27th Annual National Convention

APTICON

BHUBANESWAR | 27-28 SEPTEMBER 2024

APTICON

2024

ABSTRACT BOOK

Beyond the Counter :
Transforming Pharmacy Education for Industry and Patient Impact









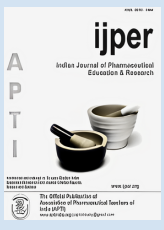
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PREFACE

It gives us immense pleasure to present the Proceedings of the 27th Annual National Convention of the Association of Pharmaceutical Teachers of India (APTICON 2024), held at Utkal University, Bhubaneswar, Odisha, from 27th to 28th September 2024. Hosted by APTI Eastern Region, this landmark event was organized for the first time in Eastern India, uniting pharmacy educators, researchers, regulators, and industry professionals under the inspiring theme "*Beyond the Counter: Transforming Pharmacy Education for Industry and Patient Impact*."

APTICON 2024 sought to reimagine pharmacy education as a driver of societal and industrial transformation. With a strong emphasis on translational research, patient-centered practice, and industrial readiness, the convention created a vibrant platform for the exchange of innovative ideas, research findings, and pedagogical models. Over the course of two days, delegates engaged in keynote sessions, panel discussions, and scientific presentations that showcased emerging directions in pharmaceutical sciences, regulatory innovation, and quality assurance.

The Scientific Committee received over a thousand abstracts from institutions across the country. Following rigorous peer review, 847 abstracts were accepted for presentation comprising 65 oral presentations and 782 posters across seven thematic domains: Pharmaceutical and Medicinal Chemistry / Pharmaceutical Analysis and Quality Assurance; Pharmacognosy, Indigenous Drugs, Herbal Formulations and Phytochemistry; Pharmaceutical Technology, Biopharmaceutics and Drug Delivery; Pharmacology and Toxicology / Clinical Research; Pharmacy Practice, Pharmacovigilance and Community Pharmacy; Regulatory Affairs, Quality Systems and Management; and Pharmaceutical Education, Artificial Intelligence, and Data Analytics.

The event drew participation from more than 2,000 delegates, including academicians, research scholars, students, and industry leaders. The proceedings were enriched by 20 invited speakers, 30 industrial sponsors, and 50 academic collaborators, whose contributions ensured both scientific depth and practical relevance. APTICON 2024 also continued the tradition of recognizing excellence the best 08 oral and 13 poster presentations were felicitated during the valedictory session, with selected authors invited to submit their full-length manuscripts for publication in special issues of the Indian Journal of Pharmaceutical Education and Research (IJPER).

These proceedings stand as a record of the collective intellectual endeavour of the Indian pharmacy community in 2024. The Scientific Committee extends heartfelt appreciation to the Patron, Co-patrons, Organizing Committee, and APTI leadership, as well as to every participant whose work and presence made this event a memorable success. We hope this compilation serves as both a scholarly reference and a source of inspiration for continued innovation in pharmaceutical education and research.

Scientific Committee
27th APTICON 2024, Bhubaneswar

INDEX

Presentation Code	Name of Presenting Author*	Page No.
OCG151	Priya Shetti	2
OCG152	Vasantharaju S G	2
OCG153	Jignasha Ronak Pandya	3
OCG154	Ruchi Khare Shrivastava	4
OCG155	Arjun Patra	5
OCG156	Ramu Govindan	5
OCG157	Minakshi Nehete	6
OCG158	Nabarun Mukhopadhyay	7
OCG159	Smriti Rekha Chanda Das	7
OCG160	Srinath B	8
OCG161	Neeraj Kumar Sethiya	9
OCG162	H K Sundeep Kumar	9
OCG163	Saswati Tarafdar Sasmal	10
OCH111	Mahendra Gowdru Srinivasa	12
OCH112	B. Behera	12
OCH113	Akhilesh Kumar Bilaiya	13
OCH114	Jubie S	14
OCH115	R. Kalirajan	14
OCH116	Uttam Prasad Panigrahy	15
OCH117	Dilip G Maheshwari	15
OCH118	Paresh Patel	16
OCH119	N. Raghavendra Babu	17
OCH120	Prabitha P	17
OCH121	G. Jaya Syamala	18
OCH122	Mahesh B. Palkar	19
OCH123	Vaishali	19
OCH124	Ajmer Singh Grewal	20
OCH125	Lakshmana Rao Atmakuri	20
OCH126	Geetanjali Swain	21
OCL131	Nutan Naik	23
OCL132	Payal Dande	23
OCL133	Ramesh Kumar Gupta	24
OCL134	Alok K Soni	25
OCL135	Soukat Chandra	25
OCL136	Ambika M	26
OCL137	Bhagyashree Mote	27
OCL138	Rajaram Das	27
OCL139	Sumithra Mohan	28
OCL140	Justin A	28
OCL141	Payal Chakraborty	29
OTC171	Sathianarayanan S	31
OTC172	Yogeeta S. Goyal	31
OTC173	Jaymin Patel	32
OTC174	Meenakshi Patel	33
OTC175	Vividha Dhapte-Pawar	33
OTC176	Rashmi Surve	34
OTC177	Suwarna Suresh Bobde	35
OTC178	Gouranga Dutta	35
OTC179	Anindita De	36
OTC180	Kalavathy. D.J	37
OTC181	Prakash Kendre	37
OTC182	Suvarna G. Kini	38
OTC183	Thangavelu Prabha	39
OTC184	Indranil Banerjee	39
OTC185	Ramesh Babu Janga	40
OTC186	Vamshi Krishna Tippavajhala	41
OTC187	Arun KP	41
OTC188	Prabhakar Reddy Veerareddy	42
OTC189	Sunita A. Chaudhary	43
OTC190	Sweta Mishra	44
OTC191	Hiral M Manani	44
OTC192	Hemalatha KP	45
OTC193	Suddala.Shirisha	45
OTC194	Manohar M	46
OTC195	Megha Verma	47
PHCG301	Sushma Rathod	49
PHCG302	Shraddha R. Samrit	49
PHCG303	Ashwini Meshram	50
PHCG304	Sharath H P	50
PHCG305	Chava Sri Sailaja	51
PHCG306	Abhijit S. Salokhe	52
PHCG307	Suraj Singh Bhadoria	53
PHCG308	Monika Ray	54
PHCG309	Anupam Jaiswal Sil	54
PHCG310	Mrityunjaya B. Patil	55
PHCG311	Debashis Tripathy	56
PHCG312	Pradeep Singh Tomar	56
PHCG313	Mitali Kubade	57
PHCG314	Rasmita Jena	58
PHCG315	Soubhagya Lenka	58
PHCG316	Jyoti Prakash Guru	59
PHCG317	Dharmendra Pradhan	60
PHCG318	Rashmi Rawal	60
PHCG319	Chinmaya Chidananda Behera	61
PHCG320	Jyoti Balaji Arsude	62
PHCG321	Ayush Dangwal	63
PHCG322	Sakshi Nirhali	63
PHCG323	Soubhanik Giri	64
PHCG324	Bhubaneswari Mishra	65
PHCG325	Anuma Zine	65
PHCG326	Vaishnavi Yadav	66
PHCG327	Pawan Kumar Prasad	67
PHCG328	Sidhant Tamang	67
PHCG329	Sudipta Choudhury	68
PHCG330	Nikki Kumari Gupta	68
PHCG331	Suman Boruah	69
PHCG332	Milan Jana	69
PHCG333	Tabom Rigia	70
PHCG334	Nihas Hussain	70
PHCG335	Supriya Sahani	71
PHCG336	Gayatri Lohe	71
PHCG337	Bhargab Thakuria	72
PHCG338	Pratiksha Khajone	72
PHCG339	Dipali Bokade	73
PHCG340	Prachurjya Bhuyan	74
PHCG341	Deepakshi Boro	74
PHCG342	Sachin Thakur	75

Presentation Code	Name of Presenting Author*	Page No.
PHCG343	Moziihrii Chache	75
PHCG344	Jebina Yasmin	76
PHCG345	Dipjyoti Sharma	77
PHCG346	Rashmita Gogoi	78
PHCG347	Gourab Das	78
PHCG348	Shibanee Talukdar	79
PHCG349	Muslek Uddin Mazumder	79
PHCG350	Abhilash Bharadwaj	80
PHCG351	Smriti Sarma	81
PHCG352	Gunjan Sahariah	81
PHCG353	Shravana Das	82
PHCG354	Biraj Das	83
PHCG355	Aslam Ahmed	83
PHCG356	Dibarri L Paduna	84
PHCG357	Bitopan Deka	84
PHCG358	Nilanjana Medhi	85
PHCG359	Jessica Kalita	86
PHCG360	Rutuja Alone	86
PHCG361	Shibani Kashyap	87
PHCG362	Sharan Raj R	87
PHCG363	Anisa Das	88
PHCG364	Prachi P. Shinde	89
PHCG365	Harshalata B. Sahare	89
PHCG366	Priyanka Itankar	90
PHCG367	Nitul Barman	91
PHCG368	Munish Choudhary	91
PHCG369	Sanskruti J. Nagmote	92
PHCG370	V. Geethika	92
PHCG371	Dhruv Sharma	93
PHCG372	Archit Rajesh Mawale	93
PHCG373	Vennila C	94
PHCG374	Nidhi P. Dhone	94
PHCG375	Swapnil Chouragade	95
PHCG376	Gauri O. Nikhade	96
PHCG377	Vedanti Anand Mandle	96
PHCG378	Asmita Umate	97
PHCG379	Kandasamy C.S	97
PHCG380	Ekta Hemraj Wanjari	98
PHCG381	Esha Mohitkar	98
PHCG382	S. V. Kawale	99
PHCG383	Mohammad Rawoof	99
PHCG384	Soumya Swadhin Bisoyi	100
PHCG385	Sandip Maity	100
PHCG386	Mukesh Keshari	101
PHCG387	Binita Pradhan	101
PHCG388	Prateek Chaurasia	102
PHCG389	Pratyush Mondal	103
PHCG390	Mrinmoy Basak	103
PHCG391	Sneha Adak	104
PHCG392	Naveen Vishwakarma	105
PHCG393	Mainak Nath	105
PHCG394	Koushik Narayan Sarma	106
PHCG395	Sayantan Kayal	106
PHCG396	Shila Das Adhikary	107
PHCG397	Debkanta Panja	107
PHCG398	Hrishikesh Biswas	108
PHCG399	Sayan Maity	109
PHCG400	Sofia Meher	109
PHCG401	Sourav Agasti	110
PHCG402	Dinesh Kumar Panda	110
PHCG403	Swagatika Panda	111
PHCG404	Roshan Ku. Pradhan	111
PHCG405	Sonali Barik	112
PHCG406	Binay Pradhan	112
PHCG407	Sonali Bhujabal	113
PHCG408	Sandhya Parameswaran	113
PHCG409	Mishra Pratibha	114
PHCG410	Biprojit Paul	115
PHCG411	Pushpendra Kumar Shukla	115
PHCG412	Raj Kumari	116
PHCG413	N V L Sirisha Mulukuri	116
PHCG414	Soumya Kiran Misra	117
PHCG415	Jayakumari	117
PHCG416	Suchita K. Bhoyar	118
PHCG417	Abhijeet Puri	119
PHCG418	Snehal S. Manekar	119
PHCG419	Tushar Salunke	120
PHCG420	Raghu Chandrashekar H	120
PHCG421	Biswa Mohan Sahoo	121
PHCG422	Aswatha Ram HN	121
PHCG423	Deijy Choudhury	122
PHCG424	Shraddha Suman Panda	123
PHCG425	K.Swathi Priya	124
PHCG426	Dipti B. Patel	124
PHCG427	Kunika	125
PHCG428	K.S Chandrashekar	126
PHCG429	Geeta Deswal	126
PHCG430	Pooja S. Kothekar	127
PHCG431	Bhojaraju P	127
PHCG432	Archana Bele	128
PHCG433	Rupali Humane	128
PHCG434	Vikram Choudhary	129
PHCG435	Sheelpriya R. Walde	129
PHCG436	Muppaneni Srikanth	130
PHCG437	Sushree Sameekshya Rath	131
PHCG438	Kolli Srinivas	131
PHCG439	Narendra Devanaboyina	132
PHCG440	Aayushi Sanadhya	132
PHCG441	Priya Khape	133
PHCG442	Shaziya Yasmeen Sayeed	133
PHCG443	VM Subrahmanyam	134
PHCG444	Soumya Pal	134
PHCG445	A. Kanakadurgavalli	135
PHCG446	Hurmat	135
PHCG448	Amit Kumar Joshi	136
PHCG449	Sarbani Roy	136
PHCG450	Shambaditya Goswami	137
PHCG451	Sujit Kumar Patro	137

Presentation Code	Name of Presenting Author*	Page No.
PHCG452	Moumita Dhara	138
PHCG453	Pethakar Shriram Ramesh	138
PHCG454	G. Neelamma	139
PHCH151	Shankar Gharge	141
PHCH152	Rahul Koli	141
PHCH153	Gope Edward Raju	142
PHCH154	Aradhana Panigrahi	143
PHCH155	Pooja Rayanade	143
PHCH156	Yadishma A. Gaude	144
PHCH157	Seema B. Kharwade	144
PHCH158	Soumyashree Tripathy	145
PHCH159	Bhagyashree Prakash Gaikwad	145
PHCH160	Debashis Mishra	146
PHCH161	Udita Malik	147
PHCH162	Khushboo Raj	147
PHCH163	Pallavi Saha	148
PHCH164	Rishab Bhanot	149
PHCH165	Pranita Jirvankar	149
PHCH166	Sunismita Sahu	150
PHCH167	Mohsin Ahmad	151
PHCH168	Shourya Pratap	152
PHCH169	Arun Patidar	152
PHCH170	Dhananjay K. Tanty	153
PHCH171	Kalyani R. Thombre	153
PHCH172	Misbah Sultana Abdul Kausar Badewale	154
PHCH173	Nikhil Shrisunder	155
PHCH174	Debashis Mishra	155
PHCH175	Swarnajeet Tripathy	156
PHCH176	Pratip K. Chaskar	156
PHCH177	Tata Santosh	157
PHCH178	Jogesh Nayak	158
PHCH179	Vaibhav S Nedre	158
PHCH180	Parixit Prajapati	159
PHCH181	Sarang Luhure	159
PHCH182	Supratip Laha	160
PHCH183	M.S. Sarulatha	161
PHCH184	Mariya Shelby	161
PHCH185	Ishika Sanyashi	162
PHCH186	K Monica	162
PCHC187	Harshashree M	163
PHCH188	Janani C	164
PHCH189	Geolin Subin D	164
PHCH190	Shreya Koche	165
PHCH191	Pavan V. Khodke	166
PHCH192	Krutika Nagpurkar	166
PHCH193	Pratik R. Ghive	167
PHCH194	Aaditi Wankhede	168
PHCH195	Ganesh Rahangdale	168
PHCH196	Siddhartha Sankar Das	169
PHCH197	Priyanka Baruah	169
PHCH198	Bhabana Sarma	170
PHCH199	Soaib Ahmed	171
PHCH200	Dhananjay Roy	171
PHCH201	Akash Gayen	172
PHCH202	Vaishnavi T. Gabhane	172
PHCH203	Priya B. Yadav	173
PHCH204	Nandini R. Pophale	173
PHCH205	Pooja S. Meshram	174
PHCH206	Nikita Rahangdale	174
PHCH207	Mayuri Kashyap	175
PHCH208	Bedanga Bora	176
PHCH209	Anamika Dey	176
PHCH210	Anoushka Dash	177
PHCH211	Jeevan S	178
PHCH212	Sarvesh Ravichandran	178
PHCH213	Snigdho Kanti Dey	179
PHCH214	Sukeshan M P	179
PHCH215	Aiswarya M	180
PHCH216	R Achala S Prabhu	181
PHCH217	Karan Das	181
PHCH218	Rajdeep Bhuyan	182
PHCH219	Aswini Kumarpadhy	182
PHCH220	Chinmaya Mishra	183
PHCH221	Sarangadhara Sahu	183
PHCH222	Laxman Kumar Satapathy	184
PHCH223	Sharan Anandhan	184
PHCH224	Devansh S. Manusmare	185
PHCH225	Himanshi P. Rehapade	186
PHCH226	Karpakavali M	186
PHCH227	Kuchimanchi Bhaskara Shashank	187
PHCH228	Yash Akotkar	187
PHCH229	Debasish Saha	188
PHCH230	Ashish Ranjan Mishra	189
PHCH231	Tamalika Pandit	190
PHCH232	Syed Rihana	190
PHCH233	S.N. Meyyanathan	191
PHCH234	Grace Shaji Chittilappilly	191
PHCH235	Babu B	192
PHCH236	Kajal Bhagat	193
PHCH237	Rajat Ghosh	193
PHCH238	Kunal Gokhale	194
PHCH240	Sonam Patel	195
PHCH241	Raja Rajeswari Kamisett	195
PHCH242	Debanjan Sen	196
PHCH243	Popat Mohite	197
PHCH244	Ashwini Jadhav	198
PHCH245	Chaitali S Prabhu Tendulka	199
PHCH246	Saikat Sen	200
PHCH247	Vivekanand A Chatpalliwar	200
PHCH248	Krishna Chandra Panda	201
PHCH249	Kalyani Sahare	202
PHCH250	Anand Kumar Gupta	202
PHCH251	Arundhati Behera	203
PHCH252	Shaik Khadar Yazdan	203
PHCH253	Gomathi Swaminathan	204
PHCH254	Ramgopal Dhanwad	205
PHCH255	Somsubhra Ghosh	205
PHCH256	Jignesh Shah	206

Presentation Code	Name of Presenting Author*	Page No.
PHCH257	Gowri Gollu	207
PHCH258	Satheeshkumar Sellamuthu	207
PHCH259	Ekta Thakor	208
PHCH260	Mukesh T. Mohite	208
PHCH261	Karthika Paul	209
PHCH262	Revan Karodi	210
PHCH263	B. M. Gurupadayya	210
PHCH264	Gurappa Kashinath Dyade	211
PHCH265	Sandip Zine	211
PHCH266	Maulikkumar D. Vaja	212
PHCH267	Kalyan Chakravarthi	213
PHCH268	Hima Bindu Kodali	213
PHCH269	Rajeswar Das	213
PHCH270	Kiran.Patil	214
PHCH271	Bheema Naik Angothu	214
PHCH272	Manish Kumar Thimmaraju	215
PHCH273	Slesha Kumar Kosuru	215
PHCH274	Rashmi Rekha Pati	216
PHCH275	Sushil D. Patil	217
PHCH276	Siddhant Vijay Byas	217
PHCH277	Archana S. Gurjar	218
PHCH278	Debadash Panigrahi	218
PHCH279	Mahesh Patil	219
PHCH280	Amita Rana	219
PHCH281	Soumya Ranjan Gharai	220
PHCH283	Kiruthiga Natarajan	220
PHCH284	Saidatri	221
PHCH285	Ghadge Ojaswi	222
PHCL801	YN Lakshmi Durga	224
PHCL802	Aishwarya Sambhaji Patil	224
PHCL803	Gayatri Patil	225
PHCL804	Sheetal Kasbe	225
PHCL805	Salini P Nair	226
PHCL806	Krishnalekha Bandyopadhyay	227
PHCL807	Ashwini M. Gavit	227
PHCL808	Kiran Heera Makhija	228
PHCL809	Samruddhi S. Patil	228
PHCL810	Dabhekar Shalakha	229
PHCL811	Intekhab Alam	229
PHCL812	Ankita Dudhal	230
PHCL813	Mirza Adil Beig	230
PHCL814	Pragati A. Dongare	231
PHCL815	Adyasa Samantaray	232
PHCL816	Kondumahanti V N Lakshmi	232
PHCL817	Chaithra S R	233
PHCL818	Mohd Ismail Zubair	233
PHCL819	Syed Fayyazuddin	234
PHCL820	Shaik.Shafiya Begum	235
PHCL821	Junaid Tantray	235
PHCL822	Sneha Kispotta	236
PHCL823	Ritika Singh	237
PHCL824	Mona Motallebi	237
PHCL825	Amrita Babu	238
PHCL826	Manas Ranjan Dash	238
PHCL827	Ramdas D. Shinde	239
PHCL828	Rakesh Meher	239
PHCL829	Ekta Valand	240
PHCL830	Disha Sudesh Chopdekar	241
PHCL831	Jahanvi Panchal	241
PHCL832	Winnie Rose Daimar	242
PHCL833	Mahima Prakash MD	242
PHCL834	Praghya Sharma	243
PHCL835	Reshma George	244
PHCL836	Trisha Shukla	244
PHCL837	Akash Nigam	245
PHCL838	Shreya	245
PHCL839	Veepin Kumar Dwivedi	246
PHCL840	Vishal Rathod	246
PHCL841	Kasturika Bhuyan	247
PHCL842	Jyoti Rupa Mochahari	247
PHCL843	Rajkumar Choudhury	248
PHCL844	Riknggam Gibo	248
PHCL845	Rushikesh P. Thanekar	249
PHCL846	Shahin Siddik	250
PHCL847	Basavakiran B S	250
PHCL848	Shubham Sontakke	251
PHCL849	Akanksha Waghmare	251
PHCL850	Diksha Yadav	252
PHCL851	Darshan R	252
PHCL852	Abdul Islam	253
PHCL853	Nayan	254
PHCL854	Shashwath Ponnappa M.U	254
PHCL855	Takshashila N. Wankhade	255
PHCL856	Shivani Ingole	255
PHCL857	Omkar Kakade	256
PHCL858	Rakshith Gowda M L	256
PHCL859	Samiksha Vaidya	257
PHCL860	Jithen Shibu	258
PHCL861	Preethi. K	258
PHCL862	Sanjay B	259
PHCL863	SH Darshini	259
PHCL864	Akanksha Yadav	260
PHCL865	Tejash Patni	261
PHCL866	Mankala Sree Lalitha	261
PHCL867	Shivansh Dixit	262
PHCL868	Minerva Kalita	263
PHCL869	Asavari Rangari	263
PHCL870	Renuka S. Pattewar	264
PHCL871	Sabareesh Appusamy	264
PHCL872	Dhinagaran Murugan	265
PHCL873	Shalini Subramani	265
PHCL874	Aliunui Pouomogne Wouabo Aime	266
PHCL875	Rhitika Lanjekar	266
PHCL876	Yuvashree Narayanan	267
PHCL877	D. Neha	267
PHCL878	Balakoti Erothi	268
PHCL879	Praneeth GVS	268
PHCL880	Sudhir. M. Rajan	269
PHCL881	Surya Kiran Sunil	269
PHCL882	Annie Angeline Benesa X	270

Presentation Code	Name of Presenting Author*	Page No.
PHCL883	Dhivya. S	271
PHCL884	Sashank Chandragade	271
PHCL885	Arya N. Deshmukh	272
PHCL886	Mahima S Lande	272
PHCL887	Ashutosh .S Vajpayee	273
PHCL888	Madhura Ingole	273
PHCL889	Shreyas Kawale	274
PHCL890	Shankar Parvate	274
PHCL891	Kartik Bhoyar	275
PHCL892	Prashant R. Shere	275
PHCL893	Raj Zamare	276
PHCL894	Chirag D Ahuja	277
PHCL895	Samruddhi T. Chopade	277
PHCL896	Shravani A Masane	278
PHCL897	Kalyani Sitanboyana	278
PHCL898	Sakshi S. Bhoyar	278
PHCL899	Gauri Thakre	279
PHCL900	Manjusha Sontakke	279
PHCL901	Harsha J. Sathawane	280
PHCL902	Murari KK	280
PHCL903	Gagan D URS	281
PHCL904	Ram Jajodia	281
PHCL905	Supritha Das	282
PHCL906	Rohit Bokde	282
PHCL907	Shivang Patel	283
PHCL908	Souvik Patra	283
PHCL909	Debasis Acharya	284
PHCL910	Supriya Mohanty	285
PHCL911	Nameet Pujahari	285
PHCL912	Arumoy Mondal	286
PHCL913	Udit Ranjan Baruah	287
PHCL914	Satyasnata Sahoo	287
PHCL915	Biswarup Karmakar	288
PHCL916	Kirtiraj Jena	288
PHCL917	Nibedit Mishra	289
PHCL918	Nishikanta Malla	290
PHCL919	Praveen Saxena	290
PHCL920	Arpit Narayan Yadav	291
PHCL921	Swayan Prangya Mishra	292
PHCL922	Swayamsmita Jena	292
PHCL923	Shibayan Hazra	293
PHCL924	Jayashree Naiya	293
PHCL925	Ananya Mondal	294
PHCL926	Anand Prasad	294
PHCL927	Saikat Kayal	295
PHCL928	Chinmayee Dash	295
PHCL929	Vishwjeet Singh	296
PHCL930	Ankita Priyadarshini	296
PHCL931	Damayanti Pawar	297
PHCL934	Pragyan Mohanty	297
PHCL935	Payal D. Warokar	298
PHCL936	Pavan Kumar M R	298
PHCL937	Dighe Santosh B	299
PHCL938	Dithu Thekkekkara	300
PHCL939	Nida A Balekundri	300
PHCL940	Vadivelan Ramachandran	301
PHCL941	Ponnusankar S	301
PHCL942	Parag Jain	301
PHCL943	Pooja Vyas	302
PHCL944	Soumya Datta	302
PHCL945	D Sreedhar	303
PHCL946	Omprakash Dubey	303
PHCL947	Yashashwi Shrivastav	304
PHCL948	Prashant Gupta	305
PHCL949	Shantilal Singune	306
PHCL950	Mangirish Deshpande	306
PHCL951	Manju Pandey	306
PHCL952	Mohsina Hyder K	307
PHCL953	Anchal Sankhyan Tuli	308
PHCL954	Sangeeta Dwivedi	308
PHCL955	Triveni Mishra	309
PHCL956	Kishor Kumar Roy	309
PHCL957	Ramesh Adepu	310
PHCL958	Mrunali Potbhare	310
PHCL959	Vijayapandi Pandy	311
PHCL960	Nandakumar K.	312
PHCL961	S. Durga Prasad Reddy	312
PHCL962	Shaila Angela Lewis	313
PHCL963	Ujwal Vyas	313
PHCL964	K Surya Neeraja Nagalla	314
PHCL965	Shahid Nazir Wani	314
PHCL966	Jyothi Basini	315
PHCL967	Krisnendu Das	316
PHCL969	Guntheti. Chiranjeevi	316
PHCL970	Santhosh Kumar G	317
PHCL971	Kamna Tripathi	317
PHCL972	Ram Choudhary	317
PHCL973	Smita Jain	318
PHCL974	Kapil Kalra	318
PHCL975	Vishal Babushetty	319
PHCL976	Durga Madhab Kar	319
PHCL977	Diptimayee Jena	320
PHCL978	Krishana Kumar Sharma	320
PHCL979	Banshongdor H Mawlieh	321
PHCL980	Shyamalendu Tripathy	322
PHCL981	Abhishek Anand	322
PHCL982	Victor Roychowdhury	323
PHCL983	Sharmila Mondal	323
PHCL984	Anand Babu K	324
PHCL985	Diptirani Rath	324
PHCL986	G. Sai Sruti	325
PHCL987	Joshi Sumit Ashok	325
PHCL988	Debananda Champatisingh	326
PHCL989	Subramanian Mohanraj	327
PCTC501	Pritipragatika Nayak	329
PCTC502	Sukanya Pote	329
PCTC503	Swagatika Dash	330
PCTC504	Basanta Kumar Behera	330

Presentation Code	Name of Presenting Author*	Page No.
PCTC505	Aakanksha Sinha	331
PCTC506	Guptanjali Sahu	331
PCTC507	Ashish Singh Chauhan	332
PCTC508	Nikhita M Chambhare	332
PCTC509	Sangita Mishra	333
PCTC510	Baviya Priyadharshini R	334
PCTC511	Atiqulla Shariff	334
PCTC512	Shuvashree Meher	335
PCTC513	Debaprasad Routray	335
PCTC514	Neha T. Nistane	336
PCTC515	Sarita R. Bawankule	336
PCTC516	Vishal R. Gajbhiye	337
PCTC517	Himadri Tanaya Bisoi	337
PCTC518	Ankita Dhar	338
PCTC519	Pallobi Dutta	339
PCTC520	Sushree Sambita Swain	339
PCTC521	Rinkee Verma	340
PCTC522	Krutuja R. Chougule	340
PCTC523	Abhishek Singh	341
PCTC524	Kanishka Lakhmani	341
PCTC525	Meenakshi Singh	342
PCTC526	Pallavi B. Gholap	342
PCTC527	Varsha Sahu	343
PCTC528	Palash Chandra Biswas	343
PCTC529	Himansu Ranjan Palatasingh	344
PCTC530	Saurabh Singh	344
PCTC531	Shikha Meena	345
PCTC532	Dhiraj B. Dabhade	345
PCTC533	Lipanjali Badhei	346
PCTC534	Varsha Laxman Jakune	346
PCTC535	Harekrushna Barik	347
PCTC536	Gnyana Ranjan Parida	347
PCTC537	Rakhi Verma	348
PCTC538	Apurba Banerjee	348
PCTC539	Laura S L	349
PCTC540	Akashdeep Udmale	349
PCTC541	Varsha Uikey	350
PCTC542	K Rahul	350
PCTC543	Chetan R. Sormare	351
PCTC544	Abhinandan Satapathy	352
PCTC545	PN Tapaswini Behera	352
PCTC546	Mayuri Gajghate	353
PCTC547	Divya Malode	354
PCTC548	Pratiksha. S. Hanmante	354
PCTC549	Pratistha Phukan	355
PCTC550	Rohini Ghodke	356
PCTC551	Sourav Jyoti Nath	356
PCTC552	Sakshi Itekar	357
PCTC553	Akshaya.P	358
PCTC554	Chinmaya Sahoo	358
PCTC555	Nishijyoti Choudhury	359
PCTC556	Dhiraj Lanjewar	359
PCTC557	Ketan Yede	360
PCTC558	Omkar Vijay Tekade	360
PCTC559	Sahil Gupta	361
PCTC560	Vedant Dixit	361
PCTC561	Ojas Kumbhalkar	362
PCTC562	Katikala Tanvi	362
PCTC563	Kanchan Chafle	363
PCTC564	Sakshi Chawde	363
PCTC565	Nidhi Gopale	364
PCTC566	Battu Vaishnavi	365
PCTC567	Akash Jagtap	365
PCTC568	Rajat Kumar Prusty	366
PCTC569	Dibyajyoti Beuria	367
PCTC570	Harish.N	367
PCTC571	Surya CS	368
PCTC572	Sandip Mandal	368
PCTC573	Nagaskanda Gupta H S	369
PCTC574	Megha Kapse	369
PCTC575	Sayan Bera	370
PCTC576	Bhabani Sankar Mohanta	370
PCTC577	Deepak A. Thakre	371
PCTC578	Akash Ande	371
PCTC579	Hiten Nikam	372
PCTC580	Monali S. Manghani	373
PCTC581	Abhijith K Shaji	374
PCTC582	Tanushree D. Malode	374
PCTC583	Priyanka Singanwad	375
PCTC584	Dipti Suryawanshi	376
PCTC585	Ashwini Narendra Bhamare	376
PCTC586	Anjana Lekshmi S S	377
PCTC587	Mustafizur Rahman	378
PCTC588	Yogesh S	378
PCTC589	Annapurneshwari BJ	379
PCTC590	T. Jayasree Reddy	379
PCTC591	Omprakash Ramdas Pendor	380
PCTC592	Mayuri Upagya Kalita	380
PCTC593	Shrishail I. Gobbur	381
PCTC594	Sourish Sarkar	382
PCTC595	Subhra Prateek Puspalak	382
PCTC596	Barsha Das	383
PCTC597	Neha A. Pudke	383
PCTC598	Mayuri Patil	384
PCTC599	Anisha Das	384
PCTC600	Sushangkar Dey	385
PCTC601	Ashabari Nayak	385
PCTC602	Priyadarshini Paul	386
PCTC603	Francis Xavier A	387
PCTC604	Manas Mal	387
PCTC605	Bhate Lokesh	388
PCTC606	Nituporna Bora	389
PCTC607	Madhuri Gawai	389
PCTC608	Abhijit Deka	390
PCTC609	Komal Chavan	391
PCTC610	Shirin Bhuyar	391
PCTC611	Rutuja Gulhane	392
PCTC612	Khushal Gangurde	393

Presentation Code	Name of Presenting Author*	Page No.
PCTC613	Rushikesh Girase	393
PCTC614	Richa Saxena	394
PCTC615	Sushmita Debbarma	394
PCTC616	Gauravi Sewatkar	395
PCTC617	Sufiya Qureshi	395
PCTC618	Afshanaz Sayed	396
PCTC619	Phiwansiewdor Syiem	396
PCTC620	Swapnasish Behera	397
PCTC621	George Hmangte Kom	397
PCTC622	Abantika Mondal	398
PCTC623	Muskan Tamang	399
PCTC624	Suvasish Mitra	399
PCTC625	Aniket Jape	400
PCTC626	Harshali Waze	401
PCTC627	Aditya Gandale	402
PCTC628	Chaitali Pardeshi	402
PCTC629	Ayati Kar	403
PCTC630	Deepraj Datta	404
PCTC631	Toufique Ahmed	404
PCTC632	Bhaskarjyoti Deka	405
PCTC633	Sejal Ukey	405
PCTC634	Madhuri Madavi	406
PCTC635	Payal Sahu	407
PCTC636	Baby Lalrinawmi	407
PCTC637	Abdus Samad	408
PCTC638	Suman Kumar Choudhury	409
PCTC639	Subhalaxmi Dash	409
PCTC640	Suchismita Bindhani	410
PCTC641	Avinash Kudhekar	410
PCTC642	Adithya BS	411
PCTC643	Tinkal Pardhi	411
PCTC644	Samir Hang Subba	412
PCTC645	Ramit Rahaman	412
PCTC646	Hiranmoy Mitra	413
PCTC647	Arnab Neelam Baruah	413
PCTC648	Akanksha Ashtankar	414
PCTC649	Saiyed Selim Ali	415
PCTC650	Abhisek Satapathy	415
PCTC651	Debashis Dash	416
PCTC652	Sangita Ghosh	416
PCTC653	Md Kabirul Islam Mollah	417
PCTC654	Phanibhusan Das	417
PCTC655	Satya Narayan Jena	418
PCTC656	Prasanna Kumar Sahoo	418
PCTC657	Sagardeep Rana	419
PCTC658	Saumya Katiyar	419
PCTC659	M. S. Sindhu Priya	420
PCTC660	Utkarsh Navneet Prasad	420
PCTC661	Rohit Yashwant Gaupale	421
PCTC662	Krishnansh S. Raut	421
PCTC663	Abhilipsa Bal	422
PCTC664	Ayan Samanta	422
PCTC665	Ashmita Goswami	423
PCTC666	Sarvesh Tryambak Lawange	423
PCTC667	Ishwari D.Thakare	424
PCTC668	Tejas Satish Gadhwe	424
PCTC669	Prasant Kumar	425
PCTC670	Jyotirmaya Parida	426
PCTC671	Subhashree Bohidar	426
PCTC672	Prarthana A. Kokate	427
PCTC673	Maniram Choukade	427
PCTC674	Suvarna Patel	428
PCTC675	Gausiya Siddiqui	428
PCTC676	Pranav Gundapure	429
PCTC677	Unmani C. Kawadkar	429
PCTC678	M.Shiva Chandana	430
PCTC679	Onkar Dhande	431
PCTC680	Rahul Ravi	432
PCTC681	Neha Gode	432
PCTC682	Shaurabh Kumar Jha	433
PCTC683	D. Sowmya	433
PCTC684	B. Hari Chandana	434
PCTC685	Jitendra Behera	435
PCTC686	Jyotiranjan Barik	435
PCTC687	Lipsa Priyadarshani Dash	436
PCTC688	Shambojit Ghosh	436
PCTC689	Adarsh Ranjan Swain	437
PCTC690	Ashutosh Nepak	437
PCTC691	Kshireswari Sahu	438
PCTC692	Anjali Kumari	438
PCTC693	Atharva Shende	439
PCTC694	Shrushti L. Bhongade	439
PCTC695	Prajwal S. Kohale	440
PCTC696	V. Sivakalyani	440
PCTC697	Krishna Raj	441
PCTC698	Yash P. Umate	441
PCTC699	Akshay Bokde	442
PCTC700	Yash Kolhe	442
PCTC701	Ankit Kumar Sahoo	443
PCTC702	Aparna Swain	444
PCTC703	Surajit Das	444
PCTC704	Priti Das Ukil	445
PCTC705	Aritra Bag	445
PCTC706	Deep Mondal	446
PCTC707	Ankit Datta	446
PCTC708	Ananya Das	446
PCTC709	Shreyasi Dey	447
PCTC710	Adrita Banerjee	448
PCTC711	R Abhijan Sahoo	448
PCTC712	Janvi B. Pote	449
PCTC713	Kovvuri Harshit Reddy	449
PCTC714	Sagar Fating	450
PCTC715	Ch. Niharika	450
PCTC717	Vedant Gulghane	451
PCTC718	Soma Jana	451
PCTC719	Nayan Gujarathi	452
PCTC720	Srinivas Mutalik	453
PCTC721	Amrita Nayak	453

Presentation Code	Name of Presenting Author*	Page No.
PCTC722	Chinmaya Keshari Sahoo	454
PCTC723	Archana S. Patil	455
PCTC724	Aarti Belgamwar	455
PCTC725	Mohan Parasuraman	456
PCTC726	Soma Das	457
PCTC727	Sitakant Patnaik	457
PCTC728	Muddukishna BS	458
PCTC729	Kunika Champanerkar	458
PCTC730	Sachin Maruti Kokate	459
PCTC731	Amlan Bishal	460
PCTC732	Vijaya Vara Prasad Medapati	460
PCTC733	Easha Biswas	461
PCTC734	Karan Kumar Das	461
PCTC735	Saroj Kanta Bisoyi	462
PCTC736	Aishwarya C. Narayankar	462
PCTC737	Medha Khade	463
PCTC738	Prachi Mehendale	463
PCTC739	Suryadevara Vidyadhara	464
PCTC740	Jaya Vasavi G.	465
PCTC741	Tulshidas S. Patil	465
PCTC742	Anju Goyal	466
PCTC743	Raman Sureshkumar	467
PCTC744	Lalchand D. Devhare	467
PCTC745	Harishkumar K Rathod	468
PCTC746	Mrugendra Potdar	468
PCTC747	Deepalakshmi M	469
PCTC748	Raneet Das	470
PCTC749	Ankita Jaunjal	470
PCTC750	Sucheta Moharana	471
PCTC751	Anand Babu S	471
PCTC752	Shabana Quadri	472
PCTC753	Ashwini R. Raghorte	473
PCTC754	D. Nagarjuna Reddy	473
PCTC755	Virendra S Ligade	474
PCTC756	Samir Bhargava	474
PCTC757	Natesh Gunturu	475
PCTC758	Bhavana Bhat	475
PCTC759	Amol B. Khade	476
PCTC760	Anshuman Panda	476
PCTC761	GNK Ganesh	477
PCTC762	Kowmudi Gullapalli	477
PCTC763	Anup Naha	478
PCTC764	Geetanjali S. Salimath	478
PCTC765	Annu Rathor	479
PCTC766	Madhusmruti Khandai	479
PCTC767	G Selvi	480
PCTC768	Deepk Khobragade	481
PCTC769	Rakhi Khabiya	481
PCTC770	Sushruta Mulay	482
PCTC771	Gayathri Rajaram	483
PCTC772	Ganesh Deshmukh	483
PCTC773	Ruchi R. Khobragade	484
PCTC774	Divya Suares	484
PCTC775	Saritha Shetty	485
PCTC776	Manali Sharma	485
PCTC777	Parag Ghosh	486
PCTC778	Tanmoy Ghosh	487
PCTC779	Kiran D. Patil	487
PCTC780	Maya Desai	488
PCTC781	Arpna Indurkhya	488
PCTC782	Namdev Dhas	489
PCTC783	Appasani Sambasivarao	490
PCTC784	Durgaprasad Kemisetti	490
PCTC785	Sankar Narayan Bhunia	491
PCTC786	M. Venu	491
PCTC787	Bhattacharya S	492
PCTC788	Morusu Keerthana	492
PCTC789	Puja Saha	493
PCTC790	Rajkumar M Biradar	494
PCTC791	Snigdha Rani Behera	495
PCTC792	Reechik Bandyopadhyay	495
PCTC793	Rudragouda Patil	496
PCTC794	Aishwarya Jain	497
PCTC795	Didhiti De	498
PCTC796	Mohammed Asif Hussain	498
PCTC797	Chandan Kumar Brahma	499
PCTC798	Bratati Bandyopadhyay	499
PCTC799	Ankur Maity	500
PCTC800	Subhash V. Deshmane	501
PCTC801	Vinayak Katekar	501
PCTC802	Abhra Das	502
PCTC803	Soumya Pathak	503
PCTC804	Kanchan Thakur	503
PCTC805	Vaibhav Vaidya	504
PCTC806	Srinivas Hebbar	505
PCTC807	Abhay Sharma	505
PCTC808	S Prema	506
PCTC809	Laxmidhar Maharana	507
PCTC810	Sougat Suman Nayak	507
PCTC811	Kalyani Jogimahanti	508

ABSTRACTS OF SCIENTIFIC ORAL PRESENTATIONS

PHARMACOGNOSY, INDIGENOUS DRUGS, HERBAL FORMULATIONS AND PHYTOCHEMISTRY, BIOTECHNOLOGY AND BIOTHERAPEUTICS

OCG151

EVALUATION OF ANTIOXIDANT AND ANTICANCER ACTIVITIES OF SILVER NANOPARTICLES OF LEAF EXTRACTS OF *ARCHAS SA POTA* L.

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Abstract:

Objectives: The current study was performed to examine the antioxidant and anti cancer potential of biosynthesized silver nanoparticles (AS-AgNPs) using leaf extract of *Archassapota*, **Methods:** The study proposes a new approach involving the combination of the bio-synthesized AgNPs with *Archassapota L* (AgNP-AS). The biosynthesized AgNPs were characterized. The cytotoxicity study against KB 3-1 cancer cell lineand antioxidant activity of AS and AgNP- AS was examined. **Results:** Ultraviolet–visible spectroscopy revealed surface plasmon resonance of nanoparticles, at an absorbance peak of 453nm clearly indicated the synthesis of AS-AgNPs. The results showed that theshapeofAS-AgNPswas spherical or oval and inside the range of 10-23nm with a mean 16.55nm length. The synthesized AS-AgNPs confirmed high zeta capacity of -38.1 mV. The cytotoxicity study revealed the IC50 values for AS and AS-AgNPs, Cisplatin were 83.22 ±5.42 and 7.34±1.25, 3.62+ 0.92 µg/ml respectively, showing dose-dependent cell death. The IC50 values of antioxidant assay for AS, AS-AgNPs, and ascorbic acid were 191.8 ±6.85, 94.96 ±41.25, and 13.10±2.55µg/ml respectively. **Conclusions:** We developed an easy, simple, clean, reliable, and economical approach for synthesizing AgNPs using the leaf extracts of *Archassapota*. The biosynthesized AgNPs was characterized and studied *in vitro*. Our study demonstrates stable AgNPs with a desirable morphology and high yield, thereby improving the AgNPs properties for anti-oxidants and cancer.

OCG152

SIMULTANEOUS ASSAY METHOD DEVELOPMENT AND VALIDATION FOR BERBERINE, GLYCYRRHIZIC ACID, PALMATINE AND QUERCETIN BY RP-HPLC - AN APPLICATION TO AYURVEDIC FORMULATIONS

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Abstract:

Objectives: The aim of this study was to develop and validate RP-HPLC method for the simultaneous estimation of Berberine, Glycyrrhizic Acid, Palmatine, and Quercetin and application to ayurvedic polyherbal formulations. **Methods:** The liquid chromatographic method was developed by using a Shimadzu LC-20 AD Prominence solvent delivery module equipped with an SPD M-10A VP Prominence PDA detector. The separation was performed on HyperClone BDS C_{18} Column (250 x 4.6mm x 5µ) Phenomenex by gradient program at a detection wavelength of 254nm. The mobile phase used was 0.01 M Potassium hydrogen phosphate buffer (pH adjusted to 3.0 using orthophosphoric acid) and acetonitrile at a step-gradient configuration of 70:30 from 0 to 10.5 min,

followed by 60:40 from 10.5 to 20.0 mins at a flow rate of 1.0ml/min. **Results:** The retention time of Berberine, Glycyrrhizic Acid, Palmatine, and Quercetin was found to be 8.1, 10.2, 11.8, and 18.5 mins, respectively, with resolution e"2.0. The method demonstrated a linearity of r^2 e" 0.999 and recoveries of 95% - 105% for all the markers. The method was found to be precise and robust, and system suitability values were within acceptable limits. The LOD was found to be <0.02µg/ml, and LOQ was found to be <0.5µg/ml for all the markers, which indicates the commendable sensitivity of the method. The linearity was found to be 5-25 µg/ml for all the markers. **Conclusions:** The method is simple, accurate, and specific for the simultaneous estimation of these four markers within a short run time of 25 minutes. The developed and validated method was successfully applied to two Ayurvedic formulations.

OCG153

DEVELOPMENT, OPTIMIZATION AND EVALUATION OF NOVEL HERBAL HYDROGEL FORMULATION FOR WOUND HEALING ACTIVITY

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Abstract:

Objectives: The aim of this study was to develop, optimize and evaluate novel herbal hydrogel formulation for wound healing and anti-microbial activity that has promising therapeutic and potential action with herbal ingredients and minimum side effects. **Methods:** Hydrogels are obviously recommended for wounds healing therapy as they have a remarkable freshening and soothing outcome when applies topically on burns and sore wounds. Firstly, Ambehalad, Arjuna bark, and Hirabol extracts were prepared by maceration process. To utilize their therapeutic properties of healing wound, antioxidant and anti-mocrobial, 1% carbopol in 50 mL water was taken to prepare a hydrogel like consistency for gradual release of herbal ingredients in a controlled manner for the said purpose. Formulation was then optimized by 3^2 factorial design. Further optimized formulation was evaluated with various parameters. Three sets (each group having 6 rats) of animal groups were made i.e. Control, standard and test. Initially wound was created with hot glass rod of 1 cm diameter in each set of animal. Control group was not given any treatment on wound whereas standard group and test group were given topical medical treatment of marketed formulation and prepared novel herbal hydrogel, respectively. This study was observed for wound healing activity for 7 days and extended upto 14 days for the results. Moreover, anti-microbial activity also performed. **Results:** Herbal hydrogel formulation was evaluated for various physico-chemical properties like visual inspection, pH, viscosity, spreadability and thermal stability. All the parameters were complied with evaluation criteria. 14 days study was shown significant wound healing in case of test group as compare to standard and control group without any potential side effects. This formulation was also showed good anti-microbial action. **Conclusions:** Based on the research conducted on herbal hydrogel, it can be concluded that this formulation has noteworthy potential for wound curing effect. It can help in treating wound, scars and marks and promote wound soothing without triggering injurious side effects that are frequently allied with conventional medications. Hence, developed novel herbal hydrogel is a promising natural remedy for wound healing therapy and makes it a potential candidate for commercial application.

OCG154

IN VITRO – IN VIVO CELLULAR REPROGRAMMING AND ANTIOXIDANT POTENTIAL OF HERBAL CREAM FORMULATION

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Abstract:

Objective: The medicinal plants have numerous pharmacological properties and having lesser side effects. Todaythere is increasing trend of medicinal plants as anti-aging and anti-wrinkle agents. The aim of thisstudy is to evaluate antioxidant, anti-aging and anti-wrinkle potential of herbal cream formulation of *Fumaria officinalis.* **Methods:** *Fumaria officinalis,* fumitory *(Papaveraceae)* is native to Europeand Asia, now grows wild in parts of North America. Powdered crude drug 100g were successively extracted in a soxhlet apparatus with petroleumether (60-80ºC), chloroform and methanol. After successive solvents extraction methanolic extract was used fortesting of antioxidant potential using DPPH assay. Further, anti-aging potential of extract was investigated byinhibitory effect of various enzymatic estimations i.e. Col-I, Ela-I and Hya-I inhibitory assays on early aginghuman skin fibroblasts. Anti-wrinkle potential of plant extract and cream formulation *Fumaria officinalis* was done by using UV light inducedphoto aging model. **Results:** The present study was performed to determine antiwrinkle and antiaging potential of *F. officinalis*. The work was divided into several major sections including collections and authentication of the plant materials; extract preparation; herbal cream formulation and skin irritancy test of prepared cream formulation and evaluation of formulation against the wrinkles. In this study, methanolic extracts of *F. officinalis* used to form topical herbal formulation to prevent aging and wrinkle.The percentage yield of *F. officinalis* was 0.34%, 1.02% and 3.88% in petroleum ether, chloroform and methanolic extracts, respectively. Qualitative phytochemical analysis of *F. officinalis* showed presence of glycosides, flavonoids, alkaloids and several other secondary metabolites. At the highest concentration (100 µg), *F. officinalis has* the highest DPPH scavenging activity compared to Ascorbic acid (63.13% and 86.08% respectively). The percentage inhibition of hyaluronidase activity of *F. officinalis* (75.82%) in comparison to standard rutin (78.17%). Rutin has low IC_{50}value (19.06µg/mL) when compared to *F. officinalis* extract (30.55 µg/mL). The collagenase inhibitory activity of *F. officinalis* (62.17%) respectively, where rutin (71.71%) was used as a standard. IC_{50} value of *F. officinalis* (41.25 µg/ml) in comparison to standard rutin (11.54 µg/ml). Results revealed that the formulation F3 having high viscosity, spreadability, optimum pH for topical application, highest acid and saponification values. Thus, F3 was selected as optimized formulation to determine anti-wrinkle and anti-aging activities. The skin irritation studies of prepared herbal cream formulation showed no redness, edema, inflammation and irritation after application on skin. Thus, formulation was found safe to use over skin. The Studies of cutaneous retention showed higher colour intensity in case of formulation rather that the solution system indicates the higher permeation and cutaneous retention of extracts in the skin.It was found that the topical application of methanolic extract cream of *Fumaria officinalis* may induce a decrease in the thickness of epidermis and dermis and the number of adipose tissues in skin but maximum decrease was found in cream formulation treated group. Order of effectiveness on wrinkles: Rutin> herbal cream formulation> *Fumaria officinalis* extract. **Conclusions:** During the last decade, there is a growing demand of natural plant extracts with antioxidant activity because of the increased report for carcinogenic effect of some synthetic antioxidants, currently applied in food,

cosmetic and pharmacy. Plant flavonoids are example for natural compounds with strong antioxidant properties. It can be concluded from the study that *Fumaria officinalis* scavenged the free radicals and significantly contributed to inhibition of enzyme associated with the process of skin aging against external factors.Results showed that the plant possess significant antioxidant activity that can help in restoration of skin elasticity and thus slowing the wrinkling process. *In-vivo* study suggests that the reduction of wrinkles produced by UV radiation was maximum in herbal cream formulation treated group.

OCG155

GREEN SYNTHESIS OF SILVER NANOPARTICLES USING EXTRACT OF *MITRAGYNA PARVIFOLIA* BARK AND THEIR BIOLOGICAL ACTIVITIES

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Abstract:

Objectives: The aim of this study was to fabricate silver nanoparticles using a plant extract through an economical and environment-friendly method, and to examine their biological activities. **Methods:** The silver nanoparticles (AgNPs) were synthesized by microwave-assisted green synthesis using aqueous extract of bark of *Mitragyna parvifolia*. The synthesis of AgNPs was confirmed by visual colour change to brown colour and characteristic surface plasmon resonance peak by UV-Vis spectroscopy. AgNPs were characterized for particle size, size distribution, surface charge, surface functionality, surface morphology, crystalline nature, elemental composition and stability. The antioxidant activity (by DPPH and ABTS assay), *in vitro* cytotoxicity (by MTT assay), sedative activity, antibacterial and antinociceptive property of the AgNPs were also examined. **Results:** The synthesis of AgNPs was confirmed by visual colour change to brown colour and characteristic surface plasmon resonance peak at 432 nm. The hydrodynamic diameter of the AgNPs was 171.81 nm having zeta potential –24.14 mV; Fourier Transmission Infra-red Spectroscopy confirmed presence of different functional groups on the NP surface; Scanning Electron Microscope and High Resolution Transmission Electron Microscopy indicated predominantly circular shape of nanoparticle; Selected Area Electron Diffraction and X-ray Diffraction analyses determined the crystalline structure of AgNPs. Energy Dispersive X-ray indicated the elemental composition, and formation of AgNPs. The AgNPs exhibited significant anticancer, antibacterial, antioxidant, sedative and antinociceptive activities. **Conclusions:** *Mitragyna parvifolia* extract successfully produced AgNPs from silver salt. These NPs could be used as drug molecules, however, detail mechanistic studies are warranted in future for clinical application of the AgNPs as biologically active agent as well as a carrier for drug delivery.

OCG156

MICROSCOPICAL AND MOLECULAR IDENTIFICATION OF PEARL MILLET COLLECTED FROM THE LOCAL MARKET

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Abstract

Objectives: This study aimed to introducesome validation techniquesfor identifying powdered samples. **Methods:** Pearl millet was collected from the local market and authenticated in the Central Council for Siddha Research Institute, Chennai. The sample was established in glycerine and the diagnostic characters were viewed using Eclipse microscope E200 and photographed using Axion Cam ERc5s. Histochemical analysis was performed using

Microscope Olympus and photographed using a Nikon camera. Molecular identification using DNA barcoding has also been done to identify them based on molecular data. The DNA was isolated using CTAB buffer and subjected to nanodrop analysis and gel electrophoresis using Tris buffer solution. PCR was performed and the band obtained was subjected to gene sequencing. **Results:** The sample showed the presence of alkaloids, mucilage, oil, tannin, and protein by microscopical analysis and it was effectively determined that the sample was Pearl millet by molecular identification using DNA barcoding. **Conclusions:** The outcome of the microscopic and DNA barcoding study is of great value in the identification of powdered millet samples. **Keywords:** Pearl millet,microscopy, DNA sequence, identification.

OCG157
A NOVEL MULTIMODAL CHEWABLE GUMMY TABLETS OF *SYZYGIUM CUMINI* SEED IN MANAGEMENT OF DEPRESSION

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Abstract:

Objectives: To evaluate*in vitro* and *in vivo* antidepressant activity of *Syzygium cumini* seed (Jambhul) extract. **Methods:** Extraction was carried out using a maceration method using methanol solvent. A phytochemical analysis was carried out by estimating the total phenolic and flavonoid content. The extract was further evaluated for its *in vitro* free radical scavenging activity using DPPH, nitric oxide and hydrogen peroxide assay methods. The methanol extract of *Syzygium cumini* seed was subjected to LCMS study to identify the phytoconstituents present in the extract. *In vivo* antidepressant activity of methanol extract of *Syzygium cumini* seeds was evaluated by Forced swim test and Tail suspension test models in mice. *In silico* molecular docking study was carried out using Autodock software. A network pharmacology study was performed to investigate the phytoconstituents present in the plant *Syzygium cumini* and their potential therapeutic effects on CNS disorders. Gelatin and pectin-based chewable gummy tablets containing methanol extract of *Syzygium cumini* seed were prepared by heating and congealing methods. The developed formulations were further evaluated for organoleptic properties, weight variations, pH, drug content, swelling ratio test, dispersion time test, syneresis test, moisture content and *in vitro* dissolution study. **Results:** The methanol extract of *Syzygium cumini* seed extract showed excellent antioxidant activity by *in vitro* DPPH, hydrogen peroxide, hydroxyl radical and reducing power methods. The LC-MS results revealed the presence of quercetin, caffeic acid, and gallic acid in methanol seed extract. Evaluation of *in vivo* antidepressant activity in mice revealed the significant anti-depressant effect of methanol extract of *Syzygium cumini* seed in experimentally induced depression by Forced swim test and Tail suspension test models. *In silico* molecular docking study carried out on phytoconstituents showed good docking scores against targets involved in depression. The results of the Network Pharmacology study demonstrated the connection of phytoconstituents present in the extract to specific mental disorders. Further, chewable-gummy tablet formulations were developed and evaluated. All the parameters were found within the limit. **Conclusions:** The numerous phytoconstituents present in the *Syzygium cumini* seed extract may be functioning on multiple targets at the same time, providing holistic treatment that is more suited for multiple disorders such as depression. According to the findings of *in vitro, in vivo*, and *in silico* studies of *Syzygium cumini* seed extract, developed chewable gummy tablets containing *Syzygium cumini* seed extract may be utilized as a therapeutic agent in the treatment of depression.

OCG158

PHYTOCHEMICAL ANALYSIS AND EVALUATION OF DUAL COX-LOX INHIBITORY POTENTIAL OF *MACHILUS MACRANTHA* (GULMAVU), AN ETHNOPHARMACOLOGICALLY IMPORTANT YET UNEXPLORED MEDICINAL PLANT

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Abstract:

Objectives: The aim of this study was to explore an ethnopharmacologically important medicinal plant named *Machilus macrantha* (Gulmavu) to validate the traditional knowledge behind its anti-inflammatory activity by focusing on the dual COX-LOX inhibition mechanism and to develop novel anti-inflammatory agents. **Methods:** The leaves and barks of *M. macrantha* were collected, dried, and authenticated, and by using the sequential extraction method, hexane, ethyl acetate, and methanolic extracts were prepared. The stas-otto method was followed to prepare total alkaloidal extract from the same. Preliminary phytochemical screening has been done to determine the presence of the targeted classes of phytoconstituents (phenolics, terpenoids, steroids, and alkaloids). Further, the extracts were evaluated for their preliminary anti-inflammatory activity by performing Nitric oxide (NO) assay, and also the dual COX-LOX inhibition potential was tested by using the western blotting technique in RAW 264.7 macrophages. The bioactive extracts were analyzed by using different hyphenated analytical techniques like LC-MS, GC-MS etc. Molecular docking studies were also performed by using Schrodinger Maestro and the binding interactions were noted. **Results:** A total of five extracts were prepared, and from preliminary phytochemical screening, it was observed that phenolics, terpenoids, steroids, and alkaloids may be present in the extracts. From the pharmacological evaluation, the extracts showed significant reduction in the NO elevation in RAW 264.7 macrophages and also showed good inhibition against both COX and LOX enzymes. GC-MS and LC-MS analysis revealed the presence of several important phytoconstituents in the prepared extract which may be responsible for its dual COX-LOX inhibition. Molecular docking studies showed that the constituents have good binding affinities for both COX and LOX enzymes. **Conclusions:** From the present study, it can be concluded that *M. macrantha* can be utilized as a source for developing novel and safer anti-inflammatory agents.

OCG159

ISOLATION, CHARACTERIZATION AND EVALUATION OF ANTIOXIDANT ACTIVITY OF PHYTOCONSTITUENT FROM *GAMOCHAETA PENSYLVANICA* (WILLD.) CABRERA: UNVEILING THE POTENTIAL OF A PROMISING AND UNEXPLORED MEDICINAL PLANT.

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Abstract:

Objectives: Plants have been a cornerstone in the discovery of bioactive compounds with therapeutic potential. *Gamochaeta pensylvanica (Willd.) Cabrera*, a plant belonging to the Asteraceae family, has garnered attention for its purported medicinal properties in traditional medicine. The exploration of phytochemicals from such plants is crucial as they can serve as lead compounds in drug development or as models for synthetic analogs.The phytoconstituents found in medicinal plants, which include flavonoids, terpenoids, alkaloids, and phenolic compounds, are responsible for the pharmacological effects they exhibit. To identify and elucidate the structure of the active components, these compounds are isolated and characterized using a range of chromatographic and spectroscopic techniques.This research aims to bridge

this gap by systematically isolating and characterizing the phytoconstituents present in *Gamochaeta pensylvanica* (Willd.) Cabrera. By employing advanced analytical methods, this study seeks to unveil the chemical diversity within the plant and evaluate its potential medicinal benefits. The findings could contribute to the development of novel therapeutic agents and enhance the understanding of the pharmacological potential *of Gamochaeta pensylvanica* (Willd.) Cabrera. **Methods:** A meticulous set of procedures was followed in the investigation of *Gamochaeta pensylvanica* (Willd.) Cabrera in order to identify and assess its phytoconstituents and assess its antioxidant capacity. Cold Maceration was used on the Gamochaeta pensylvanica (Willd.) Cabrera plant material, which had been dried and powdered. To find out whether kinds of bioactive chemicals were present, a preliminary phytochemical screening was performed on the crude extract that was obtained after maceration. Column chromatography was used to further fractionate the crude extract. Using a free radical scavenging experiment called DPPH (2,2-diphenyl-1-picrylhydrazyl), the antioxidant activity of the separated fractions was evaluated. **Results and Discussion:** A bioactive compound was successfully isolated from *Gamochaeta pensylvanica* (Willd.) Cabrera and characterized using spectroscopic techniques. The compound exhibited significant antioxidant activity in the DPPH assay, indicating its potential as a natural antioxidant. **Conclusions:** This research underscores the importance of *Gamochaeta pensylvanica (Willd.) Cabrera* as a source of potent phytochemicals with considerable antioxidant properties. The phytochemical analysis revealed the presence of multiple compounds in the plant extract. Similarly, Thin-layer chromatography (TLC) also showed the presence of several spots, indicating the presence of multiple compounds. However, only one compound was isolated in this study. These findings emphasize *Gamochaeta pensylvanica* (Willd.) Cabrera 's medicinal potential, opening the door for future pharmacological research and the potential development of novel antioxidant as well as anticancer agent.

OCG160

DEVELOPMENT OF SMART NANO CARRIERS FOR DELIVERY OF BIOACTIVE SMALL MOLECULES FOR THE THERAPEUTICS OF CANCER AND INFECTIOUS DISEASES

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Abstract:

Objectives: The aim of this study was to develop and evaluate smart nanocarriers for bioacttive small molecules for drug delivery of cancer and infectious diseases therapeutics. **Methods:** Drug delivery systems using nanofibers, polymers can provide growth factor and drug delivery directly to the site to encourage reparation and regeneration and prevent infection. The surface of Nano fibres can be modified for drug delivery, by plasma treatment or wet chemical method, surface graft polymerization, or coelectro spinning. PEGylation is a chemical modification that involves conjugation of active polyethylene glycol (PEG) to a therapeutic protein / peptide or to a delivery system (nanoparticle). **Results:** Drug delivery in cancer, tumor and other types of infectious disease are important of optimizing the effects of drugs while reducing toxic side effects. The beneficial effects of Nano particles are attributed to their unique physio chemical properties, which are highly dependent on their size, shape, and surface properties. **Conclusions:** This study concluded that Nano biomaterials play a pivotal role in advancing medical applications, particularly in combating cancer and microbial infections.

OCG161

ANTIDIABETIC ACTIVITY OF NOVEL SYNERGETIC NUTRACEUTICAL POLY-HERBAL COMPOSITION ON STREPTOZOTOCIN-NICOTINAMIDE INDUCED TYPE-II DIABETES IN RATS

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Abstract:

Objectives: The aim of this study was to develop and validate novel synergetic nutraceutical poly-herbal composition against streptozotocin-nicotinamide induced type-II diabetes in rats. **Methods:** The novel poly-herbal composition was developed using hydroalcohol extract of *Mangifera indica* seed kernal, Urtica dioica leaves, Curcuma zedoaria roots and rhizomes, Amaranthus caudatu leaves, Allium wallichii leaves and Piper longum fruits. Prior to extractions each plants were characterized for nutraceutical parameters using various reported methods. Finally, the polyherbal composition (200 and 400 mg/kg) was tested for oral glucose tolerance test and in non-insulin-dependent diabetes mellitus-induced elevated serum glucose levels in the rat. **Results:** In outcome, single oral administration of poly-herbal composition caused a significant ($p<0.05$) reduction in the serum glucose level (mg/dL). Similarly, poly-herbal composition normalized plasma glucose levels after repeated oral administration for up to 21 days in diabetic rats ($p<0.05$) as an evidence from improvement in biochemical parameters and histology architecture. Further, nutraceutical analysis revealed a rich supply of mineral elements, including Fe, K, Co, Na, Ca, Mg, P, and Al, which emphasized to high nutritional content. **Conclusions:** The study concluded therapeutic and nutraceutical potential of poly-herbal composition for establishment of antihyperglycemic activity against streptozotocin-nicotinamide induced type-II diabetes in rats. Additionally, the current polyherbal composition may be useful for designing market ready future herbal nutraceutical formulation for management of diabetes.

OCG162

DESIGN, EVALUATION & STANDARDIZATION OF NON-CLASSICAL POLY HERBAL FORMULATION FOR WOUND HEALING.

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Abstract:

Objective: The aim of this study was to develop and evaluate a market viable Non-Classical Poly Herbal Ointment formulation for wound Healing. **Methods:** Reported plants having wound healing activity such as *Piper betle*,*Ocimum Sanctum* and *Eucalyptus globulus Labill*were selected for the study. Leafextracts were prepared by using Soxhlet Apparatus and formulations were prepared by mixing each extract in different ratio to make non classical polyherbal formulations (NPHF). The extracts were then prepared into ointment for topical use. **Results:** The physical and chemical properties of the plant materials were characterized by performing various pharmacognostic, Rheological and Analytical parameters.The crude powder and extracts were evaluated for various parameters includingPowder Microscopy, Rheological Studies and Pharmacognostic Studies etc.To address the chronic problem of heavy metal content in the herbal formulations, heavy metal detection test was performed following ICP-OES technique. Subsequently to validate the phytochemical composition of individual as well as polyherbal extract, analytical studies like HPLC,HPTLC, GC-MS, GC and FT-IR were carried out. FurtherPHE were subjected to form ointment dosage form and were

evaluated for various parameters including spreadability study, pH, diffusion study and stability study. **Conclusions:** The study concluded that the metal content was found to be minimum proportions so it does not interfere with the healing process of Poly herbal formulation (PHF). The HPTLC report gives 3 different Rf values for each plant extract as well as PHE. The individual plant extracts having Rf values 0.21, 0.29 and 0.41. Rf value 0.21 represents *Ocimum sanctum*, 0.29 represents *Eucalyptus globulus* and 0.41 represents *Piper betel. L*. Hence, poly herbal constituents are being very well justified by the HPTLC report which was confirmed by the HPLC study. Further the GC-MS report gave detailed description of different phytoconstituent present in individual plant extract and Poly herbal extract through the molecular weight and retention time. The report also reveals the presence of flavonoids and phenolic compounds which accelerate wound healing. In addition to it, the FT-IR report reveals the presence of phenolic compounds and terpenoids which helps in wound management.

OCG163
MANAGEMENT OF OXIDATIVE STRESS – AN APPROACH FOR BETTER LIFESTYLE WITH HERBAL MEDICATIONS

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Abstract:
Objective: The objective of this study is to explore the effectiveness of herbal medications in managing oxidative stress as a means to enhance overall lifestyle and well-being. The impact of oxidative stress extends significantly to both mental and physical stress, creating a complex interplay that exacerbates overall health decline. This research aims to evaluate the role of specific herbal medications in mitigating oxidative damage and improving health outcomes. **Methods:** A systematic review and analysis of existing literature were conducted, focusing on key herbal medications known for their antioxidant properties, such as curcumin, resveratrol and ashwagandha. The study examined clinical trials, *in vitro* studies, and observational studies that assessed the impact of these herbs on oxidative stress markers, inflammation levels, and overall health indicators. **Results:** The findings indicate that herbal medications significantly reduce oxidative stress by scavenging free radicals, enhancing the activity of endogenous antioxidant systems, and lowering inflammation markers. For example, curcumin and resveratrol were shown to improve antioxidant enzyme levels and reduce lipid peroxidation, while ashwagandha demonstrated both antioxidant and adaptogenic effects that contributed to stress reduction and improved mental health. **Conclusion:** Herbal medications offer a viable and effective approach to manage oxidative stress, leading to improved health outcomes and a better lifestyle. Integrating herbal medications into daily routines, with appropriate guidance and dosing, can serve as a preventive strategy against oxidative stress-related diseases. Further research and clinical trials are recommended to optimize dosage and explore the long-term benefits of herbal medications in oxidative stress management.

PHARMACEUTICAL & MEDICINAL CHEMISTRY, PHARMACEUTICAL ANALYSIS AND QUALITY ASSURANCE

OCH111

DESIGN, SYNTHESIS, AND ANTIDIABETIC EFFICACY OF NOVEL THIAZOLIDINEDIONE DERIVATIVES AS POTENT PPAR-Γ AGONISTS: INSIGHTS FROM MOLECULAR DOCKING AND MD SIMULATIONS

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Abstract:

Objectives: To synthesize and characterize a novel series of thiazolidinedione derivatives (2a-j) and evaluate their potential as anti-diabetic agents by examining their interactions with Peroxisome proliferator-activated receptor-gamma (PPAR-γ), assessing their stability, cytotoxicity, PPAR-γ transcription activity, and *in vivo* blood glucose-lowering activity. **Methods:** Synthesis and spectroscopic characterization of thiazolidinedione derivatives (2a-j). Molecular docking studies to investigate binding interactions with the PPAR-γ agonist binding pocket. Molecular dynamics (MD) simulations to assess the stability of the ligand-PPAR-γ complex. Cytotoxicity evaluation using the MTT assay in C2C12 myoblasts. Testing PPAR-γ transcription activity in C2C12 cell lines. *In vivo* assessment of blood glucose-lowering activity in a dexamethasone-induced diabetic rat model. Measurement of liver enzyme levels (AST, ALT, ALP) to evaluate potential liver damage. **Results:** Compounds 2b, 2g, and 2h showed significant potential as PPAR-γ agonists compared to the reference drug Pioglitazone. The compounds demonstrated noteworthy blood glucose-lowering effects (hypoglycemia) with values of 110.04±5.42 (2b), 114.52±6.32 (2g), and 118.48±5.93 (2h) compared to the diabetic control and Pioglitazone (153.93±4.61). Compounds 2b, 2g, and 2h exhibited significant reductions in liver enzyme levels (AST, ALT, ALP), indicating the absence of liver damage. **Conclusions:** Thiazolidinedione derivatives 2b, 2g, and 2h demonstrated promising anti-diabetic properties, showing potential as PPAR-γ agonists with significant blood glucose-lowering effects and minimal liver toxicity. These findings suggest that these compounds could serve as effective alternatives to current anti-diabetic treatments.

OCH112

DEVELOPMENT OF A NEW REVERSE PHASE HPLC (RP-HPLC) METHOD FOR THE ESTIMATION OF CONCENTRATION OF CAFFEINE IN NON-ALCOHOLIC SOFT BEVERAGES AND ENERGY DRINKS IN INDIA

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Abstract:

Objectives: The aim of this study was to develop a RP-HPLC method for the estimation of caffeine concentration in non-alcoholic soft beverages and energy drinks in India. **Methods:** A model drug, caffeine, various soft beverages and energy drinks having caffeine in labels, were selected for the study. The stock solution of caffeine at a concentration of 10000 part/million (ppm) was prepared in the mobile phase using acetonitrile and phosphate buffer solution (pH-7.5) in a ratio of 11:89, respectively. Different dilutions of the stock solution, ranging from 20 to 100 ppm were prepared for calibration curve, and the linearity was determined. Sample solution were prepared by diluting the 1ml of soft beverages and energy drinks in the same ration of mobile phase used for the preparation of standard solution. The solution was sonicated for 10 min. Each sample were then run in triplicate. The average area of each samples were calculated for determination of caffeine concentration. The chromatographic conditions were carried out at flow rate of 1ml/min with the run time

of 14 min in an isocratic elution mode. **Results:** Calibration curve of caffeine were prepared by using the area of all standard dilution ranging from 20 to 100 ppm. Linearity were measured by evaluating the correlation coefficient r^2 of the calibration curve, (r^2 = 0.998). Limit of detection (LOD) and Limit of quantification (LOQ) was found to be 4.8 ng/ml and 14.74 ng/ml respectively. The concentration of caffeine in the sample was calculated using the average area of peaks, which was determined from the retention time (RT) of the caffeine standard dilutions. Each sample solution was run in triplicate. The concentration of caffeine in all samples of soft beverages SB-1, SB-2, SB-3 and Energy drink was found to be 8.61 w/v, 9.16 w/v, 9.41 w/v and 8.79w/v. Concerning safety, it was determined that the tested soft beverages and energy drinks had caffeine contents found below an acceptable limit. **Conclusions:** The study concluded that RP-HPLC method is an accurate, reliable and sensitive method for determination of caffeine in soft beverages and energy drinks. The sample preparation is simple, easy and efficient.

OCH113

PHARMACOPHORE BASED DESIGN, VIRTUAL SCREENING, MOLECULAR DOCKING, AND MOLECULAR DYNAMIC SIMULATION OF PYRAZINE DERIVATIVES AGAINST *MYCOBACTERIUM TUBERCULOSIS* FATTY ACID SYNTHASE - I

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Abstract:

Objectives: The objective of this work is to find a promising lead for the development of pyarazine derivatives by utilizing an array of computer-aided drug design techniques, including virtual screening, pharmacophore modeling, molecular docking, and studies of molecular dynamic simulation for antitubercular activity. **Methods:** An e-pharmacophore model was generated using Mycobacterium tuberculosis Fatty Acid Synthase - I in order to achieve our goal. 274 new pyrazine derivatives were designed using this methodology in addition. The designed compounds was validated using this model as well. Best fit compounds to generated e-pharmacophore were examined utilizing successive computational techniques, such as molecular docking and molecular dynamic simulation. These compounds demonstrated improved binding affinity and stability as compared to reported inhibitor (5-Cl-PZA) of Mycobacterium tuberculosis Fatty Acid Synthase – I (PDB ID: 6GJC). The chosen compounds were further supported as therapeutic possibilities by the ADMET analysis and Lipinski rule filtering. **Results:** The generated e-pharmacophore showed three main features, including hydrogen bond acceptors, hydrogen bond donor and hydrophobic region.The e- pharmacophore model was then utilized to design and validate 274 pyrazine derivatives, and the top 16 compounds, including S628, S72, S131, S717, S621, S421, S624, S726, S120, S618, S214, S719, S322, S218, S625, and S613 based on the Fit values, were chosen for molecular docking and dynamic Simulation study. All 16 compound showed good Lib dock scores as compared to 5-Cl-PZA (Lib dock score 69) ranging 97-127. Numerous parameters dynamic simulation, such as B-factor, Eigen value, %variance, covariance, and elastic network showed deformability, stiffness of residues participating in these interactions and their stability. **Conclusions:** Following the completion of all significant computational analyses, all of the sixteen compounds demonstrated the highest likelihood of developing into next-generation Mycobacterium TB Fatty Acid Synthase-I inhibitors. The next key challenge is to synthesize these compounds and establish their potential as Mycobacterium TB Fatty Acid Synthase - I inhibitors through *in vitro* and *in vivo* studies.

OCH114

AN INTEGRATED DRUG DISCOVERY OF NOVEL HIF-1 ALPHA MIMETIC NATURAL PRODUCTS FOR THE TREATMENT DIABETIC WOUND HEALING

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Abstract:

Objectives: The Von Hippel-Lindau E3 ubiquitin ligase is responsible for the degradation of hypoxia-inducible factor 1α (HIF-1α) under hydroxylation. The objective of the present work is to discover the HIF-1α mimetics for the stabilization of hydroxylated α subunit of HIF-1α from subsequent proteasomal degradation to improve diabetic wound healing. The free HIF-1α leads to accelerate wound closure in both normal and diabetic conditions, with a more significant effect being observed in the diabetic condition. **Methods:** A set of natural compounds as inhibitors of PPI (Protein-protein interaction) between VHL – HIF-1αare identified by structure based virtual screening. The natural products were designed as HIF-1α mimetics through *in-silico* pharmacophore modelling followed by structure based virtual screening and molecular simulation. Preliminarily, we have carried out a scratch wound assay using 3T3L1 cell lines for the selected top two compounds. The compounds showed significant wound healing activity. Further, to validate the *in vitro* assay, the compound, which showed effective *in vitro*results, was used for *in vivo* study using the diabetesmouse model, comprising streptozotocin-induced (STZ) diabetic mice and scratch wound assay. **Results:** The protein-protein interaction networking confirms the interaction between the VHL – HIF-1α proteins. So, VHL (Von Hippel-Lindau) is the potential target to stabilize the HIF-1α. In the Pharmacophore modelling, 2 acceptors and 1 donor pharmacophore is generated. In the virtual screening process, generated pharmacophore gives a data set of natural compounds that have the same pharmacophoric feature. The compounds accelerated cell migration, which improved wound healing. The percentage of wound contraction in the high dosage (150 mg kg”1) treated group was substantially than in the disease control and low dose groups. **Conclusion:** We demonstrated that inhibiting the VHL and HIF-1a connection is a promising strategy for treating diabetic ulcers. The natural compounds (ZINC ID: ZINC15959407, ZINC12884117) have substantial *in silico*, *in vitro*, and *in vivo* outcomes.

OCH115

DESIGN, SYNTHESIS OF SCHIFFBASES OF 9- ANILINO ACRIDINE DERIVATIVES AND EVALUATION OF ANTI-BREAST CANCER ACTIVITY

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Abstract:

Objectives: 9-Anilinoacridines Play An Important Role In The Field Of Antitumor DNA-Intercalating Agents, Due To Their Antiproliferative Properties. Several Anticancer Agents With 9-Anilinoacridines Such As Amascrine, And Nitracrine Have Been Developed. **Methods**: In The Present Study, For Identification Of Potential Ligands Schiff Bases Of 9-Anilino Acridines As Selective Erα Inhibitors (2IOG.Pdb) Targeting Breast Cancer By Using Schrodinger Suit-2024-2, Maestro 14 Version. Docking Was Performed By Glide Module, In-Silco ADMET Screening By Qikprop Module, Free Binding Energy Was Calculated By Prime-MMGBSA Module And MD Simulation By Desmond Module. The Selective Compounds Are Synthesized, Characterized And Evaluated For *In Vitro* Anti-Breast Cancer Activity Against MCF-7 Cells. **Results**: The Schiff Bases Of 9-Anilinoacridine Derivatives Iia- L Have Good Binding Affinity With Glide Score In The Range Of -7.01 To -11.85 Kcal/Mol When Compared

With The Standard Ledacrine (-5.61) And Tamoxifen (-7.81). The ADMET Screening Of The Designed Molecules Are Within The Recommended Values. MM-GBSA Binding Results Of Most Potent Inhibitor Displayed Stable And Favorable. A 100ns MD Simulation Study Also Confirms The Stability Of Docking Complex. The Compounds With Good Glide Scores Are Synthesized, Characterized And Evaluation Of Anti-Breast Cancer Activity Against MCF-7 Cell Lines Also Performed. The Compounds II-K, II-E And II-L Exerted Significant Antitumor Activity Against MCF-7 With IC50 Values 29,9 To 80.5 µm. **Conclusion**: The Results Reveal That, This Study Provides Evidence For Consideration Of Valuable Ligands In Schiff Bases Of 9-Anilinoacridine Derivatives As Potential Erα Inhibitor And The Compounds, II-K, II-E And II-L Have Significant Anti-Breast Cancer Activity And Are Useful As Drugs After Further Refinement.

OCH116

QUANTITATIVE ANALYSIS AND METHOD VALIDATION OF IVACAFTOR IN TABLET DOSAGE FORM THROUGH ISOCRATIC ELUTION BY RP-HPLC METHOD

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Abstract:

Objectives: Quantitative analysis of Ivacaftor in tablet dosage form was established and validated as per ICH guidelines. **Methods:** The separation was achieved with *Hypersil BDS C18 (4.6mm x 250 mm, 5 µm)* column and mobile phase contained 0.05M potassiumdihydrogenphosphate buffer (pH adjusted to 4 with 0.1% orthophosphoric acid and HPLC grade Acetonitrile with 65:35, v/v was delivered at a flow rate of 1 mL/min at 274nm. **Results:** The retention time of Ivacaftor was 2.123min. Linearity for Ivacaftor in the range of 3.75-22.5µg/ml with correlation coefficients (r=0.999) was obtained and the percentage recovery was obtained as 99.93%. LOD values are obtained from regression equations of Ivacaftor were 0.1µg/ml and LOQ values are obtained from regression equations of Ivacaftor were 0.4 µg/ml. Regression equation of Ivacaftor was y = 47294x + 6996. **Conclusions:** The method developed was simple and economical that can be adopted in regular quality control test in research and development.

OCH117

ENHANCED DETECTION OF ELEMENTAL IMPURITIES IN PROCHLORPERAZINE MALEATE TABLETS: A MICROWAVE-ASSISTED ICP-MS APPROACH

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Abstract:

Objectives: A specific, precise, accurate, and reproducible analytical method for determination of elemental impurities by ICP-MS in Prochlorperazine Maleate Tablets was developed. The said developed method was validated as per ICH Q2(R1) for Prochlorperazine Maleate Tablets. **Methods:** This work proposes a procedure for Microwave assisted simple preparation using combination of nitic acid and hydrofluoric acid for Prochlorperazine Maleate Tablets. Internal standardization was applied for minimization and correction of matrix effects. Addition and recovery experiments were performed according to oral permissible daily exposure values specific for each Class 1 and Class 2A elements and each sample was spiked with element concentration of 0.25J and 1.5J to check recoveries as per USP requirement. The use of the matrix that overcomes low spike recovery problem and allow the

determination of each Class 1 and Class 2A elements in a single analysis. The matrix was used in the validation of method to determine elemental impurities according to the procedures defined in USP<232/233> and to GMP requirements. These developed methods were successfully validated in terms of Specificity, LOD, LOQ, Linearity, Precision (System Precision and Method Precision), Accuracy, and System Suitability found suitable for its intended purpose. **Results:** The linearity for each target element was obtained above 0.990 respectively, limit of detection (LOD) and limit of quantitation (LOQ) were spiked at 8% and 25% respectively and the results were within the acceptance criteria. According to the USP guidelines Specificity, LOD, LOQ, Linearity, Precision (System Precision and Method Precision), Accuracy, and System Suitability were within the acceptance criteria. **Conclusions:** A specific, precise, and accurate analytical procedure for the determination of elemental impurities by ICP-MS was developed in accordance with USP<232/233> for Prochlorperazine Maleate Tablets. The developed analytical procedures were then validated according to USP <233> guidelines. The data for each validation parameter described met the acceptance criteria with respect to Specificity, LOD, LOQ, Linearity, Precision, and Accuracy. The validation results revealed that the developed analytical method suitable for determining elemental impurities in Prochlorperazine Maleate Tablets and therefore supports regulatory submissions in various regulated markets.

OCH118
DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATION OF TRIAZINE DERIVATIVES AS ANTI-HIV AGENTS

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Abstract:
Objectives: AIDS is a life-threatening condition caused by Human Immunodeficiency Virus (HIV). Many drugs have approved in last 3 decades inhibiting these enzymes but most of drugs have problems of Drug resistance, side effects, toxicities and poor bioavailability. In course of our research to design and discover potent and bioactive anti-HIV agents, we have used ligand and structure-based drug design approaches. **Methods:** A total number of 4 pharmacophore hypotheses were generated (3 Ligand based and 1 structure based). The common features obtained in pharmacophore were hydrogen bond donor, hydrogen bond acceptor and hydrophobic region. All these 4 models were validated and were used to search substructure from different databases. 3D-QSAR (CoMFA and CoMSIA) models were generated using 3 different alignment techniques including Multifit alignment, docking based and distill based alignment for 63 compounds. A distill based alignment method was considered a better method according to different validation parameters and contour maps generated from CoMFA and CoMSIA models. **Results:** A total number of 32 compounds were synthesized and were characterized using FTIR, mass, ^{1}H NMR and ^{13}C NMR. The purity of all synthesized compounds were checked using HPLC. All synthesised compounds were evaluated for their HIV inhibitory activity on strain of $HIV1_{III}B$. The results obtained indicated that all compounds showed comparative anti-HIV activity. **Conclusions:** The results obtained in the present study will be further utilised as hit molecules in future to design and develop novel lead molecule as potent compound as anti-HIV drugs for the treatment of AIDS.

OCH119
SYNTHESIS, CHARACTERIZATION, MOLECULAR DOCKING STUDY AND ANTITUBERCULAR ACTIVITY OF SUBSTITUTED 1,4,5,6,7,8 HEXAHYDROQUINOLINE-3-CARBONITRILE DERIVATIVES

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Abstract:

In an attempt to develop more effective antitubercular drugs to combat the increasing bacterial resistance, we have successfully produced new analogues of hexahydroquinoline-3-carbonitriles (Y 1 -10). The synthesised compounds were characterized using ^{1}HNMR, IR, and ESI-MS spectra. The target compounds were evaluated for their antitubercular activity against *Mycobacterium tuberculosis*. Six derivatives (Y1-6) exhibited highly significant activity at a concentration of 1.6µg/mL and shown greater potency than pyrazinamide (3.2µg/mL). In addition, molecular docking studies were performed on all synthesised compounds against the *M. tuberculosis* InhA protein, which is targeted by the PT70 X-ray crystal structure with PDB ID: 2X23. Out of all the chemicals, Y5 demonstrated the most negative binding energy of -9.8 kcal, indicating an effective interaction with its target. On the other hand, Y9 had the lowest binding energy of -7.8 kcal, suggesting a much weaker contact. In addition, Zebrafish larvae were utilized to assess the teratogenic effects of the synthesised compounds. At a concentration of 0.5 µM, Y2, Y3, Y5, Y6, and Y9 were demonstrated to be safe, with no noticeable problems.

OCH120
DESIGN AND DEVELOPMENT OF NOVEL GLITAZONES TARGETING PGC-1A SIGNALING VIA PPAR-Γ AGONISM: A PROMISING THERAPEUTIC APPROACH FOR PARKINSON'S DISEASE

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Abstract:

Objective: The glitazone/thiazolidinedione scaffold has been effective in drug design and development, particularly for creating new lead molecules as PPAR-γ agonists. We designed and synthesized two glitazone molecules, G1 and G2, to explore their potential as PPAR-γ agonists targeting PGC-1α signaling. We evaluated their neuroprotective effects on lipopolysaccharide-intoxicated SHSY5Y neuroblastoma cells and assessed their impact on motor impairment in MPTP-induced mice. **Method:** G1 and G2 were synthesized via condensation and oxime formation, characterized by Mass and NMR spectroscopy. Neuroprotective effects were assessed using cell viability assays, with a lipid peroxide assay evaluating their free radical scavenging abilities. Pharmacokinetic properties were analyzed *in silico*, and molecular docking studies examined their interaction with PPAR-γ. **Results:** G1 and G2 demonstrated significant neuroprotective effects in SHSY5Y cells with IC50 values of 2.247 µM and 4.509 µM, respectively, showing greater potency than pioglitazone (42.86 ± 0.33 µM). Both compounds alleviated MPTP-induced motor impairment in mice, as shown by the beam walk test. They also restored antioxidant enzyme levels and reduced lipid peroxidation in brain tissues. Histopathological analysis revealed decreased apoptosis and increased viable neurons and oligodendrocytes. Molecular

docking revealed interaction energies of "35.1081 kcal/mol for G1 and "49.1987 kcal/mol for G2, indicating stronger interaction of G2 with PPAR-γ. **Conclusion:** G1 and G2 effectively target PGC-1α signaling through PPAR-γ, offering significant neuroprotection. Their favorable pharmacokinetic profiles and beneficial effects on oxidative stress and brain pathology suggest potential for treating Parkinson's Disease.

OCH121
A NOVEL METHOD FOR THE ESTIMATION OF BUDESONIDE IN HUMAN PLASMA BY USING LC-MS-MS

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Abstract:

Objectives: The Objectives of this study was to develop sensitive, specific, and reproducible method for quantifying Budesonide in human plasma and enhance sample preparation procedures to maximize recovery and minimize matrix effects.Validate Parameters according to regulatory guidelines and perform Stability studies at low and high concentrations of sample of budesonide in plasma.Implement the Validated method to analyze clinical samples, assess pharmacokinetic parameters and bioavailability. **Methods:** Budesonide was extracted from the plasma samples where with protein precipitation. Concisely, 200 µl of plasma sample were extracted in 4 ml of extraction solvent (tert-butyl methyl ether: n-hexane, 70:30, v/v) including the internal standard (Levenorgestreol at 200 ng/ml). Chromatographic studies were performed using injection volume of 5 µl. The mass spectrometer was operated under positive ionization mode. The ion spray voltage, the source temperature, declustering potential, collision cell exit potential, entrance potential and dwell time were sets at 5000V, 500^{0}C, 90V, 11V, 10V and 200ms, respectively. Molecular mass of analyte and internal standard was calculated by using version 1.4.2 for Analyst software. Validation parameters were performed according to ICH Guidelines. short term stability at -20^{0}C, long term stability for 55 days at -70^{0}C, wet extract stability for 54 hours, auto sampler stability for 63 hours, bench top stability for 14 hours and freeze and thaw stability (3) cycles at -70^{0}C, respectively. **Results:** Parent peak molecular mass is 413.5 m/z, 313.4 m/z for Budesonide and levonargasterol respectively. Linearity was established for working solution containing concentration between 0.103-3.010 ng/ml for Budesonide. The equation was obtained y=0.101+0.00158 (r^2=0.9989). The obtained values for the recoveries were in the range of 72.48-81.48%. The matrix effect checked by three different concentration levels, these are HQC, MQC and LQC. The %CV values below 15% showing good matrix effect of the method. The %CV values below 15% showing good stability effect of the method. **Conclusion:** The proposed LC-MS/MS method was simple, rapid, precise and accurate for determination of Budesonide in human plasma. Sample preparation showed high recovery for the quantitative estimation of Budesonide in human plasma and this method to allow higher sample through out put due to the short chromatography time (3.5 min) and simple sample preparation. Thus, the developed LC-MS/MS method was can apply for the bioequivalence and pharmacokinetic studies of Budesonide in human plasma samples.

OCH122

DISCOVERY OF NEWER IMIDAZO(2,1-B)THIADIAZOLE ANALOGUES DERIVED FROM DICLOFENAC AS PROMISING ANTI-INFLAMMATORY AGENTS: DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATION

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[3]School of Health Sciences, University of KwaZulu-Natal, Westville Campus, Durban, South Africa.

Abstract:

Objectives: In this research work, the major objective was to design, synthesize, and develop newer anti-inflammatory agents derived from diclofenac acid and evaluate them for their possible anti-inflammatory activity and inhibitory activity against cyclooxygenase enzyme (COX-1/COX-2). **Methodology:** We have synthesized thirteen 2-(2-(2,6-dichlorophenyl-amino)phenyl)acetohydrazide derivatives 4(a-m) and four 2,6-dichloro-N-(2-((6-phenylimidazo[2,1-b][1,3,4]thiadiazol-yl) methyl)phenyl)benzenamine derivatives 6(a-d) of diclofenac. Structures of these novel compounds were characterized based on physicochemical, spectral and elemental analysis. The title compounds were screened for *in vivo* acute anti-inflammatory activity at a dose of 10 mg/kg b.w. **Results:** Two derivatives (4d and 6b) exhibited the most promising and significant anti-inflammatory profile while other compounds showed moderate to good inhibitory activity at 2nd and 4th h, respectively. Compounds that displayed promising anti-inflammatory profile were further evaluated for their inhibitory activity against cyclooxygenase enzyme (COX-1/COX-2), by colorimetric COX (ovine) inhibitor screening assay method. **Conclusion:** The privileged anti-inflammatory scaffold diclofenac was successfully hybridized with other structural framework like imidazo[2,1-b][1,3,4]thiadiazole rings. In conclusion, compound 6b has presented the most encouraging results and could be further exploited for developing new ant- inflammatory agents with better efficacy.

OCH123

MULTIELEMENTAL SCREENING AND ANALYTICAL METHOD VALIDATION FOR DETERMINATION OF ELEMENTAL IMPURITIES IN CATRAZIL BY ICP-MS TECHNOLOGY

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Abstract:

Objectives: The aim of this study was to develop and multielemental Screening and Analytical Method Validation using (ICP-MS) technology. **Methods:** A new ICP-MS method has been developed for multimetal screening of elemental impurities in Catrazil for its risk assessment. ICP-MS technology offers direct detection of ultratrace multimetals, with a detection limit of 0.001 ppb.Multimetals were determined by using cold vapor generation (CVG) coupled to ICP-MS. Nickel and Chromium were detected by means of dynamic reaction cell-inductively coupled plasma mass spectrometry (DRC–ICP-MS). Catrazil is a potent calcium channel blocker preventing calcium-dependent myocyte contraction and vasoconstriction. **Results:** The other investigated elements Ag, As, Au, Ba, Cd, Co, Cu, Hg, Ir, Li, Mo, Pb, Pd, Pt, Rh, Ru, Sb, Se, Sn, Tl ,V, and Os were directly determined in the properly

diluted samples.The method detects and quantifies at very minor and trace level for elements (24 elemental impurities as per ICH guidelines).This technique is applicable to solid and liquid matrices, eliminating interferences. **Conclusion:** The developed analytical method found to be Linear for each element with working concentration range from 15%, 50%, 100%, 150% and 200% i.e. 0.15J, 0.5J, 1J, 1.5J and 2J with correlation coefficient not less than 0.990. % recoveries of elemental impurities of each elements at three different concentrations with spiking in samples were found to be an acceptable range as 70% to 150%. Therefore developed method can be recommended for routine quantitative analysis of elemental impurities.

OCH124
DISCOVERY OF NOVEL SUBSTITUTED BENZAMIDE DERIVATIVES AS ALLOSTERIC ACTIVATORS OF HUMAN GLUCOKINASE

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Abstract:
Objectives: The aim of this study was to design a novel class of benzamide derivatives with pyrazine substitutions, intended to function as potential activators of glucokinase (GK), and subsequently assess their efficacy in managing diabetes. **Methods:** Starting with benzoic acid, a series of pyrazine-substituted benzamides were synthesized and subjected to *in vitro* experiments to assess their ability to activate GK. Docking studies were performed to determine the binding interactions and identify the most suitable conformations in the allosteric region of GK. The antihyperglycemic efficacy of the selected compounds was evaluated using the oral glucose tolerance test (OGTT) in normal rats, guided by the results of both *in vitro* enzyme assays and *in silico* investigations. One of the most potent compounds identified from the antihyperglycemic assay underwent further evaluation for its antidiabetic effects in an OGTT assay using induced diabetic rats. **Results:** *In vitro* activation of GK revealed that compounds 1, 8, and 9 exhibited the highest activation, with fold activation values ranging between 1.90 and 2.10. Subsequent OGTT in normal rats demonstrated promising antihyperglycemic activity for compounds 1 and 8. Consistent with both docking studies and *in vitro* results, the *in vivo* antidiabetic assay underscored the potential therapeutic efficacy of the tested compound. **Conclusions:** The newly synthesized pyrazine-substituted benzamide derivatives are promising candidates for developing allosteric activators of human GK. These compounds demonstrate attributes of safety, efficacy, and oral bioavailability, positioning them as potential therapeutic agents for managing type 2 diabetes.

OCH125
QUANTIFICATION OF NIFEDIPINE IN HUMAN PLASMA BY UHPLC-MS/MS METHOD

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Abstract:
Objectives: The aim of this study was to develop and validate a simple, selective, specific, accurate, precise and stable UHPLC-MS/MS method for the estimation of Nifedipine in K_2EDTA human plasma using Nifedipine D6 as Internal Standard. **Methods:** Nifedipine and Nifedipine D6 were extracted from human plasma by liquid-liquid extraction method using ethyl acetate as extraction solvent. They are

separated on UHPLC column (Phenomenex, Gemini 3µ, $C_{18,}$ 50 × 4.6 mm) using mobile phase composed of Acetonitrile: 5mM Ammonium Formate pH 3.50 (60:40 V/V) at a flow rate of 1.0 ml/min. Both the compounds were detected in mass spectrometer (API-4000) by using Positive polarity, Electro spray ionization (ESI) with MRM scan mode. **Results:**The retention times of Nifedipine and Nifedipine D6 were 1.22 min and 1.20 min respectively. The linearity range was in between 0.802 ng/ml - 241.037 ng/ml. The regression coefficient was found to be 0.9994. The Q1/Q3 values for Nifedipine and Nifedipine D6 were 347.100/315.200 and 353.200/318.200 respectively. Stock solutions and working solutions were stable for 6 days 2 hrs and 3 days respectively at 2-8ºC. All the results obtained are within the acceptable limits. **Conclusions:** The developed method was accurate, precise and stable throughout the process and superior due to simple sample preparation, less sample volume, effective recovery, very short run time, good chromatographic resolution, wide concentration range, absence of major matrix effects, enhanced sensitivity and employed for routine QC and pharmacokinetic studies.

OCH126
HPTLC METHODS FOR DETERMINATION OF GEMIFLOXACIN MESYLATE IN GUINEA PIG PLASMA

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Abstract:
Objective: A new, simple, rapid, very sensitive and accurate, high performance thin-layer chromatographic (HPTLC) method has been developed and validated for estimation of Gemifloxacin in Guinea Pig plasma. **Study Design:** Gemifloxacin was extracted from plasma by liquid liquid extraction procedure. HPTLC was performed on silica gel 60F254 plates with ethanol: ethyl acetate: hexane, 2:7:1 (v/v), as mobile phase. Densitometry scanning was performed in absorbance mode at λ=254 nm. **Results:** The RF value was 0.21. The response was a linear function of concentration over the range 0.1–0.7µg mL"1 (r2=0.996). A maximum recovery of drug from plasma was obtained by using chloroform and glacial acetic acid. Mean extraction recovery was 80%. Intra-day and inter-day precision (% RSD) of the assay were in the range 1.19–2.85% and accuracy was 1.7-5.66%. **Conclusion:** This method can be applied to various drugs for pharmacokinetic studies in Guinea Pig plasma.

PHARMACOLOGY AND TOXICOLOGY, CLINICAL RESEARCH, PHARMACOVIGILANCE, HOSPITAL, COMMUNITY AND CLINICAL PHARMACY

OCL131
ANTIALLERGIC POTENTIAL OF OXIME ANALOGUES OF IMINOESTER TYPE AS A SAFER ALTERNATIVE.

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Abstract:

Objectives: The study aimed to discover a potential antiallergic motif as a safer alternative. **Methods:** In the present study, the antiallergic potential of oxime analogues of iminoester type previously synthesized by condensing tricyclic oximes with selected anti-inflammatory drugs possessing carboxylic group was evaluated using mast cell mediated allergy model with compound 48/80 induced mast cell degranulation following acute oral toxicity study as per OECD guideline 425. The iminoesters were evaluated for predicted toxicity profile to assess for CVS safety using pKCSM. **Results:** Upon evaluation of acute oral toxicity study, dose levels of 10 and 20 mg/kg of body weight for each iminoester were selected. The antiallergic potential of oxime analogues on Compound 48/80 induced anaphylaxis reactions were evaluated for (%) protection against anaphylaxis, (%) inhibition of scratching, (%) protection against mast cell degranulation, serum and bronchoalveolar lavage (BAL) nitric oxide level and blood histamine release and results were analyzed statistically. Of all molecules, 3b, 2c, 1b, 3a and 3d in their respective doses have shown good protection against anaphylaxis reaction responses. All molecules were predicted to be non hERG I inhibitors with zero PAINS alert. **Conclusions:** To conclude the study, the oxime analogues have exhibited considerably good antiallergic activity in the model chosen and predictive non hERG I inhibitors indicating their potential safety against long QT syndrome and ventricular arrhythmia. These novel compounds could lead to potent, and safe antiallergic, post-screening toxicity profiles.

OCL132
EVALUATION OF THE ROLE OF CANNABIDIOL IN COGNITIVE PERFORMANCE USING NOSE TO BRAIN DRUG DELIVERY SYSTEM

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Abstract:

Objective: The aim of the study was to evaluate the role of cannabidiol in cognitive performance using drug delivery to brain via nasal route. **Methods:** Young and old age C57BL/6 mice were used to evaluate the effect of cannabidiol on learning and memory. The drug (20mg/kg) was administered to the three groups containing 6 mice for 8 weeks 6 weeks at two different age point (3 months and 9 months) via nasal route in the form of aerosol mist using nebulizer. The behavioral changes were evaluated at the young and old age using open field test (OFT), light and dark box test (LDBT), novel object recognition(NOR), object location memory (OLM), elevated plus maze (EPM) and forced swim test(FST). **Results:** There were significant behavioral changes evaluated in the mice with the increasing age in the normal group. Prolonged treatment with cannabidiol was able to lower the anxiety like behavior evaluated using Open field test. There was no influence seen on the depressive behavior evaluated using force swim test. The learning behavior, locomotor and memory was found to be unaffected and comparable to growing age in CBD treated groups. The results showed that CBD was able to lower the effect of aging on cognitive performance in the treated C57Bl/6mice. **Conclusion:** The study concluded that the nose to brain drug delivery is an effective, non-invasive and easy administration route for crossing the blood brain barrier. The non-addictive

cannabidiol promises to have positive effect on cognitive performance and can be further evaluated for the cognitive and neurodegenerative disorders like dementia and specifically Alzheimer's disease.

OCL133

IN SILCO AND *IN VIVO* CARDIO-PROTECTIVE EFFECTS OF *HEDYOTIS CORYMBOSA* L. EXTRACT AGAINST DOXORUBICIN AND ISOPROTERENOL INDUCED CARDIO TOXICITY IN RATS

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Abstract:

Objectives: To investigate the Insilco and *in vivo* Cardio-Protective effects of ethanol extract of *Hedyotis corymbosa* L. against Doxorubicin and Isoproterenol Induced Cardio toxicity in Rats. **Methods:** For cardio toxicity assessment, rats were divided into 9 groups (n=6 per group). Experimental models spanned 21 days. Group I: Normal control received 0.5% CMC, (2 ml/kg, p.o.) for 21 days. Group II: Disease control received ISO 85 mg/kg s.c. for two consecutive days (days 0 and 1) and standard diet for 21 days. Group III: Received 15 mg/kg i.p. DOX for three days (7th, 14th, and 21st days) with standard diet. Groups IV-V: Control groups receiving EEHC suspension (2 ml of 0.5% CMC) at low (100 mg/kg p.o.) and high (200 mg/kg p.o.) doses for 21 days. Groups VI-VII: Received ISO (85 mg/kg s.c.) as negative control Group II and EEHC at low (100 mg/kg p.o.) and high (200 mg/kg p.o.) doses. Groups VIII-IX: Received DOX regimen similar to negative control Group III with vehicle substitution of low (100 mg/kg p.o.) and high (200 mg/kg p.o.) doses of EEHC, respectively. **Results:** In the case of Insilco studies with NF-κB, COX2, and MCL, the binding interactions show that phytoconstituents show considerable inhibition. NF-κB and COX-2 involved in inflammation and lipid lowering pathways, MCL upon inhibition fatty acid biosynthesis inhibited and lipid profile markers are lowered. Based on the obtained results isolated constituents from the H. corymbosa extract might inhibit NF-κB and COX-2 reduces inflammatory responses, lower the oxidative stress, and protect cells from stress-induced damage. Outcomes of Insilco study support the *in vivo* results, i.e., the after administration of EEHC (100 mg/kg and 200 mg/kg), CK-MB, malondialdehyde, and glutathione levels were found to be significantly decreased. The HDL, catalase and superoxide dismutase levels were markedly elevated, reducing blood total cholesterol and triglyceride levels. Overall, this study provides a mechanistic insight into the cardio protective action of ethanol extracts of Hedyotis corymbosa which can be a putative therapy for DOX and ISO-induced patients. Insilco results also corroborated well with our histopathological examination in this study. **Conclusion:** From the current study, it is evident that the ethanol extract of Hedyotis corymbosa possesses cardioprotective effects against cardio toxicity induce rats. The leaves extract alleviated the biochemical parameters such as serum, lipid, and cardiac proteins, hence prevented from the oxidative stress. Insilco results also corroborated well with our histopathological examination in this study.

OCL134

IN VIVO ASSESSMENT OF DRDE-07 AND AMINOGUANIDINE: A COMBINED APPROACH TO MITIGATING SULFUR MUSTARD-INDUCED PULMONARY TOXICITY

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Abstract:

Objectives: Sulfur mustard (SM) is a highly toxic vesicant CWA and it is still considered as a threat due to easy synthesis, and stockpiling. The respiratory system is majorly affected from the viewpoint of acute well as chronic toxicity which is associated with increased expression of inducible nitric oxide synthase (iNOS). No effective treatment or antidote has been available for SM yet. Therefore, this study aimed to determine a combination therapy of DRDE-07 and Aminoguanidine (AG) to attenuate SM-induced oxidative lung injury and inflamma-tion. **Methods:** Mice were treated intratracheally with 0.1 mg/kg SM. DRDE-07 (250 mg/kg, oral) and AG (300 mg/kg were administered 30 minutes before SM exposure. Bronchoalveolar lavage fluid (BAL) and lung tissue were collected on 3 and 7 d later and lung injury, oxidative stress, and inflammation were assessed. **Results:** SM exposure resulted in progressive histopathological changes in the lung including multifocal lesions, alveolar wall disruption, and inflammatory cell accumulation which were evidently correlated with increased MPO and β-glu activity in BALF. Expression of TNF-α, COX-2, S100, and iNOS was also increased in the lung following SM exposure, along with levels of LDH, protein, and inflammatory cells in BAL, consistent with oxidative stress and alveolar-epithelial injury. Additionally, proinflammatory macrophages appeared in the lung following SM administration within 3 d and increased at 7 d. Treatment with a combination of DRDE-07 and AG effectively mitigated SM-induced lung injury, oxidative stress, and inflammation, leading to improved histological outcomes. In contrast, treatment with either DRDE-07 or AG alone was insufficient to protect against the pulmonary toxicity induced by SM. **Conclusions:** These findings indicate that oxidative stress, inflammation, and peroxynitrite generated via iNOS contributes to SM-induced lung toxicity. The combination of DRDE-07+AG reduced these biochemical alterations and improved histological tissue architectures. In the present study, our findings suggest that the combination of DRDE-07 and AG may serve as new treatment approach for protecting SM-induced respiratory toxicity.

OCL135

THE SYNERGISTIC EFFECT OF ENDOCRINE DISRUPTORS AND ENVIRONMENTAL STRESSORS ON MALE FERTILITY: RESULTS FROM A RAT MODEL

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Abstract:

Objectives: The aim of this study was to develop and evaluate the synergistic Effect of Endocrine Disruptors and Environmental Stressors on Male Fertility by using an experimental Rat Model. **Methods:** The decline in male reproductive health has been linked to a wide range of factors, including environmental stressors and exposure to endocrine-disrupting chemicals. This study aimed to investigate the combined impact of chronic restraint stress (CRS) and α-Cypermethrin (ACP), an EDC, on male reproductive health. During a 30-day protocol, male rats underwent CRS for 2 hours daily and received concurrent ACP treatment. Behavioral changes, hormones, oxidative stress, cytokines, and histological changes in the testes were examined. **Results:** The results of our study reveal that exposure to CRS and

ACP individually affects male reproductive health. In combination, these exposures exacerbate the effects, affecting behavior as well as reproduction, hormone levels, oxidative stress, dysregulation of immune responses, and testicular histological abnormalities. The results reflect the interplay between stress and exposure to EDC in influencing male reproductive health. **Conclusions:** The study concluded that for developing successful treatments for minimizing the decline in male fertility and safeguarding reproductive health, it is essential to understand these intricate relationships. Additional research is needed to clarify the mechanisms and investigate potential treatments for reducing testicular damage from stress and exposure to EDCs.

OCL136
EFFECTS OF EXOGENOUS ERYTHROPOIETIN ON LEARNING AND MEMORY IN HIGH FAT DIET FED SLEEP RESTRICTED ANIMALS

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Abstract:

Objectives: The objective of the study was to investigate the effect of exogenous Erythropoietin administration by intraperitoneal route to the animals with high fat diet and sleep restriction, on learning, memory and the oxidative stress on the brain by behavioral assessment and estimating the markers of antioxidants. **Methods:** Modified Multiple Platform Method was performed with male BALB/c mice. The groups of normal, control, low, high dose treatment and drug control were subjected to sleep restriction. The mice were sleep deprived for 72 hrs in acute sleep deprivation and for 8 hrs daily for 45 days in chronic sleep deprivation. The spatial learning and memory performance of the animal was measured using the Morris Water Maze task, Stepdown Latency method and Transfer Latency using Elevated Plus Maze. The brain homogenate which was prepared using 10% of whole brain with ice cold KCL, and centrifuged to obtain the cytosolic lysate and was used for antioxidant assays using Spectrophotometer for the estimation of SOD and Reduced GSH levels. **Results:** High fat fed animal showed increased glucose, creatinine and urea levels when compared to their counterparts with severe cognitive decline and decreased brain anti-oxidant SOD and GSH levels. In both acute and chronic experimental models, the administration of erythropoietin (EPO) significantly improved cognitive function, as evidenced by reduced latency times in the Morris water maze and improved transfer latency. The higher dose of EPO (10 U/kg) demonstrated a more pronounced effect, resulting in a statistically significant decrease in latency times ($p<0.01$) compared to the control group. Furthermore, EPO treatment enhanced the antioxidant status, as indicated by increased levels of superoxide dismutase (SOD) and glutathione (GSH). These findings suggest that EPO has a therapeutic potential in mitigating cognitive decline and oxidative stress associated with high-fat diet-induced metabolic disturbances. **Conclusion:** The erythropoietin (EPO) demonstrates significant potential as a therapeutic agent for improving cognitive function and antioxidant status in models of high-fat diet-induced metabolic disturbances. Both acute and chronic administration of EPO resulted in improved performance in the Morris water maze and increased levels of key antioxidants (SOD and GSH). The higher dose of EPO (10 U/kg) was particularly effective, suggesting a dose-dependent relationship. These findings underscore the promise of EPO in addressing cognitive decline and oxidative stress, highlighting its potential application in related clinical conditions.

OCL137

A NOVEL SYNTHESIS, *IN SILICO* STUDY, AND ANTICANCER ACTIVITY OF SOME NEW SYNTHESIZED 1,2, 4-TRIAZOLOTHIADIAZINE DERIVATIVES

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Abstract:

Objectives: The aim of this study was invention of to synthesize of 1,2,4-triazolothiadiazine derivatives by conventional and microwave method. Characterize and synthesize IR, H1 NMR and Mass Spectra and molecular docking study and synthesized derivatives studied on the Anticancer Activity. **Methods:** A model drug, 1,2,4 Triazolothiadiazine , was combination Aniline and 3- Phenyl Propionic acid and selected derivatives for the study. Anticancer activity by using MTT assay for that using Breast cancer MCF -7 cell with standard anticancer 5fluracil Different formulations were prepared using varying concentrations of derivatives. **Results:** The dock score of compounds displayed in the table, with compound 4f having a dock value of -4f to the literature this docking score indicated that designed compounds have good binding affinity for binding to the best pose obtained by docking results is reported where main interaction between ligand and receptor Crystal structure of glycogen synthasase kinase 3 in composed with inhibitor (PDB code-1Q5K) for anti-Cancer activity can be observed. All designed compound adopt a very similar conformation at Crystal structure of glycogen synthasase kinase, showing Vander Waals binding with amino acid. **Conclusions:** A novel Synthesis, *in silico* Study, and anticancer activity of Some new synthesized 1,2,4-triazolothiadiazine derivatives comprises conventional and microwave method. anticancer activity of Some new synthesized 1,2,4- triazolothiadiazine derivatives claimed in claim 1 the structural characterization of the synthesized compounds was done by the interpretation of IR, NMR and Mass spectra. Series of compounds were docked with receptors of Compound 4f glycogen synthasase kinase 3(PBD code-1Q5K) for anticancer activity and docking results highlight that fact that the compound code (3h) exhibited good docking scores and could be considered as possible hit as therapeutic agents.

OCL138

NEUROPROTECTIVE AND ANTIOXIDANT STUDY OF *CYANOBACTERIA ARTHROSPIRA*

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Abstract:

Objectives: The search for novel neuroprotective and antioxidant agents is crucial in combating neurodegenerative diseases and oxidative stress-related disorders. This study explores the neuroprotective and antioxidant properties of *Arthrospira* (commonly known as spirulina), a cyanobacterium renowned for its rich nutritional profile and potential health benefits. *Arthrospira* has gained attention for its high content of bioactive compounds, including phycocyanin, carotenoids, and essential fatty acids, which are thought to contribute to its therapeutic effects. **Methods:** In this research, *Arthrospira* was evaluated for its neuroprotective and antioxidant capabilities through a series of *in vitro* and *in vivo* experiments. The study utilized cell-based assays to assess the ability of *Arthrospira* extracts to protect neuronal cells from oxidative damage induced by various stressors, including hydrogen peroxide and glutamate. Additionally, the study employed animal models to further investigate the effects of *Arthrospira* on cognitive function and oxidative stress *in vivo*. **Results:** The findings revealed that *Arthrospira* extracts exhibited significant antioxidant activity, as demonstrated by their ability to neutralize free radicals

and reduce oxidative stress markers in neuronal cells. *In vitro* assays showed that *Arthrospira* enhanced cellular viability and reduced markers of oxidative damage, such as malondialdehyde (MDA) and reactive oxygen species (ROS). These results suggest that *Arthrospira* possesses potent antioxidant properties that can mitigate oxidative stress and protect neuronal cells. *In vivo* studies using rodent models further confirmed the neuroprotective effects of *Arthrospira*. Animals supplemented with *Arthrospira* showed improved cognitive performance in behavioral tests, including memory and learning tasks. Additionally, histological analysis revealed a reduction in neuroinflammation and neuronal damage in the brains of *Arthrospira*-treated animals. **Conclusions:** Biochemical assays supported these findings, indicating a decrease in oxidative stress markers and an increase in endogenous antioxidant enzyme activities.

OCL139
EVALUATION OF TASIMELTEON EFFECT AGAINST NON –ALCOHOLIC STEATO HEPATITIS INDUCED IN MICE.

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Abstract:

Objective: NAFLD affects up to one-third of the population in several developed nations, and it is on the rise. Cirrhosis can develop in 10 to 30% of NAFLD patients with non-alcoholic steatohepatitis (NASH). The aim of the study was focussed on the effect of Tasimelton against NASH by Thioacetamide induced model. **Methodology:** Initially, insilico screening by swiss ADME analysis followed by Pretox software to analyse toxicity profile and by MTT assay using HEP G2 cell line the role of the drug Tasimelteon was studied . Finally, invivo assay was carried out by grouping the animals in to five group and using thiactamide (100mg/kg) the disease is induced and followed by Tasimelteon (2.5 mg and 5mg/kg) were considered as low and high dose and give for next 15 days after induction and the parameters like total cholesterol, hydroxy proline, ast.ALT amd histopathological examination was done. **Result:** in-silico studies by were performed by checking the receptor ligand interactions and swiss ADME Analysis.The *in vitro* analysis is done by using the HepG2 Cell lines and MTT Assay was done, *in-vivo* studies were performed and the various parameters like AST,ALT were analyzed and the liver histopathology studies were performed. **Conclusion:** All the results were shown dose dependent activity and statistically significant. Further study is essential to analyze the formulated product against NASH.

OCL140
NOVEL GLITAZONES ATTENUATE AMYLOID-B INDUCED NEUROTOXICITY THROUGH ACTIVATING PGC-1A SIGNALLING VIA PPAR-Γ AGONISM

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Abstract:

The central activation of PPAR-γ has been reported to have beneficial effects on Alzheimer's disease (AD) by regulating multiple molecular events. Our objective remains to investigate the effect of developed novel glitazones (G4 and G7) in *in vitro* and *in vivo* AD models. **Methodology:** The novel compounds were screened for *in vitro* cell assays (MTT, apoptosis, ROS, ELISA) and gene expression studies. The most promising compounds were evaluated for *in vivo* toxicity and pharmacological screening in the ICV-Aβ rat model. **Result:** Our results also indicated that compounds G4 and G7 exhibit nontoxicity (IC50>120μM) against the SH-SY5Y cell lines and reduced amyloid beta (Aβ)-induced cell damage, probably through the suppression of

proinflammatory cytokines (TNF-α, IL-1β, 1L-6) and oxyradical production determined by ROS assay. The compound (G4 & G7) treatment restored Aβ induced memory deficit which was proved by behavioural, biochemical, and histopathological studies. The protective effect was mediated through the activation of PPAR-γ/ PGC-1α signalling that was confirmed by increased target gene expression by RT-PCR. The mechanism of action of the above glitazones attributes to the activation of neuronal PGC-1α signalling via PPAR-γ agonism. The PPAR-γ-PGC-1α dependent attenuation of oxidative stress, neuroinflammation, and mitochondrial dysfunction enhanced neuronal survival, thereby reversing the cognitive dysfunction in Aβ infused rats. **Conclusion:** Hence, the developed novel glitazones (G4 and G7) could be a promising candidate for AD-like neurodegenerative conditions.

OCL141
EXTRINSIC AND INTRINSIC EFFECTS OF STRESSORS MARKS THE *IN-UTERO* VASCULAR DYSFUNCTION VIA A CROSSTALK MECHANISM

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Abstract:

Objectives: In this study, we aim to highlight an adverse intrauterine environment that results in the imbalance of redox homeostasis condition due to the increased ROS production. Under such physiological state there occur indiscriminate macromolecular damages during the *in-utero* fetal development. Here we like to shed light on the underlying molecular and functional changes due to an intrinsic stressor like the "twinning" and the toxicological effects of extrinsic stressors such as sustained maternal smoking during the long-term gestation period. **Methods:** As the umbilical cord bridges the feto-placental circulation and lacks innervations, the vascular tone critically depends on the nitric oxide production of the cord endothelial layer and the newly proposed "erythrocrine function" in the red blood cells via their functional nitric oxide synthase (NOS3). In accordance with the Declaration of Helsinki, and informed consent process considering all the inclusion and exclusion criteria, segment of umbilical cord and cord blood from mature twins and from neonates born to smoking mothers were collected, subjected to immunohistochemistry and FACS study, and analyzed in parallel with the age and weight matched singletons, born to healthy non-smoking mothers, as the control group. **Results:** Under the influence of different stressors, our study exhibited significant alterations in the regulatory parameters of vessel endothelium, which are pivotal in the NOS3 signaling pathway. However, in the fetal red blood cells differences were found in the activation of NOS3 between test and the control population. Through an intimate crosstalk mechanism Arginase1 expression was also profoundly elevated that marks a major criterion in the prognosis of endothelial or vascular dysfunction. **Conclusions:** The underlying molecular alterations of the umbilical cord vessels and red blood cells clearly indicate the impact of harmful substances in the fetal circulation, which might serve as the fingerprints in mapping the macromolecular damages during the *in-utero* fetal development.

PHARMACEUTICAL TECHNOLOGY, BIOPHARMACEUTICS, PHARMACOKINETICS & DRUG METABOLISM, DRUG REGULATORY AFFAIRS & PHARMACEUTICAL MANAGEMENT, PHARMACEUTICAL EDUCATION AND PROFESSIONAL PHARMACY, ARTIFICIAL INTELLIGENCE, BIOINFORMATICS / DATA ANALYTICS

OTC171

SYNTHESIS OF CEFIXIME-GELATIN CHEMICAL CONJUGATED MICROPARTICLES AND ITS ANTIBACTERIAL ACTIVITY AGAINST *ESCHERICHIA COLI.*

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Abstract:

Objective: The purpose of our experiment was to develop cefixime chemical conjugates for the treatment of E.coli infections. Cefixime has very good activity against E. coli strains. The drug has poor aqueous solubility. So it was conjugated with gelatin using EDC to produce a conjugate (CGcc) with significantly higher solubility than the pure drug it may produce a better therapeutic effect. **Methods:** Cefixime was conjugated with gelatin using EDC to produce a conjugated product (CGcc). The conjugate was then characterised using spectral data. The conjugate was determined to be non-haemolytic and non-toxic by using L929 cell line. CGcc's antibacterial activities against E.coli were evaluated *in vitro* using the disc diffusion method. **Results:**The results was found to be slightly soluble in methanol but very much soluble in water and PBS. The melting point was 224-230 ºC. SEM images revealed that CGcc exhibited a spherical morphology. All of the spectral data supported the chemical conjugations with gelatin. The conjugation efficiency in CGcc was determined to be 74.54 ± 3.358%. CGcc was hemocompatible and biocompatible. Antibacterial effects revealed that CGcc demonstrated good antibacterial activity against E.coli at both lower and higher concentrations. **Conclusions:** Overall, the Cefixime-Gelatin chemical conjugate was found to be effective in treating E.coli (gram-negative) infections, CGcc showed a better solubility than API. It may be a better candidate for future formulation in the market.

OTC172

OPTIMIZING TRIFLUOPERAZINE DELIVERY FOR SCHIZOPHRENIA: A QUALITY BY DESIGN APPROACH TO NANOSTRUCTURED LIPID CARRIERS WITH COMPREHENSIVE *IN-VITRO*, PHARMACOKINETIC, AND BEHAVIORAL INSIGHTS

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Abstract:

Objective: Trifluoperazine (TFP), a first-generation antipsychotic, is effective in managing schizophrenia symptoms but has poor oral bioavailability due to significant first-pass metabolism. The objective of the present study is to develop TFP-loaded nanostructured lipid carriers (NLCs) to enhance both oral bioavailability and brain delivery. **Method:** A Quality by Design (QbD) approach is employed encompassing a three-factor, three-level Box-Behnken design (BBD) to optimize the TFP-NLC formulation. Key parameters such as particle size, zeta potential, polydispersity index, and entrapment efficiency were systematically evaluated. *In vitro* drug release studies and solid-state characterization of the optimized formulation were also conducted. To assess the *in-vivo* performance of TFP-NLCs, pharmacokinetic and behavioral studies were performed on Sprague Dawley rats. **Results:** The particle size was found to be 171.6 ± 27 nm, with a PDI of 0.266 ± 0.1, and a zeta potential of -15 ± 3 mV. While the percent entrapment efficiency (%EE) was 81.62% ± 3%. The DSC thermogram overlay shows an endothermic peak for Precirol at 68.48 °C and a pronounced endothermic peak for free TFP at 243.25 °C. Moreover, an *in-vitro* drug release study was performed and has shown the sustained drug release pattern. Various drug release models are

analyzed and found that drug release from the TFP-NLCs formulation followed a diffusion-controlled mechanism. This was further confirmed by kinetic studies. Additionally, *in-vivo,* pharmacokinetic, and behavioral studies in Sprague Dawley rats showed a substantial modulation of bioavailability and therapeutic benefit of TFP. **Conclusions:** In conclusion, these outcomes indicate that TFP-loaded NLCs present a valuable approach for enhancing schizophrenia treatment and efficient drug delivery.

OTC173

OPTIMIZATION OF MICROBIOTA-SENSITIVE COLON-TARGETED DRUG DELIVERY SYSTEM USING CONCEPT OF QUALITY BY DESIGN APPROACH, HISTOPATHOLOGY STUDY AND BIOCHEMICAL (IL-6 AND TNF-A) ESTIMATION

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Abstract:

Objective: To develop microbial and pH-triggered colon-targeted Budesonide pellets utilising the QbD approach. Several polysaccharide-based natural gums selected using a retrospective research strategy were screened for their efficacy in developing a microbial degradation-based colon-targeted DDS. **Methods:** The viscosity profiles were generated in the presence of a prebiotic culture medium that simulated the effect of 4% rat cecal content. CPPs such as spheronization speed and time and formulation variables (CMAs) such as proportion of tamarind gum and MCC: Lactose were selected as independent variables for screening design 2^4 FFD to sort out the crucial parameters for the further optimization of pellets. The significant dependent variables were aspect ratio, particle size distribution, and % CDR at 2 hrs. Pellets were super coated with the enteric polymer Eudragit S100. The screened range was further revealed to BBD for Response surface optimization. Histopathological study, biochemical analysis (IL-6 and TNF-α) and Roentgenography study were performed to analyses the efficiency of formulation *in-vivo*. **Results:** On the basis of viscometric analysis, tamarind gum was selected for formulation development. Based on the screening design, considering the constraints of aspect ratio, particle size distribution, and % CDR at 2 hrs in the range of 1-1.2, 1-1.3, and <25%, respectively, the independent variables selected for BBD were proportion of gum and % MCC in the ranges of 2-3 g and 30-40%, respectively. The optimization design space was generated based on the criteria of LT 10% of the drug in the first 5 hours and MT 80% in the first 9 hours to achieve colon targeting. Histopathological and biochemical analyses (IL-6 and TNF-α) confirmed the efficacy of the optimized pellet formulation in treating induced ulcerative colitis in rats, showing superior outcomes compared to standard Budesonide solution. Roentgenography revealed that the optimized formulation remained intact for 5 hours and fully dispersed after 7 hours. **Conclusion:** Tamarind gum is efficient for colon targeting, and its proportion of 2.5-3 g along with an enteric coating of 6% lead to an optimized formulation. The use of QbD principles facilitated the optimization of critical formulation parameters, ensuring efficient drug delivery to the colon and enhancing therapeutic outcomes.

OTC174

DESIGNING OF NANOEMULSION BASED *IN-SITU* GEL OF ESCITALOPRAM OXALATE FOR INTRANASAL DELIVERY IN THE TREATMENT OF DEPRESSION

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Abstract:

Objectives: This study aimed to design and develop a nanoemulsion-based *in situ* gel for the intranasal delivery of Escitalopram Oxalate to improve its bioavailability and therapeutic efficacy in the treatment of depression. **Methods:** Escitalopram Oxalate-loaded nanoemulsion was prepared using a high-energy emulsification method by the use of a probe sonicator, employing Arachis oil:Caproyl 90 (1:1),Tween 80 and PEG 400 as oil, surfactant and cosurfactant respectively to achieve optimal formulation characteristics. The formulations were evaluated for droplet size, polydispersity index (PDI), zeta potential, and drug encapsulation efficiency. Selected nanoemulsion were incorporated into a thermosensitive *in situ* gel matrix composed of poloxamer 407. The developed formulations were characterized for gelation temperature, viscosity, pH, drug content, and *in vitro* release profile. Ex vivo permeation studies using nasal mucosa were conducted to evaluate the permeation behavior of the formulations. Nasal Ciliary toxicity studies and cell line studies with RPMI 2650 were performed to assess the toxicity. Additionally, pharmacodynamic studies were performed in Wistar rats to assess the anti-depressant efficacy of the optimized formulation. **Results:** The optimized nanoemulsion showed a mean droplet size of 34.93 ±1.7, a PDI of 0.1955 ±0.08 , and a zeta potential of -17 ± 0.55 mV, with an drug content of 97 ± 0.4%. The *in situ* gel demonstrated a gelation temperature of 34 ± 1°C, suitable viscosity for nasal administration, and a pH of 6.4 ± 0.93. The *in vitro* release study indicated a controlled release pattern of Escitalopram Oxalate over 8 hours. Ex vivo permeation studies showed a significantly higher permeation rate of the drug from the nanoemulsion-based gel compared to the nanoemulsion. Nasal Ciliary toxicity studies and cell line studies revealed that the formulation is not toxic to the nasal epithelium. Pharmacodynamic studies revealed that the nanoemulsion and nanoemulsion-based *in situ* gel formulation exhibited a marked reduction in depressive-like behaviors in rats compared to the oral solution of Escitalopram Oxalate. **Conclusions:** The nanoemulsion-based *in situ* gel formulation of Escitalopram Oxalate for intranasal delivery demonstrated improved bioavailability, sustained drug release, and enhanced antidepressant activity. This novel delivery system holds promise for effective and non-invasive treatment of depression.

OTC175

NANOUSUPENSION APPROACH: WAY TO IMPROVE BIOAVAILABILITY OF SEROTONIN AND NOREPINEPHRINE REUPTAKE INHIBITOR (SNRI) MOLECULES.

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Abstract:

Objectives: To develop and evaluate, stable SNRI [serotonin and norepinephrine reuptake inhibitor, an anti-obesity drug] nanosuspension for better bioavailability. **Methods:** SNRI nanosuspension was prepared by bottom-up technique (Solvent precipitation). The optimized batch was characterized for particle size analysis, zeta potential analysis, entrapment efficiency and drug loading, lyophilisation, morphological analysis including DSC, XRD, TEM, HPLC and in-vitro release studies. **Results:** The

prepared and optimized SNRI nanosuspension showed particle size of 123 nm, PDI of 0.266 and zeta potential as -50.4 mV. % Entrapment efficiency of SNRI nanosuspension formulation was found to be 81.63±0.005%. TEM images of the SNRI nanosuspension showed spherical shaped nanoparticles and confirmed that no aggregation of particles was observed. SNRI nanosuspension showed 80% drug release in 90 mins and then there was sustained release up to 5 hours. *In vivo* pharmacokinetic study of SNRI nano-suspension showed higher Cmax 1.56 µg/ml as well as higher AUC 12.70 µg/ml with lower Tmax i.e., 2h with mean residence time (MRT) of 5.8 h. As observed during *in vivo* pharmacodynamics study, SNRI nanosuspension demonstrated enhanced bioavailability. This may aid in decreasing side effects with feasibility in dose reduction. Also, the histopathological results illustrated decrease in cardiotoxicity. **Conclusions:** Colloidal dispersion systems like nanosuspension proved promising to overcome the cardiotoxicity risk associated with SNRI via dose reduction possibility owing to enhanced bioavailability.

OTC176

DEVELOPMENT AND ASSESSMENT OF SUMATRIPTAN-LOADED MICROSPONGE *IN-SITU* GEL FOR ENHANCED MIGRAINE TREATMENT

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Abstract:

Objectives: The current research was focused on formulation of *in-situ* gel loaded with microsponges of Sumatriptan succinate by using quasi emulsion solvent diffusion technique for migraine therapy to overcome oral bioavailability problems and to minimize the side effects of Sumatriptan succinate when taken orally. **Methods:** The microsponges were formulated using the quasi emulsion solvent diffusion technique and were subsequently integrated into the *in situ* gel. We attempted varying proportions of ethyl cellulose polymer in combination with the drug to fabricate the microsponges. Differential Scanning Calorimetry and Fourier Transform Infrared Spectroscopy was used to study the compatibility of the drug with other excipients. Further the microsponges were characterized by various parameters like, percentage yield, scanning electron microscopy, drug entrapment efficiency, drug content determination, drug release studies and short term stability study as per ICH guidelines. **Results:** Our findings revealed that Formulation F6, with a drug-to-polymer ratio of 1:6, exhibited substantial entrapment efficiency of approximately 71% ± 0.57, a mean particle size of around 111 ± 0.35 micrometers, and showed controlled drug release of 64.2% over 8 hours. Additionally, the physicochemical attributes of the *in situ* gels, such as pH, gelling capacity, gelation time, and rheological properties, were within the acceptable range. Notably, Formulation ISG 3 demonstrated better controlled drug release compared to other formulations. These results highlight the potential of Sumatriptan succinate microsponges in *in situ* gel form for nasal drug delivery. **Conclusion:** Stable microsponges of Sumatriptan succinate were successfully prepared by the quasi-emulsion solvent diffusion method. The microsponges were spherical porous particles as shown by SEM. The prepared gels exhibited acceptable properties. The *in vitro* release kinetics of the gel formulations followed Higuchi diffusion model. This microsponges *in situ* gel formulations could be successfully used for the treatment of migraine, bypassing the side effects accompanied by oral administration.

OTC177

DEVELOPMENT AND EVALUATION OF A CHRONOMODULATED ORAL DRUG DELIVERY SYSTEM FOR MANAGING NAUSEA AND VOMITING IN PREGNANT WOMEN

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Abstract:
Nausea and vomiting is a condition which, around 70–80% of expectant mothers experience; in severe situations, this indicates hyperemesis gravidarum, which is characterized by prolonged vomiting and major complications. The health of the mother and fetus depends on managing this illness. Chronomodulated drug delivery systems (ChrDDs) present a viable remedy by delivering medication at the most effective periods to reduce symptoms and enhance patient adherence. **Objective:** The goal of the current study was to create an oral time-released press coated tablet of Doxylamine succinate and Pyridoxine hydrochloride to treat the condition of nausea and vomiting in pregnant women. **Method:** The time released system is designed using the direct compression method, using the polymer Methocel K100M CR and Ethocel 20. Methocel used its water permeability to postpone the release of the drug, whereas Ethocel functioned as a rate-controlling membrane. A predetermined lag time and regulated medication release were made possible by modifying the polymer's composition and quantities using design of experiment. The formulation underwent rigorous evaluation, encompassing precompression and post-compression parameters, lag time, drug release kinetics, percentage swelling index, and percentage water uptake. **Results:** Remarkably, all evaluation parameters fell within the defined limits, affirming the formulation's quality and efficacy. Drug-Excipient Compatibility was examined through FTIR analysis, revealing no significant interaction between the drug and excipients. **Conclusion:** The study successfully demonstrated that design of experiment was found to be a suitable tool to determine the effect of formulation variables on lag time and drug release. This approach was found to not only enhance the treatment efficacy but also align with the principles of chronomedicine by optimizing medication delivery according to circadian rhythms.

OTC178

SYNERGISTIC ANTICANCER ACTIVITY OF GREEN SYNTHESIZED CUO-ZNO NANOCOMPOSITES AND 5-FLUOROURACIL IN PH-RESPONSIVE GELATIN NANOCAPSULES AGAINST HELA CERVICAL CANCER CELLS

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Abstract:
Objectives: Cervical cancer remains a significant health challenge in developing countries, exacerbated by inadequate Human Papillomavirus (HPV) vaccination rates, delayed diagnosis, and limited access to healthcare, leading to increased mortality rates. Nanomaterials have shown promise in cancer therapy, with copper oxide (CuO) and zinc oxide (ZnO) nanocomposites (NCs) demonstrating potential for inducing apoptosis due to their unique physicochemical properties. This study investigates

the synergistic therapeutic effects of pH-responsive, green-synthesized CuO-ZnO NCs combined with 5-fluorouracil (5-Fu) encapsulated within gelatin nanocapsules (NCap) for anticancer activity against HeLa cervical cancer cells. **Methods:** The green synthesized NCs was prepared and NCaps are prepared using double emulsion method. After that these products were characterized for morphology, drug-excipient interaction, zeta potential, and crystal structure and *in vitro* drug release. **Results:** *In vitro* release studies confirmed controlled, pH-responsive drug release from the NCaps at pH 5. The anticancer efficacy of all samples was evaluated against the HeLa cell line, with results indicating that NCaps exhibited more potent activity than the metal NCs or the drug alone. Apoptosis assays further confirmed the induction of cell apoptosis by the NCaps, **Conclusion:** This underscoring their potential as a novel and effective approach for the treatment of cervical cancer

OTC179
THERMOSASSEMBLE IONIZABLE REVERSE PLURONIC PLATFORM: PIONEERING LONG-TERM STABILITY AND ENHANCED SIRNA DELIVERY FOR TARGETING ONCOGENIC PATHWAY

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Abstract:

Objective: This study aims to develop and evaluate the Thermosassemble Ionizable Reverse Pluronic (TIRP) platform for siRNA delivery, specifically targeting oncogenic pathways. The objective is to address existing challenges in siRNA delivery systems by combining thermoassemble and ionizable features to achieve long-term stabilization, high siRNA loading, and enhanced therapeutic efficacy, particularly for cancer treatment and potential applications in glioblastoma (GBM). **Method:** The TIRP platform was designed to self-assemble into micelles. Bcl2 siRNA was encapsulated within these micelles. The ionizable headgroup facilitated efficient siRNA loading, while the reverse pluronic structural orientation ensured stability. Thermoassemble properties were tested by exposing the platform to mild hyperthermia to assess its response in terms of deep tissue penetration and siRNA release in the tumor microenvironment. Additionally, the ability of TIRP to cross the blood-brain barrier was investigated. **Results:** TIRP-Bcl2 micelles demonstrated exceptional colloidal stability and maintained their integrity over 8 months at 4°C. micelles with a nanodiameter of 75.8 ± 5.7 nm. The controlled release profile extended up to 180 hours. The thermoassemble feature enabled effective siRNA release and deep tissue penetration under mild hyperthermia. *In vitro* and cellular evaluations revealed significant intracellular uptake and enhanced gene silencing in cancer cells. TIRP-Bcl2 also showed promising efficiency in crossing the blood-brain barrier, indicating potential for GBM treatment. **Conclusion:** The TIRP platform represents a significant advancement in siRNA delivery, offering prolonged stability, high siRNA loading, and responsive release properties. Its dual features of thermoassemble and ionizable characteristics enhance therapeutic efficacy and stability, paving the way for precise and personalized cancer therapies.

OTC180

FORMULATION AND EVALUATION OF NANOEMULSION BASED HYDROGEL NOVEL DRUG DELIVERY SYSTEM USING ANTIMICROBIAL DRUG FOR WOUND HEALING

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Abstract:

Objectives: To formulate and evaluate nanoemulsion based hydrogel of Erythromycin antimicrobial drug so as to improve its solubility and permeability and also to develop Erythromycin loaded nanoemulsion based hydrogel for wound healing and to achieve controlled drug release and hence by improving these properties, the effectiveness and therapeutic outcomes of treatment of wound can be enhanced. **Methods:** Erythromycin was selected as antimicrobial drug for the study. Different formulations were prepared using varying concentrations of polymers. Using a pseudo ternary phase diagram, the existence of nanoemulsion regions was determined. Tea tree oil was selected as the oil phase. Tween 80 and ethanol were used as surfactants and co- surfactant respectively. Different Nanoemulsion of Erythromycin were prepared, and based on the results of Transmittance, particle size and PDI, pH, Viscosity, Drug content, % Drug entrapment, % Drug release and stability, one was optimized and was converted in to Nanoemulgel using different concentration of Carbopol 934. The prepared nanoemulgel was evaluated for various parameters like pH, viscosity, Spreadability, Drug content, *In vitro* drug release, Assay, antimicrobial study and stability study. The final formulation was compared with marketed product. **Results:** The physical and chemical properties of nanoemulsion and emugel was performed.The drug was subjected to preformulation studies followed by formulation and evaluation. Using a pseudo ternary phase diagram, the existence of nanoemulsion regions was determined. The pseudo ternary diagrams were constructed using Tea tree oil, Smix (Tween 80 and Ethanol) and water. The nanoemulsion was optimised using central composite design (CCD) and was evaluated for pH, Viscosity, globule size, PDI, drug content and zeta potential. The nanoemulsion with lowest concentration of oil 8.3 %w/w showed desired globule size of 13.6, PDI of 0.16 with 98.8±0.75% drug content and 74.17±1.18% drug release at the end of 24 hours and a zeta potential of +45.6mV. Based on these results, optimized formulation was selected and was then incorporated in to different concentrations of Carbopol 934 and nanoemugel was prepared and evaluated. **Conclusions:** The study concluded that sustained release of the drug from the developed formulation was achieved . The antimicrobial tests demonstrated that the optimized formulation had the ability to inhibit the growth of E. coli and Staphylococcus aureus. Thus, it may be concluded that the objective of this research work was achieved by developing Erythromycin nanoemulgel with better therapeutic efficacy and reduced side effects for rapid wound healing and making it a potential candidate for commercial application.

OTC181

INNOVATIVE MUCOADHESIVE VAGINAL SPRAY WITH CURCUMIN AND SILVER NANOPARTICLES: A NOVEL APPROACH TO COMBAT RESISTANT CANDIDIASIS

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Abstract:

Background: Candidiasis, a common fungal infection, has become a major health concern, especially with the emergence of resistant strains. Traditional treatments often cause adverse effects and

exhibit limited efficacy, driving the search for alternative therapeutic options. This study focuses on developing a mucoadhesive vaginal film-forming spray that combines curcumin and silver nanoparticles for the effective and safe treatment of candidiasis. **Objective:** The primary objective of this research was to create a novel, mucoadhesive vaginal film-forming spray incorporating curcumin and silver nanoparticles. The goal was to enhance antifungal efficacy while minimizing side effects, providing a safer alternative to conventional treatments for candidiasis. **Methods:** Silver nanoparticles were synthesized using moringa leaves extract and silver nitrate, while curcumin was selected for its potent antifungal properties. Soluplus served as the film-forming agent, with ethanol as the solvent. The interaction between these components was assessed using Fourier-transform infrared spectroscopy (FT-IR) and Differential Scanning Calorimetry (DSC) to ensure stability and compatibility. A phase solubility study was conducted to optimize the formulation, leading to the preparation of five different batches. Each batch was evaluated for antimicrobial activity against Candida species. **Conclusion:** The study successfully developed a mucoadhesive vaginal film-forming spray, with batch no. 3 (containing 1% curcumin, 0.1% silver nanoparticles, 5% Soluplus, and 10 ml ethanol) demonstrating the most significant antifungal activity. This formulation presents a promising and safer alternative for managing candidiasis, offering enhanced efficacy and reduced side effects.

OTC182

IMMUNOINFORMATIC-BASED DESIGN OF MULTI-EPITOPE VACCINE AGAINST *CHLAMYDIA TRACHOMATIS* SEROVARS TARGETING MAJOR OUTER MEMBRANE PROTEINS

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Abstract:

Objectives: *Chlamydia trachomatis* (CT) is a significant etiological agent of several sexually transmitted diseases (STDs) and preventable blindness (trachoma) worldwide, with current vaccines proving insufficient. This study focuses on designing a novel multi-epitope vaccine by targeting major outer membrane proteins of CT serovars through several bioinformatics tools. **Methods:** Predicted T-cell and B-cell epitopes from serovars A, B, D, E, L1, and L2 using IEDB T-cell epitope prediction tool and ABCpred tool were combined into a single construct, incorporating adjuvants and linkers to enhance immunogenicity and stability. Physicochemical characterization confirmed the vaccine's stability and structural modeling refined its 3D configuration. The selected 3D structure was taken forward to investigate the binding ability of the vaccine with the immune receptor of TLR3 through several methods, such as molecular docking, followed by binding energy estimation and molecular dynamics (MD) simulations. Finally, *in silico* cloning and immune simulations of the designed vaccine were performed to evaluate immune response. **Results:** The vaccine construct is characterized by favourable antigenic, non-allergic, and highly soluble in water without toxic behaviour. Molecular docking studies demonstrated stable binding with TLR-3 receptor, with molecular dynamics simulations supporting the complex's stability. *In silico* cloning indicated a high potential for expression in Escherichia coli. Immune simulations revealed robust activation of B cells, cytotoxic T cells, and antigen-presenting cells, alongside significant production of IgM and IgG antibodies. The vaccine elicited a balanced Th1/Th2 cytokine response, which is crucial for effective immunity. **Conclusions:** This study presents an in-silico multi-epitope vaccine that could effectively induce comprehensive immune responses against CT, highlighting the need for further development followed by *in vivo* validation to advance this promising candidate toward clinical use.

OTC183

COMPARATIVE ANALYSIS OF TRADITIONAL QSAR AND MACHINE LEARNING CLASSIFIERS FOR COUMARIN-ANNULATED AZOLE COMPOUNDS IN THE DISCOVERY OF *MYCOBACTERIUM TUBERCULOSIS* ANTAGONIST

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Abstract:

Background: *Mycobacterium tuberculosis* (MTB) is a slow-growing infectious agent that causes tuberculosis. One of the biggest challenges in trying to manage tuberculosis is the ongoing spread of drug-resistant tuberculosis. Thus, the development of novel drugs is crucial to the fight against tuberculosis. **Objective**: The purpose of this work is to build and compare the QSAR model developed by both traditional QSAR (QSARINS software) and current machine learning techniques for predicting the antimycobacterial activity of coumarin-annulated azoles. **Methods:** Both conventional QSAR (QSARINS software) and modern machine learning approaches are utilized to construct a QSAR model employing a case study of the actions of coumarin-annulated azole compounds as an antagonist of MTB. Using the free PaDELDescriptor programme, the molecular descriptors for the model were computed. **Result:** The model was found to have an internal cross-validation value of Q^2loo = 0.7938 and an external validation parameter of R^2ext = 0.6399. These results indicate that the model has the potential to predict the actions of additional inhibitors within its chemical space. On the other hand, the R^2 values for RF, SVR, MLR, PLS, and OLS in a QSAR model constructed using a machine learning programme remained at 0.7063, 0.8207, 0.7966, 0.7966, and 0.6800, respectively. **Conclusion:** The predicted pMIC values from the QSARINS as well as from the machine learning techniques of the case study chemicals were compared and found to be well fitted to the model and well predicted for the external set of compounds. The outcome demonstrates the value of using the suggested method in the creation of new medication candidates. This work uses the OECD principle as a guide in order to hypothesise a clearly defined step in the ligand-based design process for generating more active molecules.

OTC184

LIPOSOMAL DOXORUBICIN IN COMBINATION WITH METFORMIN SIGNIFICANTLY BLOCKS TUMOR GROWTH IN A SUBCUTANEOUS MODEL OF BRAIN CANCER

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Abstract:

Objectives: This study aimed to encapsulate doxorubicin in a PEGylated liposomal platform and combine that formulation with metformin to enhance the efficacy of doxorubicin (dox) in a subcutaneous brain cancer model developed in rats. **Methods:** PEGylated liposomal doxorubicin (PD) was prepared following the ammonium sulfate gradient method. The prepared formulation was characterized using several assay methods like particle size determination, zeta potential measurement, drug entrapment efficiency, etc. Rat glioma cell line C6 was used for the cell culture studies. Different *in vitro* experiments like MTT assay, cell cycle analysis, and western blotting were performed to determine the efficacy of the combination therapy. The *in vivo* antitumor efficacy of the combination therapy was determined in a rat subcutaneous brain cancer model. **Results:** The average diameter of the prepared formulation (monodisperse) was found to be less than 100 nm. Zeta potential measurement confirmed that the

prepared PD was negatively charged. The entrapment efficiency and drug release profile of PD were found to be satisfactory. PD's 50 % inhibitory concentration (IC50) value was in the nanomolar range. The combination of metformin and PD further reduces the IC50 value. A similar trend was observed in the apoptosis assay. The *in vivo* study in the subcutaneous glioma model proves the efficacy of the combination therapy. **Conclusions:** This study exhibits the efficacy of the combination therapy (i.e., PD + metformin) in the subcutaneous rat C6 glioma model. Further studies are warranted with this combination regimen in different brain cancer models.

OTC185

DESIGN AND EVALUATION OF FAST DISSOLVING TABLETS OF ANTI –HISTAMINE DRUG

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Abstract:

Objectives: The present study is aimed to formulate fast dissolving Levocetirizine oral disintegrating tablets for management of allergic rhinitis using direct compression method. **Methods:** Levocetirizine belongs to BCS class III drug i.e. High Solubility and Low Permeability. The Bioavailability is somewhat limited after oral dosing so parenterals dosing is an alternative choice but it causes inconvenience to patients so an attempt was made to formulate oral disintegrating tablets in order to enhance the bioavailability. The Levocetirizine tablets were formulated by using direct compression technique. All the formulations were subjected to pre-compression and post- compression parameters. **Results:** The powder blend showed good flow properties for all the formulations. All the formulated tablets were found within the permissible limits for previous post- compression parameters. F10 is considered has optimized formulation containing a combination of 7.5% concentration of crospovidone and fenugreek mucilage powder showed maximum drug release of 98.05 % at 14 mins. Among all the formulations formulation F10 containing higher amounts of crospovidone and fenugreek mucilage powder have hardness 2.80 kg/cm^2, Friability 0.075%, drug content 98.05%, thus fulfilling all the parameters. It has shown disintegration time 21.25±0.240 sec as compared to other superdisintegrants. All the ten formulations disintegrated within less than 50 secs. This indicates rapid disintegration, water absorption ratio showed good absorption in all the formulations. *In-vitro* drug release studies revealed that 98.05% of drug released from a combination of crospovidone and fenugreek mucilage powder within 14 mins. F10 formulation was compared with selected F6, F9 and in this F10 showed good *in-vitro* drug release study. Stability studies were carried out at room temperature and accelerated temperature, results revealed that at room temperature F10 formulation was stable. **Conclusions:** Combination of 7.5% concentration of crospovidone and fenugreek mucilage powder showed least disintegration time and highest percentage drug release hence judged as best formulation. The relative efficiency of super disintegrants in enhancing the disintegration and dissolution rates of tablets was found to be in the following order: Sodiumstarchglycolate> Fenugreek-mucilage powder >Crospovidone> Combination (crospovidone and fenugreek mucilage powder). Formulation F10 showed faster drug release in comparison to the all other formulation of Levocetirizine dihydrochloride. Stability studies were carried out for 30 days as per ICH guidelines in normal as well as in accelerated conditions. Levocetirizine dihydrochloride fast dissolving tablet was found to be stable at the end of 30 days. Hence, the formulated fast dissolving tablet of Levocetirizine dihydrochloride is a promising formulation for safe and effective use in management of allergic rhinitis by oral route.

OTC186
FORMULATION, OPTIMIZATION, AND EVALUATION OF PEGYLATED BILOSOMES FOR THE TOPICAL DELIVERY OF LULICONAZOLE

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Abstract:
Objectives: The present study aimed to formulate, optimize, and evaluate Luliconazole-loaded pegylated bilosomes to improve skin penetration. **Methods:** Luliconazole-loaded pegylated bilosome was developed using the thin-film hydration method and optimized through a Box-Behnken design. The optimized formulation was then evaluated for *in vitro* drug release, ex vivo skin permeation, and *in vitro* antifungal activity. *In vivo* studies like skin retention, histopathology and pharmacodynamic activity were condcuted in Wistar rats. **Results:** The optimized formulation exhibited a particle size of 270.00±1.65 nm, a polydispersity index of 0.4±0.05, a zeta potential of -48.7±1.39 mV, and an entrapment efficiency of 94.0±2.0%. *In vitro* drug release and ex vivo skin permeation studies showed significantly higher drug release compared to conventional noisome and drug dispersion. The *in- vitro* antifungal activity of the optimized formulation demonstrated a larger zone of inhibition against Candida albicans, attributed to the deformability and flexibility of the ultra-deformable vesicles. Confocal laser scanning microscopy revealed superior permeation, retention, deposition, and distribution of rhodamine B-loaded optimized formulation in the skin compared to conventional formulation. Histopathological studies and *in vivo* pharmaco-dynamic evaluations confirmed the formulation's safety and efficacy, showing a marked reduction in fungal infection. **Conclusions:** In conclusion, pegylated bilosomes represent a promising carrier system for the enhanced topical delivery of Luliconazole, offering a potent approach to treating fungal infections.

OTC187
PRECISION DOSING OF METFORMIN BY PHARMACOMETRIC APPROACH – AN EXPLORATORY STUDY

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Abstract:
Objectives: To determine the prevalence of genetic polymorphism(s) of Organic Cationic Transporters (OCTs) and explore the impact of those genetic polymorphism(s), if any, on the pharmacokinetics of Metformin through a pharmacometrics approach. **Methods:** The genotypes and allele frequencies of OCT1, OCT2 and OCT3 were determined among the healthy adult male volunteers of south India from the DNA samples extracted from the blood samples using RT-PCR method. The study volunteers were administered a standard single dose of Metformin and blood samples were collected at predetermined time points of pre and post dosing. The plasma supernatant was used to quantify the concentration of Metformin using a validated LC-MS/MS method and the WBCs harvested from the infranatant was used for the DNA isolation. The pharmacokinetic (PK) parameters of Metformin were estimated by non-compartmental analysis (NCA) using the software Pumas® v.1.40.1. The PK parameters estimated among the wild &mutant genotypes of OCTs were compared using unpaired student t-test. Further, the time vs. plasma concentration data sets were used for population pharmacokinetic analysis using nonlinear mixed effects modelling approach and first order conditional estimation with interaction (FOCEI) method using the software Pumas® v.1.40.1. A base model

consisting of both structural and stochastic models was developed and further added to the covariate model. The model validation was performed using various conventional approaches including the bootstrap analysis. **Results:** The OCT1 variant rs628031 (1222A>G) showed 10% homozygous wild genotype, 41% heterozygous mutant genotype, and 48.7% homozygous mutant genotype. While for the rs622342 (1386 C>A) variant of OCT1, 22.6% was found to be homozygous wild genotype, 53.7% heterozygous mutant genotype, and 23.5% homozygous mutant genotype. Similarly, for OCT2, the variant rs316019 (808G>T) showed 10.9% homozygous wild, 38.6% heterozygous mutant, and 50.4% homozygous mutant genotypes. Lastly, for OCT3, the rs2076828 (698C>G) variant showed 63.8% homozygous wild, 22.7% heterozygous mutant, and 13.4% homozygous mutant genotypes. The clearance and volume of distribution of Metformin was found to be 97.41 L/ hr and 186.8 L respectively. A significant variance (55.7 %) in the clearance of Metformin among the individuals of the study population was estimated in the base model, further the covariate modelling revealed the sources for such a large variance in clearance and it was reduced to 20.2 % in the final model. A strong association of OCT2 genetic polymorphism on the clearance of Metformin was determined in this study. **Conclusion:** Among the three genetic variants studied, only the OCT2 genetic polymorphism had shown a significant impact on the clearance of Metformin. This finding has to be applied in the clinical settings and by performing the therapeutic drug monitoring of Metformin, the attainment of the target concentration shall be confirmed to attain the optimal therapeutic outcomes of the study drug.

OTC188

CHALLENGES IN THE EXECUTION OF NATIONAL EDUCATION POLICY TO PHARMACY EDUCATION

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Abstract:

Objective: Pharmacy education is a multidisciplinary education system with broad opportunities for community pharmacy, patient education, and research. Education policy is a prerequisite to evolve and maintain a balance between economy and growth. The Pharmacy Council of India (PCI) members of diverse backgrounds, Academic and industry background members have developing and planning to implement the National Education Policy (NEP-2020) for Pharmacy Education from 2025 academic year onwards. The NEP2020 is framed to provide a standardized education to everyone with a belief in an integrated and research-oriented vision. However, it encountered resistance in implementation due to different course structure for D.Pharm/B.Pharm/ M.Pharm. Therefore, we would like to analyze the challenges in implementing the NEP2020 in pharmacy education in India and propose potential solutions (Naushad , 2008). **Methods:** A comprehensive literature review was conducted examining recent publications, policy documents and expert opinions on the NEP2020 implementation in Pharmacy education. The analysis focused on identifying key hurdles, assessing their impact and exploring possibilities to surpass them. **Results:** Several significant challenges were encountered in the implementation of the NEP2020 for Pharmacy education. First one is restructuring the curriculum where the PCI is discussing with subject matter experts about the benefits of implementing six-year courses for industry and practice with unified syllabus for D.Pharm (2 Years), B.Pharm (4 Years), and M.Pharm (6 Years). This act aims to produce pharmacy graduates who are better equipped to handle the evolving demands of the pharmaceutical industry and healthcare sector. Other challenges include lack of equipment, skill or specialization to support the proposed changes in teaching

methodologies and practical training to dissolve the industry-academia gap (Jishnu et al, 201). **Conclusion:** Implementation of the NEP2020 in pharmacy education requires comprehensive and coordinated approach by all stake holders (Academia, Industry and Regulators). It is critical to create awareness on the benefits of the NEP2020, organizing zonal meetings conducted by PCI and invest in infrastructure and resources. Addressing these challenges and implementing proposed solutions, pharmacy education in India can be transformed to meet the objectives of the NEP2020 and produce competent industry ready professionals capable of contributing to the country's healthcare and pharmaceutical sectors.

OTC189
FORMULATION & OPTIMIZATION OF APREMILAST LOADED SPANLASTICS FOR PSORIASIS ARTHRITIS

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Abstract:

Objectives: This study focuses on the formulation and optimization of Spanlastics, a nanocarrier system composed of Span-60 and Tween-80, loaded with apremilast for the targeted treatment of PsA. The rationale behind utilizing Spanlastics lies in its potential to enhance the solubility and permeability of apremilast, thereby augmenting its therapeutic efficacy. **Methods:** The research methodology entails the systematic design and development of Spanlastics formulations through a series of experiments, employing varying ratios of Span-60 and Tween-80. Spanlastics were prepared by ethanol injection method. The optimization process is carried out by applying DoE after selecting promising variables from trials. Statistical optimization tools were utilized to explore the design space and identify optimal formulation parameters. The optimization process aims to achieve the desired balance between particle size reduction for enhanced bioavailability and entrapment efficiency for maximal drug loading capacity. Statistical optimization tools, such as Design of Experiments (DoE) and Response Surface Methodology (RSM), are utilized to systematically explore the formulation space and identify the optimal formulation parameters. **Results:** Identification done with FTIR. Prepared spanlastics were evaluated for various parameters like particle size, entrapment efficiency, zeta potential and diffusion study. The results indicate that drug has sufficiently increase solubility with reduced size of spanlastics so increase the permeability. The optimized apremilast spanlastic was evaluated, and the results showed that the PDI was 0.615, the zeta potential was -27.5 mV, and the particle size was 220.20 nm. An entrapment effectiveness of 79.5 percent was discovered. Optimized batch was loaded in carbopol gel for ease of application. Then evaluated for pH, percentage of drug content, *in vitro* diffusion research, and *ex vivo* permeation study. **Conclusions:** The outcomes of this study are expected to yield insights into the formulation and optimization of Spanlastics for efficient delivery of apremilast in the treatment of PsA by enhancing the solubility and permeability of apremilast.

OTC190

MANAGEMENT OF RETINAL AILMENTS WITH DISSOLVING MICRONEEDLES LOADED WITH NANOSUSPENSION OF SELECTED NEUROPROTECTANT.

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Abstract:

Objectives: The present work aims to develop microneedles loaded with nano suspension of deferasirox, a novel neuroprotective agent for management of retinal injury, as the conventional dosage form exhibits few disadvantages like undergoing first pass metabolism along with need of frequent dosing when administered through oral route. **Methods:** Microneedles are involved with low incidence of invasion thus making it ideal for intrascleral administration compared to ocular injections especially when drug is to be administered to the vitreous humor. Thus, deferasirox was first formulated as nano suspension followed by loading it successfully onto polymeric microneedles. The prepared microneedles were further subjected to various characterization parameters with special focus on scleral penetration. **Results:** The formulated microneedles loaded with deferasirox exhibited around 84.45±2.61% of penetration. The scleral under investigation demonstrated around 72% drug deposition after 10 minutes of administration. The safety testing carried out on human retinal pigment showed exceptionally good values of cell survival, thereby, paving way for safe administration to human eye. **Conclusions:** From the experiment it may be concluded that the dissolving type microneedle loaded with deferasirox nanosuspension can be utilised for management of retinal injury with minimal invasion procedure.

OTC191

STUDIES ON WOUND HEALING POTENTIAL OF TRANEXAMIC ACID FILM FORMING SPRAY: FORMULATION, DEVELOPMENT AND CHARACTERIZATION

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Abstract:

Objectives: The aim of present work is to formulate and evaluate topical film forming spray containing Tranexamic acid for wound healing. **Methods:** Tranexamic acid was selected for the study. Screening study was done by using Taguchi design for process and formulation variable screening. On the basis of screening final formulation optimized by using Central Composite design. Eudragit RLPO, conc. of Ethyl Cellulose and Speed of homogenizer selected as variables for optimization. The film forming spray was prepared by using solvent evaporation method. The optimized batch was evaluated for film formation, film clarity, viscosity, drying time and thickness. *In vivo* wound healing study was performed on wistar female rat. **Results:**Characterization study illustrated that transparent film with desired mechanical property was obtained. Eudragit RLPO shows less viscosity (58cps) and drying time (97 sec) and PEG 400 shows good flexibility. Hence, Eudragit RLPO with EC as a film forming polymer and PEG 400 as a plasticizer is used for the preparation of transdermal film forming spray. Film forming spray gives shiny and translucent appearance of the film, moderate mucoadhesive and dermal flexibility, good water washability, no leakage of container and short-term stability study indicates no significant change in storage. Container-related evaluations such as volume delivered upon each actuation or priming, spray angle, spray pattern, pH was found to be in the range. A successful transdermal spray formulation using Eudragit 10.5% w/w, EC

5.25% w/w, and ethanol: water (8:2) as the solvent provided encouraging results for treating the wound. Developed transdermal spray shows the drug reach to the deep layer of the skin and to treat the wound. **Conclusions:** The study concluded that formulated topical film forming spray containing Tranexamic acid provides thin film for treatment of wound and have superior properties to the conventional dosage forms.

OTC192
FORMULATION, OPTIMIZATION, *IN-VITRO* AND *IN-VIVO* EVALUATION OF CARBON NANOTUBE VIGABATRIN CONJUGATES FOR EPILEPSY TREATMENT

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Abstract:

Objective: The rationale is to conjugate the drug with MWCNTs, and to prepare novel carrier delivery system for epilepsy to enhance the release of drug from PEG F-MWCNTs-Vigabatrin conjugate. To evaluate the sustain release of Vigabatrin optimized formulations for anticonvulsant activity by MES model using Rats. **Method:** Multi walled carbon nanotubes empower by non-covalent functionalization. F-MWCNTs loaded with Vigabatrin, DOE has been applied for the formulation development. The characterization studies of PEG F-MWCNTs-Vigabatrin conjugate were completed by FT-IR, SEM, particle size, zeta potential, drug loading efficiency. *In vitro* drug release and *in vivo* studies was statistically analyzed. The animals will be divided into 5 groups (n = 6), standard, control and three groups of rats were pre-treated with optimized formulations for 10 days. On the 10th day, the rats will be subjected to MES 1 hr after the test drug administration. the various stages and duration of epilepsy will be observed and noted. **Results:** Our study consists of 3 factors with 3 levels, for designing the experiments L27 OA was selected based on number of degrees of freedom (DOF). SEM images show the change in the morphology of MWCNTs. The particle size and zeta potential of PEG F-MWCNT's Vigabatrin conjugate was found to be 689 d. nm and -19.1 mV. The drug entrapment efficiency outcome shows more than 80% of entrapment. The CDR was found to be 94%. The anti-epileptic activity produced by optimized formulation showed significant reduction in HLE phase and delaying onset of clonic and tonic convulsions in MES model. **Conclusion:** Functionalization process help to boost the release of drug and upsurges the dispersion of the formulations. Prepared F-PEG MWCNTs-Vigabatrin conjugate with heightened development in medical use. FT-IR spectrum exemplifies the drug attached to MWCNTs. F-MWCNTs formulations releases the drug with good percentage and the obtained results were analyzed statistically and *in-vivo* studies proves that binding of Vigabatrin to MWCNTs has improved the pharmacokinetic properties of Anticonvulsant drug.

OTC193
IONTOPHORETIC DELIVERY OF NAPROXEN SODIUM: OPTIMIZATION AND EVALUATION

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Abstract:

Objectives: The objective of the present work was to investigate and optimize the iontophoresis process parameters of Naproxen Sodium (NS) by 3× 3 factorial, Box-Behnken design (BBD) of response surface method. **Methods:** NS is a suitable candidate for iontophoretic delivery due to its gastrointestinal (GI) adverse effects, ranging from dyspepsia to serious life-threatening effects while deliver through

oral route. Independent variables selected were current intensity (X_1), medium/pH (X_2) and polymer (HPMC E15) concentration (X_3). The dependent variables studies were amount of NS permeated in 4 hr (Y_1: Q_4), 24 hr (Y_2:Q_{24}) and lag time (Y_3). Mathematical equations, contour plots and response surface plots were used to relate the independent and dependent variables. Establish the statistical validity of polynomials and optimized process variables were selected by feasibility and grid search. The optimization study was validated with 13 confirmatory runs indicated high degree of prognostic ability of response surface methodology. **Result:** The approach of Box-Behnken design helped in identifying the critical process variables in the iontophoretic delivery of Naproxen Sodium. The maximum cumulative amount of drug permeation in 48h for optimized formulation was found to be 4301.04±118 µg, 5897.84±112 µg through pig ear skin and flux was calculated as 25.11µg/cm^2/h, 41.8 µg/cm^2/h with and without application of iontophoresis, then 1.66 folds increased in the drug flux. *In vivo* bioavailability studies were carried out in Newzeland white rabbits and blood samples were analyzed by high performance liquid chromatography with UV- spectrophotometer detector. The mean area under the curve (AUC) values of NS transdermal patches with emu oil and iontophoresis shows 1.46 and 1.12 fold statistically significant increases in the bioavailability compared with oral administration and transdermal patches without iontophoresis respectively. **Conclusion:** NS matrix type transdermal films were prepared effectively with the help of HPMC E15 (hydrophilic polymer). Active ingredient remains stable in patches on storage. Enhancement of permeation of drug across the pig ear skin was obtained by utilizing permeation enhancer (emu oil) and physical enhancing method (Iontophoresis). In rabbits the pharmacokinetic study showed improvement in transdermal films bioavailability by 1.46 and 1.12 folds compared to oral administration and without Iontophoresis. The current investigation verifies preparing transdermal films feasibility using emu oil as chemical permeation enhancers and Iontophoresis for drugs such as Naproxen sodium in efficient anti-inflammatory management.

OTC194

CHITOSAN- FABRICATED ASIATIC ACID NANOEMULGEL FOR WOUND MANAGEMENT: OPTIMIZATION, CHARACTERIZATION, *IN VITRO* AND *IN VIVO* EVALUATION

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Abstract:

Objective: The skin is essential for protection against microbial infiltration. Any disruption or damage to the skin leads to a wound, which typically heals over time. However, chronic wounds with excessive exudation can lead to tissue ischemia and gangrene, often requiring external interventions to promote healing. Asiatic acid (ASA) and chitosan (CS) promote collagen synthesis and cellular proliferation, aiding wound healing, while virgin coconut oil (VCO) acts as a potent anti-inflammatory agent. This study aimed to develop and evaluate a novel Chitosan-coated Virgin coconut oil-Asiatic acid-loaded nanoemulgel (CS-ASA-NEG) for improved wound management. **Methods:** An optimized nanoemulsion was developed via ultrasonication using a Central Composite Design to assess the impact of organic phase percentage, sonication time, and amplitude percentage on globule size and polydispersity index (PDI). ASA was incorporated into the nanoemulsion, coated with CS, and converted into a NEG using 1% Carbopol. The formulation was characterized by various physicochemical parameters, microscopy, stability, *in vitro* and *ex vivo* studies, and *in vivo* wound healing and irritation studies in rats. **Results:** The optimization study showed that using a 15% organic phase at 24% amplitude for 6 minutes yielded a nanoemulsion with a 131.8±0.33 nm globule size and a PDI of 0.260±0.01. The CS-ASA-NEG remained stable at 5 and 25°C over

28 days. Electron microscopy confirmed spherical oil globules within the nanoemulsion. *Ex vivo* studies demonstrated enhanced permeability with the CS-ASA-NEG formulation. The CS-ASA-NEG and ASA-free NEG formulations showed superior wound closure compared to a commercial gel. **Conclusion:** The novel CS-ASA-NEG notably influences wound healing and holds promise as a novel product for wound management.

OTC195

FORMULATION, CHARACTERIZATION, *IN-VITRO*, *EX-VIVO* AND STABILITYSTUDIES OF CIPROFLOXACIN LOADED MUCOADHESIVE GEL FOR THE EFFECTIVE TREATMENT OF PERIODONTAL DISEASE

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Abstract:

Objectives: The objective of this study was to formulate and characterize mucoadhesive gel containing ciprofloxacin to release drug in controlled manner for treatment of periodontitis. **Methods:** Medicated mucoadhesive gel of ciprofloxacin (20%w/v) having carbopol 934 (0.5%, 1%, 1.5%w/v) and mannitol (2%w/v) were prepared and characterized for physiochemical properties, *in-vitro* drug release, permeation and stability studies. Drug-excipients compatibility study was done by Fourier Transform Infrared Spectroscopy. *Ex-vivo* drug permeation study was carried out by Franz Diffusion cell using goat cheek mucosa. Optimized formulation was characterized for scanning electron microscopy and *in-vitro* antimicrobial activity against *E.Coli* bacterial strain. **Results:** The results revealed that drug and polymer were compatible to formulate. All formulations were transparent, clear with gel like consistency. pH of formulation was in the range of 6.6 to 6.8. Swelling index of formulations was in the range of 39.4±0.01 to 49.8±0.32. Mean % drug content was found to be 95.46±0.03 to 97.63±0.11%. *In-vitro* drug release was rapid, reaching 55% in 13 hours and nearly completing 84% in 24 hours. *Ex-vivo* drug permeation was studied by Franz Diffusion cell using goat cheek mucosa which shows 52.1 % of the medicine permeates within 12 hours, whereas 80 % permeates in 24 hr. Optimized formulation was characterized for scanning electron microscopy and *in-vitro* antimicrobial activity against *E.Coli* and *S. aureus* bacterial strain and 7.45 ± 0.18 mm and 6.32 ± 0.88 mm zone of inhibition was observed for the respective bacterial strains. The result of stability studies shows that CF-loaded-Carbopol-Gel was found to be stable for 45 days. **Conclusions:** In conclusion, optimized medicated 1.5% w/v Carbopol 934 mucoadhesive gel was compatible with oral mucosa. The Optimized gel was mucoadhesive, show sustained release behaviour and was found to be stable. Thus, our findings show that the prepared formulation is suitable for the treatment of periodontitis.

ABSTRACTS OF SCIENTIFIC POSTER PRESENTATIONS

PHARMACOGNOSY, INDIGENOUS DRUGS, HERBAL FORMULATIONS AND PHYTOCHEMISTRY, BIOTECHNOLOGY AND BIOTHERAPEUTICS

PHCG301
FORMULATION, EVALUATION AND ANTIOXIDANT STUDY OF HERBOMINERAL GEL

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Abstract:

Objectives: The present study was aimed to develop a herbomineral formulation using herbs and minerals. **Methodology:** The selected plants for the present study were the leaves of *Aegle marmelos, Aloe barbadensis, Morienga olefera*. The plants were collected, authenticated, dried and powdered. The powders of each crude drug were mixed in equal parts and subjected to soxhlet extraction using methanol as solvent. **Results:** The obtained extracts of plants were evaluated for preliminary phytochemical screening, The formulation was evaluated for its physiochemical properties The Phytochemical analysis revealed the presence of various phytoconstituents present in the extracts. The prepared formulations were evaluated for its physiochemical characters and revealed that both formulations demonstrated ideal characteristics of herbal gel. Formulations complied with the physical evaluation parameters like pH, viscosity, spreadability, extrudability were found to be acceptable. The effect of antioxidants on DPPH is thought to be due to their hydrogen donating ability. The free radical scavenging activity of the extract was estimated by comparing the % inhibition of herbomineral gel with standard Absorbic acid. IC50 was also calculated to determine the amount of formulation needed to quench 50% of radicals. The herbomineral gel exhibited the scavenging activity with IC50 values of 96.5µg/ml. Where the IC50 for standard ascorbic acid was found to be 113.6µg/ml. **Conclusion:** Thus, from the result obtained it could be concluded that formulation shows a good antioxidant activity.

PHCG302
FORMULATION AND EVALUATION OF SUNSCREEN FROM *SOLANUM LYCOPERSICUM* (TOMATO) AND *CALENDULA OFFICINALIS* (MARIGOLD) EXTRACTS.

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Abstract:

Objectives: The aim of this study was to develop and evaluate Sunscreen from *Solanum lycopersicum* (Tomato) and *Calendula officinalis* (Marigold) Extracts. **Methods:** Tomato and marigold were selected for the study. First the tomato extracts were prepared using hexane and then different formulations of sunscreen were prepared using varying concentrations of tomato and marigold extracts into o/w and w/o creams (sunscreen). **Results:** The SPF value of the sunscreen was characterized using UV Spectrophotometry. The sunscreen was evaluated for various parameters including washability, Ph, spreadability, etc. Results indicated significant UV protection, satisfactory SPF and enhanced skin nourishing properties from the combined extracts. **Conclusions:** This research demonstrates the potential of tomato and marigold extracts as effective natural ingredients in sunscreens, supporting the development of safer, environmentally friendly sun care products that meet consumer demand for natural skincare solution.

PHCG303

ISOLATION AND CHARACTERIZATION OF ENDOPHYTIC BACTERIA FROM *EUPHORBIA NERIIFOLIA* FOR SECONDARY METABOLITE PRODUCTION.

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Abstract:

Objectives: The objective of this study was to isolate endophytic fungi from *Euphorbia neriifolia* using sterile culture techniques and to investigate the potential role of these endophytes in secondary metabolite production. **Methods:** The endophytic bacteria were isolated by sterile culture method and purified, and characterization was done morphologically and microscopically. The presence of secondary metabolites was examined through phytochemical tests. **Results:** The endophytic bacteria were characterized both morphologically and microscopically. Through staining techniques, it was observed that the endophytes were Gram-positive. They had a symbiotic relationship with the plant Euphorbia neriifolia and were likely involved in secondary metabolite production. The extracted bacteria tested positive for various secondary metabolites. **Conclusions:** The study concluded that the endophytic bacteria present in Euphorbia neriifolia have a symbiotic relationship and the ability to produce a range of beneficial secondary metabolites. This offers unique opportunities for medical and scientific advancements.

PHCG304

FORMULATION AND EVALUATION OF IMMUNITY-BOOSTING FAST-DISSOLVING ORAL FILMS BY USING *SYZYGIUM CUMINI L* PULP EXTRACT.

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Abstract:

Objectives: This study aimed to formulate and evaluate of oral films. Evaluate formulations for physicochemical properties. **Methods:** The extraction of *Syzygium cumini* pulp was carried out using the freeze-dry method. Initially, the pulp was processed to extract the juice using an extruder. This juice was then subjected to freeze-drying to preserve its beneficial components. The next step involved the formulation of fast-disintegrating oral films, which were designed to deliver the active ingredients efficiently. These films were prepared using the solvent extraction method, following a three-square factorial design to optimize the formulation parameters. In detail, the *Syzygium cumini* pulp was first cleaned and prepared for the extraction process. By employing the freeze-dry method, moisture was removed from the pulp while maintaining its nutritional and medicinal properties. This method ensures the preservation of sensitive compounds that might degrade under heat or prolonged exposure to air. After freeze-drying, the pulp was processed using an extruder to separate the juice. The extracted juice, rich in bioactive compounds, was then freeze-dried to obtain a stable powder form. This freeze-dried extract was incorporated into the oral films. The formulation of these fast-disintegrating oral films was meticulously carried out using the solvent extraction method. The use of a three-square factorial design allowed for the systematic variation of formulation parameters, ensuring the optimal combination for maximum efficacy and rapid disintegration. The final step involved adding the *Syzygium cumini* extract to the oral film matrix. These films were then subjected to a series of evaluations to check their physicochemical

parameters. Parameters such as disintegration time, uniformity, tensile strength, and bioactive compound release profiles were assessed to ensure the films met the desired standards. The integration of *Syzygium cumini* extract into fast-disintegrating oral films represents a novel approach in delivering the beneficial properties of this plant efficiently and effectively. **Results:** *Syzygium cumini* pulp extract, which exhibited a maximum absorbance at 400 nm when examined using UV spectrophotometry. The resulting extract was brown, non-sticky, had an aromatic odor, a pH of 7.83, and a yield of 2%. It contained various compounds including alkaloids, proteins, saponins, steroids, tannins, phenolic compounds, carbohydrates, and starch. Oral films were created by drying a casting solution at 60°C, producing films measuring 3 cm by 2 cm, each containing 505.108 mg of the extract. Nine different film formulations, each with varying flavors and sweeteners, were tested. These films exhibited slight variations in thickness (ranging from 0.16±0.05 mm to 0.23±0.03 mm) and had a surface pH close to the normal oral pH. The weight and extract content of the films were consistent across formulations, and the films demonstrated good flexibility and handling suitability based on folding endurance and tensile strength tests. The extract release rates varied slightly, with formulations F3, F4, and F7 showing higher release rates. Stability tests conducted over 60 days indicated no significant physical or chemical changes. **Conclusions:** Formulation F4 was identified as the best candidate for further research, and *in vivo* studies are needed to confirm its potential as an immunity booster.

PHCG305
ARTHRITIS RELIEF COOKIES: TAMARIND AND FENUGREEK INFUSED COOKIES, ENHANCING KNEE JOINT HEALTH AND ALLEVIATING ARTHRITIS PAIN

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Abstract:

Objectives: The aim of this study was to formulation and evaluation of cookies Evaluate formulations for physicochemical properties. **Methods:** Tamarind and fenugreek seed extracts were prepared through maceration and subsequently incorporated into cookie formulations. These cookies were developed using a blend of wheat flour and oats, employing a factorial design involving 3 cubes to explore 27 distinct formulations aimed at sensory evaluation, particularly taste perception. Alongside taste assessment, the cookies underwent various evaluation tests, including measurement of hardness, moisture content, water absorption rate, and initial qualitative phytochemical analysis of the incorporated extracts. The process involved first extracting the active components from tamarind and fenugreek seeds through maceration, ensuring the resultant extracts were suitably concentrated for use in the cookie formulations. These extracts were then carefully integrated into the cookie recipes, which primarily comprised wheat flour and oats. The factorial design methodology enabled the creation of 27 different cookie formulations, each varying in the proportion and combination of ingredients, particularly the seed extracts, to assess their impact on taste perception through sensory evaluation. Furthermore, the cookies were subjected to rigorous testing to gauge their physical properties and chemical composition. Hardness testing provided insights into the texture and structural integrity of the cookies, while moisture content and water absorption rate measurements evaluated their response to environmental conditions and moisture uptake. Additionally, preliminary qualitative phytochemical analysis of the extracts within the cookies confirmed the presence of key chemical constituents, laying the foundation for further detailed analysis of their potential

health benefits and sensory attributes. This comprehensive approach aimed to optimize both the sensory appeal and nutritional profile of the cookies, leveraging the natural properties of tamarind and fenugreek seed extracts to enhance product quality and consumer satisfaction. **Results:** The extract derived from seeds exhibited a brown color and a non-sticky texture, with a pH measurement of 7.89 and a distinct aromatic scent. The yield of the extract was determined to be 5% for tamarind seeds and 6.8% for fenugreek seeds. Phytochemical analysis revealed the presence of alkaloids, proteins, saponins, steroids, tannins, phenolic compounds, carbohydrates, and starch, all confirmed through positive results in respective phytochemical tests. In addition to chemical composition, the cookie's hardness was quantified at 2 SCU (strong cobb Units). Moisture absorption was oobtained at 0.1256 + 2859, indicating the moisture content absorbed by the cookie during testing. Furthermore, the water absorption rate was recorded at 10 ml within 5 seconds, reflecting how quickly the cookie absorbed water under the specified conditions.These findings underscore the comprehensive characterization of the seed extract's chemical properties and the physical attributes of the cookie. The identified phytochemical constituents suggest potential applications in various fields, given their known biological activities. The measured parameters for the cookie, such as hardness and water absorption rates, provide insights into its texture and behavior under moisture conditions, pertinent for product development and quality assessment in food science and related industries. **Conclusions:** Formulation F25 was identified as the best candidate for further research, and *in vivo* studies are needed to confirm its potential to Alleviating Arthritis Pain.

PHCG306

IN SILICO AND *IN VITRO* INSIGHTS INTO *CAREYA ARBOREA* BIOACTIVE COMPOUNDS FOR BURN WOUND HEALING

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Abstract:

Objectives: Burn wounds are complex injuries requiring effective therapeutic interventions for optimal healing. *Careya arborea,* a medicinal plant known for its therapeutic properties, has shown potential in wound healing. This study investigates the burn wound healing potential of *Careya arborea* extract through a network pharmacology approach, molecular docking and *in-vitro* studies. **Methods:** The pharmacognostic evaluation was Powder microscopy, ash value and phytochemical evaluation. All components of Careya arborea were retrieved from the pharmacology database of the TCM system. Uni Prot and Gene Cards databases retrieved the genes corresponding to the targets. The compound–target–pathway network was constructed using Cytoscape, and the target protein–protein interaction network was built using the STRING database. The main active compounds of Careya arborea were docked with EGFR and TNF-α. Based on in-silico studies, as *in vitro* study was carried out on EGFR and TNF- alpha. **Results:** Microscopical study reveals that presence of co-oxalate crystal, cork , cortex, stone cell, lignified fibers, fragment of cork epidermis .The compound–target network mainly contained 12 compounds and 272 corresponding targets. Key targets included EGFR, TNF, MAPK8, GH1, ITGA6, CXCL10, PLCG2, IL4R, ERBB2, and CCL5. There were 522 GO items in GO enrichment analysis ($p< 0.05$) and 168 signalling pathways ($p <0.05$) in KEGG, mainly including chemokine signalling pathway, TNF signalling pathway, PI3K–Akt signalling pathway, focal adhesion, cytokine–cytokine receptor interaction, and estrogen signalling pathway. The molecular docking results showed that AE7 and AE8 were the top two compounds of Careya arborea, which had high affinity with PDB IDs 1M17 and 2AZ5. AE7 and AE8 showed docking scores of -8.529 and -8.415, respectively, for EGFR.

Additionally, AE7 and AE8 showed docking scores of -7.838 and -6.115, respectively, for TNF-α. In comparison, standard silver sulfadiazine showed binding scores of -3.479 and -5.195 for EGFR and TNF-α, respectively. The IC50 value of TNF-alpha is 47.59, compared to the standard drug, which has been an IC50 value of 38.26. **Conclusion:** This study provides a comprehensive analysis of the therapeutic potential of *Careya arborea* extract for burn wound healing, highlighting its bioactive compounds and their molecular mechanisms of action and *in-vitro* studies.

PHCG307
ANTIBACTERIAL ACTIVITY OF PREPARED HOMOEOPATHIC MEDICATED *THUJA OCCIDENTALIS* MUSTARD HAIR OIL

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Abstract:

Objectives: The aim of this study was to prepare Homoeopathic Medicated Hair oil with *Thuja occidentalis* and antibacterial activity against gram positive and gram negative bacteria. **Methods:** *Thuja occidentalis* mustard hair oil was prepared by mixing the Thuja occidentalis Q as 1 part in 9 parts of Mustard oil as (1:9), *Thuja occidentalis* Q was procured from Different Homoeopathic Pharmaceutical company. They were prepared by indirect heating so as to obtain a miscible solvent which can be further used for the activity. The antibacterial activity of the prepared preparation was determined by agar well diffusion method. The antibacterial assay was carried out by standard procedures which reference Indian Pharmacopoeia. **Results:** The result was observed that Homoeopathic Prepared *Thuja occidentalis* Mustard oil, in which *Thuja occidentalis* Q was procured from X Homoeopathic Pharmaceutical company shows inhibition zone in *Staphylococcus aureus* at 50 microlitre is 2.16±0.15 cm, at 100 microlitre is 2.36±0.05, Prepared *Thuja occidentalis* Mustard oil in which *Thuja occidentalis* Q was procured from Y Homoeopathic Pharmaceutical company shows inhibition zone in *Staphylococcus aureus* at 50 microlitre is No results, at 100 microlitre is 3.3±0.1, Prepared *Thuja occidentalis* Mustard oil in which *Thuja occidentalis* Q were procure from Z Homoeopathic Pharmaceutical company shows inhibition zone in Staphylococcus aureus at 50 microlitre is no results, at 100 microlitre is no results. Whereas in *E. coli* Homoeopathic Prepared *Thuja occidentalis* Mustard oil, in which *Thuja occidentalis* Q were procure from X Homoeopathic Pharmaceutical company shows inhibition zone in at 50 microlitre is No results, at 100 microlitre is 2.46±0.05, Prepared *Thuja occidentalis* Mustard oil in which *Thuja occidentalis* Q were procure from Y Homoeopathic Pharmaceutical company shows inhibition zone in *Staphylococcus aureus* at 50 microlitre is 2.86±0.11, at 100 microlitre is 3.06±0.11, Prepared *Thuja occidentalis* Mustard oil in which *Thuja occidentalis* Q were procure from Z Homoeopathic Pharmaceutical company shows inhibition zone in Staphylococcus aureus at 50 microlitre is no results, at 100 microlitre is no results. **Conclusions:** The result was observed that Homoeopathic *Thuja occidentalis* Mustard oil prepared by procured *Thuja occidentalis* Q From X & Y Homoeopathic Pharmaceutical company showed inhibition in growth of *Staphylococcus aureus* and *E. coli*.

PHCG308

MANGIFERA INDICA AND MANGIFERIN AS ANTIOXIDANTS, ANTICANCER AND CANCER PREVENTIVE AGENTS.

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Abstract:

Objective: To explore the anti-cancer potential of extracts from *Mangifera indica* (mango) and mangiferin (Mgf), its key bioactive component. **Method:** Mangiferin extraction techniques have evolved from traditional, inefficient methods to modern, eco-friendly approaches.UTTP, MTPP, and supercritical CO2 extraction offer faster extraction times, higher yields, and reduced environmental impact, paving the way for sustainable and large-scale production of mangiferin for pharmaceutical applications. **Result:** *Mangifera indica* extract, a natural source of potent bioactive compounds, exhibits significant anti-cancer activity, as demonstrated through both conventional and cutting-edge extraction methods. **Conclusion:** Mangiferin, a potent mango compound, shows promise as a cancer conqueror.It can inhibit cancer growth, promote cell death, and protect DNA. While promising, more research is needed to understand its full potential and overcome challenges for clinical use. Its ability to target the NF-κB pathway is particularly exciting.

PHCG309

EVALUATION OF ANTI-INFLAMMATORY AND ANTI-BACTERIAL ACTIVITY BY USING FOUR HERBAL MEDICINAL PLANT

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Abstract:

Objective: The aim of this study was to evaluate of anti-inflammatory activity and anti bacterial activity by using four Herbal medicinal plant with different parameters**. Method:** Leaves of Aloe vera, oregano, *Zingiber officinalis*, turmeric,were collected from Jabalpur area, Madhya Pradesh. The individual plants were identified and authenticated by a Professor of state forest research institute Jabalpur. The four medicinal plants were shade dried and powdered. The selected parts of medicinal plants were extracted in 80% ethanol by hot extraction in Soxhlet apparatus till colourless solvent was obtained. Extracts obtained was allowed to dry till constant weight was obtained. The % yield of extract of each plant part was Aloe vera 28.60%, oregano16.12%, and *Zingiber officinale* 12.60%, turmeric 14.95%. The plant mixture was made by combining each extract with 25 mg of methanol, dissolved in 10 milliliters of methanol, ((that is 100 mg /10ml) and then boiling the mixture. It was centrifuged for 10 minutes at 2500 rpm. The resulting supernatant became known as Herbal Preparation (HP-4) and applied in the experiment. **Results:** Protein Denaturation Inflammation is primarily brought on by denaturing of proteins. The potential of the extract to suppress protein denaturation was examined as part of the inquiry into the mechanism of the anti-inflammatory effect. Certain extracts worked well to prevent heat-induced albumin denaturation. Aspirin was used as a standard anti-inflammation drug. DPPH scavenging experiment used in this investigation showed that plants might be active. This suggests that plant extracts, particularly at greater concentrations, may be helpful for addressing pathological damage caused by radicals. To analysis of anti bacterial activity by measure Zones of inhibition. The inhibition zones measured by Escherichia coli, Enter ococcus faecalis, and Staphylococcus aureus. This was nearly equal to the control's sodium hypochlorite. **Conclusion:** In conclusion, ethanol and aqueous extract of Leaves

of Aloe vera, oregano, *Zingiber officinalis*, turmeric showed various phytochemical assay and significant reduce inflammation and shows anti bacterial effect by the study of different parameter. In the present study, it is found that the Leaves of Aloe vera, oregano, *Zingiber officinalis*, turmeric extract of leaves contains a substantial amount of phenolics and flavonoids, and it is the presence of phenolics present in these extracts that are responsible for their marked antioxidant activity

PHCG310

DESIGN OF EXPERT BASED EXTRACTION AND GC/MS-MS ANALYSIS OF METABOLITES IN *AILANTHUS EXCELSA* BARK EXTRACT: EVIDENCED BY NETWORK PHARMACOLOGY, MOLECULAR DOCKING, DYNAMIC SIMULATION AND *IN-VITRO* STUDIES FOR OBESITY

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Abstract:

Objectives: This study aimed to elucidate the efficacy of different modern and conventional methods for extracting *Ailanthus excelsa* by Qbd approach and in modulating the enzymatic activity of pancreatic lipase, HMG-CoA reductase, α-glucosidase, and α-amylase. **Materials and Methods**: Extraction conditions (extraction time, solvent-to-drug ratio, and extraction temperature) were optimized using Quality by Design (QbD), specifically the Box-Behnken Design (BBD). Dependent variables included TPC (mg GAE/g), TFC (mg QUE/g) and pancreatic lipase inhibition. Fingerprinting analysis of *Ailanthus excelsa* extracts from all batches was conducted using HPTLC. Furthermore, the anti-obesity and antidiabetic potential of hydroalcoholic extracts of *Ailanthus excelsa* were assessed through the enzymatic inhibition activity of pancreatic lipase, HMG-CoA reductase, α-glucosidase and α-amylase. **Results:** The ultrasound-assisted extraction method yielded the highest extract and was found to be the most effective. Using BBD, the optimal conditions for Ailanthus excelsa extraction were determined to be an extraction temperature of 60°C, a solvent-to-drug ratio of 20 mL/g, and an extraction time of 30 minutes. Under these conditions, the yield of *Ailanthus excelsa* was 6.44±0.42%. Our results, based on the combined findings of network pharmacology and molecular modeling experiments, revealed that the compounds AE4 exhibited potential binding patterns against the active sites of antidiabetic and anti-obesity enzyme targets compared to reference molecules, modulating HMOX1, PIK3CA, STAT3, NOS3, INSR and other targets. This was further justified by molecular docking and MD studies. Additionally, the hydroalcoholic extract of *Ailanthus excelsa* showed significant inhibition of pancreatic lipase (IC50: 98.25±2.37 µg/mL) and HMG-CoA reductase (IC50: 87.62±4.92 µg/mL). The extract also effectively inhibited both α-glucosidase (IC50: 67.08±3.28 µg/mL) and α-amylase (IC50: 58.93±2.29 µg/mL). Notably, GC-MS/MS derived metabolites (AE1-4) exhibited superior binding affinity towards all four enzymes compared to reference molecules. HPTLC fingerprinting analysis also showed that the optimized batch had more effective bands. **Conclusion:** The ultrasound-assisted extraction method was superior among maceration methods, significantly influenced by all three variables. This study demonstrates the effectiveness of QbD in optimizing the extraction of potent phytoconstituents, making the process more efficient than traditional methods. *In vitro* and molecular modeling confirm the potent inhibitory activity of *Ailanthus excelsa* and its GC-MS/MS compounds, providing crucial insights into its antidiabetic and anti-obesity mechanisms.

PHCG311

ESTIMATION OF ALCOHOL CONTENT, GC-MS STUDY AND *IN-SILICO* ADMET PREDICTION OF HOMEMADE LIQUOR CONSUMED BY BONDA TRIBES OF ODISHA

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Abstract

Objective: The study explores the socioeconomic significance and health impacts of homemade liquor consumed by the Bonda tribes in Odisha, India. The research aims to estimate the alcohol content of these liquors and analyze their chemical constituents, particularly focusing on volatile compounds. Additionally, the study uses in-silico ADMET predictions to assess the toxicity and other health-related effects of these compounds. **Methodology:** The research involved collecting homemade liquor samples from the Bonda tribes, claimed by the producers as "good quality" spirits. The alcohol content in these samples was determined using pycnometry, following the United States Pharmacopoeia guidelines. To identify volatile constituents other than ethanol, 200 mL of the liquor was diluted and extracted with chloroform. The extracted components were then analyzed using Gas Chromatography-Mass Spectrometry (GC-MS), employing a capillary column with a 5% Diphenyl-95% Dimethyl Polysiloxane stationary phase. For further evaluation, selected compounds identified from the GC-MS analysis were subjected to in-silico ADMET predictions, using tools like ADMET Lab 2.0 and SwissADME, to predict their pharmacokinetic and toxicity properties. **Results:** The pycnometry method revealed varying alcohol content across different samples, with the highest being 7.3% in a sample prepared from mango. GC-MS analysis identified several volatile constituents, including some harmful compounds. The study found that these homemade liquors contain various organic compounds, some of which, like o-Xylene and n-Decane, were present in significant quantities. The in-silico ADMET predictions indicated that while most compounds did not show AMES toxicity or rat oral acute toxicity, some were predicted to have carcinogenic potential. Additionally, compounds with CYP inhibition, eye corrosion, eye irritation, and skin sensitization properties were identified, suggesting health risks for the consumers.**Conclusion:** The study concludes that while homemade liquors hold cultural and socioeconomic importance for the Bonda tribes, they pose significant health risks due to the presence of harmful chemical constituents. The findings underscore the need for public health interventions and further research to mitigate these risks and ensure the safety and well-being of the tribal population.

PHCG312

ISOLATION, CHARACTERIZATION OF POLYPHENOLIC COMPOUNDS AND ANTI-DIABETIC ACTIVITY OF ETHANOLIC EXTRACT OF *HIBISCUS SYRIACUS*

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Abstract:

Objectives: The purpose of this work was to identify Hibiscus syriacus polyphenolic compounds, characterize them, and determine whether the isolated compounds from ethanolic extracts had an anti-diabetic effect on mice on alloxan-induced diabetic mice model. **Methods:** In this investigation, two polyphenols (Compound 1 and Compound 2) were separated from the H. syriacus flower's ethanol extract. The separated substances were characterized using a variety of spectroscopic methods, including mass, infrared, and NMR. An essential class of natural products, polyphenols contain a range of biological

properties, including the ability to prevent diabetes. The study compared the mean blood glucose levels after two weeks of fasting in mice with normal blood sugar, diabetic mice receiving no treatment, and diabetic mice receiving treatment with the separated chemicals. The data was statistically analysed using Microsoft Excel. Statistically significant was defined as having a P-value of less than 0.05. **Results:** Two polyphenolic compounds, were isolated from the ethanolic extracts were investigated anti-diabetic effects. Given that neither Compounds exhibited a mean lethal dosage (LD50) of less than 300 mg/kg, it appears that under the observed conditions, they are not dangerous. Hibiscus syriacus Compound 1 reduced high blood glucose levels by 42.31 ± 1.34% (10 mg/kg) and 45.18 ± 1.27% (20 mg/kg), whereas Compound 2 reduced such levels by 43.26 ± 1.12% and 48.54 ± 1.21% (P < 0.0001). When Glibenclamide (10 mg/kg body weight) was administered as an antidiabetic, blood glucose levels were lowered by 50.10% (p < 0.05). **Conclusions:** The Compound 1 (20 mg/kg) showed the highest percentage reduction in blood glucose levels and the ability of Hibiscus syriacus extracts in reducing blood glucose levels due to the presence of Polyphenol.

PHCG313
ANTICANCER ACTIVITY OF RESVERATROL- LOADED MICRO-PARTICLES ON MCF-7 BREAST CANCER CELLS

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Abstract:

Objectives: The current research was performed to prepare and develop resveratrol encapsulated in biodegradable PLGA micro-particles using solvent evaporation method and study its cytotoxic activity on MCF-7 breast cancer cell line using MTT assay.

Methods: PLGAr micro-particles were prepared using solvent evaporation technique. Slowly drop-by-drop ethyl acetate was mixed with polyvinyl alcohol. After evaporation of solvent, formed particles were observed under microscope. The particles then centrifuged, freeze-dried at -80°C and lyophilized for 24hrs. Morphological characteristics of micro-particles were assessed using SEM. Loading capacity and entrapment efficiency was carried out using HPLC. Further the anticancer activity on MCF-7 breast cancer cell line was determined using MTT assay. **Results:** Microscopic and SEM assessed images revealed the micro-particles were spherical in shape with 5-10µm in size and high porosity. Drug loading capacity of micro-particles was 4.8%. *In vitro* anticancer activity resulted to an enhanced anticancer activity of PLGAr in comparison with free resveratrol on MCF-7 breast cancer cell line. PLGAr showed anti-proliferative effect and decrease in cell viability of MCF-7 breast cancer cell line. **Conclusion:** Resveratrol a phytochemical of cranberry, mulberry and peanuts has drawn attention of researchers due to its anticancer, anti-inflammatory, chemo protective and decreased risk of coronary heart disease. Yet, resveratrol has short half time, poor bioavailability that restricts its use in therapeutic, pharmaceutics and food industries. Therefore, addressing this problem resveratrol was encapsulated in PLGA micro-particles as a drug carrier to the target site. The resulted PLGAr micro-particles depicted good cytotoxic effect on MCF-7 breast cancer cell line.

PHCG314

LCMS PROFILING OF LEAVES EXTRACT OF *CALYCOPTERIS FLORIBUNDA* (ROXB.) LAM. EX POIR.

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Abstract:

Objective: In the current study, our goal was to evaluate the phyto composites and analyze the Liquid chromatography-mass spectrometry (LCMS) of potent leaves extract having various pharmacological activities. **Methods:** Phytochemical screening of the leaves extracts was performed by following standard protocols. Antioxidant property of the extracts was also evaluated by DPPH method. LC-MS methods were used to perform the phytochemical study of both methanol and aqueous extract produced from *C. floribunda* leaves. **Results:** The methanol extract of *C. floribunda* showed effective DPPH radical scavenging activity as compared to aqueous extract. The IC50 Values of methanol extract of *C. floribunda* and Rutin (standard) were found to be 490µg/ml and 450µg/ml respectively. The lesser the IC50 Value signifies the elevated free radical scavenging ability. **Conclusion:** The LCMS analysis revealed the identification of more than 50 metabolic compounds like Valine, 1, 5-Dihydroxy-2- methoxy-6-methylanthraquinone, Penicillic acid, 4-Hydroxy-5-phenyltetrahydro-1,3-oxazin-2-one, 5'-O-beta-DGlucosylpyridoxine, 4-Aminocatechol, Ursiniolide A, Isomorellic acid, Quercetin 3,7-dirhamnoside, Xanthoxic acid, Lauric acid, 2-Octaprenyl-6-methoxy-1,4-benzoquinone, 12-nitro-9Z,12Zoctadecadienoic Acid, 3-oxo-tetradecanoic acid etc. Few major compounds are identified as potent antimicrobial, anti inflammatory agent and also as wound healer. The findings explore that this plant is having potent pharmacologically active constituents which need further exploration to get few promising therapeutic lead.

PHCG315

ANTIBACTERIAL EVALUATION OF *ANACARDIUM OCCIDENTALE* L. LEAF EXTRACTS

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Abstract:

Objectives: The present investigation aims to evaluate the antibacterial potential of petroleum ether and methanol extracts of *Anacardium occidentale* L. leaf by agar well diffusion method. **Methods:** The leaves were collected, shade dried and pulverized to obtain a coarse powder. The powdered leaves were successively extracted with pet ether and methanol. The extracts were subjected to preliminary phytochemical screening to identify various phytoconstituents. The antibacterial screening of the extracts was carried out against selected strains of microorganisms by determining the zone of inhibition using agar well diffusion method. **Results:** The phytochemical screening shows the presence of alkaloids, glycosides, flavonoids, triterpenes, carbohydrates, proteins, amino acids, etc. All the extracts showed inhibitory activity against the tested bacterial strains. Among the two extracts, pet ether extract exhibited better efficacy against bacterial pathogen. **Conclusions:** From the present study, it can be concluded that *Anacardium occidentale* is endowed with promising antimicrobial activity against bacterial strains causing gastrointestinal tract infections. The petroleum ether extracts of this plant showed better

antimicrobial activity than methanol extract. The inhibitory effect of the leaf extracts of *Anacardium occidentale* against pathogenic bacteria used in the present study indicates that this plant can be a potential candidate for drug development for the treatment of gastrointestinal tract infections.

PHCG316

ETHNOBOTANICAL EXPLORATION OF TRADITIONAL PLANTS USED AS HEPATOPROTECTIVE, NEUROPROTECTIVE, AND IMMUNOMODULATORY ACTIVITIES IN PATIENTS WITH MULTI-DRUG RESISTANCE TUBERCULOSIS AT BALANGIR, ODISHA, INDIA

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Abstract:

Objective: Ethnobotanical studies conducted in Balangir district, Odisha, highlight the region's rich biodiversity and the deep-rooted traditional medicinal practices employed to combat tuberculosis, including its multidrug-resistant forms. These studies emphasize the crucial role of indigenous knowledge, passed down through generations, in utilizing medicinal plants for their potent immunomodulatory, neuroprotective, and hepatoprotective properties against multi-drug resistance in tuberculosis. **Method:** The study involved surveying 90 participants from different rural communities in Balangir district. They acquired Traditional knowledge through interviews and formal gatherings by employing semi-structured questionnaires. Data related to different plants containing immunomodulatory, neuroprotective, and hepatoprotective activities were obtained in addition to their part used, common botanical description, route of administration, dosage form, etc. Quantitative parameters such as information participants, informant response, relative frequency citation, and cultural index were employed to determine the plant's usefulness in that particular location. **Results:** with a demographic breakdown showing 71.1% men and 28.9% women. Participants represented a broad spectrum of ages, ethnicities, and occupations, with the highest participation observed in Kushang village. Notably, the Harijan community was the most represented, accounting for 29.0% of the respondents, highlighting the community's active engagement in ethnomedicinal practices. The research documented 35 medicinal plants, categorized into herbs (13 species), trees (13 species), and shrubs (9 species), with the entire plant being the most frequently used component. Medicinal preparations were primarily in the form of powders, reflecting local practices. Among the plants studied, *Bombax ceiba* (RFC 0.95), *Solanum xanthocarpum* (RFC 0.97), *Withania Somnifera* (CI 0.93), and *Ocimum tenuiflorum* (CI 0.93) emerged as key species with high therapeutic value and frequent use. Other significant species included *Scindapsus officinalis* (CI 0.91) and *Martynia annua* (CI 0.90), which are recognized for their considerable cultural and medicinal importance**.** **Conclusion:** This study highlights the therapeutic potential of these plants and underscores the importance of preserving and validating traditional medicinal practices for future generations. This research underscores the potential of these plants to serve as alternative or adjunct therapies for TB, particularly in the face of rising drug resistance. Additionally, the study contributes to biodiversity conservation and promotes sustainable development by advocating for preserving this invaluable traditional knowledge.

PHCG317

PLUMERIA PUDICA ETHANOLIC LEAF EXTRACTS: PHYTOCHEMICAL SCREENING, GCMS PROFILE, AND *IN SILICO* PROPERTIES OF BIOACTIVE COMPOUNDS

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Abstract

Objective: Ethnopharmacological studies support the usage of the plant Plumeria pudica, family Apocyanaceae, commonly known as Naga Champa in India, whose leaves are utilized in herbal medicine to treat inflammatory disorders.The present study aims to determine the bioactive component of the *Plumeria pudica* plant by phytochemical screening and GC-MS analysis. **Method:** Plumeria pudica leaf extracts were subjected to phytochemical examination and gas chromatography-mass spectrometry (GCMS) analysis. The phytochemical research of Plumeria pudica revealed the presence of terpenes and steroids, alkaloids, anthraquinones, flavonoids, saponins, tannins, and phenolic acids, all of which are known to have antioxidant and anti-diabetic activities.Moreover, 111 compounds were identified by GCMS analysis, including 1-METHYL-1-ETHYL-2-[2-(METHOXYCARBONYL)PROP-2-YL]HYDRAZINE, OXIME, N-.ALPHA, 4-NITRO, and 2-PROPANONE. Prominent compounds include -ACETYLGLYCINAMIDE, 1, 1, 1, 3, 5, 5, 5-HEPTAMETHYLTRISILOXANE, CYCLOTRISILOXANE, HEXAMETHYL, HEXESTROL, and 2TMS DERIVATIVE. Hexitol, 4-NITRO, OXIME, and 1H-BENZOTRIAZOLE all have anti-inflammatory and anticancer properties. **Results:** The outcomes demonstrated the potential utility of *Plumeria pudica* ethanolic extract as a source of phytoconstituents with encouraging antioxidant, antibacterial, and antidiabetic properties. **Conclusions:** Some noteworthy bioactive chemicals with potential health effects were found in *Plumeria pudica* leaves.

PHCG318

ISOLATION OF COMPOUNDS CONTAINING PHENYL PROPANOID GLYCOSIDE, AN IRIDOID AND AN ALKALOID FROM AN INVASIVE PLANT *TECOMA STANS* (L).

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Abstract:

Objectives: Major objectives of this study involve-extraction of the selected plant *Tecoma stans* (L), then Isolation of 3 active constituent(s) from those extracts, one constituent each from leaves, stem and root of the plant followed by identification of the structure of the isolated active compounds and finally, to establish the pharmacological activity of the isolated compounds from plant *Tecoma stans* (L), viz., treatment of cardiovascular diseases. **Methodology:** Methods involved in the extraction of the plant parts was through- solvent extraction, distillation methods and percolation methods, further, isolation of the constituents of plant extracts was done using column chromatography, HPLC, and HPTLC techniques. Characterization of the isolated compounds was done using: Solubility study, Melting point, Partition coefficient, Ultraviolet spectroscopy, Infrared spectroscopy, Nuclear Magnetic Resonance spectroscopy, Mass spectroscopy, X-Ray Diffraction, Differential Scanning Calorimeter studies. **Result:** The spectroscopic techniques IR and proton NMR confirms the structure and thus presence of alkaloid 'Tecomine' in the compound isolated from the diethyl ether extract of *T. stans* leaves, presence of a phenylpropanoid glycoside 'Crenatoside' in the compound isolated from plant's stem bark and presence of an iridoid 'plantarenaloside' from compound isolated from root of the plant. Findings of this study are equivalent with the literature. **Conclusion:**The alkaloid was isolated from the

ethanolic extract of *T. stans* leaves; glycoside was isolated from methanolic fraction of the stem bark of the plant. The iridoidwas isolated from the benzene fraction of the plant's root extract. The isolated compounds can be studied further for their *in vitro* and *in vivo* activities on cardiovascular system, as glycoside containing compounds and alkaloidal drugs are well known for their effects on cardiovascular system. The isolated compounds have potential to treat cardiovascular diseases.

PHCG319

HOTSPOT RESIDUE-BASED PHARMACOPHORE-ASSISTED VIRTUAL SCREENING, MOLECULAR DOCKING, AND TANIMOTO SIMILARITY SEARCH TO IDENTIFY SMALL MOLECULE NATURAL PRODUCT DUAL INHIBITORS OF RANKL AND PAD4 FOR RHEUMATOID ARTHRITIS.

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[2]School of Agriculture & BIO-Engineering, CUTM, Village Alluri Nagar, R.Sitapur, Odisha

Abstract:

Objective: As per many reports, Rheumatoid arthritis (RA) has affected 0.46% of the worldwide. Several researchers have emphasized the interaction of the receptor activator of nuclear factor (NF)-kB ligand (RANKL) with its receptor RANK is the most essential for the processes of osteoclast differentiation and activation. Moreover, the expression of RANKL is detected specifically in the synovium of patients with RA but not in the synovium of patients with other bone diseases. Protein-protein interactions (PPIs) are essential for biological function and have emerged as an important class of therapeutic targets. Some reports have also demonstrated the identification of small molecular PPI inhibitors of RANK-RANKL interaction by *in-silico* and biological approaches. So in the present investigation, it has been tried to identify some small molecule natural product inhibitors of both RANKL and PAD4 as potential candidate for inhibition of Autoimmune responses as well as Rheumatoid Arthritis. **Methods**: In the present investigation Pocketquerry, a web-based tool, is used to generate several hot-spot residue-based pharmacophore models of RANK-RANKL protein-protein complex (PDB ID: 5BNQ), and the pharmacophore models were exported to Zinc-Pharmer, another web-based application for virtual screening of the Zinc-database for screening Zinc Natural product database. The molecules identified from Zinc-database were docked with the PAD4 enzyme (PDB ID: 3B1U), responsible for initiating autoimmune responses. The compounds having the highest dock score were further used to screen the Indian Medicinal Plant database through Tanimoto Similarity search. Compounds screened through similarity search were arranged in the decreasing order of Tanimoto coefficient. **Results**: Some of the key compounds screened through the similarity search of IMPPAT database in the decreasing order of Tanimoto coefficient are, Dihydrocapsaicin, Nordihydro-capsaicin, (8)-Gingerdione, Homodihydrocapsaicin, etc. **Conclusion**: Despite the enormous research done in this area and the availability of some recently developed FDA-approved drugs in the market, RA has remained an unsolved problem to society and is attracting many researchers to continue exploring for new possibilities. In our study, we have tried to identify some small molecule natural product inhibitors, that are readily available to common people, stable during storage, and possibly of lesser side-effects.

PHCG320

EXPLORING HERBAL NANO FORMULATIONS FOR TOPICAL DRUG DELIVERY: PROSPECTIVE FOR MULTIPLE SKIN DISORDERS

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Abstract:

Objective: Dermatological conditions exert their influence across the globe, encompassing a broad spectrum of maladies ranging from commonplace afflictions such as acne and eczema to more formidable challenges like psoriasis and cutaneous malignancies. The realm of topical drug delivery stands as a pivotal modality in the domain of dermatology, proffering precise and minimally invasive therapeutic avenues. In recent times, the fusion of herbal curatives with the marvels of nanotechnology has surfaced as a pioneering strategy. **Methodology:**This work was conducted by using the various search domains and collected the valuable data. This comprehensive review undertakes an exploration of the amalgamation of herbal constituents within nano-sized drug carriers, catering to the domain of topical applications, with a particular emphasis on their potential in addressing a myriad of dermatological conditions. The outset of this review is dedicated to the elucidation of the meticulous criteria governing the selection of herbal components and the underpinning rationale behind their integration into nanoscale formulations, thereby spotlighting the rich heritage of botanical remedies intrinsic to traditional medical practices. Subsequently, a meticulous scrutiny of nanotechnology's role in the domain of cutaneous drug conveyance ensues, elucidating diverse nanoparticle typologies and their respective mechanisms of therapeutic action. The crux of this review centers upon the manifold approaches of herbal nanoformulations, encompassing lipid-based matrices, polymer-driven carriers, liposomal constructs, micellar entities, nanoemulsions, solid lipid nanoparticles, dendritic platforms, and nanogels. For each of these approaches, illustrative case studies are presented, thereby affording perspicacity into their bespoke utility in the management of diverse dermatological conditions. **Results:**In the ensuing discourse, the potential of herbal nanoformulations in the amelioration of acne, mitigation of psoriatic manifestations, alleviation of eczematous distress, acceleration of wound healing, attenuation of scar formation, and prophylaxis against cutaneous neoplasia is subjected to meticulous examination. The purview extends to the discerning analysis of clinical trials and the practice informed by empirical evidence, thereby shedding illuminative insight onto the safety and efficacy profiles of these innovative formulations. Concomitantly, the challenges entailing regulatory adherence, standardization, and the enforcement of rigorous quality control are thoughtfully addressed, with a subsequent contemplation of the trajectories shaping the future of this burgeoning discipline. **Conclusion:** In summation, this review underscores the intrinsic value of interdisciplinary synergism and underscores the compelling imperative for relentless research efforts that propel herbal nanoformulations to the vanguard of mainstream dermatological therapeutics. In doing so, a new epoch in the management of cutaneous disorders is heralded, one that promises safe, efficacious, and patient-centric interventions, thus ushering in a transformative era in the domain of dermatological care.

PHCG321

EXTRACTION, PLAN AND ASSESSMENT OF *ARGEMONE MEXICANA* LINN LEAVES AS ANTIMICROBIAL CREAM AND TREATMENT

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Abstract:

Objectives: The target of this study was to the assessment of antibacterial as well as antifungal action were done against standard bacterial strains (*Staphylococcus aureus* and *Pseudomonas euroginosa*) and standard parasitic strains (*Aspergillus flavus* and *Candida albicans*) individually. Ciprofloxacin is utilized as antibacterial positive control and fluconazole as antifungal positive control. **Methods:** 250 g of Argemone Mexicana Linn leaves were taken into a 750 ml Conical flask and it was doused with the dissolvable by maceration extraction strategy. The Highest point of the cone-shaped carafe was covered with aluminum foil paper for additional counteraction of vanishing of dissolvable and unstable constituents from the blend. It was saved for seven days with shaking sporadically and blended with a perfect glass bar to remove the most extreme measures of phytoconstituents from the leave's powder. Then the concentrates with various solvents vanished utilizing a rotational evaporator and changed to a semisolid, at last, the freeze drier was utilized to finish drying and the semisolid concentrate to strong. **Results:** The formed Argemone Mexicana cream uncovered great security, including simple to wash, non-oily with great stable spreadability, and smooth surface with no creaming, blend happened through investigation time of sped up solidness study. **Conclusions:** *Argemone mexicana* belongs to Papaveraceae family, it has antibacterial and antifungal exercises against numerous types of these microorganisms. Various groupings of *Argemone mexicana* separates (methanolic and ethanolic) were ready to quantify the antimicrobial action against certain microorganisms and organisms.

PHCG322

FORMULATION DEVELOPMENT AND PHARMACOLOGICAL EVALUATION OF POLYHERBAL FORMULATION FOR ANEMIA

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Abstract

Objectives: The objective is to develop, analyse, and evaluate a polyherbal formulation (PHF) through *in-vitro* and *in-vivo* pharmacological screening models for the treatment of anemia. **Methods:** The PHF was developed by combining ten indigenous herbs like *Trigonella foenum graecum*, *Emblica officinalis*, *Pterocarpus marsupium* , *Withania somnifera*, *Asparagus racemosus*, *Zingiber officinale* , *Rubia cordifolia*, *Boerhavia diffusa* and *Adhatoda vasica*. The powdered crude drugs were pulverized and extracted in methanol. This extract was further processed into a PHF. Qualitative and Quantitative phytochemical evaluation was carried out for the preliminary phytochemical screening, Thin Layer Chromatography (TLC), High-Performance Thin Layer Chromatography (HPTLC), Total Phenol Content (TPC), and Iron estimation by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES). The antioxidant capacity was assessed using DPPH and FRAP radical scavenging assays. Finally, the PHF was evaluated for its efficacy in treating anemia by animal model - Phenylhydrazine-

induced hemolytic anemia in Sprague Dawley rats. **Results:** The PHF was analyzed for phytochemicals, confirming the presence of Flavonoids, Alkaloids, Tannins, and Saponins. These phytochemicals were further confirmed using Thin Layer Chromatography (TLC) and High-Performance Thin-Layer Chromatography (HPTLC) analysis, which quantified that 0.25g of PHF contains 0.18% Gallic Acid and 0.86% Ellagic Acid. Employing Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) revealed that the Iron content of PHF was 98.47 parts per million (ppm). In quantitative analysis, the phenol content of PHF was calculated as 73.97 milligrams of Gallic Acid Equivalent (GAE) per gram of extract. The IC_{50} values of PHF for the DPPH assay and the FRAP assay were estimated to be 14.29 µg/ml and 58.57 µg/ml, respectively, indicating its antioxidant activity. Anemia was induced with phenylhydrazine (60mg/kg), followed by the administration of PHF at a dosage of 100 mg/kg, twice daily, for 15 days. This treatment resulted in a notable increase in blood parameters such as Red Blood Cells, Hemoglobin, and Hematocrit, as well as improvements in pathological changes in the liver, spleen, and bone marrow. **Conclusion:** The research findings show that the PHF is effective in treating anemia due to the combined action and antioxidant properties of the raw drugs in the PHF. These attributes help counteract phenylhydrazine-induced hemolytic anemia in a rat model. As a result, the PHF may have the potential to treat both hemolytic anemia and iron deficiency anemia because of its iron content.

PHCG323
ANALGESIC, ANTI-INFLAMMATORY AND ANTIPYRETIC PROPERTIES OF *CHLOROPHYTUM BORIVILIANUM* ROOTS

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Abstract:

Objective: The objective of the study was to evaluate the analgesic, anti-inflammatory and antipyreticeffect of the ethanol root extract of *Chlorophytum borivilianum*Linn. (Family: Asparagaceae). **Methods:** *Chlorophytum borivilianum*roots were shade dried, powdered, and extracted by Soxhlet extraction procedure usingethanol. In the present work ethanolic extract was administered orally in two doses of 200 mg/kg and 400 mg/kg body weight and analgesic, anti-inflammatory and antipyretic activities were evaluated. Analgesic activities were evaluated from acetic acid-induced writhing, tail immersion, and formalin-induced paw licking test. Carrageenan-induced rat paw edema model was selected for evaluating anti-inflammatory activity. The antipyretic activity was performed by using the yeast-induced hyperpyrexia method. **Results:** The assessment of the peripheral analgesic effect of the test drug exhibited a significant percentage inhibition in the writhing effect which were induced by acetic acid in mice. Similarly, ethanol extract of *Chlorophytum borivilianum*significantly increased the latency period in the tail immersion test and the formalin study showed that both the aphasic and tonic pain was blocked by the extract. Carrageenan-induced rat paw edema showed that the role of the extract was significant in this acute inflammation model at the tested dose level. Ethanol extract also significantly decreased the rectal temperature of the rats. **Conclusion:** An ethanolic root extract of *Chlorophytum borivilianum*possesses analgesic, anti-inflammatory and antipyreticactivity which may be mediated by the central and peripheral mechanisms.

PHCG324

IN SILICO INTERACTION OF HSP90 WITH SOME PHYTOCHEMICALS FROM *SMILAX ZEYLANICA* PLANT; POTENTIAL ANTIFUNGAL AGENTS AGAINST *CANDIDA ALBICANS*

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Abstract:

Objective: This study aims to perform a molecular docking analysis of Heat Shock Protein 90 (HSP90) with three chemical constituents like rutin, beta-sitosterol, and glucopyranoside. It is isolated from the plant *Smilax zeylanica*, to evaluate their potential as antifungal agents against *Candida albicans*. HSP90 is a crucial molecular chaperone involved in protein folding and stability, making it a significant target for antifungal therapy due to its role in fungal pathogenicity. **Methodology:** Molecular docking simulations were conducted using Auto Dock Vina software to predict the binding affinity and interaction modes of rutin, beta-sitosterol, and glucopyranoside with HSP90. The docking process involved evaluating the binding energies and analyzing the interactions between these compounds and the ATP-binding pocket of HSP90. **Results:** The docking study revealed binding energies of -9.8 kcal/mol for rutin, -8.3 kcal/mol for beta-sitosterol, and -7.6 kcal/mol for glucopyranoside, indicating significant binding affinities. Rutin exhibited multiple hydrogen bonds and hydrophobic interactions with key residues in the ATP-binding pocket of HSP90, suggesting strong inhibitory potential. Beta-sitosterol predominantly formed hydrophobic contacts, demonstrating a stable binding conformation. Glucopyranoside, with a lower binding affinity, engaged in essential hydrogen bonding with HSP90 residues. **Conclusion:** The findings indicate that rutin, beta-sitosterol, and glucopyranoside from *Smilax zeylanica* have the potential to inhibit HSP90, suggesting their possible use in developing novel antifungal agents targeting HSP90-related pathogenicity in *Candida albicans*. Further *in vitro* and *in vivo* studies are necessary to validate these interactions and assess the biological efficacy of these compounds in antifungal therapy.

PHCG325

EVALUATION OF A HERBO-MINERAL FORMULATION FOR ITS IMMUNOMODULATORY ACTIVITY.

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Abstract:

Objectives: To study the immunomodulation effect of selected individual herbal extracts of *Ashwagandha ghan, Amalaki ghan, Guduchi ghan, Tulsipatra ghan, Bhuiamla ghan, Sunthi choorna, Marich choorna, Pippali choorna* and minerals including *Loha Bhasma, Abhrak Bhasma*. To formulate a herbo-mineral capsule using selected herbs and minerals. To observe the synergistic impact of the newly formulated herbo-mineral combination. **Methods:** Individual herbal extracts used in the formulation were subjected to Physico-chemical identification. Examination for characterization. Immunomodulation activity was studied for mixed herbal extracts using albino rats. A capsule formulation using herbal extracts and some mineral powders was prepared. For the combination herbo-mineral capsules, the immunomodulation effect is to be studied. **Results**: A mixture of selected herbal extracts exhibited noticeable immunomodulation. However, further study is still underway to evaluate the hypothesized synergistic effect of combining herbal extracts with minerals. **Conclusions**: Immunity is the ability of the

body to overcome diseases. Based on the promising results obtained so far and the expected outcomes from the remaining work, it can be derived that the present approach is showing positive outcomes. Further, continuous monitoring of the prolonged use of the formulations is recommended for judging their long-term effectiveness, safety, and freedom from side effects.

PHCG326
TRANSFORMING VAGINAL HEALTH: BROAD-SPECTRUM ANTIMICROBIAL GEL LOADED WITH *SYZYGIUM CUMINI* SEED EXTRACT

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Abstract:

Objective: The objective behind this study is to formulate and evaluate the broad-spectrum antimicrobial mucoadhesive gel containing *Syzygium cumini* seed extract for the treatment of Vaginal infection. **Methods:** The extraction of *Syzygium cumini* seeds was carried out using simple Maceration technique. The Qualitative and Quantitative phytochemical screening of seed extract was conducted using standard methods. The mucoadhesive gel was formulated by incorporating the seed extract into suitable gel base to enhance mucoadhesion. The optimization of Mucoadhesive vaginal gel was conducted by application of Central Composite Design using Design Expert software. The formulated gel was evaluated for its physicochemical properties, including pH, viscosity, spreadability, mucoadhesive strength, Drug content and *In-vitro* and *Ex-vivo* Drug release. The molecular docking studies of Phyto-active present in *Syzygium cumini* seed extract was conducted using VINA in build PyRx (Version 8.0) and the interaction between Microbial protein and ligand was observed using BIOVIA Discovery studio. The *In-vitro* antimicrobial activity of *Syzygium cumini* seed extract and final formulation were‘ assessed in comparison with the marketed formulation against Bacterial and fungal strains. **Results:** The Qualitative and Quantitative phytochemical screening of *Syzygium cumini* seeds extract showed presence of active phyto-constituents like Gallic acid, Ellagic acid and Catechin. The prepared batches of mucoadhesive gel exhibited desirable physicochemical properties, including a pH compatible with the vaginal environment ranging from 3.8 to 4.5, suitable viscosity, good spreadability, strong mucoadhesive strength and controlled drug release. The molecular docking studies showed that Gallic acid, Ellagic acid and Catechin showed potential Binding affinity with target microbial proteins which can attribute to a versatile phyto-active compound for the treating of Vaginal infection. *In-vitro* antimicrobial studies of optimized batch demonstrated that *Syzygium cumini* seed extract Mucoadhesive gel effectively inhibited the growth of pathogens associated with vaginal infection in comparison with the marketed formulation, confirming its broad-spectrum antimicrobial efficacy. **Conclusion:** The mucoadhesive gel formulation containing *Syzygium cumini* seed extract presents broad-spectrum antimicrobial activity against both bacterial and fungal pathogens, coupled with its favorable physicochemical properties, suggests a promising therapeutic approach for the treatment of vaginal infections. This herbal formulation underlines its significance as to reduce the bridge between traditional medicine and modern technologies propelling advancement in female healthcare and Indian agriculture system.

PHCG327
EMERGING TRENDS IN BIOPHARMACEUTICALS: A COMPREHENSIVE REVIEW OF MONOCLONAL ANTIBODIES, GENE THERAPY, AND BIOSIMILARS

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Abstract:

Objectives: The review focuses on the current trends in the biopharmaceutical industry underlining main developments related to monoclonal antibodies, gene therapy, and biosimilars. The new developments emerging in these categories are deeply redefining therapies and reorienting patient care in view of aspects such as efficacy, regulatory considerations, and clinical applications. **Methods:** Extensive literature review was carried out where recent progress in the field of monoclonal antibodies, new gene therapy technologies such as CRISPR/Cas9, and biosimilars being cheaper derivatives of biologics were reviewed. The major scientific advances are discussed in this paper together with clinical trial results and regulatory frameworks that concern the above sectors of biopharmaceuticals. **Results**: These therapeutic monoclonal antibodies reached adulthood for the treatment of a wide range of diseases, from cancers to autoimmune disorders, with constant improvements in their specificity with fewer adverse effects. Gene therapy, through vector technology and gene-editing techniques, has expended its scope into offering new hope for diseases that were once inhumane to treat. Meanwhile, biosimilars emerge as a vital solution to enhance patient access, providing an affordable alternative to originator biologics. All these together are indications of treatments getting more precise, efficient, and accessible within healthcare. **Conclusions**:The review thus concludes that more growth and innovation are foreseen in the biopharmaceutical sector: on monoclonal antibodies, gene therapy, and biosimilars. Such progress improves therapeutic efficacy and accessibility but equally raises new challenges and opportunities in terms of their adoption and approval processes. Further progress in this field is expected to shape the future of medicine.

PHCG328
ROLE OF NEUTRACEUTICALS IN MANAGEMENT OF DIABETES

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Abstract:

Objectives:The aim of this study was to review the role of nutraceuticals in management of diabetes. **Methods**:When it comes to diabetes management, several nutraceuticals have shown potential in helping to regulate blood sugar levels and improve blood sugar levels. In this review. I have taken some nutraceuticals such as cinnamon (*Cinnamomum aromaticum*), Fenugreek (*Trigonella foenum graecum*) and Ginseng (*Panaxginseng*). **Results**:The phytoconstituents and the other chemical compositions were studied and their various benefits involving how they are effective in the management of diabetes were mentioned and shown. **Conclusion**: This review concluded that diabetes can be managed and can be taken care of to an extent with the help of nutraceuticals. Some of these nutraceuticals have shown excellent effects in the management of diabetes and helps to regulate blood sugar levels and improve insulin sensitivity. They have also shown excellent result in improving glucose metabolism as well.

PHCG329

ROLE OF LAVENDER OIL IN TREATING ANXIETY AS AN AROMATHERAPY: A REVIEW

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Himalayan Pharmacy Institute, Majhitar, E. Sikkim, India

Abstract:

Objectives: The aim of this study was to increased relaxation and reduced depression, anxiety and stress by massaging with lavender oil in aromatherapy. **Methods:** Lavender oil is obtained from the flowers of *Lavandula angustifolia* (family: Lamiaceae) and by using steam distillation lavender flower exact will be collected. This lavander flower extracts have been used both internally and by olfaction from centuries as a treatment for anxiety and depression. It can also be applied topically by combining it with a carrier oil. Direct inhalation of any essential oil causes side effects, so before using any essential oil it should be mixed with carrier oil. **Results:**Modern analytical research has identified the main active constituents of the oil and *in vitro* and *in vivo* studied are done to identify and documented the safety, efficacy and dose. Lavender has an inhibitory action on the hypothalamic-hypophysis- adrenal axis, which results in the reduction in the release of cortisol or stress hormone. **Conclusions:** As per the research Lavender essential oil is one of the most popular and versatile essential oil used in aromatherapy which is used for massage to reduce anxiety, stress, and depression and also increased relaxation. Aromatherapy was traditionally used in India for body massage with essential oils and dhoop is also used for changing the mood. A study determined that three drops of lavender oil inhaled nightly before sleep reduced patients' trait anxiety levels and improved sleep quality.

PHCG330

A REVIEW ON IMMUNIZATION

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Abstract:

Objectives: The aim of this study was to explore the current state of nanovaccine-based immunotherapy (NBI), particularly in the context of enhancing immune responses against cancer. The review aims to assess cutting-edge NBI techniques that address challenges in stimulating effective anticancer immunity and offer potential solutions for improving vaccine stability and efficacy. **Methods:** This review analyzes recent advancements in vaccine science, with a focus on nanotechnology applications. It examines the use of nanoparticles (NPs) as adjuvants and carriers in vaccines, evaluates the potential of NBI to stimulate tumor-specific immunity, and discusses methods to enhance vaccine effectiveness at various stages of the LDIMP cascade: nanoscale drug delivery systems, lymph nodes, dendritic cells, costimulatory signaling, and T lymphocytes. **Results:** Nanovaccine technology offers several advantages, including improved immune stimulation, stability, and the elimination of the need for booster doses or cold chain storage. NBI has shown promise in both infectious disease prevention and cancer immunotherapy, though challenges remain in generating strong anticancer immunity and optimizing nanoparticle formulations for maximum effectiveness across the LDIMP cascade. **Conclusions:** While nanovaccine-based immunotherapy represents a promising frontier in cancer treatment, there is a need for continuous development of novel approaches to maximize the effectiveness of nanovaccines. Overcoming current challenges requires a multidisciplinary effort, incorporating improvements in nanoparticle design, drug delivery systems, and complementary immunotherapeutic strategies to achieve a more robust and synergistic anticancer immune response.

PHCG331
ANTIHYPERLIPIDEMIC ACTIVITY OF IMPORTANT AYURVEDIC HERBS INEXPERIMENTAL MODELS- A SYSTEMIC REVIEW

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Himalayan Pharmacy Institute, Majhitar, Rangpo, East Sikkim, India

Abstract:

Objectives: The aim of the study was to study antihyperlipidemic activity of some important ayurvedic herbs in experimental models to reduce hyperlipidemia. These studies showed that ayurvedic herbs are effective for reducing hyper cholesterolemia and endogenous cholesterol synthesis.**Methods**: When it comes to antihyperlipidemia management several ayurvedic herbs are used to reverse the increase levels of circulating lipids and lipoprotein. Studies showed that ayurvedic herbs namely, Ashwagandha (*Withania somnifera* L.), Guggulu (*Commiphora mukul*), Bael (*Aegle marmelos* L.), Haritaki (*Terminalia chebula*), Amalaki(*Phyllanthus emblica* L.) etc are extracted by several solvents and applied in various experimental animal models. **Results**: The phytoconstituents present in these ayurvedic herbs like alkaloids, tannins, saponins, flavonoids, phenolics, and volatile oils were studied and their various medicinal benefits involving how they are effective in the management and reduction of the significant antihyperlipidemic activity. **Conclusion**: Hyperlipidemia has been identified as one of the most important risk factors, which increases the incidence and seriousness of coronary heart diseases, which cause death. This review comprehensively describes the antihyperlipidemic activity of these important medicinal plants which will be helpful for the development of more effective antihyperlipidemic therapies in coming years.

PHCG332
NOVEL THERAPEUTIC APPLICATION OF NANOTECHNOLOGY IN MEDICINE FIELD: A REVIEW

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Abstract:

Objectives: The main objective is potential of nanomedicine, including the development of nanoparticles for diagnostic and screening purposes and manufacturing of drug delivery systems. **Methods:** Nanomedicine is a relatively new field of science and technology which helds five sub disciplines; medical diagnosis, Nanoimaging, chemotherapy analytical tools, nanodevices, and drug delivery systems. Nanotoxicology is the study of toxicity effects of nanoparticles on human health's environment. Nanotechnology has powerful impacts and beneficial uses in the fields of diagnostics, regenerative medicine, gene therapy, molecular biology, bio-engineering, cardiology, oncology, ophthalmology, endocrinology, and immunology. These can be made to act specifically at the target tissue by active as well as passive. **Results:** Product based on nanotechnology in medicine and medical technologies are reaching the market with an anticipated enormous highly positive impact on human health.A larger amount of nanodevices (carbon nano tube, dendrimers, nano crystal, nano wire, nano shells etc) are presently under medical examination as well as several devices are commercially available. **Conclusions:** The current research includes several possible Nanotechnology uses in the medical field. Nanotechnology also highlights the multipronged aspects of nanomedicine and how it is proving beneficial for the health and enhances the normal human physiology. Nanotechnology that should be valuable to researchers, engineers, and scientists for future research projects.

PHCG333

PHYTOCHEMICAL AND PHARMACOLOGICAL POTENTIAL OF *LANTANA CAMARA* LIN

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Abstract:

Objective: The aim of this study was to research and evaluate the phytochemical and pharmacological activity of *Lantana camara* lin. **Methods**: Collection of plant from the wild sources and extracting it with various solvent in Soxhlet apparatus and conducting the phytochemical screening to obtain the presences of secondary metabolites. Test for phenol, flavonoid, tannins and different activities are performed such as antimicrobial, fungicidal, insecticidal, nematocidal, biocidal activity. **Result:** Monoterpenes, triterpenes, flavones coumarin, steroids, iridoid glycosides, are reported from *Lantana camara*. Triterpenes and flavones are the more common secondary metabolites in *Lantana camara*. Leaf extracts of lantana exhibit antimicrobial, fungicidal, insecticidal and nematocidal properties. **Conclusion**: *Lantana camara* is considered as weed used in folk medicine in many parts of the world. Several phytochemicals like phenol, alkaloids, tannin, saponin and flavonoids ware presented in the extract. *Lantana camara Lin* has several therapeutic uses, mainly as herbal medicine. There has been much work conducted in India on the chemical constituents of *Lantana camara*; extracts from the leaves exhibit antimicrobial, fungicidal, biocidal activity. Lantana oil is used externally for leprosy and scabies.

PHCG334

A COMPARATIVE STUDY ON ANTIDIABETIC EFFECTS OF THE FLOWERS OF *NYMPHAEA RUBRA & EICHHORNIA CRASSIPES.*

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Abstract:

Objectives: The aim of this study was to compare the antidiabetic effects of the flowers of water lily *(Nymphaea rubra*) and water hyacinth *(Eichhornia crassipes*). **Methods:** The extraction of *Nymphaea rubra* (flower) and *Eichhornia crassipes* (flower) were done by using Soxhlet apparatus in different solvents like petroleum ether, Chloroform and Ethanol. The extracts were studied for their physiochemical and phytochemical parameters. The comparative study of both the plants extract was done by Alpha- Amylase inhibitory assay. **Results:** The IC50 value of the *Nymphaea rubra* (flower) for Ethanolic extract varies from 178.2925 to 968.8063µg/ml, for Chloroform extraction it varies from 185.9349 to 952.2184µg/ml, and for petroleum ether extraction varies from 175.7046 to 887.4484µg/ml. Whereas, the IC50 value of the *Eichhornia Crassipes* (flower) for Ethanolic extract varies from 269.274 to 1368.17µg/ml, for chloroform it extraction varies from 201.654 to 1024.7µg/ml and for pet. Ether varies from 164.4396 to 835.580µg/ml. So according to the result, the Ethanolic extract of *Nymphaea rubra* has more potent ant diabetic activity as compare to the ethanolic extract of *Eichhornia crassipes.* **Conclusion:** *Nymphaea rubra* and *Eichhornia crassipes* were collected and soxhlet apparatus was used to obtain petroleum ether, chloroform and ethanolic extract. The qualitative phytochemical analysis shows the presence of secondary metabolites like alkaloids, carbohydrates, cardiac glycoside, anthraquinone glycosides, phenols, tannins in both the plant. After the comparative study of the *Nymphaea rubra* and *Eichhornia crassipes* for *in-vitro* diabetic activity the Ethanolic extract of *Nymphaea rubra* has more potent then ethanolic extract of *Eichhornia crassipes.*

PHCG335
THE ISOLATION AND SCREENING OF BIOSURFACTANT PRODUCED BY OIL DEGRADING BACTERIA OBTAINED FROM OIL CONTAMINATED SOIL SAMPLE COLLECTED FROM CHARAIDEO DISTRICT, ASSAM

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Abstract:

Objectives: The aim of this research work was to isolate the biosurfactant producing microorganisms from oil contaminated soil sample, to extract crude biosurfactant, and to perform the screening tests for the extracted biosurfactants. **Methodology:** This research is based on the isolation and screening of the biosurfactants produced by oil degrading bacteria obtained from oil contaminated soil sample. The work is initiated by a deep study of the literature followed by the isolation of the biosurfactant producing bacteria, their characterization using various methods such as Gram staining, Motility test, Catalase test, IMViC test, Urease test and TSI test. On the completion of these tests, the extraction of biosurfactant was performed. It was then followed by the screening test such as drop collapse test, oil spread test, hemolytic test, antagonistic test and emulsification test which were performed to analyze the activities of the crude biosurfactant. **Result:** The isolated bacterial strains were found to be Gram negative, which was confirmed by Gram staining. The isolates also showed negative results for Voges Proskauer and Methyl red test, while positive result for the other characterization tests. In addition to that, we were also able to extract crude biosurfactant from the microorganisms present in the oil contaminated soil sample. Furthermore, the biosurfactant obtained from the extraction method gave positive result in the screening test. **Conclusion:** Based on the tests performed on the samples, it can be concluded that the microorganisms that were isolated from the soil are capable of producing biosurfactants. It was also observed that the bacterial isolated had similarities with *Pseudomonas.*

PHCG336
FORMULATION AND EVALUATION OF PEEL-OFF GEL MASK CONTAINING FENNEL

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Abstract:

Objectives: The objective of this study was to formulate and evaluate peel off gel mask containing fennel. To ensure that the mask provides the desired benefits and meets quality standards. **Methods:** To formulate a peel-off gel mask with fennel, dissolve 2-5% of fennel extract in distilled water. Mix 10-15% polyvinyl alcohol (PVA) as a film-forming agent and 2-3% glycerin for moisturization. Heat gently until fully dissolved. Add preservatives like parabens and a small amount of essential oils for fragrance. Cool the mixture and pour it into molds. For evaluation, assess parameters like spreadability, drying time, pH, viscosity, and skin adherence. Conduct skin irritation tests and stability studies to ensure safety and efficacy. **Results:** The peel-off gel mask containing fennel showed excellent spreadability and a smooth, uniform film formation upon drying. The pH was within the acceptable range from 4.4 to 6.5 for skin application, and the viscosity range from 3000 to 6000 CPS. Skin adherence was good, ensuring effective removal of impurities. Stability studies indicated no significant changes in physical properties. Skin irritation tests confirmed the formulation was safe, with no adverse reactions observed. The maximum drug content was

found to be 58.10%. The temperature stability was performed, it was observed that formulation was stable. **Conclusions:** The study has used sample fennel, which has a high antioxidant activity. The results showed that all of formulas is stable and homogeneity during 45 days of storage. Herbal formulations are more acceptable in the belief that they are safer and having less side effect as compared to synthetic formulations. This peel off mask gel are believed as a sustaining and productive way to advance the appearance of skin. Thus in the study, formulation shows a good attempt to formulate shows a good attempt to formulate the herbal peel off gel mask containing naturally available ingredients.

PHCG337

ISOLATION AND CHARACTERIZATION OF BIOSURFACTANT PRODUCED BY MICROBIAL STRAINS ISOLATED FROM OIL SPILLED SOIL OF MEGHALAYA

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Abstract:

Objective: The objectives of the study are to collect oil-spilled soil samples and perform biochemical tests on the bacterial isolates. The study also aims to isolate the biosurfactant produced by these bacterial strains and subsequently screen the biosurfactant for its properties. These steps are crucial for understanding the potential of the isolated biosurfactants and their applications. **Methodology**: The research work started with extensive literature survey on biosurfactants and biosurfactant producing microorganisms. The soil Sample was collected from Meghalaya, India. After collection, the sample was processed and bacteria was isolated and cultured. Various biochemical test was done to characterize the bacteria, followed by extraction and screening of biosurfactant. Tests done for screening of biosurfactant was haemolytic assay and emulsification test. **Results:** After the biochemical test was done it was found that the bacterial isolates were gram negative. The yield of biosurfactant was 0.282 mg. Furthermore, screening of biosurfactant was carried out and it was found that the obtained biosurfactant exhibited β-haemolytic properties and had an emulsification index of 32.85%. **Conclusion:** The study confirms the production of biosurfactant but the yield of biosurfactant was found out to be very less and this may be due to various environmental factor that affect the production of biosurfactant.

PHCG338

FORMULATION AND EVALUATION OF GREEN APPLE RIND EXTRACT *IN SITU* GEL

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Abstract:

Objectives: The objective of this study is to develop and evaluate an *in situ* gel formulation containing green apple rind extract for the treatment of dental problems, aiming to enhance the local therapeutic efficacy, provide sustained drug release and improve patient compliance through an easy-to-use and effective dental care solution. **Methods:** Firstly, prepared hydroalcoholic green apple rind extract by maceration technique using water and ethanol in equal proportion, for preparation of gel. It has anti-microbial properties. This gel is formulated by cold technique with using various polymers like Poloxamer 407 and Carbopol 934. It is prepared by taking green apple rind extract and gel base, to mix it up to mix homogeneously. The formulation was characterized for various physicochemical parameters such as physical appearance, pH, viscosity, syringe ability, drug content in gel and *in vitro* drug release study.

Results: Green apple rind extract contains Alkaloids, Tannins, Anthraquninones, saponins and turpenoids. The formulated *in situ* gel was transparent with a light greenish tint and free from visible particulate matter, indicating proper formulation. It exhibited a pH of 6.48 to 7.04, ensuring compatibility with the oral environment. Gelation occurred rapidly indicating suitability for oral application. Viscosity increased when concentration of Carbopol increases. Drug content was uniformly distributed. *In vitro* release studies showed a sustained release of 75% of the green apple rind extract for over 8 hours, suggesting prolonged therapeutic action. Stability studies over 3 months revealed no significant changes in appearance, pH, viscosity, or drug content. The gel exhibited strong antimicrobial activity. **Conclusion:** The green apple rind extract *in situ* gel exhibited desirable characteristics such as appropriate gelation temperature, sustained release, good stability, and effective antimicrobial activity. These results suggested that the formulated gel could be a promising therapeutic option for the treatment of periodontal disease compared to traditional methods. The optimized formulation exhibits a sustained drug release profile and able to provide prolonged therapeutic effect.

PHCG339
FORMULATION AND EVALUATION OF *PSIDIUM GUAJAVA* LEAVES EXTRACT GEL FOR ORAL APPLICATIONS

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Abstract:

Objectives: The aim of this study was to formulation and evaluation of *Psidium guajava* leaves extract gel for oralapplications. **Methods:** The method involved the hydroalcoholic extraction of *Psidium guajava* leaves using a maceration technique with a 1:1 ratio of ethanol and distilled water. The extract was then concentrated to obtain an enriched product. This extract was incorporated into a gel base consisting of carbopol 934, sodium CMC, and triethanolamine, formulated to achieve the desired rheological properties, spreadability, and adhesion. The gel was subjected to various physicochemical tests, including organoleptic evaluation, pH determination, viscosity measurement, spreadability assessment, and drug content uniformity. Stability studies were conducted under different storage conditions to determine shelf life. Lastly, *in vitro* assays were performed to assess the antimicrobial activity of the gel against common oral pathogens such as E. coli and S. aureus. **Results:** Based on the study, the formulation containing Carbopol 934 was identified as the most effective gel formulation. Among the nine batches tested, batch 5 demonstrated superior characteristics, including a smooth texture, optimal pH, good spreadability, and ideal viscosity. The *in vitro* drug release study revealed that as the gel's viscosity decreased, the rate of drug release increased. The antimicrobial activity showed that a concentration of 30 µg/ml had the highest zone of inhibition. The formulation was stable at room temperature for 30 days, confirming its stability and suitability for oral application. Overall, batch 5 was selected as the best formulation due to its excellent stability, uniformity, and viscosity. **Conclusion:** In conclusion, the hydroalcoholic extract of guava leaves gel formulation showed promising results in inhibiting mouth-related bacteria and maintaining mouth health without irritation, this study highlights the potential of guava leaves extract as a safe and effective alternative in the management of mouth ulcers and other problems, paving the way for further clinical evaluations and potential commercial applications.

PHCG340

GREEN SYNTHESIS OF COPPER NANOPARTICLES FROM *SYZYGIUM JAMBOS*(L.) ALSTONE, THEIR CHARACTERIZATION AND EVALUATION OF INHIBITORY EFFECT ON URINARY STONES USING *IN-VITRO* TECHNIQUES

Prachurjya Bhuyan*, Pranjal Saikia, Kangkan Deka
NETES Institute of Pharmaceutical Science. Shantipur, Mirza, Kamrup, Assam, India

Abstract:

Objective: This work investigates the production of copper nanoparticles (Cu-Nps) using green chemical process and renewable extract of *Syzygium jambos*, with a focus on their potential as anti-urolithiatic agents. Using green chemistry techniques has several advantages, including easy process control, high production rates, economic effectiveness, and environmental friendliness. Plant extracts can be used as renewable starting components to synthesize Cu-Nps in an efficient and ecological way. **Methodology**: The study project began with a survey of the literature followed by preparation of methanolic extract from the leaves of *Syzygium jambos*. The extract was then used as the renewable source for the green synthesis of Cu-NPs. The inhibitory effect of green synthesised Cu-NPs against urolithiasis was evaluated using three *in vitro* procedures: the calcium oxalate nucleation assay, the aggregation assay, and the single gel diffusion assay for struvite stones. **Result**: FTIR spectra confirms the successful synthesis of Cu-NPs. Cu-Nps's zeta potential was found to be -16.3 mV, while its zeta sizer measurement yielded a value of 467.3 nm. In the single gel diffusion assay the inhibitory action of the green synthesised nanoparticle on the growth of struvite crystals was seen to be dose dependent with maximum percentage inhibition of 66.84µg/ml at the highest concentration of Cu-Nps. The IC_{50} values for the nucleation and aggregation assays were found to be 793.61g/ml and 784.56 ug/ml, respectively. **Conclusion:**The study validates the formation of Cu-NPs ssfrom *Syzygium jambos* to suppress crystal formation *in-vitro*. To completely comprehend their anti-urolithiatic potential and investigate their use as a urolithiasis treatment, cell line investigations and *in vivo* tests are required.

PHCG341

GREEN SYNTHESIS OF SILVER NANOPARTICLES FROM *CALAMUS FLORIBUNDUS*, THEIR CHARACTERIZATION AND EVALUATION OF INHIBITORY EFFECT ON URINARY STONES USING *IN VITRO* TECHNIQUES.

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Abstract:

Objectives: The aim of this study was to synthesize silver nanoparticles using biological methods and evaluate the antiurolithiatic potential. **Methodology**: The project commenced with an extensive analysis of the literature, which was then followed by the eco-friendly production of silver nanoparticles (AgNPs) from the plant material (methanolic extract of *Calamus floribundus*), and subsequent characterization of the nanoparticles. Following completion of the task, the assessment of antiurolithiatic activity was conducted using three *in vitro* procedures namely nucleation assay, aggregation assay, and single gel diffusion assay. **Results**: The confirmation of the synthesis of AgNPs was obtained through the analysis of the FTIR spectrum results. The measured values for zeta potential and particle size were -38.4mV and 1147.2nm, respectively. The IC_{50} value for AgNPs was determined to be 791.60µg/

ml for the nucleation test and 690.33µg/ml for the aggregation assay. In the single gel diffusion assay the inhibitory action of the green synthesized AgNPs on the growth of struvite crystal was seen to be dose dependent with maximum percentage inhibition of 54.64µg/ml at the highest concentration of AgNPs. **Conclusion:**The results verified that the silver nanoparticles produced from *Calamus floribundus* has the capability to inhibit the *in vitro* crystal formation. However, additional investigations, including as cell-line studies and *in vivo* studies, must be conducted to determine and comprehend the antiurolithiatic potential of green synthesised AgNPs.

PHCG342

SOLANUM XANTHOCARPUM; A PROMISING DIURETIC PLANT

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Abstract:

Objectives: To screen the plant *Solanum xanthocarpum* for diuretic activity. **Methods:** The ethanolic extract of *Solanum xanthocarpum* will be administered to experimental rats at doses of 30, 50 and 100 mg/kg, (i.p.) Furosemide 10 mg/kg (i.p.) and normal saline will be used as reference drug and control, respectively. Diuretic effect will be examined after injecting the drugs and on an hourly basis by measuring the urine volume of the rats, sodium and potassium content and pH of the urine, comparing with that of the control. Preliminary phytochemical analysis of the extract will be carried out to determine major constituents. **Results:** Traditionally *Solanum xanthocarpum* reported diuretic activity. Therefore, it is possible that extract will show diuretic effects and may induce electrolytes excretion in a dose- dependent manner in comparison with control. The diuretic effect of extract will be comparable to that of the reference drug (furosemide). Phytochemical analysis revealed the presence of alkaloids, flavonoids, tanninsand saponins. **Conclusions:** The study concluded that the plant is used in different parts of the world for the treatment of severalailments including skin diseases, inflammations, rheumatism, hernia, urolithiatic, muscle pain,gonorrhea, piles, and dysentery etc. Traditionally, it has been used for diuretic activity, therefore thisplant is worth screening for diuretic activity, thus lending support for the traditional use.

PHCG343

PHYTOCHEMICAL PROFILING AND ANTI-MICROBIAL ACTIVITY ASSESSMENT OF NAGA CHILLI FRUITS(*CAPSICUM CHINENSE JACQ*) USING GC-MS AND HPTLC BIOAUTOGRAPHY.

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Abstract

Objectives:The goal of this study is to conduct a comprehensive phytochemical profiling and biological activity assessment of the Naga Chilli (*Capsicum chinense Jacq*) using advanced analytical techniques such as gas chromatography-mass spectrometry (GC-MS) and high-performance thin layer chromatography (HPTLC) in conjunction with bioautography. **Methodology:** The Soxhlet extraction method with ethanol was used to prepare and analyze Naga King Chilli. Standard capsaicin and chili extract were mixed in ethanol, spun in a centrifuge, and analyzed on a coated silica gel TLC plate for HPTLC. A calibration curve was used to determine capsaicin concentration after developing the plate in benzene, ethyl acetate,

and methanol (75:20:5 v/v/v) and scanning the chromatograms at 283 nm. Different concentrations of the ethanol extract were tested on nutrient agar and Muller-Hinton plates to determine their antimicrobial activity against various bacterial and fungal strains using the disc diffusion method. **Results:** The Naga King Chilli extract contained carbohydrates, alkaloids, phenols, steroids, coumarins, flavonoids, terpenoids, and saponins, according to the study. HPTLC analysis confirmed the extract's capsaicin content with an HRf value of 30.1, and a linear regression with a R^2 value of 0.99, demonstrating reliability and accuracy. The detection limit (LOD) was 0.67 µg/ml, while the quantification limit (LOQ) was 2.04 µg/ml. Bioactive compounds like capsaicin have strong binding affinities for E. coli and S. aureus dihydrofolate reductase (DHFR) enzymes, according to GC-MS analysis. In *in vitro* antimicrobial activity analysis, Naga King Chilli extract inhibited E. coli and Enterococcus at a moderate rate compared to Amoxicillin, indicating its antimicrobial potential. **Conclusions:** This study effectively demonstrated Naga Chilli's rich phytochemical profile and potent antimicrobial properties, emphasizing its potential as a source of bioactive compounds, particularly capsaicin. A broad spectrum of compounds, including phenolics, terpenoids, and flavonoids, have been identified using advanced techniques such as GC-MS and HPTLC, all of which contribute to the chilli's potent antimicrobial properties. The findings highlight Naga Chilli's therapeutic potential for future pharmacological research aimed at developing new antimicrobial agents.

PHCG344

PHARMACOGNOSTICAL AND PHYTOCHEMICAL ANALYSIS OF DENDROCNIDE SINUATA (BLUME) CHEWLEAF EXTRACTS USING HPTLC AND GC-MS TECHNIQUES.

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[2]Bir Bikram College of Pharmacy, Agartala, Tripura

Abstract:

Objectives: The objective of this study was to analyse the pharmacognostical and physicochemical characteristics, preliminary phytochemical composition, high-performance thin-layer chromatography (HPTLC), Gas chromatography-mass spectrometry (GCMS) analysis of leaf extracts from Dendrocnide sinuata. **Methods:** This method involved preparing and analysing Dendrocnide sinuata (Blume)chew leaf extracted using a Soxhlet apparatus. HPTLC analysis required preparing standard and sample solutions in methanol and centrifuging the supernatant. Methanolic solutions of standards and extracts were applied to pre-coated silica gel plates using CAMAG HPTLC. In a 5:4:1 v/v/v mobile phase of chloroform, ethyl acetate, and formic acid, the plates migrated 7 cm. Using a gas chromatograph (Intuvo 9000GC System & 5977B GC/MSD, Agilent) and a previous trimethylsilyl (TMS) derivatization method, the extracts bio actives were qualitatively assessed. Mass Hunter GC/MS Acquisition 10.0.368 was the mass spectrometer, and the sample volume was fixed at 1 µl. **Results:** The HPTLC analysis of Dendrocnide sinuata leaf extract revealed the presence of Quercetin and Gallic acid as flavonoids, with Quercetin found in the ethyl acetate and ethanolic samples (Rf = 0.892) and Gallic acid found in the petroleum ether, ethyl acetate, and ethanolic samples (Rf= 0.967), which closely matched the standard Rf values. The phenolic analysis of the ethyl acetate fraction revealed the presence of chlorogenic acid, caffeic acid, and vanillic acid, with Rf values (0.012, 0.509, and 0.561, respectively) that were closely aligned with standard references. Further, GCMS analysis of the ethyl acetate extract

reveal several bio active compounds. **Conclusion:**In conclusion, the comprehensive investigation into the pharmacognostical and physicochemical properties, as well as the phytochemical composition of Dendrocnide sinuata leaf extracts, has confirmed the presence of key bioactive compounds. Advanced analytical techniques like HPTLC and GCMS identified bioactive compounds or Phyto active compounds. These findings not only validate the traditional uses of Dendrocnide sinuata but also highlight its potential for further exploration as a source of pharmaco-logically active compounds, paving the way for future research in medicinal and therapeutic applications.

PHCG345

ASSESSMENT AND CHARACTERIZATION OF DIVERSITY OF PHYTOCHEMICALS AND BIOACTIVE WONDERS IN *POGOSTEMON BENGHALENSIS* (BURM.F.) KUNTZE LEAVES EXTRACT BY GC-MS AND HPTLC FOR PHARMACOGNOSTIC INSIGHTS

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NETES Institute of Pharmaceutical Science, NEMCARE Group of Institution, Mirza, Assam, India

Abstract:

Objectives: The research delves deeply into *Pogostemon benghalensis* identification, purity, and therapeutic potential, the research examines its macroscopic, microscopic, and physicochemical properties. The plant's mineral content and extractable chemicals are measured by ash values and extractive assessments, which show substantial moisture and swelling index. Fluorescence and solvent extraction identified bioactive chemicals, with GC-MS andHPTLC whichreveal substantial phytochemical with profiling. **Methods:** Tocollect, authenticate and processing of plantmaterial followed by the pharmacognosticanalysis of the crudedrug obtained from the leaves of *Pogostemon benghalensis*. Toperform extraction of the phytoconstituents using successive extraction technique and assessment of the qualitative phytochemical analysis of the crude extract. The analysis was further carried forward by chromatographicanalysisviaThin-layerchromatography (TLC), High- performance thin-layer chromatography (HPTLC), and Gas chromatography Mass Spectroscopy (GCMS) of the crude extract. **Results:** The identification of bioactive compounds through fluorescence analysis, solvent extraction, GC-MS, TLC, and HPTLC fingerprinting, as well as extractive values, solubility profiles, chemical composition analyses, and microscopic and macroscopic evaluations, has revealed that the extracts contain a variety of compounds with antioxidant, anti-inflammatory, and wound-healing properties, including naringenin, caffeic acid, and 4-Hydroxybenzoic acid. It is thereby necessary to do more study to fully understand the therapeutic potential of *Pogostemon benghalensis* leaf extracts. **Conclusions:** This work demonstrates the effectiveness of high-performance thin-layer chromatography HPTLC in identifying bioactive chemicals in *Pogostemon benghalensis* leaves from various solvent extracts, as well as the leave's extensive phytochemical variety. So, it's reasonable to say that naringenin, caffeic acid, and 4-Hydroxybenzoic acid are present in significant quantities in the different *Pogostemon benghalensis* leaf extracts. These results provide credence to the idea that these extracts might have medicinal uses, since these chemicals are known to have bioactivities including antioxidant, anti-inflammatory, and wound-healing properties. As a result, further study is needed to determine the most effective way to use *Pogostemon benghalensis* leaf extracts for various pharmacological aspects.

PHCG346

DETERMINATION OF CHEMICAL COMPOSITION, ANTIMICROBIAL ACTIVITY OF THE ESSENTIAL OIL EXTRACTED FROM PEELS OF *CITRUS LIMON* (KAJI NEMU) &*CITRUS HYXTRIX* (HATI NEMU) GROWN IN NORTH EASTERN REGION OF INDIA

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Abstract

Objectives: The objectives of this study are to collect two varieties of lemons grown in various regions of Assam and to extract the *Citrus limon* and *Citrus hyxtrix*essential oil and conduct exploratory and comparative profiling of the chemical composition of the essential oil isolated from the lemon peel respectively for the evaluation of their *in vitro* antimicrobial activity. **Methodology**: The study was conducted with Hydrodistillation of the lemon peels followed by chemical profiling of the oil which was done by the estimation of GC-MS Analysis and the anti-microbial efficacy of the respective oils were comparatively evaluated against Gram-positive bacteria *Enterococcus faecalis* and Gram-negative bacteria *Escherichia.coli***. Results**: From the GC-MS analysis total 226 and 130 phytoconstituents were found from both the lemons, among them 20 and 17 compound from *Citrus limon* and *citrus hyxtrix* showed high intensity peak, where Eugenol, D-Limonene, ""-Pinene, β-Myrcene, 2-Methylhexacosane, Caryophyllene, Heptacosane were the common major components found in both the lemon peel oil. In *in-vitro* Anti-microbial testing peel oil of the lemon showed a promising antibacterial action against Gram negative bacteria and Gram-positive bacteria. Compared to Gram-positive bacteria, Gram negative bacteria have complex cell envelopes. The results also confirmed that the oils have greater antimicrobial activity against the Gram-positive as compared to the Gram-negative bacteria. **Conclusion**: The study demonstrates that the GI tag holder *Citrus limon* and *Citrus hyxtrix* peel oil, containing primary compounds like Eugenol, D-Limonene, and ""-Pinene, are responsible for the Anti-microbial activity. It is particularly effective against Gram-positive bacteria, with superior efficacy compared to Gram-negative bacteria. Further research is required to understand the fundamental mechanism of the oils, as well as to verify the safety of the oils and bioactive constituents, to develop novel therapeutic agents.

PHCG347

PREPARATION AND EVALUATION OF HERBAL GEL FROM PAPAYA SEED OIL FOR ANTI-HYPERPIGMENTATION

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NETES Institute of Pharmaceutical Science, NEMCARE group of institutions Mirza, Assam, India

Abstract:

Objective: The aim of this study is to formulate and testing herbal gel derived from papaya seed oil for anti-hyperpigmentation and to prepare a formulation that uses papaya seed oil's potential to minimize or prevent hyperpigmentation. **Methodology:** The papaya seed oil was selected for the study. The oil was extracted from the papaya seed which are immersed into n-hexane and the organic phase is collected from that solution. Papaya seed oil is mainly used for this formulation because papaya seed is having various beneficial property and this fruit is easily available. For gel phase carbopol-940 is taken, then soaked into water, then triethanolamine was added then stirred continuously until a viscous gel was formed in that prepared oil and saffron red is added.In order to obtain relevant information, a

number of web databases were used, including PubMed, Science Direct, Wiley web, the Web of Science, and ResearchGate. **Result:** The preparation is formed by the addition of the prepared papaya seed oil in the gel phase properly. P^H measurement test, appearance and spread-ability test, is conducted. The obtained product showed the anti-hyper pigmentation and various other activity. **Conclusion:** This study shows the gel containing *Caricapapaya Linn* seed oil that shows the anti-hyper pigmentation activity and delivers a considerable amount of medication throughout the skin. The conducted evaluation tests have revealed that the delivery of *Carica papaya Linn* seed oil gel is effective.

PHCG348

PREPARATION AND EVALUATION OF A TOPICAL HYDROGEL FORMULATION CONTAINING PIGMENTS OF *BASELLA ALBA* L. FRUITS WITH REFERENCE TO ITS ANTIOXIDANT ACTIVITY AND ANTIMICROBIAL ACTIVITY

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[2]School of Pharmacy, Pragjyotishpur University, Chandrapur, Kamrup(M), Assam

Abstract:

Objective: The study focuses on the preparation and evaluation of a topical hydrogel formulation containing pigments of *Basella alba* L. fruits with reference to its antioxidant activity and antimicrobial activity. **Method:** To investigate their potential, red-violet pigments from ripe *Basella alba* L. fruits were extracted using a novel ultrasonication method. Lyophilizing the aqueous extract produced powdered *Basella alba* L. fruit pigments. The extract was ultrasonicated for 10 min at 60% intensity and stored overnight in 0.1ml 99% chloroform to prevent microbial growth. The *Basella alba* L. pigments were analyzed using FTIR and GC-MS. Many chemicals were used to make a *Basella alba* L.-pigmented topical gel. The pigments extract and gel were tested for *in vitro* antioxidant and antimicrobial activity. **Results:** Red-violet pigments yielded 16.66% w/w of the crude drug extracted. Separate tests found alkaloids, amino acids, carbohydrates, flavonoids, tannins, phenolic compounds, phlobatannins, and terpinoids in the pigments. Pigments contain alkanes, aldehydes, esters, ketones, and carboxylic acids according to FTIR. GC-MS analysis found 218 compounds, 20 of which had high intensity peaks. The extract demonstrated antioxidant activity, with IC50 values of 23.80, 31.27, and 32.08 µg/ml against standard ascorbic acid in free radical scavenging. The zone of inhibition against *S.aureus* and *P.aeruginosa* was 92.85% and 31.11%, respectively. **Conclusion:** *Basella alba* L. belonging to family Basellaceae which has been used as a therapeutic agent in the treatment of various pathological condition. A high yield was achieved in a short time using the novel UAE method without degrading the red-violet pigments, which contain valuable bioactive compounds with antioxidant and antimicrobial properties. As a topical infection or wound healing medication, these pigments in a stable topical hydrogel are promising.

PHCG349

PHARMACOGNOSTICAL STUDIES AND EVALUATION OF *IN-VITRO* ANTIOXIDANT ACTIVITY OF *BEGONIA BURKILLII* DUNN.

Debojit Deka, Muslek Uddin Mazumder*, Narzin Nehar, Apurba Talukdar, Bhargab Jyoti Sahariah
NETES Institute of Pharmaceutical Science (NEMCARE Group of Institutions), Mirza, Kamrup, Assam

Abstract:

Objective: The aim of this study is to evaluate the pharmacognostical characteristics, phytochemical composition, and antioxidant activity of *Begonia burkillii* Dunn. **Methods:** The collection and

authentication of the plant was performed followed by a thorough analysis of its organoleptic and microscopic characteristics. The plant material has been dried and ground into a fine powder, different. solvents were used to extract the phytochemicals present in it. The ethanolic extract was selected for further evaluation. *In-vitro* assessment of the antioxidant activity was determined by Total Phenolic Content, Total flavonoid content, DPPH radical scavenging activity, and FRAP assay. The results obtained were then compared to those of standard antioxidants. **Result:** The pharmacognostical parameters of *Begonia burkillii* Dunn. aerial part was studied. The phytochemical screening of petroleum ether, chloroform and ethanol extract was performed. The phenolic content of the *Begonia burkillii* Dunn. leafextractwas found to be 22mg GAE/gm and the total phenolic flavonoid content was found to be 14mg QE/gm. The antioxidant activity of *Begonia burkillii* Dunn. stem and leaf was estimated using DPPH radical scavenging activity and ferric reducing antioxidant power test. The IC_{50} value for DPPH free radical scavenging activity of the standard and plant extract was found to be 78.25 and 70.96 µg/ml respectively. The IC_{50} value for ferric reducing antioxidant power assay of the standard and plant extract was found to be 2.713 µg/ml and 2.73 µg/ml respectively. The antioxidant activity confirms that the plant possesses significant antioxidant activities. **Conclusion:** This study revealed that the ethanolic extract of *Begonia burkillii* Dunn. exhibits significant antioxidant activity, with a comparable free radical inhibitory activity with respect to standards. The plant shows potential antioxidant activity for use in polyherbal formulations for treatment of various diseases. This study will help future researchers for further exploration of antioxidant activities which is necessary for scavenging of reactive oxygen species, reactive nitrogen species, which are responsible for various diseases in the human.

PHCG350

FORMULATION AND EVALUATION OF GELATIN CHITOSAN BASED HYDROGEL SHEET CONTAINING POTATO PEEL POLYSACCHARIDE FOR BURN WOUND HEALING

Abhilash Bharadwaj*, Soham Kakati Verma, Nilutpal Sharma Bora

NETES Institute of Pharmaceutical Science, NEMCARE Group of Institute, Mirza, Kamrup, Assam

Abstract

Objective: The objective of the study was to formulate and evaluate gelatin chitosan-based hydrogel-sheet containing potato peel polysaccharide for burn wound healing. **Methods:** Potato peel was collected, dried and later grinded for extraction**.** The extraction of the potato peel was done using reflux condenser with water as solvent. Later, a detailed phytochemical screening was performed with each of the extract in order to have a clear view about the phytoconstituent of the plant parts. The formulation of the hydrogel sheet was done using 20g of potato peel polysaccharide and appropriate chemicals. Different *in vitro* anti-inflammatory and anti-oxidant studies were conducted. **Results:** Phytochemical screening revealed the presence of carbohydrates, starch, flavonoid, tannin and phenols. The hydrogel sheet was prepared with a thickness, length and breadth of 0.7cm, 10cm, and 5cm respectively with a swelling index of 233%.In this study, the extract and standard ascorbic acid showed anti-oxidant activity with IC_{50} value 74.51 µg/ml and 138.44 µg/ml respectively. The total phenolic content in the hydrogel sheet containing potato peel polysaccharide measured by Folin-Ciocalteu reagent in terms of gallic acid equivalent (GAE) was 116.25 mg/g and flavonoid content of the sheet was found to be 80.72 mg/g, which indicates that they are in good amount. The extract showed mild anti-inflammatory activity with IC_{50} value of 6.01mg/ml when compared with the standard diclofenac sodium having IC_{50} value of 0.45mg/ml. **Conclusion:** Potato peel polysaccharide hydrogel demonstrated significant antioxidant activity, inhibiting DPPH and hydrogen peroxide effectively, and contained high levels of total phenolics and

flavonoids. The protein denaturation bioassay confirmed its mild anti-inflammatory properties, comparable to diclofenac sodium. These results highlight the promising application of potato peel polysaccharides in management of burns and skin abrasions. Future research should focus on optimizing this technique for commercial application and evaluating their long-term stability and scalability.

PHCG351

FABRICATION AND EVALUATION OF ACID NEUTRALIZING EFFERVESCENT GRANULES CONTAINING HERBAL EXTRACT OF *ZANTHOXYLUM OXYPHYLLUM* (EDGEW): AN INDIGENOUS MEDICINAL PLANT OF NORTH EAST INDIA

Smriti Sarma[1]*, Firuza Begum[2], Nilutpal Sharma Bora[1]

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Abstract:

Objectives: The objectives are to assess pharmacognostic parameters, phytochemical screening, *in vitro* antioxidant, digestive activities of *Zanthoxylum oxyphyllum* (Edgew) leaves and formulate effervescent granules. **Methods:** Fresh leaves of *Zanthoxylum oxyphyllum* (Edgew) were collected, authenticated, washed, air-dried, and powdered. The powder was extracted using methanol via cold maceration, then filtered and dried. The dried extract was analysed for phytochemical contents, antioxidant and acid-neutralizing activity. The extract was further used for preparation of digestive effervescent granules. The aqueous extract served as the Active Pharmaceutical Ingredient (API) in effervescent granules, prepared using sodium bicarbonate, citric acid, and tartaric acid. The fusion method was employed, and the granules were sieved, dried, and stored. For testing, granules were dissolved in water, and *in vitro* acid neutralizing capacity was measured using a pH meter. **Results:** Preliminary phytochemical tests for *Zanthoxylum oxyphyllum* (Edgew) revealed positive results for flavonoids, glycosides, tannins, steroids, phenolic compounds, and coumarins. The powdered leaves showed distinct fluorescence under UV light, and quantitative analysis was performed using a UV-light chamber. The extract demonstrated strong scavenging ability against DPPH radicals with an IC_{50} of 96.68 µg/ml, compared to 138 µg/ml for ascorbic acid. Its hydrogen peroxide scavenging activity was effective, with an IC_{50} of 248.77 µg/ml versus 570.86 µg/ml for ascorbic acid. Total phenolic content was 890 mg/g (GAE) and flavonoid content was 148 mg/g (QE). Physical properties included a particle size passing sieve no. 80, bulk density of 0.539, tapped density of 0.61 and pH of 7.03. The preliminary antacid test showed a neutralizing capacity of 11.12 mEq/g and buffering capacity of 25 minutes. **Conclusions:** Due to the presence of multiple phytoconstituents combined with high antioxidant activity, the extract of *Zanthoxylum oxyphyllum* (Edgew) has tremendous potential to be used as a drug. The formulated effervescent granules containing this extract demonstrated excellent acid neutralizing and buffering capacity and therefore indicated good potential to be used a medication for relieving gastrointestinal discomfort due to increased acid secretion.Top of Form

PHCG352

PHYTOCHEMICAL INVESTIGATION AND EVALUATION OF *IN-VITRO* ANTI-MICROBIAL ACTIVITY OF *SESBANIA SESBAN* LINN.

Gunjan Sahariah*, Imranur Rahman, Sameeran Gam

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Abstract:

Objectives: *Sesbenia sesban* has been traditionally used as purgative, demulcent, anthelmintic and for all pains and inflammation. The main objective of this study is to conduct a phytochemical analysis as well

as evaluation of *in-vitro* anti-microbial activity of *Sesbania sesban* leaves extracts. **Methodology:** Dried leaves of *Sesbania sesban* were successively extracted with n-hexane, Chloroform, Ethanol and Water using Soxhlet apparatus. Phytochemical analysis of different extract of *Sesbani sesban* were performed as per standard procedure. Anti- microbial activity, of all the leaves extract were evaluated by disc diffusion method against pathogenic bacteria *Escherichia coli* andAmoxicillin was used as standard. **Result:** A preliminary phytochemical report suggests that *Sesbania sesban* contains carbohydrates, proteins, alkaloids, glycosides, steroids, tannins, and saponins. Determination of pharmacognostical parameter showed that Total ash content is 7.5%, water insoluble ash 3 % etc. The water extract shows highest anti-microbial potential with ZOI is 44.16mm where, Amoxicillin shows ZOI is 314mm against gram negative bacteria. N-hexane, chloroform, ethanol extracts don't show any anti-microbial activity. **Conclusion:** The phytochemical analysis of *Sesbania sesban* shows the presence of various bioactive compounds. The water extract exhibits strong anti-microbial activity against gram-negative bacteria, which is more potent than the N-hexane, chloroform, and ethanol extracts. This suggests potential for developing antimicrobial agents, and further research will be needed to fully understand its therapeutic potential and identify the active compounds.

PHCG353

NIRAPARIB AS MONOTHERAPY FOR THE MAINTENANCE TREATMENT OF ADULT PATIENTS WITH PLATINUM-BASED CHEMOTHERAPY AGAINST OVARIAN CANCER

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[2]Girijananda Choudhury Institute of Pharmaceutical Science, Azara, Kamrup, Assam

Abstract

Objectives: The objective of this review work is to evaluate effectiveness of Niraparib and safety profile in ovarian cancer patient, and also to provide valuable insights into the benefits and risks of using niraparib as maintenance therapy in the cancer patient. **Methodology:** The extensive literature survey was in order to acquire scientific data on a variety of features of niraparib as monotherapy and treatment of adult patients with platinum-based chemotherapy. The elements included effectiveness of Niraparib, safety profile in cancer patient, clinical efficacy, overall survival and response rate. In order to obtain relevant information, a number of web databases were used, including PubMed, ScienceDirect, Wiley and ResearchGate. To ensure a thorough examination of all relevant studies and investigations, other search engines were used. "Niraparib", "platinum based chemotherapy", "combination therapies" were some of the keywords utilized to find the relevant information. **Results:** Upon reviewing the finding of various research studies, the conclusive findings that could be emphasized is that Niraparib prolonged the Progression-free survival and responded to re-treatment with platinum-based chemotherapy. Niraparib is studied as maintenance therapy and has a role in the treatment in combination with immune inhibitors. **Conclusions:** Fromthe study, it can be concluded that niraparib had a positive effect on the ovarian cancer. Niraparib has an acceptable safety profile that was consistent with the known safety profile for niraparib. Overall, Niraparib-based chemotherapy represents a valuable advancement in personalized cancer treatment, offering hope for improved outcomes in patients with specific genetic profiles.

PHCG354

A SYSTEMATIC REVIEW ON ETHNOBOTANY, PHYTOCHEMICALS, TRADITIONAL USE AND PHARMACOLOGICAL ACTIVITY OF *XANTHENIUM STRUMARIUM*

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Abstract:

Objective: This study aims to present the overview of ethnobotany, novel bioactive compounds, various established pharmacological activity, and traditional use of *Xanthenium strumarium.* **Methodology:** Systematic review was carried out to collect databy using several keywords such as *Xanthenium strumarium*, pharmacological activity, traditional usage, phytochemicals, disease, diagnosis etc. Search engine like PubMed, ScienceDirect, Wiley Online Library, and Taylor & Francis were used to obtained the data on *Xanthenium strumarium* by considering the articles from 2010 to 2024. The initial search yielded a total of 200 papers. Irrelevant articles were excluded which were published before 2010 and papers not published in English and finally considered 80 numbers of article for data collection. **Results:** This article provides a comprehensive analysis of significant topics and potential avenues for further investigation about this plant. *X. strumarium*, a traditional herbal medication, has been widely used to treat various disorders including rhinitis, nasal sinusitis, headache, gastric ulcer, urticaria, rheumatism, bacterial and fungal infections, and arthritis. Contemporary research indicates that extracts and compounds derived from *X. strumarium* have diverse pharmacological properties, such as anti-allergic rhinitis (AR) effects, anti-tumor effects, anti-inflammatory and analgesic effects, insecticide and antiparasitic effects, antioxidant effects, antibacterial and antifungal effects, antidiabetic effects, antilipidemic effects, and antiviral effects. Numerous phytochemical studies have been carried out on *X. strumarium* to date, and identified over 170 compounds from the plant. Among these, sesquiterpenes and phenylpropanoids are the most prevalent and significant bioactive components. Bioactive compound isolated from aerial part of the plant include 1β-hydroxyl-5α-chloro-8-epi-xanthatin and 11α. 13-dihydro-8-epi-xanthatin. Similarly, Stigmast-4-en-6β-ol-3-one, β-sitoste-none, β-sitosterol, 5α,8α-epidioxy-22E-ergosta-6,22-dien-3β-ol were isolated from root part and deacetoxylxanthumin , xanthatin, xanthinosin , tomentosin were isolated from the leaves of *X. strumarium*. **Conclusion:** Recent studies indicate that extracts and compounds from *X. strumarium* exhibit diverse pharmacological properties, including effects against allergic rhinitis (AR), tumors, inflammation, pain, insects, parasites, oxidation, bacteria, fungi, diabetes, high lipid levels, and viruses. However, future research should aim to identify bioactive compounds, clarify the mechanisms involved in detoxification, and establish more appropriate quality control standards for *X. strumarium*.

PHCG355

EVALUATION OF *HELLENIA SPECIOSA* WITH REFERENCE TO ITSANTI-DIABETIC ACTIVITY

Aslam Ahmed*, Apurba Talukdar, Monoj Kumar Deka
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Abstract:

Objective: The aim of this study was to investigate Pharmacognostical studies and evaluation of *in-vitro* antidiabetic activity of *Hellenia speciosa*. Pharmacognostical studies of *Hellenia speciosa*, phytochemical screening of the plant extract, *in-vitro* anti-diabetic evaluation of ethanol extract of *Hellenia speciosa* rhizome. **Methods**: Preliminary phytochemical testing of the rhizome of *Hellenia*

speciosa was done with two respective solvents, those are petroleum ether and ethanol. The investigation with petroleum ether was done first to solubilize the inorganic sustenance (if any). Ethanol is the main solvent for the extraction of phytoconstituents. The objective of this chapter is to screen the phytochemicals present in the hydroalcoholic extract of *Hellenia speciosa* leaves. **Results**: The preliminary phytochemical screening was conducted with ethanolic extract of the rhizome of the plant and the result found that there is significant presence of alkaloids, carbohydrates, flavonoid, steroids, saponins, quinones, terpenoids etc. *In vitro* anti-diabetic study was carried out by alpha amylase inhibitory method by taking acarbose as a standard drug, and the result found that, in 100 mcg/ml concentration of extract showed the highest antidiabetic activity which was 28.50±0.06% inhibition. The IC50 value of the plant extract was found to be 150.7 while the IC50 value of acarbose was found at 127.0. **Conclusion:** *Hellenia speciosa* is an endogenous traditionally used plant of Assam, due to presence of various active constituents, it is being used to cure many diseases. Based on the above study we can conclude that the plant can be used as a potent anti-diabetic drug and can be considered as an anti-diabetic formulation in the future studies.

PHCG356

REVIEW ON CURATIVE PROPERTIES OF VARIOUS INDIGENOUS PLANTS AND FRUITS OF MEGHALAYA

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Abstract:

Objectives: The present research attempted to document the value of various indigenous plants and fruits used by the different ethnic groups of Meghalaya. **Methods:** The methods for carrying out this review paper involve doing various literature surveys and by interacting with the people of Meghalaya have garnished knowledge based on these various plants and fruits. A list of medicinal plants and fruits was gathered based on their traditional folklore and availability in the region. **Results:** It was found that around 70 varieties of indigenous fruits and plants are used to cure many different ailments and used to treat various diseases related problems like fever, stomach acne, kidney stones etc. and it is 70% of these fruits and plants are extensively marketed in local markets. Many people use the plant as medicinal value for primary healthcare and some of these plants have been already proven scientifically. A great amount of traditional knowledge about the use of medicinal plant species is still carried and orally transmitted by indigenous peoples. **Conclusion:** Currently, approximately 25% of allopathic drugs are derived from plant-based compounds, and many others are synthetic analogues built on prototype compounds isolated from plant species. Medicinal plants, since times immemorial, have been used virtually in all cultures as a source of medicine. Medicinal plants are accessible, affordable and culturally appropriate sources of primary health care for more than 80 percent of the population. Medicinal plants play a significant role in providing their own nutrient composition.

PHCG357

PHYTOCHEMICAL INVESTIGATION AND *IN VITRO* EVALUATION OF THE LEAF EXTRACTS OF *MELASTOMA MALABATHRICUM L.* PERTAINING TO ANTI-HYPERTENSIVE ACTIVITY

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NETES Institute of Pharmaceutical Science, NEMCARE Group of Institutions, Mirza, Assam

Abstract:

Objectives: This research involves the phytochemical investigation and *in vitro* evaluation of the leaf extracts of *Melastoma malabathricum L.* pertaining to anti-hypertensive activity. **Methods:** The selected plant

material was collected and authenticated in Gauhati University botanical herbarium. The plant material was dried and extraction was carried out using successive extraction process after which the plant extract was subjected to various preliminary phytochemical screening. The ethanolic extract was then evaluated for *in vitro* antihypertensive activity through ACE inhibition assay. **Results:** Phytochemical screening of *Melastoma malabathricum L*. showed the presence of alkaloid, carbohydrate, tannins, glycoside, steroids, phenols, flavonoids, terpenoids and amino acids in the extracts indicating the plant has medicinal properties that can be investigated. ACE inhibition assay was done to demonstrate the anti-hypertensive activity of ethanolic extract of *Melastoma malabathricum L*. At 100µg/ml maximum inhibition of 58.22% was found. Captopril is a common ACE inhibitor, inhibited ACE to a maximum of 75 .9% at 100 µg/ml. The IC_{50} value of the extract came out to be 85.32µg/ml. **Conclusion**: In this investigation, it was found that *Melastoma malabathricum L.* was effective enough to show anti-hypertensive activity *in vitro*. This finding highlights the importance of protecting this significant ethno-medicinal plant.

PHCG358

EVALUATION OF *IN-VITRO* ANTI-INFLAMMATORY AND ANTIOXIDANT ACTIVITIES OF GREEN SYNTHESIZED ZINC OXIDE NANOPARTICLES USING *JUSTICIA GENDARUSSA* BURM.F

Nilanjana Medhi*, Muslek Uddin Mazumder, Bhargab Jyoti Sahariah

NETES Institute of Pharmaceutical Science, NEMCARE Group of institutions, Santipur, Mirza, Assam

Abstract:

Objectives: The aim of this study was to evaluate the *in-vitro* anti-inflammatory and antioxidant activities of the green synthesized zinc oxide nanoparticles from *Justicia gendarussa* Burm.f. by using egg albumin protein denaturation method and free radical scavenging activity (DPPH). **Methods:** For the model nanoparticle, the plant *Justicia gendarussa* Burm.f. *was* selected for the study. Firstly, the plant was collected from mirza, Assam then it was washed and dried under shade. It was authenticated from Botanical Survey of India, Shillong, Meghalaya. The selected plant's leaves were ground and then extracted using maceration process. After the extraction was completed, the extract was then collected and ran for green synthesis of Zinc oxide nanoparticle. After synthesis of Zinc oxide nanoparticles evaluation of *in-vitro* anti-inflammatory and antioxidant activities were done using egg albumin protein denaturation method and free radical Scavenging activity (DPPH). **Results:** After the synthesis of zinc oxide nanoparticle, its characterization was done using Fourier Transform Infrared Spectroscopy (FT-IR) and UV-Visible Spectroscopy. FT-IR analysis confirmed the successful synthesis of ZnO nanoparticles and UV visible spectroscopy analysis provided the optical characteristics and structure of the ZnO nanoparticles. To evaluate the anti-inflammatory activity egg albumin denaturation method was carried out. Egg albumin denaturation method demonstrated the anti-inflammatory activity by preventing the protein denaturation. Again, the evaluation of antioxidant properties of ZnO nanoparticles was carried out using (DPPH). **Conclusion:** The study concluded that the use of *Justicia gendarussa* Burm.f.as a green source for the synthesis of ZnO nanoparticles offers a several advantages including its cost-effectiveness, eco-friendliness, and the presence of bioactive compounds that can potentially enhance the anti-inflammatory and anti-oxidant activity of the nanoparticles.

PHCG359

BIOSYNTHESIS OF CUO NANOPARTICLES USING AQUEOUS EXTRACT OF *JUSTICIA GENDARUSSA* BURM.F. LEAVES AND EVALUATION OF ITS *IN-VITRO* ANTI-INFLAMMATORY AND ANTIOXIDANT ACTIVITIES

Jessica Kalita*, Muslek Uddin Mazumder, Bhargab Jyoti Sahariah
NETES Institute of Pharmaceutical Science, NEMCARE Group of Institutions, Santipur, Mirza, Assam

Abstract:

Objectives: The aim of this study was to biosynthesize CuO nanoparticles using aqueous extract of *Justicia gendarussa* Burm.f. leaves and evaluation of its *in-vitro* anti-inflammatory and antioxidant activities by using egg albumin protein denaturation method and free radical scavenging activity (DPPH) respectively. **Methods:** The plant *Justicia gendarussa* Burm.f. was selected for the biosynthesis of the CuO nanoparticles. Initially, the plant was collected from Mirza, Assam, and subsequently washed and dried under shade. It was authenticated from Botanical Survey of India, Shillong, Meghalaya. The leaves of the plant were ground and subjected to extraction via maceration process. Following the extraction, an ecofriendly and green method was developed for green synthesis of CuO-NPs using the aqueous leaves extract. After synthesizing the CuO-NPs, evaluation of *in-vitro* anti-inflammatory activity was done by egg albumin protein denaturation method and antioxidant activity by free radical scavenging activity (DPPH). **Results:** The biosynthesized CuO-NPs were characterized by using Fourier Transform Infrared Spectroscopy (FT-IR) and UV-Visible Spectroscopy. FT-IR analysis confirmed the successful synthesis of CuO-NPs while UV-Visible spectroscopy analysis provided the optical characteristics and structure of the CuO-NPs. The results obtained from egg albumin protein denaturation method indicated that the CuO-NPs have potential anti-inflammatory activity by comparing the IC_{50} values of standard drug and synthesized CuO-NPs. Again, using free radical scavenging activity (DPPH), IC_{50} values of standard drug and synthesized CuO-NPs were obtained and the results indicated that the synthesized CuO-NPs also possesses potential antioxidant activity. **Conclusion:** The study concluded that there are a number of benefits to using *Justicia gendarussa* as a green source for the biosynthesis of CuO-NPs, including its affordability, environmental friendliness, and the presence of bioactive compounds that could potentially improve the anti-inflammatory and antioxidant properties of the nanoparticles.

PHCG360

STUDIES ON DEVELOPMENT AND EVALUATION OF BUCCAL MUCOADHESIVE CINNAMALDEHYDE PATCH

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Abstract

Objective: The objective of this study was to formulate, develop and evaluate the buccal mucoadhesive patches containing cinnamaldehyde to assess the formulation's effectiveness in adhering to the buccal mucosa, releasing the drug in a sustained manner and check for applications in oral health management. By improving these properties, the effectiveness and therapeutic outcomes of the patches can be significantly increased. **Method:** Oral mucoadhesive patches were prepared using the solvent casting method, where phytoconstituent called cinnamaldehyde, natural compound primarily found in the bark of cinnamon trees was dissolved in solvent and mixed with polymer solutions. Other excipients and penetration enhancers were added and the preparation was left overnight to rest. The solution was then cast into a film and dried to form flexible patches, which were cut to size, packed, and stored

to maintain their quality. **Results:** Preformulation testing was the first step as an investigation of the physical and chemical properties of the drug substance alone and when combined with excipients. It included the physical state and appearance, boiling point and solubility of both drug and excipients by means of visual observation. Physicochemical compatibility study between cinnamaldehyde and polymers used in mucoadhesive film was studied by FTIR Spectroscopy using an FTIR Spectrophotometer by Kbr pallet method. The patches showed better drug loading efficiency and adequate folding endurance. **Conclusion:** In conclusion, this study successfully developed a novel mucoadhesive buccal patch for the release of cinnamaldehyde. The use of appropriate polymers and excipients in the formulation allowed for the creation of flexible, stable patches with good mucoadhesive strength and elasticity. Cinnamaldehyde mucoadhesive patches in dentistry offers antimicrobial and anti-inflammatory properties, making the patches useful for managing oral infections such as gingivitis or periodontitis. It helps in reducing pain and inflammation in conditions like oral ulcers or after dental procedures. By inhibiting bacterial growth in the oral cavity, it potentially reduces bad breath and plaque formation maintaining oral hygiene. Due to bioactive properties of cinnamaldehyde, it promotes faster healing of oral wounds or sores. These applications make cinnamaldehyde mucoadhesive patches a promising tool in dental care and treatment.

PHCG361

IN-VITRO EVALUATION OF ANTI-DIABETIC AND ANTI-INFLAMMATORY ACTIVITY OF BANANA BLOSSOM OF *MUSA BALBISIANA* COLLA

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Abstract:

Objectives: The primary objective of this study was to evaluate the anti-diabetic and anti-inflammatory activities through *in-vitro* evaluation of the banana blossom of *Musa balbisiana* Colla by analyzing its effect on relevant biological markers. **Methods:** The study involved the extraction of bioactive compounds from *Musa balbisiana* Colla using soxhlet extraction with various solvents. The extracts were then subjected to phytochemical screening to identify active components. Anti-diabetic activity was assessed using α-glucosidase and α-amylase inhibition assays, while anti-inflammatory activity was evaluated through HRBC membrane stabilization and protein denaturation methods. **Results:** The results indicated that the banana blossom extract showed significant inhibition of α-glucosidase and α-amylase enzymes, suggesting strong anti-diabetic activity. Additionally, the extract demonstrated considerable anti-inflammatory effects, evidenced by the stabilization of HRBC membranes and inhibition of protein denaturation. **Conclusion:** The findings of this study suggest that the banana blossom (*Musa balbisiana* Colla) possesses potent anti-diabetic and anti-inflammatory properties, which could be further explored for therapeutic applications. These results provide a scientific basis for the traditional use of banana blossoms in managing diabetes and inflammation.

PHCG362

PHYTOSOMES LOADED POLYHERBAL FORMULATION FOR PHARYNGITIS

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Abstract:

Background: Sore throat, or pharyngitis, is a common viral or bacterial infection. Conventional drug delivery techniques may not target inflamed areas due to their lack of specificity. To enhance treatment

efficacy, improved vesicular drug delivery methods such as phytosomes must be developed. This study developed and evaluated a polyherbal phytosomal gel for pharyngitis treatment using Acalypha indica, Pergularia daemia, and Coleus amboinicus extracts to improve drug bioavailability and targeted distribution. **Methods:** Extracts were produced from the three plants and subsequently combined to produce phytosomes using the antisolvent precipitation method. The evaluation parameters were percentage yield, entrapment efficiency, particle size, and zeta potential. The gel vehicle forms were produced using a combination of excipients. Various quality parameters, such as homogeneity, pH, drug content, spreading, and extruding properties, were evaluated as well. *In vitro* antimicrobial and anti-inflammation studies were also evaluated. **Results:** Homogenous vesicle production with 72.5% yield, 86.94% entrapment efficiency, 158 nm particle size, and -8 mV zeta potential were observed in phytosomes. Gels were homogeneous, pH ranges between 5.1-5.4, Drug concentration was good (82.37%-90.09%), viscosity was ideal (35123 centipoises), and Spreadability was adequate (3.9-4.1 cm). *In vitro* anti-inflammatory activity is performed where F3 formulation has an edge over other formulation on suppressing inflammation. The compounds then showed strong antibacterial action against pharyngitis-associated pathogenic microorganisms. **Conclusion:** Synergizing phytosomes from the plants extracts in a polyherbal phytosomal gel may deliver particular drugs for pharyngitis. The new formulation has good qualities and potentially treats pharyngitis due to its *in vitro* anti-inflammatory and antibacterial activity. *In vivo* and clinical investigations are needed to prove its therapeutic efficacy and safety.

PHCG363
FORMULATION AND EVALUATION OF HERBAL LIP BALM USING COLOUR PIGMENTS OF *BASELLA ALBA* L.

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Abstract

Objectives: The aim of this study was toformulate and evaluate herbal lip balm using colour pigments of *Basella alba* L. The ingredients in the herbal lip balm are all natural and free from harmful chemicals and it also have many advantages like better nourishment, make lips healthy and soft, non-irritating to the skin etc. The main motive behind the formulation was to incorporate as many natural ingredients as possible to retain the natural properties of lip balm. **Methods:** The fresh fruits of *Basella Alba* was collected in the month of February from Guwahati, Kamrup(R), Assam and it was further extracted by blending the fruits of malabar spinach in mortar and pestle and then the filtration process is carried out. For formulation of herbal lip balm lyophilized extract of *Basella Alba* was used by using Double boiler method and *in vitro* antimicrobial activity was determined by using disk diffusion method. **Results:** The result obtained from this research is that marketed lip balm often contain synthetic waxes, alumina, parabens, hydrogenated oils and colours which are toxic. The use of *Basella Alba* provided natural colour which are less toxic as compared to synthetic colours. Evaluation was done for melting point, pH measurement, test for spreadability and stability studies. After performing the Stability studies for the lip balm at different temperatures, it was observed that the lip balm at room temperature (25.0±3.0°C) and refrigerator (4.0± 2.0°C) showed; Good: uniform, no fragmentation; perfect application, without deformation of the lip balm.

Conclusion: It can be concluded that lip balm formulation was successfully created utilising organic elements can be extrapolated to have a number of advantages, including the ability to prevent chapping, dry lips and cold sores. Also, we carried out an evaluation of the plant *Basella Alba* and its herbal formulation and reported to have an antibacterial property using *in-vitro* antibacterial method.

PHCG364
FORMULATION, DEVELOPMENT AND EVALUATION OF HYDROGEL CONTAINING HERBAL EXTRACTS

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Abstract:

Objectives: The objective of developing and evaluating a temperature-sensitive hydrogel for periodontitis with extracts of ashwagandha and aloe vera is to formulate a stable, potent solution that is convenient to apply and hold at the infection site. **Methods**: A herbal extract of ashwagandha and aloe vera were selected for the study. A hydrogel base using polymers like carbopol 934 and poloxamers 407 was prepared by using cold technique, followed by the incorporation of herbal extracts with thorough mixing. The hydrogel was then assessed for physicochemical properties such as pH, viscosity, spreadability, drug concentration and gelation temperature. *In vitro* drug release studies were performed, along with antimicrobial efficacy testing against periodontitis pathogens. The hydrogel's mucoadhesive strength was also evaluated to ensure prolonged retention at the application site. Based on these evaluations, the formulation was optimized for effectiveness.

Results: The results of the study on hydrogel formulations containing Aloe Vera, and Ashwagandha extracts for periodontal disease treatment showed that all formulations had satisfactory physical characteristics, drug content, pH, and clarity. The pH of the formulations ranged from 6.79 to 7.04, near neutral, ensuring compatibility with oral tissues. Viscosities were between 24,268 and 33,677 cps, within the acceptable range of 50-50,000 cps. All formulations were easily syringeable at low temperatures using a 22-gauge needle. The optimal formulation (F8) demonstrated the least drug release over 8 hours, providing sustained drug release, ideal for prolonged therapeutic action in treatment of periodontal disease. **Conclusions:** The above study concluded that a hydrogel containing Aloe Vera, and Ashwagandha extract shows promising and more effective patient-friendly treatment for periodontal disease compared to traditional methods. The optimized formulation (F8) demonstrated sustained drug release, indicating prolonged therapeutic benefits and improved treatment outcomes. The progression of periodontal disease underscores the need for effective interventions. Ashwagandha's anti-inflammatory and bone mineralizing effects, offer a potent therapeutic approach. Additionally, thermosensitive hydrogels by using Poloxamer enhance targeted treatment, ultimately improving patient outcomes and promoting better management of periodontal diseases.

PHCG365
FORMULATION, CHARACTERIZATION AND EVALUATION OF ORAL DOSAGE FORM CONTAINING *MARTYNIA ANNUA* PLANT EXTRACT FOR ANTHELMINTIC ACTIVITY

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Abstract:

Objectives: The proposed study aimed to formulate and develop an oral dosage form for anthelmintic activity using plant extract of *Martynia annua*. **Methods:** The *Martynia annua* roots were authenticated, pulverized, and extracted using petroleum ether, ethanol, and methanol via Soxhlet

extraction, then concentrated and dried. The oil-in-water emulsion was developed by using cosolvancy method followed by aqueous titration and probe sonication. The formulation was characterized through centrifugation test, craking, creaming, phase inversion, phase separation, heating and cooling cycle, viscocity determination, pH determination, droplet size analysis, zeta potential. The anthelmintic activity was assessed using *in vitro* worm motility assays and *in vivo* animal models. **Results:** *Martynia annua* ethanolic extract exhibited the highest yield (6.06% w/w) and the strongest *in vitro* anthelmintic activity against Haemonchus contortus parasites. Phytochemical screening revealed the presence of various metabolites including glycosides, flavonoids, and phenols. An acute oral toxicity study indicated low toxicity of the ethanolic extract at the tested dose. Based on these findings, an oil-in -water emulsion dosage form was developed using the ethanolic extract (MAEE). Virgin coconut oil, Tween 80, and Span 80 were selected as excipients, with a 2:1 ratio of Tween 80:Span 80 at 5% concentration found to be optimal for emulsion stability. This formulation displayed a favourable particle size, narrow size distribution, and suitable zeta potential. *In vivo* studies using rats infected with Hymenolepis diminuta showed significant reduction in parasite egg count after administration of the optimized formulation at dose 100mg/kg of MAEE present in emulsion. **Conclusions:** This research successfully investigated the potential of Martynia annua root extract as an anthelmintic agent. The extracts displayed a range of secondary metabolites and exhibited dose-dependent anthelmintic activity against Haemonchus contortus *in vitro*, with the ethanolic extract demonstrating the most potent effect. Furthermore, this study presents *Martynia annua* root extract as a promising candidate for developing an herbal anthelmintic drug formulation. The optimized oil-in-water emulsion offers a stable and potentially effective delivery. This formulation showed promise *in vivo*, with a significant reduction in parasite egg count in rats infected with Hymenolepis diminuta at a 100mg/kg dose, suggesting its potential effectiveness against intestinal worms. These findings highlight the potential of *Martynia annua* root extract as a source for developing novel anthelmintic therapies. This study successfully developed a stable and potentially effective oral dosage form of *Martynia annua* root extract for anthelmintic use.

PHCG366
FORMULATION AND EVALUATION OF TOPICAL HERBAL GEL FOR ANTI-ARTHRITIC ACTIVITY

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Abstract:

Objectives: The Objective of the present study was to carry out extraction of selected herbs such as *Commiphora Mukul* and Boswellia serrata. To Evaluate Anti- Arthritic activity of Herbal extracts then to formulate and evaluate suitable stable gel dosage form of the prepared herbal extract. **Methods:** The extraction of *Commiphora Mukul* was done by Solvent Extraction method. Formulation of Gel: - Carbopol 934 was dispersed in distilled water, by stirring at 800 rpm for 30min, in another beaker extract of *Boswellia serrata* and extract of *Commiphora mukul* was dissolved in iso-propyl alcohol, then polyethylene glycol 400, ethanol and methyl paraben added slowly, then added this solution to gel base and stirred it and mixture was neutralized by drop wise addition of triethanolamine. Mixing was continued until a gel was prepared. While the amount of base was adjusted to achieve a gel with pH 7.08. **Results:** Development of gel was done by using Carbopol 934 which was analyzed with a smooth and homogeneous appearance. It was easily spreadable with an acceptable mechanical property. The

observation of pH revealed that all the formulations were very near to skin pH make it suitable for application on skin. For the incorporation of drugs, five formulae(F1-F5) for gel were tried. During comparison of these formulae, it was observed that F3 showed the smooth texture, optimum pH and good spreadability. Hence formula 3 was taken for further studies. *In vitro* drug release of Boswellic acid and Guggulsterones from gel was performed to study the release behavior of drug from formulation. In the optimized batch the drug content of Boswellic acid was found to be 52.12% and content of guggulsterone was found to be 57.92%. **Conclusions:** From the observed results it was concluded that there is increase in the drug release with respect to time. Anti-Inflammatory, Anti-Arthritic study and Arthritis scoring of the prepared gel formulation evident the Anti-Arthritic activity of the prepared herbal gel formulation. Temperature stability study was performed and it was observed that the formulation was stable at different temperatures (room temperature, cool temperature, elevated temperature and at 75% RH) for 60 days. Hence the prepared herbal topical gel was found to be effective.

PHCG367
EXPLORING THE PHYTOCHEMICAL PROFILE AND ANTIOXIDANT PROPERTIES OF *BAMBUSA BALCOOA* LEAVES

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Abstract:

Objectives: The aim of this study is to investigate and measure the bioactive compounds in *Bambusa balcooa* leaf extract and to analyze the efficacy of the extract as an organic antioxidant with the potential health benefits of the identified phytochemicals. **Methods:** Phytochemical screening was conducted to identify bioactive substances, including alkaloids, flavonoids, tannins, saponins, and phenolics. HR-LCMS analysis was performed to detect specific compounds such as Frovatriptan, Anoglabasin F, Retigabine, and others. The antioxidant activity was assessed using DPPH and nitric oxide scavenging assays to determine the ability to scavenge free radicals. **Results:**The Phytochemical screening revealed a wide range of bioactive substances with recognized medicinal properties. HR-LCMS analysis confirmed the presence of several notable compounds, including Frovatriptan, Anoglabasin F, and Viloxazine. The antioxidant assays demonstrated a strong ability of the extract to scavenge free radicals and reduce oxidative stress, suggesting significant antioxidant potential. **Conclusion:** *Bambusa balcooa* leaf extract shows potential as a natural antioxidant source due to its rich phytochemical profile and high antioxidant capacity and the extract may have applications in complementary medicine and health, with possible benefits for preventing chronic diseases such as cancer, heart disease, and neurological disorders.

PHCG368
PHARMACOGNOSTIC AND PHYTOCHEMICAL STUDY OF *DICLIPTERA BUPLEUROIDES* AND ITS ANTIOXIDANT PROPERTIES

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Abstract:

Objective: The objective of this study was to explore phytoconstituents and its anti-oxidants properties of Dicliptera *bupleuroides* leaves. **Methods:** Firstly, Pharmacognostic studies of the leaves were performed where its micro and macro study was conducted on the plant. Fresh leaves were collected from local fields of mandi, Himachal Pradesh and the leaves were shadow dried and powdered. Ethanolic extract was

obtained through Soxhlet extraction for 6 to 9hr. Then the physicochemical analysis was performed which is ash value, acid insoluble ash and water-soluble ash. Phytochemical analysis of the leaves was performed to check the active phytoconstituents present in the plant. The antioxidant assay of this plant is performed using DPPH method where we calculated IC_{50} value of the plant. **Results:** The physicochemical analysis show that the total ash value of the plant is 35.55% w/w, Acid Insoluble ash is 16.28 w/w and water-soluble ash is 1.936 w/w. Phytochemical analysis shows that the plant has alkaloids, glycosides, tannins, oil and fats, flavonoids, etc. In the antioxidant assay the IC 50 value of the leaves is 33.2 ug/ml which shows that the plant leaves have very strong antioxidant properties. **Conclusions:** The plant Dicliptera *bupleuroides* have various phytoconstituents like alkaloids, glycosides, tannins, oil and fats, flavonoids, etc. which helps to treat various diseases like fungal infection, eczema, snakebite wound, stomach disorder, bone fracture, etc. The leaves of the plant exhibited strong antioxidant properties which showed that the plant reduce the risk of many diseases like heart disease and certain cancers. This plant also has hepatoprotective properties, anti-microbial properties and anthelmintic activity.

PHCG369

FORMULATION AND EVALUATION OF ANTI-MICROBIAL HERBAL CREAM FROM THE ROOT EXTRACT OF *FICUS BENAGHALENSIS*

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Abstract:

Objectives: The study aims to extract bioactive compounds from *Ficus benghalensis* plant root, formulate a cream and evaluate its antibacterial activity against *Staphylococcus Aureus* and *Escherichia Coli*. **Methods:** The study involved the collection and drying of fresh root tubers, which have been homogenize into a coarse powder for extraction. The 10% w/v ethanolic prop root extract has been extracted using a Soxhlet apparatus to yield solid alcoholic extracts. The resulting cream has been evaluated for color, odour, texture, pH, washability, spreadability and anti-microbial activity. **Results**: The study examined the physical properties of cream, including color, odour, appearance, washability and spreadability and tested it on various concentrations. Results showed cream was not easily washable and easily spreadable, with the most effective concentrations being *Staphylococcus aureus* and *Escherichia coli*. **Conclusions:** *Ficus benghalensis* antibacterial cream, containing root and alcoholic extracts, exhibits promising antimicrobial properties against *E. coli* and *S. aureus*, suggesting potential as a natural microbial infection treatment.

PHCG370

ROLE OF EPIGENETIC ALTERATIONS IN CANCER

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Abstract:

Epigenetic mechanisms are essential for normal development and maintenance of tissue-specific gene expression patterns in mammals. Disruption of epigenetic processes can lead to altered gene function and malignant cellular transformation. Global changes in the epigenetic landscape are a hallmark of cancer. The initiation and progression of cancer, traditionally seen as a genetic disease, is now realized to involve epigenetic abnormalities along with genetic alterations. Recent advancements in the rapidly

evolving field of cancer epigenetics have shown extensive reprogramming of every component of the epigenetic machinery in cancer including DNA methylation, histone modifications, nucleosome positioning and non-coding RNAs, specifically microRNA expression. The reversible nature of epigenetic aberrations has led to the emergence of the promising field of epigenetic therapy, which is already making progress with the recent FDA approval of three epigenetic drugs for cancer treatment. In this review, we discuss the current understanding of alterations in the epigenetic landscape that occur in cancer compared with normal cells, the roles of these changes in cancer initiation and progression, including the cancer stem cell model, and the potential use of this knowledge in designing more effective treatment strategies.

PHCG371
PAVETTA INDICA: AN EMERGING RESERVOIR OF PROMISING THERAPEUTIC COMPOUNDS

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Abstract:

Objectives: This review planned to evaluate the active constituents found in the Pavetta indica and its therapeutic efficacy, concentrating on the effective and potential origin of novel chemical agents. **Methods:** A literature survey of various database such as Google scholar, PubMed and Scopus was screened. The Survey mainly evaluated the pharmacological profile, therapeutic activity and active moiety of Pavetta indica. **Results:** Pavetta indica having major chemical constituents such as alkaloids, flavonoids, and phenolic compounds. These active constituents have various biological activities such as anti-inflammatory, antioxidant, anticancer and antimicrobial. Research performed in phytochemical evaluation and animal studies has revealed that the compound has potential in inflammation, oxidative stress and cell growth. Pre-clinical trial shown its efficacy in controlling conditions such as diabetes and liver related ailments. **Conclusions:** In conclusion, Pavetta indica has the ability to provide efficient chemical moieties for novel medicinal compounds. However, various research activities required to deep elaboration the medicinal efficacy. This includes exploration the process employed to extract it, performing clinical trials in big sample size, and broad explanation of mechanism involved.

PHCG372
HERBAL MEDICINES FOR LIVER PROTECTION: TRADITIONAL USES TO MODERN THERAPEUTICS

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Abstract:

Objectives: This review seeks to examine the traditional uses of herbal medicines for liver protection and explore how these practices align with contemporary scientific findings. The objectives include identifying commonly used herbs, summarizing their traditional applications, and evaluating modern therapeutic evidence supporting their efficacy and safety. **Methods:** A comprehensive literature review was conducted, analyzing historical texts, ethnobotanical surveys, and recent clinical trials. Sources included peer-reviewed journals, traditional medicine archives, and databases such as PubMed and Google Scholar. The review focused on herbs with documented use for liver health, including their

active compounds, mechanisms of action, and clinical outcomes. **Results:** Traditional herbs like Milk Thistle (Silybum marianum), Dandelion (Taraxacum officinale), and Turmeric (Curcuma longa) were frequently cited for their liver-protective properties. Modern research supports some of these claims, particularly for Milk Thistle, which has demonstrated hepatoprotective effects through its active component, silymarin. However, evidence for other herbs is less robust, with varying degrees of clinical support and conflicting results. **Conclusion:** The integration of traditional herbal medicine with modern scientific research provides valuable insights into liver protection strategies. While some herbs have strong evidence supporting their efficacy, others require further investigation. Future research should focus on well-designed clinical trials to confirm traditional uses and clarify the mechanisms through which these herbs exert their protective effects on the liver.

PHCG373
HPTLC FINGERPRINT PROFILE OF METHANOLIC EXTRACT OF DIFFERENT CHROMATOGRAPHIC FRACTIONS OF *RAUWOLFIA TETRAPHYLLA*. L

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Abstract:

Objective: To establish qualitative and quantitative screening of phytochemicals, and characterization of some alkaloids present in roots of *Rauwolfia tetraphylla* L by using High Performance Thin Layer Chromatography (HPTLC) technique. **Methods:** The Qualitative and Quantitative Phytochemical analyses were carried out as per the standard protocols.The solvent system were optimised by Thin Layer Chromatography, followed by different fractions of methanolic extract of *Rauwolfia tetraphylla* were isolated by column chromatography, further the fingerprinting of different elutes were performed by High Performance Thin Layer Chromatography (HPTLC). **Results:** The preliminary phytochemical screening of methanolic extracts revealed the presence of alkaloids, carbohydrates and flavonoids. The solvent system of Ethyl acetate: Methanol: Water (2:7:1) was found appropriate for fractionation by Column chromatography. A total of seven fractions were isolated and they were analysed by HPTLC. Distinct spectra of different constituents were obtained for each fraction. **Conclusion:** The HPTLC fingerprinting of *Rauwolfia tetraphylla* L may be useful in characterization of different phytochemicals found in this species. It may also be useful in differentiating the species from the adulterant and act as a biochemical marker for this medicinally important plant in the Pharmaceutical industry.

PHCG374
BIOMEDICAL PERSPECTIVE - CANCER BIOLOGY, EPIDEMIOLOGY, AND TREATMENT IN THE TWENTY-FIRST CENTURY: CURRENT STATE AND FUTURE CHALLENGES

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Abstract:

Objective: To ascertain the relationship between clinical outcomes, social adversity-associated transcription factor activity that has been validated, and objective (geospatial) indices of neighbourhood deprivation and aggressive breast cancer tumor biology. **Methods:** Using 147 tissue samples that

were prospectively collected according to the protocol, we measured the prevalence of TF-binding motif inside the promoters of genes that were differently expressed. Using five validated factors of social adversity and aggressive biology pro-inflammatory activity sympathetic nervous system activity protective biological responses, and proteins that bind to the Adenosine Monophosphate Response Element transcription activator, signal transducer, and interferon-regulatory factor covariate-adjusted multivariable regression was used to analyze objective and subjective ND scores. **Results:** Higher objective was linked to SNS activation and aggressive tumor biology , activator protein 1, down-regulated IRF, and signal transducer and activator of transcription). There was a correlation between down-regulated IRF and up-regulated NF-kB, CREB, and subjective ND. **Conclusion:** TFs of aggressive biology and SNS activation were substantially correlated with both objective and subjective in the biggest human social genomics investigation. These TFs also showed a negative correlation with clinical outcomes, suggesting that SNS activation may be a contributing factor to the differences in ND survival.

PHCG375
BIOALCHEMY: TRANSFORMING MEDICINE WITH BIOTECHNOLOGY WITH FUTURE OF THERAPEUTICS SCIENCE

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Abstract:

Objectives:-To enhance healthcare outcomes by utilizing cutting-edge technological applications and interdisciplinary collaboration to advance scientific research, develop novel medicines, and utilize expertise in biotechnology and biotherapeutics.

Method: *Biotechnology methods Genetic Engineering (Recombinant DNA technology)*: Recombinant DNA technology, a critical component of genetic engineering, involves modifying DNA from various organisms in order to create different combinations of genes with important uses in health, farming, and research. ***Fermentation Technology:*** Antibiotics, vitamins, and other beneficial chemicals are all produced through fermentation processes. For example, penicillin is developed by the fermentation of Penicillium fungus. **Results:** The advancement of biotherapeutics treatments made from living things or their cells is greatly aided by biotechnology. Biotherapeutics, which provide tailored treatments for illnesses like cancer, autoimmune disorders, and hereditary abnormalities, include recombinant proteins, gene therapies, and monoclonal antibodies. Biotechnology advances the creation and manufacturing of these treatments, boosting their efficacy and safety through the use of genetic engineering. Biotherapeutics innovations are revolutionizing medicine by enabling more individualized and targeted therapies. Biotechnology has the potential to transform healthcare outcomes by developing novel treatments for uncommon or incurable diseases if research stays on course. **Conclusion:**Biotechnology and biotherapeutics are revolutionary fields in modern medicine, offering novel ways to cure ailments. Biotechnology exploits biological systems to create novel remedies, whereas biotherapeutics focuses on therapeutic products such monoclonal antibodies, gene therapies, and vaccinations. These innovations have transformed healthcare by enabling tailored treatments, enhancing illness management, and addressing previously untreatable disorders. However, problems like as exorbitant costs, legislative barriers, and ethical issues remain. As research advances, biotechnology and biotherapeutics are likely to become increasingly import.

PHCG376

SYNTHESIS OF ZINC OXIDE NANOPARTICLES (ZNO-NPS) USING GREEN METHODS THE ANTIBACTERIAL ACTIVITY OF *AILANTHUS EXCELSA* STEM BARK EXTRACT

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Abstract:

Objective: This study aimed to create zinc oxide nanoparticles (ZnO-NPs) using a green synthesis method with Ailanthus excelsa stem bark extract, focusing on environmentally sustainable production and evaluating their antibacterial activity. **Methods:** The synthesis is carried out using methanol solvent for the Soxhlet extraction process, distilled water, Zinc nitrate hexahydrate, *Ailanthus excelsa* stem bark. Then bark crushed into powder and solvent was added and heated to reflux for 48 hours, then filter through what man filter paper. Then green zinc oxide nanoparticles were analyzed using SEM, Antibacterial activity, X-ray diffraction methods, and UV-visible absorption spectroscopy. Utilizing green chemistry, zinc oxide nanoparticle quality was evaluated via UV-visible absorption spectroscopy. The antibacterial activity of ZnO-NPs that were produced was evaluated. **Result:** The successful synthesis of ZnO-NPs was confirmed by spectrum measurement, showing high absorption peaks in the 345–365 nm range. Using the disc diffusion method, ZnO-NPs demonstrated increased antibacterial activity against Staphylococcus aureus with rising concentrations, significantly inhibiting its growth. **Conclusion:** In conclusion, the successful development of a methanolic extract of Ailanthus excelsa stem bark for the green synthesis of ZnO nanoparticles (ZnO-NPs) demonstrates their potent antibacterial activity against Staphylococcus aureus at low doses. This study suggests that green synthesis can effectively produce nanoscale ZnO-NPs, with potential applications for other metal oxide nanoparticles.

PHCG377

GENETIC MODIFICATION FOR NEUROLOGICAL CONDITIONS: A REVOLUTION IN THINKING DRIVEN BY ARTIFICIAL INTELLIGENCE

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Abstract:

Objectives: The objective of this study is to explore the application of AI in genetic therapy for neurological diseases. We aim to develop an AI-powered framework that can identify novel therapeutic targets, predict treatment outcomes, and optimize gene therapy protocols. **Methods:** We will utilize machine learning algorithms and deep learning techniques to analyze large-scale genomic data, medical imaging, and clinical data from patients with neurological diseases. We will also develop a predictive model that can identify potential therapeutic targets and predict treatment outcomes. **Results:** Our preliminary results show that AI-powered analysis of genomic data can identify novel therapeutic targets for neurological diseases. We have also developed a predictive model that can accurately predict treatment outcomes in patients with Alzheimer's disease. **Conclusion:** This study demonstrates the potential of AI in genetic therapy for neurological diseases. Our AI-powered framework can accelerate the development of effective treatments and improve patient outcomes. Further research is needed to fully explore the potential of AI in this field.

PHCG378

THE COMPREHENSIVE USES OF SHIKAKAI IN AYURVEDA

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Abstract:

Objective: The aim of this study was to create a shampoo that is entirely herbal and as effective as the market's synthetic options. **Method:** The Acacia concinna tree, which grows in the hot, arid plains of central India, produces the pods that are used to make shikakai. Shikakai powder is created by drying and grinding the pods into a powder. Its mild cleansing qualities make it a great substitute for today's more abrasive shampoos. **Result:** Promising as a dandruff cure, shikakai possesses nutritional, antifungal, and maybe antibacterial qualities. There are no notable negative effects from using it, and it can be used to cure the scalp and get rid of irritating dandruff concerns. **Conclusion:** Ancient Ayurvedic literature like the Sushruta Samhita and Charaka Samhita have made reference to the advantages of utilizing shikakai to keep hair healthy. This is thought to be an excellent treatment for clearing the scalp and fortifying hair roots, which will allow the hair to develop in healthier environments. Additionally, it relieves irritation to the scalp and dandruff.

PHCG379

ANTI-OXIDANT AND ANTI-FUNGAL ACTIVITY OF ETHANOLIC EXTRACT OF *ANNONA MURICATA* LINN. LEAVES

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Abstract:

Objectives: The objective of this study was to explore and evaluate the extraction of *Annona muricata* Linn leaves for their antioxidant and antifungal activity. By identifying these therapeutical activity of the plant extract provides an effective drug to treat fungal infections. **Method:** As Fungal infection does not respond to antibiotics could be a viable approach to research on the antioxidant and antifungal activity. Flavonoids are particularly beneficial, acting as antioxidants and their polyphenolic nature enables them to scavenge injurious free radicals such as super oxide and hydroxyl radicals. The phytochemicals of *Annona muricata* Linn extracts are used as antibacterial, anti-inflammatory, anti-protozoan, antioxidant, insecticide, larvicide, and cytotoxic to tumour cells using *in vitro* tests. The extraction were screened by various preliminary phytochemical tests, Extraction of terpenoids content of *Annona muricata* Linn leaves by using Soxhlet's extraction and by using Modified Clevenger's extraction and properties of terpenoids were evaluated. The extraction was evaluated for antioxidant property by HRSA, DRSA and FRAP. **Results:** The results reveal that the ethanolic extract of the leaves (dry) of *Annona muricata* Linn might prevent reactive radical species from damaging biomolecules in susceptible biological and food systems and the ethanolic extract of leaves (dry) of *Annona muricata* Linn showed increased scavenging potentials of free radicals with an IC50 value of 119µg, than the aqueous extract (IC50>400µg). Higher concentration of 400µg the ethanolic extract of the leaves (dry) of *Annona muricata* Linn exhibited about 85 % of OH scavenging activity. **Conclusion:** The study demonstrated that ethanolic extract of the leaves (dry) of *Annona muricata* L was found to be generally more effective than the control (Fluconazole) against the *Aspergillus niger* organisms in controlling fungal growth based on observations of zone of inhibition. These extraction provide a effective approach to treat fungal infections

PHCG380
AI BASED TECHNOLOGY IN SOXHLET EXTRACTION FOR ALKALOID BASED DRUG

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Abstract

Objectives: The extraction of alkaloids and other bioactive compounds from plant materials using SOXHLET extraction is a tried-and-true method. This extraction procedure has become more effective and efficient because of recent technological advancements. The following are some important points about the AI innovations and technologies that are connected to SOXHLET extraction for alkaloid drugs. **Method:** The Soxhlet extraction method for alkaloid drugs gains efficiency and effectiveness thanks to the incorporation of AI technology. This is an outline of the way computer based intelligence is applied in this specific situation: AI Technologies in Soxhlet Extraction: PROCESS OPTIMIZATION: - Simulated intelligence calculations can break down verifiable extraction information to enhance boundaries, for example, temperature, extraction time, and dissolvable decisions. Based on previous experiments, researchers can use machine learning models to predict the optimal conditions for maximizing alkaloid yields. Automation: -Robotized SOXHLET extraction frameworks furnished with computer-based intelligence can screen and change extraction conditions continuously. This includes controlling the solvent flow rates and heating elements to guarantee consistent and reproducible results with as little human intervention as possible. **Result:** The incorporation of AI technology into the Soxhlet extraction method significantly enhances alkaloid extraction efficiency, yield, and quality, making it an important advancement in the extraction of natural products. **Conclusion:** Alkaloid drug Soxhlet extraction has not yet utilized AI technology directly. However, the findings do shed light on the potential ways in which AI could improve this extraction method in the future

PHCG381
HEALTH BENEFITS OF PLANTS BASED SECONDARY METABOLITES

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Abstract:

Objective: The aim of this is to study the health benefits of plants based secondary metabolites and natural resources of secondary metabolites that enhances health and are utilized in treatment and prevention of disease. **Methods**: Plants produce wide range of secondary metabolites which can offer various health benefits. Antioxidant activity are those which neutralize free radicals, reducing oxidative stress and lowers risk of chronic disease. Anti-inflammatory effect they modulate inflammatory pathways. Antimicrobial properties inhibit the growth of bacteria. Some metabolites including flavonoids and glucosinolates prevent or slow the cancer development. **Result:** Alkaloids, glycosides, flavonoids, resins, tannins and sterols are some different types of bioactive substances based on their chemistry which have features to promote health. They are chemical compounds with the chiral configuration required to exert the pharmacological effect in biological systems. Chemical and biological aspects of secondary metabolites derived from natural resources are being investigated, including biosynthetic process, chemical properties and biological screening. **Conclusion**: This concluded the benefits of plants for promoting health with focus on their bioactive substance. The function and its mechanism in health are included with focus on their antioxidant activity, anti- inflammatory, antimicrobial and anti-cancer effect in chemotherapy and other chronic disease.

PHCG382
FORMULATION AND EVALUATION OF ANTIMICROBIAL POLYHERBAL DUSTING POWDER

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Abstract:

Objective: The objective of this study was to formulate and evaluate polyherbal dusting powder, and to check its antibacterial activity. **Method:** The bark from different plant species was collected and pulverized it. Evaluate the antibacterial properties of polyherbal extracts and polyherbal dusting powders. Additionally, evaluate the dusting powder. **Result:** The antimicrobial screening of ethanolic bark extracts from Ficus racemosa, Ficus religiosa, Ficus benghalensis, and Albizzia lebbeck demonstrated significant antimicrobial activity against Streptococcus aureus. The polyherbal dusting powder was evaluated for various physicochemical parameters, including physical characteristics, pH, abrasiveness, Carr's index, Hauser ratio, moisture content, and solubility. The results indicated good flow properties, with higher bulk density and lower bulk volume. **Conclusion:** The polyherbal extract exhibits greater antimicrobial activity than the dusting powder. This may be due to the large particle size of the dusting powder, which could benefits from advanced techniques to reduce it's size, allowing for easier absorption by skin cells. The polyherbal mixtures show promise due to their wide-ranging effectiveness and reduced side effects. These blends can meet the rising demand for natural remedies for treating skin issues like rashes and infections.

PHCG383
THERAPEUTIC POTENTIAL OF *CLITORIA TERNATEA* (CT) FLOWER IN MANAGING POLY CYSTIC OVARY SYNDROME (PCOS): EFFECTS ON OBESITY REDUCTION

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Abstract:

Objectives: The aim of this study was to know about the overview of the *Clitoria ternatea* (CT) flower in treatment of poly cystic ovarian syndrome (PCOS) by decreasing the weight of an individual by its anti obese property and some other therapeutic uses, by decreasing the mental stress towards it. **Methods:** The crude drug / phytopharmaceutical *Clitoria ternatea* (CT) flower was selected for this study. It is prepared by the extraction technique by using various types of extraction solvents (ethanol, methanol, ethyl acetate, and hexane). In India; recommends for the treatment of the snake and scorpion bites of the clitoria ternatea extract stem. **Results:** The main phytoconstituents found in CT flower extract are ANTHOCYANNINS AND TANNINS. So these Phytoconstituents has the potential to act as the anti diabetic, anti obesity, anti- oxidant, antiglucose, anticholesterol activities. It is also a treatment of the diuretic, laxative and atherosclerosis. The main potential in this study is about the Anti-obese property. **Conclusion:** This study provided an insightful overview of *Clitoria ternatea* (CT) flower and its potential therapeutic applications, particularly in the treatment of poly cystic ovarian syndrome (PCOS). The focus was on its anti-obese properties and other therapeutic uses aimed at reducing weight and alleviating mental stress associated with PCOS. The findings underscored the presence of key phytoconstituents such as anthocyanins and tannins. This research highlights the significant potential of CT flower extract as a natural remedy with multifaceted health benefits, warranting further exploration and clinical investigation.

PHCG384
BIOLOGICAL ACTIVITY ON *CORIANDRUM SATIVUM*

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Abstract

Objective: Coriander is a common ingredient in cooking world-wide. It has many pharmacological Effects including antidiabetic, antioxidant, carminative, hepato-protective, neuro-protective. Traditional Remedies, source of bio-active compounds, etc include the objective of coriander. **Methodology:-** There are multiple ways to prepare coriander including coriander essential oil, can be extracted by Steam-distillation or Soxhlet Extraction with methylene chloride. It is the official method for determining the essential oil content and used in industrial production. It is prepared from plant material for study, you can wash it with distilled water,air-drier and heat at room temperature. It is propagated by seeds directly in a prepared bed after the last frost. Seeds should be planted at 0.6 to 1.2cm deep, with 5cm between seeds and 30-38cm between rows. Convective drying can be used to dry coriander at different temperatures and air velocities. **Result**: Coriander may help to improve lipid profiles and cardiac biomolars and also have antihypertensive, antiatherogenic, antiarrythmic effects. Its leaves may help to counter oxidative stress, anxiolytic, hypolipidemic, hypoglycaemic effects. **Conclusion:** Coriander has many potential health benefits including Cardio-protective, help to protect neuro-degenerative diseases, cancer and metabolic syndrome. It has a long history of use as a traditional medicine for reactive airway diseases like asthma and bronchitis.

PHCG385
A CURRENT OUTLOOK ON NOVEL AND ACTIVE THERAPEUTIC AGENT BETACARYOPHYLLENE FROM CLOVE BUDS

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Abstract:

Objective: (E)-β-caryophyllene (BCP) is a natural bicyclic sesquiterpene widely distributed in the plant kingdom, where it contributes a unique aroma to essential oils and has a pivotal role in the survival and evolution of higher plants. Recent studies provided evidence for the protective roles of BCP in animal cells, highlighting its possible use as a novel therapeutic tool. **Method:** Thus, Caryophyllene more formally (“)-β-caryophyllene, (BCP), is a component of many essential oils, especially clove oil, which constituents are eugenol (70–95%), eugenol acetate (up to 20 %) and β-caryophyllene (12–17%) from the stems and flowers of Syzygium aromaticum (cloves). It was another active constituent of clove buds. BCP is one of the most widespread sesquiterpenes in floral volatiles, occurring in more than 50% of angiosperm families. Usually, it is insoluble in water. It has an earthy flavor profile with hints of spice. β- Caryophyllene serves as a defense against pathogens that invade floral tissues and, like other floral volatiles, may play multiple roles in defense and pollinator attraction. Therefore, it acts as a full agonist of the cannabinoid receptor type 2 (CB2 receptor) which was studied over an animal model. β-Caryophyllene has the highest cannabinoid activity compared to the ring- opened isomer α-caryophyllene Humulene which may modulate CB2 activity. Due to its unique ability to bind with CB2 receptors. **Result:** Beta-caryophyllene has potent anti-inflammatory, antimicrobial, antibacterial, and

antioxidant properties. It is known to help relieve anxiety and pain, reduce cholesterol, prevent Osteoporosis, and treat seizures. BCP shows beneficial effects on obesity, non-alcoholic fatty liver disease/non-alcoholic steatohepatitis(NAFLD/ NASH) liver diseases, diabetes, cardiovascular diseases and pain also. **Conclusion:** This scenario describes the current knowledge on biosynthesis and natural sources of BCP and enlightens the overview of its role and mechanisms of action in different inflammation-related metabolic and neurologic disorders. Despite its promising potential, more clinical trials are necessary to fully understand its efficacy and safety in humans. The exploration of beta-caryophyllene as a therapeutic agent continues to evolve, promising new and effective treatments derived from natural sources.

PHCG386
EXPLORING THE CARDIO PROTECTIVE EFFECTS OF GINGER: POTENTIAL IN TREATMENT AND PREVENTION OF HEART ATTACK

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Abstract:

Objective: The primary objective of this study is to evaluate the cardio protective properties of ginger and identify its active constituents responsible for mitigating heart attack risk factors, such as inflammation, oxidative stress, hyperlipidemia, and platelet aggregation. **Method:** A systematic review of both *in vitro* and *in vivo* studies, as well as clinical trials involving ginger's impact on cardiovascular health, was conducted. Key databases such as PubMed, Scopus, and Web of Science were used to gather evidence. The review focused on analyzing the mechanisms through which ginger and its bioactive compounds, such as gingerols and shogaols, exert their effects on the cardiovascular system. **Results:** The findings suggest that ginger exerts significant cardio protective effects by reducing oxidative stress, improving lipid profiles, inhibiting platelet aggregation, and modulating inflammatory pathways. Animal studies demonstrated reduced infarct size and improved myocardial function in models treated with ginger extracts. Clinical studies indicate improvements in cholesterol levels, blood pressure, and overall heart health in subjects supplemented with ginger. **Conclusion:** Ginger shows promising potential as an adjunct therapy for preventing and managing heart attacks. Its multifaceted cardio protective effects warrant further clinical investigation to determine its efficacy, optimal dosage, and long-term safety. Incorporating ginger into pharmaceutical formulations could provide a natural, effective means of addressing heart disease risks.

PHCG387
EXPERIMENTAL VALIDATION OF HERBAL TEA DEVELOPED FROM THE LEAVES AND FLOWERS OF *MIMUSOPS ELENGI* TARGETING OBESITY

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Abstract:

Objectives: The aim of this study was to formulate and evaluate a herbal tea from the leaves and flowers of *Mimusops elengi* (ME) to evaluate the phytochemical and antioxidant activity showing various potential health benefit in the management of lifestyle disease like obesity. **Methods:** A herbal tea was developed from dried leaves and flowers of ME in order to check its safety, quality, and efficacy by various

in-vitro experimental tests such as phytochemical, pharmacognostic parmeters, and antioxidant properties. Additionally, phytochemical compounds present in the developed herbal tea were analyzed usingGas Chromatography- Mass Spectroscopy (GC-MS). Two phytochemicals were subject to molecular docking to assess their binding property to specific proteins like POMC and UCP1. **Results:** The conducted test shows promising results. Tests including pharmacognostical parameters (moisture content: 2.4%; ash value: 5%), total antioxidant activity and preliminary phytochemical analysis test (presence of carbohydrate, flavonoid and alkaloid) was performed and after successful conduction of DPPH analysis, it shows significant antioxidant activity(IC_{50} of herbal tea: 43.21µg/ml) as compared to ascorbic acid (IC_{50}: 28.45µg/ml). GC-MS analysis revealed more than 20 compounds prominent among them are cyclopentasiloxane decamethyl (CPD) and cyclohexasiloxane decamethy (CHD). Both the reported compounds are found to possess potent anti-obesity effects in scientific literature. The claim was further cemented when the molecular docking studies demonstrated promising binding property of CPD and CHD towards POMC (CPD: -6.7 kcal/mol; CHD: -5.6 kcal/mol) and UCP1(CPD: -7.2 kcal/mol; CHD: -10.11 kcal/mol). From the results obtained it may be opined that ME may have promising medicinal properties in lifestyle disease like obesity. **Conclusions:** The formulated ME herbal tea may provide significant health benefit in the management of obesity. This study suggests that tea could be an effective natural remedy however additional *in-vivo* as well as clinical studies are warranted to establish its pharmacological efficacy.

PHCG388

COMMERCIAL IMPORTANCE OF GERANIOL ISOLATED FROM PALMAROSA GRASS ALONG OTHER NATURAL INSECTICIDES AND PREPARATION OF INCENSE STICKS

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Abstract:

Objectives: The aim of this study is to isolation of Gereniol from Palmarosa Grass along other natural insecticides and preparation of incense Sticks for its commercial applications and opportunities for industry advancement. **Method:** Extracting Geraniol from Palmorosa grass involves techniques such as steam distillation (Clevenger Apparatus), where geraniol is separated from the essential oils such as citronellol, citral to obtain a concentrated form of the compound. Gereniol admix with other phytoconstituents like Neem oil (Azadirachtin), Garlic, limonene and vegetable oil in definite composition. Other ingredients include sawdust, flower powder and binding agent like Joss powder or Gum. Incense sticks was prepared using formulation. Fragrance incorporated will in two different favours of Jasmine musk and Vanilla which is finally coated on bamboo sticks dry in the shade for 6-7 days in order to remove moisture content. **Result:** Geraniol holds significant commercial importance across various industries due to its versatile properties and when it has been admix with other phytoconstituents give new formulation of incense sticks which is showing better results. Incense sticks were prepared using geraniol along other natural insecticides and give better result over insects and flies repellent and giving aromatic fragrance and eco friendly. **Conclusion:** Geraniol isolated from Palmarosa grass, holds significant commercial potential due to its pleasant floral aroma and versatile properties. It has shown better response from local area public from Chhatarpur district in M.P. We are planning to go for patent against this formulation.

PHCG389
A COMPREHENSIVE REVIEW ON CARDIOVASCULAR EFFECTS OF LYCOPENE

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Abstract:

Objectives: The aim of this study was to evaluate lycopene as natural cardiovascular drug. **Methods:** For this work more than 50 journals, research and review papers have been studied, many of them are from Pub med and scopus database. "Effect of Lycopene on cardiovascular system" This information has been received from more than 30 different journals and other information we have received from remaining 20 journals. All the journals are reputed and well indexed. The authors of these journals are from different places from the world. **Results:** Lycopene is a naturally occurring carotenoid found predominantly in tomatoes and other red fruits, has garnered significant attention for its potential cardiovascular benefits. As an antioxidant, lycopene neutralizes reactive oxygen species, reducing oxidative stress—a key factor in the pathogenesis of cardiovascular diseases (CVD). Emerging evidence suggests that lycopene may improve endothelial function, reduce blood pressure, and inhibit low-density lipoprotein (LDL) oxidation, all of which are critical in the prevention and management of atherosclerosis and related cardiovascular conditions. Clinical studies have demonstrated an inverse relationship between lycopene intake and the incidence of cardiovascular events, such as myocardial infarction and stroke. Lycopene's anti-inflammatory properties also contribute to its protective effects on the cardiovascular system. While lycopene is not yet a mainstream cardiovascular drug, its role as a dietary supplement in reducing CVD risk factors is promising. Ongoing research is needed to fully understand its mechanisms of action, optimal dosing, and long-term effects when used as an adjunctive therapy in cardiovascular disease management. **Conclusions:** The dietary intervention study suggests that regular consumption of lycopene-rich foods may have beneficial effects on cardiovascular health. Participants who included lycopene in their diet showed improvements in key cardiovascular markers, including lower LDL cholesterol levels, reduced blood pressure, and decreased inflammation markers (such as CRP). These findings indicate that lycopene, as part of a balanced diet, could contribute to the prevention or management of cardiovascular diseases. However, further studies with larger sample sizes and longer durations are recommended to confirm these results and better understand the mechanisms involved.

PHCG390
PHARMACOGNOSTIC, ANTIOXIDANT, AND ANTHELMINTIC ANALYSIS OF AQUEOUS EXTRACTS FROM THE AERIAL PARTS OF *ENHYDRA FLUCTUANS*

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Assam Down Town University, Sankar Madhab Path, Gandhi Nagar, Panikhaiti, Guwahati, Assam, India

Abstract:

Objectives: *Enhydra fluctuans*, commonly known as water lettuce, is a versatile aquatic plant known for its traditional medicinal uses. This study aimed to evaluate the antioxidant and anthelmintic potential of the aerial parts of *Enhydra fluctuans* through *in-vitro* and *in-vivo* experiments. **Methods:** Phytochemical screening was done using different testing reagent for qualitative assessment of bioactive constituents. The antioxidant activity at different concentration against a standard was studied by using DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging assay. Aqueous extract was investigated for the anthelmintic activity against earth worm *Eisenia fetida* at various concentrations 25, 50, and

100 mg/ml, a standard drug albendazole 10 mg/ml and a normal (saline) control. **Results:** Phytochemical screening revealed the presence of alkaloids, flavonoids, glycosides, phenolic compounds, carbohydrate, saponin and tannin. The DPPH radical scavenging assay revealed significant antioxidant activity$IC_{50}$of 1.48.29 µg/ml and 63.39 µg/ml for aqueous extract and standard ascorbic acid respectively. All test extracts demonstrated dose-dependent anthelmintic action. The paralytic time was 23 ±0.26 minutes and the death time was 48 ±0.34 minutes for the test sample at 100 mg/ml and 20±0.18 minutes and the death time was 35±0.22 minutes for albendazole treated earthworms. **Conclusions:** The results support the usage of *Enhydra flactuans* as an antioxidant and anthelmintic. Biochemical parameters and gut histopathological findings also support the traditional claim of potential anthelmintic property.

PHCG391
NUTRITIONAL AND MEDICINAL PROPERTIES OF *SELENICEREUS UNDATUS* (CACTACEAE): A REVIEW

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Abstract:

Objectives: The aim of this study is exploring the nutritional and medicinal properties of *Selenicereus undatus* are centered around its potential to contribute to overall health and well-being, prevent and manage various health conditions, and provide a natural source of essential nutrients and bioactive compounds. **Methods:** For this work more than 40 journals, research paper and review papers have been studied, many of them are from PUBMED, SCOPUS DATABASE, WORLD CUT, GOGGLE SCHOLER. Overall, The nutritional and medicinal properties of Selenicereus undatus (dragon fruit or pitaya) play a crucial role in enhancing human health and wellness. . This information has been received from more than 30 different journal and other information we have received from remaining 20 journals. All the journals are reputed & well indexed. The authors of this journals are from different places from the world. **Result:** "*Selenicereus undatus*," also known as "pitaya" or dragon fruit, is a tropical fruit known for its vibrant red skin and sweet, seed-speckled pulp. It is oval. It is rich in nutrients, offering numerous health benefits. This fruit is low in calories but high in essential vitamins and minerals, including vitamin C, B vitamins, iron, magnesium, and calcium. Dragon fruit is also a good source of dietary fibre, which aids in digestion and promotes gut health. Its high antioxidant content, including betalains, flavonoids, helps protect cells from damage and reduces inflammation. Additionally, dragon fruit has prebiotic properties that support a healthy micro biome. However, due to its high antioxidant content, it can aid in the treatment of sunburn, dry skin, and acne. Regular consumption of dragon fruit may contribute to improved immune function, better cardiovascular health, and lower risk of chronic diseases. The anti-cancer qualities of this fruit may lower the risk of colon cancer. This fruit helps to development of fetal bones, increase the energy level, and helps to avoid birth abnormality. **Conclusion:** The study concluded that incorporating dragon fruit into our diet can lead to numerous health benefits, making it a functional food that not only satisfies the palate but also provides a wealth of nutritional and medicinal advantages. Its potential in preventing and managing health conditions highlights its importance in a balanced diet and encourages further research into its bioactive components and their applications in health and wellness. Whether consumed fresh, in smoothies, or as part of various dishes, dragon fruit is a delicious and beneficial fruit that can enhance your overall health and well-being.

PHCG392
PRODUCTION OF MOSQUITOES REPELLENTS INSECTICIDES (MOSQUITOES COIL) USING ORANGE PEELS

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Abstract

Objective: The primary objective of this study is to explore the feasibility of using orange peels, a commonly discarded organic waste, as an effective and environmentally friendly ingredient in the production of mosquito repellents and insecticides, specifically mosquito coils. The study aims to determine the effectiveness of orange peel-based mosquito coils in repelling and as a primary ingredient killing mosquitoes compared to conventional products. **Method:** Extracting essential oils and various phytochemicals and bioactive compounds with limonene being the most abundant (98.454%), from orange peel which are considered to be paramount importance. The extraction process mainly constituted techniques such as steam distillation and solvent extraction. Both the methods need further purification steps to isolate the other chemical moieties from the compound present in the extract. Mosquitoes repellent coil have been prepared which not only produces less smoke but also shows other properties such as antioxidant, anti-inflammatory. **Result:** Limonene as most abundant bioactive compound, a monocyclic monoterpene, is known for its distinctive citrus fragrance has been studied for its insecticidal properties. this diverse chemical composition makes repellent formulation, offering both safety and efficacy for the environmental friendly**.** **Conclusion:** The orange peel-based mosquito coil represents a promising advancement in eco-friendly mosquito control, with the potential to make a significant impact on public health and environmental sustainability. Through ongoing innovation and collaboration, this natural solution has the capacity to improve the quality of life for communities worldwide, offering protection against mosquito-borne diseases while promoting a healthier and more sustainable future.

PHCG393
TAURINE USED AS IMMUNOMODULATORS: A REVIEW

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Abstract:

Objective: The aim of this study is to develop the multifaceted role of taurine in the immune system, indicating its potential as a therapeutic agent for enhancing immune function and managing immune-related conditions. This abstract explores recent findings on taurine's effects on the immune system, highlighting its capacity to modulate immune responses through various mechanisms. **Method:** For this work more than 45 journals, research paper and review papers have been studied, many of them are from Pubmed, Scopus Database, World Cut, Google Scholar. Overall, taurine's role as a natural, safe, and effective immunomodulator. This information has been received from more than 30 different journals and other information we have received from remaining 20 journals. All the journals are reputed& well indexed. **Result:** Taurine, a sulfur-containing amino acid, has gained attention for its potential role as an immunomodulator. Taurine influences the activity of immune cells, including macrophages, T cells, and B cells, and impacts the production of cytokines and other inflammatory mediators. Research suggests that taurine can enhance immune function in certain contexts while mitigating excessive inflammation in others. These dual effects

suggest that taurine may have therapeutic potential in managing autoimmune diseases, inflammatory disorders, and infections. **Conclusion:** The study concluded that taurine's play a role as a natural, safe, and effective immuno-modulator makes it a promising candidate for therapeutic interventions aimed at enhancing immune function and preventing disease progression.

PHCG394

DEVELOPMENT AND ASSESSMENT OF HERBAL OINTMENT CONTAINING *AEGLE MARMELOS* PLANT EXTRACT: A STUDY EXPLORING ITS POTENTIAL USE IN DERMATOLOGY.

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Abstract:

Objective: The aim of the study was to develop and evaluate the herbal ointment incorporating *Aegle marmelos* plant extract, for carrying out the research on the potential dermatological applications of the developed formulation. **Methods:** The leaves of the plant *Aegle marmelos* was selected and collected for the study. The plant leaves were washed, dried, ground into powder, imbibed with solvents, macerated for 7 days, and concentrated into a blackish green residue and three extractions were prepared using three different solvents (Ethanol, Acetone and Methanol). The herbal ointment, containing plant extract, was prepared by melting hard paraffin and adding ingredients, stirring gently and cooling to form a homogeneous paste. **Result:** The percentage yield and different phytochemical test such as Detection of Alkaloid, Carbohydrate, Saponin, Protein and amino acid, Phenolic compound, Glycoside, Fixed oil and fats were performed. After developing the ointment formulation, different physicochemical parameters were evaluated such as Color, Odor, Consistency, pH, Loss of drying, Solubility, Washability, Stability study etc. The development and evaluation of this herbal ointment incorporating *Aegle marmelos* extract underscore the significant therapeutic potential of phytochemicals in dermatological applications. Phytochemicals, the bioactive compounds found in plants, have been used in traditional medicine for centuries and are now increasingly recognized in modern dermatology for their diverse therapeutic properties. **Conclusion:** This study highlights the potential of herbal ointments containing plant extracts as safe, natural alternatives to conventional treatments, offering anti-inflammatory, antimicrobial and wound healing properties. With further research and development, such formulations could play a vital role in modern dermatological therapy, offering patients natural options with minimal side effects.

PHCG395

QUERCETIN USED IN CARDIOVASCULAR DISEASES: A REVIEW

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Abstract:

Objectives: The main aim of the study to show the health benefits of Quercetin, mainly cardiovascular benefits. This study also focus the mechanism of action of Quercetin in various cardiovascular problems. **Methods:** For this work more than 35 journals, research paper and review papers have been studied, many of them are from PUBMED, SCOPUS DATABASE, WORLD CUT, and GOGGLE SCHOLER. Overall, the cardiovascular drugs "Quercetin" plays a vital role to reduce the

cardiovascular disease. This information has been received from more than 27 different journal and other information we have received from remaining 23 journals. All the journals are reputed & well indexed. The authors of this journals are from different places from the world. **Result:** Quercetin is a flavonoid that can be found in various kind of plant-based foods, such as onions, apples, berries etc. It has demonstrated potential as a natural cardiovascular medication. Both glycoside and aglycone, which are naturally occurring forms with biological action, are present. Its anti-inflammatory and antioxidant qualities inhibited the inflammation process, enhance endothelial function, and stop platelet aggregation to help avoid cardiovascular disease. Additionally, quercetin has been demonstrated to reduce heart hypertrophy, regulate blood pressure, and enhance lipid profiles. It might also lessen the effects of cardiovascular risk factors like metabolic syndrome, diabetes, and obesity. Quercetin's natural origin, minimal toxicity, so the clinical trials are needed to confirm its efficacy and safety as preventive treatment for cardiovascular health. **Conclusion:** The study concluded thatQuercetin is a flavonoid that can be found in various kind of plant-based foods like onions, apples, berries etc. It can be occurred from both glycoside and aglycone, which can helps to protect the heart from cardiovascular diseases, improved blood pressure regulation, and also reduce obesity, diabetes, and metabolic syndrome.

PHCG396

RECENT ADVANCES ON THERAPEUTIC STRATEGIES INVOLVING MEDICINAL PLANT FOR ALZHEIMER'S DISEASE: A REVIEW

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Abstract:

Objectives: The aim of this review is to evaluate recent advances on therapeutic strategies involving medicinal plant for Alzheimer's disease. The present scenario, several strategies and researches are being tried including the clinical trials of herbal formulations for the treatment of Alzheimer's disease. It highlights the nanomedicine, phytopharmaceuticals, nutraceutical, and gene therapy related advances and treatments. **Method:** An exhaustive literature survey was carried out through online publication data bases such as pubMed Science Direct, Google Scholar to obtain information on the various available herbal strategies to prevent Alzheimer's disease. **Results:** Based on the present scenario, Glutamine has been published as the first nutraceutical to be licensed by the FDA for reversible Acetyl cholinesterase inhibitory activity. It is derived from *Leucojum atrium* and *Galanthus nivalis*, belonging to the family Amarylidaceae. It also shows a modulatory effect on the cholinergic nicotinic receptors and provides an effective symptomatic treatment for patients with Alzheimer's disease. **Conclusion:** Grape seed extract, amylolipid nanovesicles, green synthesized nanoparticles, nano emulsion , Solid lipid NPs, coupling of low-generation dendrimers and lactoferrin are the strategies on which researchers are working to find out effective solution of treatment for Alzheimer's Disease. The recent advances and nanotechnology in herbal therapy for a treatment can be costly.

PHCG397

NUTRACEUTICALS: NEW ERA OF MEDICINE AND HEALTH

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Abstract:

Objectives: The objective of this study is to explore the role of nutraceuticals in modern medicine and health. Specifically, it aims to investigate the potential benefits of these compounds, bridging the

gap between traditional nutrition and pharmaceutical interventions. **Methods:** Literature Review: A comprehensive review of existing scientific literature on nutraceuticals was conducted. This involved analyzing research articles, clinical trials, and observational studies. Data Collection: Relevant data on various nutraceuticals, their mechanisms of action, safety profiles, and therapeutic applications were collected from reliable sources. Analysis: The collected data were critically evaluated to identify trends, patterns, and gaps in knowledge related to nutraceuticals. Synthesis: Based on the analysis, the study synthesized information to provide a holistic view of nutraceuticals' impact on health and disease prevention. **Results:** Therapeutic Applications: Nutraceuticals like omega-3 fatty acids (from fish oil) have demonstrated cardiovascular benefits by reducing inflammation, improving lipid profiles, and enhancing endothelial function, Glucosamine and chondroitin sulfate are commonly used for joint health, particularly in osteoarthritis management, Curcumin (from turmeric) and flavonoids (found in berries) show promise in supporting cognitive function and reducing neurodegenerative risks, Probiotics and prebiotics act as gut-friendly nutraceuticals, promoting a healthy microbiome, Collagen peptides and antioxidants (e.g., vitamins C and E) contribute to skin health and anti-aging effects. Challenges and Future Directions: Lack of standardized dosages and quality control hinder nutraceutical research, Clear regulations are needed to ensure safety, efficacy, and accurate labelling, Rigorous clinical trials are essential to validate nutraceutical claims, Tailoring nutraceutical recommendations based on an individual's genetic makeup and health status. **Conclusions:** Rate of growth in the nutraceutical industry is very high compared to food and pharmaceutical sectors. In future, those nutraceutical producers who will succeed in the market are expected to be companies that have wide variety of products ranging from functional foods to traditional organic goods. The future demand for nutraceutical will depend on how consumers view diet-disease relationship. However, nutraceuticals have great potential in health promotion and disease prevention but health care professionals, nutritionists and regulatory toxicologist need to work together strategically on proper regulations that provide the best healthful therapeutic benefit for all mankind. Various clinical researches should be done over a period of time to confirm scientifically the efficacy of nutraceuticals during different medical conditions. For instance, they interact with food sometimes leading to modification of their action as well as with drugs sometimes rendering their effect ineffective. Whether different processing techniques affect bioavailability or activity of nutriceuticals still remains unclear. In this respect, just like any cure, very strict regulation must be set up for these alternativemedicines.

PHCG398
A COMPREHENSIVE REVIEW ON CHEMICAL COMPOSITION AND HEALTH BENEFITS OF ANTARCTIC KRILL

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Abstract:

Objectives: This summary gives insight into human studies with regard to the health benefits of krill oil and its bioactive substances, EPA and DHA. Physiological activities and therapeutic effects in disease situations are focused on in this review, which gives a contribution to understanding the impact of essential fatty acids like Omega-3. **Methods:** Literature was searched using keywords such as "krill oil," "human," and "clinical studies" in databases like Pubmed, Google Scholar, CINAHL, and AltHealth Watch. A total of 84 results were turned out, from which 26 original research articles rigorously were screened. These provide important insights and empirical evidence with respect to the subject matter,

thereby delivering valuable insights and empirical evidence to the topic. **Results:** Krill oil, known for its EPA and DHA content, holds promise in combatting various health issues like hyperlipidemia, arthralgia, PMS, and inflammation-related conditions. Scientific findings suggest that the benefits from krill oil are comparable to those from fish oil, underscoring its potential as a viable option for addressing certain health concerns. Nevertheless, further research is essential to firmly establish and validate the advantageous effects of krill oil in these health conditions. **Conclusions:** Krill oil has a number of bioactivities and potential applications, although many studies were lacking in basic molecular mechanisms underlying these processes. Thus, future research should, at a minimum, be directed to understanding single facets of this system through molecular mechanistic keyword research in order to speed its uptake and uncover new components or functions.

PHCG399
MEDICINAL PLANTS IN THE TREATMENT OF MYOCARDIAL INFARCTION DISEASE: A REVIEW

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Abstract:

Objectives: This presentation's goal is to evaluate the possible role of natural materials in the creation of herbal myocardial infarction (MI) remedies by looking at the medicinal plants and phytochemicals that have been used to treat MI. **Method:** Using electronic databases such Web of Science, Google Scholar, PubMed, Sci Finder, Reaxys, and Cochrane, a literature search was conducted to obtain information. **Result:** Following the recognition of 140 plants from 12 families, data on the plant families, portions of the plant used, chemical contents, extracts, ulcer model used, and dose were abstracted. The findings showed that the Fabaceae (11%) and Asteraceae (9%), comprising 231 of the MI plants, were the most common families of plants. Flavonoids (43%), glucosides (25%), alkaloids (23%), phenolic acid (19%), saponins (15%), and tannins (12%), were the most common organic substances found in MI plants. **Conclusion:** The presence of flavonoids in Fabaceae plants was demonstrated to have cardioprotective effects.

PHCG400
BHASMA: A CONVENTIONAL NANOMEDICINE IN AYURVEDA

Sofia Meher[1]*, Kshireswari Sahu[1], Ashutosh Meher[2], Srimanta Kumar Das[1], Ranjan Kumar Sahoo[1], Arnabaditya Mohanty[1], Nishanirlipta Kar[1], Chandan Kumar[1]
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[2]Rajib Lochan Hota College of Pharmacy, Mahada, Barpali, Bargarh, Odisha

Abstract:

Objectives: The aim of this study is, a branch of Ayurveda, Rasashastra, deals with preparations & therapeutic applications of nanomedicines in the form of Bhasma. Metals, herbs parts of animals are used in Ayurvedic as well as other systems of medicines, although their use dates back to 2500 B.C. **Methods:** Bhasma are special ayurvedic preparations of horns, shells, feathers, metallic & non-metallic compounds, herbal & minerals that are treated with herbal juice or decoction & exposed for Ayurveda. Parpati, Rasayoga & other technologies are used to prepare Bhasma. Bhasma is an ash that is prepared by smoldering & before the reaction phase, the initial material goes through a complex purification. **Results:** Complex purification of initial material incorporates additional minerals & herbal extracts.

The metallic nanoparticles (herbo- mineral-metallic compounds having mixture of micro or nanoparticles) used in the form of Bhasma, that has been uses in treating the various disease & disorders. Bhasma breaks down heavy metals in the body instead of producing any detrimental metabolites through metabolization.

Conclusion: Bhasma has significance for numerous purposes, including keeping the body's alkalinity at its optimal state & neutralizing toxic acids. It is essential that Bhasma is standardized in order to verify its authenticity & evaluate its quality, safety, efficacy & acceptability as a product.

PHCG401

ANALGESIC ACTIVITY OF *CISSUS QUADRANGULARIS* EXTRACT IN MICE: OPIOID RECEPTOR INVOLVEMENT

Sourav Agasti[1]*, Roshan Kumar Pradhan[1], I. Sailaja[1], Srimanta Kumar Das[1], Asutosh Kumar Padhan[1], Santosh Kumar Dash[1], Amiya Ranjan Padhan[1], Ashutosh Meher[2]

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Abstract:

Objectives: *Cissus quadrangularis* is an indigenous plant to Odisha (family Vitaceae) that has never been studied. The purpose of this study was to investigate the analgesic effect of a dried ethanolic extract of Cissus quadrangularis (CQE) in mice utilizing tail flick, hot plate, and acetic acid induced writhing paradigms. **Methods**: The analgesic time course demonstrated maximal activity after three hours in both the tail flick and hot plate techniques, which was extended to 24 hours. CQE metabolites may be responsible for opioid receptor activation. In the tail flick and hot plate tests, the EC50 of CQE was 83 and 50 mg/kg, respectively. **Results**: The results showed that CQE had substantial dose-dependent analgesic efficacy in all analgesic models examined. The analgesic effect was caused by the activation of opioid receptors in the central nervous system, which might include both spinal and supraspinal components.In both assays, CQE provided double the analgesic coverage of morphine. **Conclusion**: Finally, CQE demonstrated opioid agonistic action with a new slow and protracted impact. The current study might add a new weapon to the arsenal of opioid medicines as a natural powerful analgesic and for the treatment of opioid withdrawal syndrome.

PHCG402

NUTRACEUTICALS: A IMPORTANCE IN HUMAN BEING

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[2]Rajib Lochan Hota College of Pharmacy, Mahada, Barpali, Bargarh, Odisha

Abstract:

Objective: Nutraceutical is a broad term describing foods, food ingredients, and dietary supplements that provide specific health or medical benefits, in addition to the basic nutritional value found in the food. The use of nutraceuticals is increasing dramatically for reproductive disorders because there is growing evidence of clinical benefits. **Method:** They are becoming more popular when traditional therapies of reproductive disorders have not been very effective due to many underlying conditions, nutritional deficiencies, and the responsiveness of traditional therapy. Many medically important nutraceuticals including nutritional supplements, vitamins, and antioxidants have been shown to improve reproductive performance and to be effective in treating reproductive senescence of aging and

infertility in humans. **Results:** Many expanding spectra of nutraceuticals exist, but the mechanisms of action, indications, contraindications, adverse effects, and evidential support vary with the product and species. It is difficult to discuss the scientific behaviors of all nutraceutical products used in reproductive and developmental disorder. **Conclusion:** This chapter described the role of nutraceuticals in human infertility, endocrine disorders, pubertal development, and success of pregnancy and lactation.

PHCG403

GREEN NANOTECHNOLOGY: A NEW OPTIMISM FOR MEDICATION

Swagatika Panda[1]*, Sushree Sameekshya Rath[1], Ashutosh Meher[2], Srimanta Kumar Das[2], Henerita Dash[2], Hemangini Behera[1], Simran Meher[1], Aditi patel[1]
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Abstract:

Objectives: Green nanotechnology is about the study of how nanotechnology benefit to the environment. It describes the creation of nano particles by using natural processes and environment friendly technology. Green nanotechnology has two goals that producing nano material and products without harming the environment and human health. **Methods:** Green nano technology involves the use of non hazardous green chemical and green engineering. The development of eco friendly technology, nano-products without toxic ingredients, at low temperatures using less energy and renewable inputs wherever possible, and using lifecycle thinking in all design and engineering stages. Now a days varieties of greennano particles with well defined composition, size and morphology has been synthesized by different methods and their applications. **Results:** Many green technologies aim to reduce emissions of carbon dioxide and other greenhouse gases in order to prevent climate change. Solar power is one of the most successful green technologies and is now cheaper to deploy than fossil fuels in many countries.green nanotechnology increased energy efficiency, reduced waste and greenhouse gas emissions, and minimized the consumption of non-renewable raw materials. **Conclusions:** Green nanotechnology has produced environmentally friendly synthesized nanomaterials with many applications. It also focus on the application of deed biosynthesis nanoparticles in a wide spectrum of potential areas of medical biology including catalysis for targeted drug delivery, cancer treatment, antibacterial agents and bio sensor.

PHCG404

INCINERATED GOLD (SUBARNA BHASMA) SIGNIFICANCE ON CURRENT MEDICINE

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The Pharmaceutical College, Barpali, Odisha

Abstract:

Objectives: Nano and colloidal gold particles are found in Swarna Bhasma, sometimes referred to as Suvarna Bhasma, a traditional Ayurvedic treatment. It has been used for millennia in India to treat illnesses of the neurological system, diabetes, and rheumatoid arthritis. Since it contains up to 98% gold particles, it is regarded as one of the priciest Ayurvedic remedies. **Methods:** In the past, gold was known to have several medicinal benefits, including being a rejuvenator, an aphrodisiac, and a life extension. Swarna Bhasma's aphrodisiac qualities may aid with low sperm count, strength, endurance, and semen quality and quantity. Its additional qualities also help treat a number of illnesses, such as rheumatoid arthritis, diabetes mellitus, bronchial

asthma, and problems of the nervous system. It is regarded as a superb heart tonic as well. **Results:** It helps with low blood pressure, limited cardiac pumping capacity, and general weakness. Swarna Bhasma has long been thought to strengthen immunity. It is also thought to have anti-aging and antioxidant propertiesThe present study is review on Incinerated gold (swarna bhasma) importance on current age Medicine. **Conclusion:** This Suvarna Bhasma is a traditional Ayurvedic medicine that contain nano and colloidal gold particles. In this review abstract ,the author tries to gather all information on gold that establishes its anti-inflammatory, antimicrobial, anti-carcinogenic, anti-rheumatic and antioxidant properties.

PHCG405

PHYTOCHEMICAL PROFILING AND MEDICINAL APPLICATIONS OF *TRAGIA INVOLUCRATA L.*: A NATURAL REMEDY EXPLORED

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Abstract:

Objectives: The objective of this review is to systematically explore and summarize the phytochemical profile and medicinal applications of *Tragia involucrata* L., with the aim of validating its traditional use and assessing its potential in modern therapeutic practices. **Methods:** A comprehensive review of available literature was conducted, focusing on the phytochemical composition and pharmacological properties of *T. involucrata*. Research articles from peer-reviewed journals were sourced from databases such as PubMed, Scopus, and Google Scholar. Studies were selected based on their relevance to the bioactive compounds, antimicrobial, anti-inflammatory, and antioxidant properties of the plant, as well as its traditional medicinal uses. **Results:** The review confirmed the presence of various bioactive compounds in *T. involucrata*, including flavonoids, alkaloids, saponins, and tannins, which contribute to its medicinal potential. The plant has demonstrated significant antimicrobial, anti-inflammatory, and antioxidant properties, aligning with its traditional use in treating skin disorders, inflammatory conditions, and microbial infections. The ethnobotanical significance of the plant across various cultures was also supported by scientific findings. **Conclusions:** This review highlights *Tragia involucrata* L. as a promising natural remedy with diverse medicinal applications. Its phytochemical composition and pharmacological properties suggest a valuable role in modern medicine. The study recommends further research to explore its full therapeutic potential and to facilitate its inclusion in herbal pharmacopeia and drug development initiatives.

PHCG406

NUTRACEUTICALS USED FOR INFLAMMATION

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Abstract:

Objectives: The aim of this study is to review the role of nutraceuticals used for inflammation. **Methods:** When it comes to managing inflammation and related conditions, including cardiovascular diseases, arthritis, and neurodegenerative disorders; several nutraceuticals have shown promising results. But for this review, I have taken the following nutraceuticals: Green tea (*Camellia sinensis*), Turmeric (*Curcuma longa*), Fish oil and Blueberries (*Vaccinium* sect. *Cyanococcus)*. **Results:** phytoconstituents and the other chemical compositions were studied and their various benefits

involving how they are effective in the management of diabetes were mentioned and shown. **Conclusion:** This review concluded that diabetes can be managed and can be taken care of to an extent with the help of nutraceuticals. Some of these nutraceuticals have shown excellent effects in the management of diabetes and helps to regulate blood sugar levels and improve insulin sensitivity. They have also shown excellent result in improving glucose metabolism as well. These nutraceuticals show promise for managing inflammation-related conditions, including cardiovascular diseases, arthritis, and neurodegenerative disorders. However, their bioavailability and efficacy in humans need further research. Nutraceuticals could complement conventional therapies in managing inflammation and reducing chronic inflammatory disease burdens.

PHCG407
INNOVATIVE FORMULATION OF PREVENTIVE HERBAL TEA WITH NOVEL FLAVORS FOR INSOMNIA, PCOS, AND OBESITY MANAGEMENT: EFFICACY, CONSUMER ACCEPTANCE, AND SUSTAINABLE PACKAGING SOLUTIONS

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Abstract:

Objective: This research investigates integrating new and unique flavors, aimed at addressing insomnia, polycystic ovary syndrome (PCOS), and obesity. Key herbs include Ashwagandha (*Withania somnifera*), known for its adaptogenic properties, and Shatavari (*Asparagus racemosus*), which supports hormonal balance and metabolic health. **Methodology:** The herbal tea was formulated through an extensive review of Indian herbal medicine, focusing on their roles in regulating sleep, hormonal balance, and weight management. Clinical trials assessed the effectiveness of this tea in improving sleep quality, reducing PCOS symptoms, and supporting weight loss. Results indicated significant improvements in sleep latency, hormonal markers, and body mass index among participants. **Result:** The innovative herbal tea formulation demonstrated substantial efficacy in improving sleep quality, alleviating PCOS symptoms, and aiding weight management. Validation through clinical trials confirmed significant enhancements in sleep latency, hormonal balance, and body mass index. Consumer acceptance was notably high due to the novel flavor profiles. **Conclusion:** This study's innovative approach combines traditional knowledge with modern preferences, offering a novel solution for common health issues. It highlights the role of Indian herbs in preventive health and proposes practical packaging advancements to enhance user experience and environmental impact.

PHCG408
FORMULATION AND EVALUATION OF ANISE OIL-LOADED NLCS IN TRANSDERMAL PATCHES FOR ANTIEPILEPTIC EFFICACY

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Abstract:

Objectives: Epilepsy, a prevalent neurological disorder, results from abnormal synchronized discharges within a group of neurons in the cerebral cortex. Anise oil , derived from *Pimpinella anisum*, (Umbelliferae [Apiaceae]) contains, anethole, a phytoconstituent traditionally used in Iranian medicine for neuralgia and seizures. The study focuses on the development of nano-structured lipid carriers (NLC) to enable the sustained release of anethole through transdermal patches, aimed at providing anti-seizure activity. **Methods:** The

anethole content in anise oil was quantified using UV-Vis spectroscopy. The antiepileptic activity was assessed in mice using the Maximal Electroshock Seizure (MES) model, with anise oil administered intraperitoneally at doses of 1.5 and 3 ml/kg body weight, 30 minutes before inducing convulsions. Anise oil-loaded NLCs were prepared using ultrasonication, with cholesterol and oleic acid as solid and liquid lipids, respectively. The NLCs were prepared using solvent diffusion and evaporation methods, and the loaded NLCs were formulated as transdermal patches by the evaporation casting method, utilizing a combination of HPMC and Ethyl cellulose polymers. **Results:** Standard anethole exhibited linearity in the range of 1-5 ppm at λ max 256 nm. Anise oil was found to contain 93% w/w anethole. Anise oil abolished the hind limb extensor phase in the MES model, and One-way ANOVA of the convulsion phase showed mean values of 3.5±0.932 seconds and 3.5±0.376 seconds for 3 ml/kg and 1.5 ml/kg body weight, with a significance of $P < 0.05$ compared to Levetiracetam (positive control), which had a mean of 9.667±1.70 seconds. The NLCs exhibited an entrapment efficiency of 66.4% and an average particle size of 230 nm, as determined by SEM. The transdermal patches were colourless, transparent, and exhibited a folding endurance of up to 737 folds. The diffusion study conducted using a Franz Diffusion cell demonstrated a cumulative release of 87.367% w/w in 90 minutes. **Conclusion:** The study demonstrates that anise oil-loaded NLCs in transdermal patches offer potential for sustained anti-seizure activity.

PHCG409

EVALUATION OF THE ETHANOLIC EXTRACT OF *W. SOMNIFERA* FOR HEPATOPROTECTIVE POTENTIAL AND ANTIOXIDANT PROSPECTIVE AGAINST CYCLOPHOSPHAMIDE INDUCED LIVER INJURIES AND OXIDATIVE STRESS

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Abstract:

Objective: The objective of present study was to evaluate the hepatoprotective potential and antioxidant prospective of ethanolic extract of *W. somnifera* (EWSE)against cyclophosphamide induced liver injuries and oxidative stress. **Method:** The hepatoprotective benefits of EWSE were evaluated and compared with the standard medicine Silymarin (100 mg/kg) and the ayurvedic product Liv 52 (100 mg/kg). Six groups of Wistar rats (n = 6) were formed. CTX-intoxicated animals were given treatment with EWSE at dosages of 250 mg per kg, 500 mg per kg, and 1000 mg per kg of body weight. On day fourteen, blood samples were collected and tested for liver function markers (SGOT, SGPT, ALP, and the total bilirubin level). The histological changes in animal liver sections were investigated, and the antioxidant capacity of EWSE against cellular oxidative stress induced by CTX was investigated in liver homogenates. **Result**: The results showed that EWSE at all three dosages significantly improved liver function markers and reduced oxidative stress compared to the control group. Supplementing with EWSE significantly reduced SGOT, SGPT, ALP, and total bilirubin levels ($p<0.001$). EWSE exhibits a significant ($p<0.001$) antioxidant impact, reducing lipid peroxidation and increasing GSH, SOD level, and catalase activity. Additionally, histological analysis revealed hepatic rejuvenation and the preservation of normal hepatic morphology as evidence of histopathological repair in animals receiving EWSE.

Conclusion: The findings revealed that EWSE has a protective effect against CTX-induced liver damage by reducing oxidative stress and improving liver function markers. This suggests that *W. somnifera* could be considered as an additional herbal supplement to rejuvenate and preserve the hepatic profile during cancer chemotherapy.

PHCG410

EVALUATION OF ANTI-DIABETIC POTENTIAL OF *PICRIA FEL-TERRAE* LOUR: AN *IN-VITRO* AND *IN-VIVO* APPROACH

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Abstract:

Objectives: The primary objective of this study was to investigate the anti-diabetic effect of *Picria fel-terrae* Lour through *in-vitro* and *in-vivo* experimental techniques. **Methods:** The test extracts were prepared using successive solvent extraction method using solvents in increasing order of polarity. Phytochemical screening was performed for the detection of various secondary metabolites. The study involved various *in-vitro* methods to evaluate the anti-oxidant potential as well. The anti-diabetic effect was assessed hereby with *in-vitro* α-amylase and α-glucosidase inhibition assay and *in-vivo* streptozotocin induced rat model. **Results:** The phytochemical screening confirmed the existence of different secondary metabolites in the plant extracts. The total phenolic content and flavonoid content of the selected extract were found to be 129.5 mg GAE/g and 127.8 mg QE/g respectively for anti-oxidant activity. The ethanolic extract of the plant showed inhibition against α-amylase and α-glucosidase, with IC_{50} value of 411.851 µg/ml and 433.172 µg/ml for anti-diabetic activity. The blood glucose levels decreased significantly in test extract treated group, in a dose dependent manner. The extracts significantly reduced the cholesterol, triglyceride and LDL in experimental rats compared with diabetic control. **Conclusions:** The research study concluded with an impression that the selected extract of *Picria fel-terrae* Lour has promising anti-diabetic potential. It can be inferred that the fractions effectively inhibit blood glucose levels. Further studies involving different pathways needs to be undertaken to understand the mechanism behind the anti-diabetic potential of the plant.

PHCG411

SIMULTANEOUS QUANTIFICATION OF THREE PHENOLIC BIOACTIVE COMPOUNDS IN *BIXA ORELLANA* THROUGH HIGH-PERFORMANCE THIN LAYER CHROMATOGRAPHY

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Abstract

Background: *Bixa orellana* (family Bixaceae) is a traditionally used medicinal plant for many ailments. **Method:** Simultaneous quantification of ferulic acid, apigenin, and caffeic acid were performed by using the High-Performance Thin Layer Chromatography (HPTLC) method in *Bixa orellana*. Methanolic extract of the plant was used on HPTLC silica gel 60 F_{254}, 20×10 (Mark) plate for the separation and quantification of identified bioactive compounds by using toluene: ethyl acetate: formic acid (7: 2.5: 0.5) as mobile phase. The used mobile system provides well-resolved bands at R_f ferulic acid (0.59 ± 0.02), apigenin (0.54 ± 0.02), and caffeic acid (0.44 ± 0.03) in *B. orellana*. **Result**: The quantification of ferulic acid, apigenin, and caffeic acid were carried out by using a densitometric absorption mode at 319 nm. The HPTLC method was

validated as per the standard guideline of the international conference on harmonization (ICH). The developed method was calibrated and validated in the concentration range of 100-500µg/spot for ferulic acid, apigenin, and caffeic acid. The antioxidant potential of *B. orellana* was also evaluated to correlate the role of identified marker compounds by DPPH assay and deoxyribose assay. As per the analyzed data, it is observed that *B. orellana* (Fruit) exhibits maximum and promising antioxidant potential as compared to *B. orellana* (bark & steam) extract. **Conclusion:** This study demonstrates that the developed method is reliable, efficient, and practical approachable which may be utilized as a tool for the systematic quality evaluation and standardization of *B. orellana.*

PHCG412

IDENTIFICATION AND QUANTIFICATION OF AROMATIC COMPOUNDS IN FRESH CURRY (*MURRAYA KOENIGII*) LEAVES USING GC-MS

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Abstract:

Objectives: The present study primarily focused on investigating the phytoconstituents in the leaf oil by GC-MS analysis. **Methods:** For this purpose, extraction of essential oil was carried out with the help of Clevenger's apparatus and analysis of oil done by the GC-MS. **Result:** Fifty volatile constituents were identified in *M. koenigii* essential oil in which *Caryophyllene oxide (8.12%), 2-Cyclohexen-1-one, 4-(1-methylethyl)(2.97%),Trans-1,10-Dimethyl-trans-9-decalinol(2.69%), Caryophyllene oxide (8.12%), 2-Hydroxy-2,4,4-trimethyl-3-(3-methylbuta-1,3-dienyl) cyclohexanone (2.72%), Benzaldehyde,4-(1-methylethyl) (1.38%),p-cymen-7ol(1.93%),5,5,8a-Trimethyl-3,5,6,7,8,8a-hexahydro-2H-chromene(1.05%), Cyclohexanol,3-ethenyl-3-methyl-2-(1-methylethenyl)-6-(1-methylethyl)(1.89%),2-Cyclohexen-1-one,3-(hydroxymethyl)-6- (1-methylethyl) (1.18%),* found as the major constituents. **Conclusion:** Studies of literature disclose many prominent pharmacological behaviours of the plant because of its several pharmacologically active substances. Carbazole alkaloids which are copiously available in the roots,fruits, leave and bark has been accounted for their anticancerous, antinociceptive, antibacterial, antidiabetic and antioxidantactivities. Besidethem, the plant has an amplearray of the rapeuticactivities. Present work explored the variety of constituents identified in the oil obtained by the hydrodistillation process followed by GC-MS analysis.

PHCG413

DEVELOPMENT AND EVALUATION OF ANDROGRAPHOLIDE AND FLAXSEED OIL GLYCEROGELS FOR SUPERIOR PERMEABILITY FOR SKIN CANCER TREATMENT

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Abstract:

Objectives: The aim of the current study was to develop and evaluate Nano sized Andrographolide loaded Glycerogels for their potential against skin cancer with improved permeation. **Methods:** Nano sized Andrographolide was done by sonicaiton followed by solvent evaporation technique.The best formulation was subjected for various physicochemical evaluations, release kinetics studies, particle size analysis, *ex-vivo* permeation studies, biocompatibility tests, cytotoxicity assays against A431 cell lines, cell cycle analysis, skin irritability tests, and *in vivo* cellular uptake studies. **Results:**

The optimized nano-emulgel has exhibited the *In-vitro* drug release of 92.5 ± 0.5%, following Higuchi kinetics. Ex-vivo permeation studies showed approximately 90% drug release within 24 hours, with 10% retention in the epidermal layer, shows the superior skin permeation and retention properties of the optimized emulgel. **Conclusion:**The enhanced permeability observed with the nano glycerogel formulations of Andrographolide indicates a promising novel phytotherapeutic approach for the treatment of skin cancer.

PHCG414
EVALUATION OF ANTI-OXIDANT, ANTI-MICROBIAL, ANALGESIC AND ANTI-INFLAMMATORY ACTIVITY OF *LAUNAEA SARMENTOSA*

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Abstract:

Objective: This study aims to present the pharmacognostical characterization of *L. sarmentosa* leaves and evaluate the potency of its ethanolic extract for antimicrobial, antioxidant, analgesic, and anti-inflammatory activities. **Methods:** After conducting both macroscopic and microscopic (qualitative and quantitative) characterization, an ethanolic extract of *L. sarmentosa* leaves (ELS) was prepared using cold maceration. The antimicrobial activity of ELS was tested against *Bacillus pumilus, Bacillus subtilis, Escherichia coli, Pseudomonas aeruginosa, Aspergillus niger,* and *Candida albicans* using the cup-plate method. Antioxidant activity was assessed using DPPH, H, O, , and NO assays, with ascorbic acid as the standard. Anti-inflammatory activity was evaluated using *in vitro* models (bovine serum albumin [BSA] denaturation, egg albumin [EA] denaturation, and proteinase inhibition) and *in vivo* models (acetic acid-induced writhing test, histamine-induced rat paw edema, and formalin-induced nociception test). **Results:** ELS exhibited significant inhibitory effects against *B. subtilis* (42±0.13 mm) and *E. coli* (41±0.16 mm). The extract also showed potent radical scavenging activity, with IC_{50} values of 566.09 µg/ml for DPPH, 377.029 µg/ml for NO, and 39.37 µg/ml for H, O, . *In vitro* experiment demonstrated dose-dependent inhibition of protein denaturation, comparable to the standard. *In vivo* tests showed dose-dependent analgesic and anti-inflammatory effects, significantly reducing acid-induced writhing, rat paw edema, and formalin-induced nociception compared to the disease control group ($p<0.001$). **Conclusions:** The study demonstrated ELS's significant antimicrobial, antioxidant, analgesic, and anti-inflammatory activities, effectively inhibiting pathogens, scavenging free radicals, and reducing pain and inflammation. The findings of pharmacognostic and pharmacological properties of *L. sarmentosa* highlight its potential as a promising natural alternative to chemical drugs.

PHCG415
FORMULATION AND EVALUTION OF POLYHERBAL GEL FOR SKIN ALLERGY AND ITS INFECTIONS

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Abstract:

Objectives: The aim of this study was to formulate the polyherbal gel ant its screening for skin allergy and its related infections by *in vitro* methods. **Methods:** The selected plants were identified by

organoleptic characters and powder microscopy. The results of phytochemical screening showed the presence of alkaloids, phenols and terpenoids All above optimised formulation were screened for anti-inflammatory assay by Serum albumin the present study also was focused to study anti-fungal activity by Agar –well diffusion method. **Results:** Anti-inflammatory activity results showed that the formula F2 and F4 showed remarkable percentage inhibition as compared to F1, F3 and F5. The results of anti-fungal activity also showed that F2 and F4 were found to be good zone of inhibition, whereas F5 more effective as compared to standard anti-fungal drug. From the observations of the present study, the poly herbal gel (F2 and F5) were found to be good for allergy with respect to inflammations and infections. This is due to high concentration of *Acalypha indic* and *Andrographis panniculata*. Through the combination of various herbal plant extracts the gel demonstrates effectiveness in alleviating allergic reactions and combating fungal infections. **Conclusion:** The formulated polyherbal gel for skin allergy and its infections shows promising potential as a natural remedy. Through the combination of various herbal plant extracts the gel demonstrates effectiveness in alleviating allergic reactions and combating fungal infections.The formulated polyherbal gel demonstrated by showing promising results in reducing skin allergy and related infections .Its anti-microbial and anti-inflammatory properties proved its potential for effective treatment for skin allergy and its related infections .

PHCG416
COMPREHENSIVE STUDY ON THE FORMULATION AND EVALUATION OF PHARMACEUTICAL DOSAGE FORMS FROM *PSIDIUM GUAJAVA* LEAF EXTRACT

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Abstract:

Objectives: The Aim of This Study Was: to extract the bioactive compounds present in leaves of *Psidium guajava*, to determine antibacterial activity of *Psidium guajava* leaf extract against *Staphylococcus Aureus, Escherichia Coli, Pseudomonas aeruginosa*, to formulate herbal Cream from *Psidium guajava* leaves extract which does not cause side effect or adverse effect, to study efficacy and safety of prepared antibacterial cream. **Methods:** A leaf extract of *Psidium guajava* was selected for the study. The extraction was conducted using the Soxhlet method, yielding a hydro alcoholic extract rich in bioactive compounds. The cream formulation was assessed for physical attributes, pH, spreadability, and microbial activity against common pathogens. This study focuses on formulating and evaluating an antibacterial cream utilizing *Psidium guajava* L. leaf extract. **Results:** The phytochemical analysis, spreadability, and physical parameters of *Psidium guajava* were studied. Among all preparations evaluated, *Psidium guajava* demonstrated effectiveness against Escherichia coli in microbial assays, highlighting its potential as a potent antimicrobial agent. **Conclusions:**The study successfully formulated an antibacterial cream using hydroalcoholic extract from guava leaves, demonstrating potent antimicrobial properties. This herbal cream offers a stable formulation with favorable physicochemical characteristics, highlighting its potential as a natural remedy against microbial infections.

PHCG417
FABRICATION, CHARACTERIZATION, AND EVALUATION OF SELENIUM NANOPARTICLES FOR ANTI-BREAST CANCER ACTIVITY

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Abstract:

Objectives: This study aims to synthesize Selenium Nanoparticles (SeNPs) using *Euphorbia hirta* (leaf), *Tinospora cordifila* (stem), *Terminalia arjuna* (bark) extract, characterize them, and evaluate their *in-vitro* and *in-vivo* anti-breast cancer activity. **Method:** The *E. hirta* (leaf) EH-SeNPs, *T. cordifila* (stem) TC-SeNPs, and *T. arjuna* (bark) TA-SeNPs were synthesized using plant extracts. The SeNPs were characterized and evaluated *in-vitro* using MCF-7 cells and *in-vivo* using DMBA-induced breast cancer in female rats. **Result:** The synthesis of SeNPs were confirmed by UV-visible spectroscopy. SeNPs size ranged from 100 to 200nm with stable Zeta potential from -25mV to -26.4 mV. SeNPs' crystallinity was confirmed by XRD analysis. EDAX and ICP-AES analysis verified Selenium in SeNPs. The IC_{50} values for MTT assay of EH-SeNPs (56.48 ± 0.27 µg/mL), TC-SeNPs (64.26 ±0.65 µg/mL), TA-SeNPs (43.35 ± 0.51 µg/mL), Se(69.02 ± 0.33 µg/mL), and Standard Doxorubicin (6.41 ± 0.09 µg/mL) respectively indicate that plant extracts and plain Se display moderate cytotoxicity, whereas fabricated SeNPs demonstrate high cytotoxicity. Female SD rats treated with combined SeNPs therapy showed weight recovery and reduced tumor weight and volume with no toxic side effects. The treated tumor tissues exhibited substantial cell death and low proliferation, as confirmed by immunohistochemical examination and H and E staining, in contrast to the control group. **Conclusion:** Experimental evidence reveals a successful synthesis of selenium nanoparticles and their therapeutic potential. Combinatorial SeNP therapy is a viable alternative for breast cancer treatment due to its profound cytotoxic and tumor-suppressive effects.

PHCG418
PHYOTOCHEMICAL AND ANTIMICROBIAL SCREENING OF *CENTRATHERUM ANTHELMINTICUM* L.

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Abstract:

Objective: *Centratherum anthelminticum* (Aranya jeeraka) is particular variety has a distinctive bitter taste compared to regular cumin, which contributes to its distinct flavour profile. The presence of important bioactive compounds in plants makes them pharmacologically valuable. Therefore, in the present study, the phytochemical analysis of seed extract *Centratherum anthelminticum* along with antimicrobial potential was evaluated. **Method:** The extraction of seeds was carried out by using different solvents, from non-polar to polar, by soxhlation. Preliminary tests for different secondary metabolites were conducted for all extracts. Solvent systems were developed for different extracts by thin-layer chromatography. **Results:** The preliminary phytochemical and chromatographic investigation of various extracts of *Centratherum anthelminticum* was carried out, and the results were obtained in the form of Rf values. The phytochemical profile of the plant was determined and presented in the tables, showing the presence of secondary metabolites and Rf values. Antimicrobial potency was evaluated by the disc plate method. **Conclusion:** The study concluded that the *Centratherum anthelminticum* ethanolic extract of the seed contains a rich variety of phytochemicals that might be accountable for its therapeutic value and thus justify its traditional use in India.

PHCG419

FORMULATION AND EVALUATION OF MEDICATED JELLY OF BITTER DRUGS

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Abstract:

Objectives: Present study was aimed at taste masking of Ofloxacin using ion exchange resins as a taste masking agents. The Excipients used in the formulation was tested by drug-excipients compatibility study which showed no compatibility issues. **Methods:** For taste masking of Ofloxacin,ion-exchange resin method was used. The resins like Indion 204, Indion 214 and Tulsion 335was tested at various ratios. Based on the results Tulsion 335 with the ratio 1:1.5 was selected for complexation. *In vitro* drug release studies showed more than 70% drug release at 20 minutes time point and complete drug release within 45 minutes. **Results:** Complex was prepared by using different drug: resin ratio. Trials were carried out to obtained tastemasked complex of drug with optimum drug loading efficiency. Depending upon the taste masking and %drug loading efficiency batch F8 i.e. with tulsion 335 in the ratio 1:1.5 was selected. **Conclusions**: The aim of the present study to taste masking of Ofloxacin. The Excipients used in the formulation was tested by drug-excipients compatibility study. All the excipients were compatible with Ofloxacin. For taste masking of Ofloxacin,ion-exchange resin method was used. The resins like Indion 204, Indion 214 and Tulsion 335 was tested at various ratios.Based on the results Tulsion 335 with the ratio 1:1.5 was selected for complexation. The dissolution studies of the Taste masked formulation for all the formulations show more than 70% drug release at 20 minutes time point and complete drug release within 45 minutes.The optimized formulation F8 evaluated for uniformity of dosage form and taste evaluation. It shows satisfactory results. Further this complex could be useful for the formulation of different taste masked dosage forms.

PHCG420

NEUTRALIZING RUSSELL'S VIPER PHOSPHOLIPASE (PLA2) TOXIN USING MINI AA-CRYSTALLIN (MAC) PEPTIDE

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[2]National Centre for Cell Science, NCCS Complex, Savitribai Phule Pune University Campus, Ganeshkhind, Pune, Maharashtra, India.

Abstract:

Objectives: This study aims to design a peptide-based inhibitor for Phospholipase A2 (PLA2), an abundant low molecular mass toxin with various pharmacological effects including hemolysis, anti-coagulation, and oedema. The peptides mini αA-crystallin (MAC) and its variant MAC-GRD identified from eye lens crystallin were investigated for their ability to inhibit PLA2 via *in silico* studies. **Methods:** The 3D structures of the MAC and MAC-GRD peptides were modeled using PepFold 3 server and docked with PLA2 using ClusPro. Molecular Dynamics (MD) simulations were performed for 100 ns to assess the stability of the interactions. **Results:** Docking results demonstrated that MAC and MAC-GRD interact with PLA2 via various hydrogen and hydrophobic bonds, with free energies (ΔG) of -13.1 and -12.6 kcal/mol, respectively. MD simulation indicated that the MAC-PLA2 complex is more stable than the MAC-GRD-PLA2, as evidenced by low Root Mean Square Deviation (RMSD) values. The residues

involved in interactions between PLA2 and MAC-peptide were consistent across docking and MD simulations, suggesting a stable complex. **Conclusions:** The study suggests MAC peptide might be an effective peptide-based inhibitor against Russell's viper PLA2 toxin. Further *in vitro* and *in vivo* studies are necessary for conclusive evidence. This would aid in developing peptide-fortified antivenoms resulting in better neutralization of low molecular mass venom toxins.

PHCG421
IN-SILICO APPROACH, GREEN TECHNOLOGY FOR EXTRACTION OF *CENTELLA ASIATICA* LEAF WITH ANTI-MYCOBACTERIAL EVALUATION OF ITS PHYTOCONSTITUENTS

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Abstract:

Objectives: The aim of this study is to extract Centella asiatica Leaf by applying Green Technology (Microwave Assisted Extraction) for enhancing the extraction efficiency and reducing the time required as compared to the traditional extraction methods. Further, the in-silico study significantly reduces the time and cost associated with experimental research. **Methods:** Microwave Assisted Extraction (MAE) is used to extract phytoconstituents from Centella asiatica Leaf using suitable organic solvents. Then in-silico approach predicts the preferred orientation of target molecules with proteins that help in identifying potential drug candidates. To evaluate the in-silico results, the suitable phytoconstituents of Centella asiatica Leaf are subjected to an *in vitro* anti-tubercular study. The luciferase reporter phase (LRP) assay method is conducted to evaluate the anti-mycobacterial property of C. asiatica leaf extract. **Results:** MAE provides better product yield as compared to conventional extraction methods. It is observed that some of the phytoconstituents of Centella asiatica Leaf displayed good binding interaction with the target protein (*Mycobacterium tuberculosis enoyl reductase)*. The anti-tubercular result revealed that methanolic extract exhibits promising anti-tubercular activity as compared to standard drug (Isoniazid). **Conclusions:** The study concluded that MAE significantly shortens the extraction process. This is due to the rapid heating and efficient energy transfer provided by microwave irradiation. Further MAE is employed to improve the extraction yield as compared to the soxhlet extraction. The leaf extract of Centella asiatica contains phytochemicals that have promising anti-mycobacterial activity. This study further provides the scope of isolating and understanding the characteristics of each compound for developing new drug candidates with potential pharmacological properties.

PHCG422
DETERMINATION OF PIPERINE IN ZANDU HALDI DROPS USING UV SPECTROPHOTOMETER

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Abstract:

Objectives: The present work was aimed at the determination of Black pepper in Haldi drops by UV spectrophotometer with reference to its marker compound piperine. **Methods:** *Preparation of Standard Stock solution:* Accurately weighed 1mg of piperine was dissolved in methanol in a 10ml volumetric flask to get a stock solution containing 100 µg/ml piperine. From this working standard of

1,2,3,4, and 5µg/ml were prepared. *Preparation of Sample solution:* An accurately measured quantity (1ml) of the formulation was dissolved in methanol in a 10ml volumetric flask to get a concentration of 100 µg/ml. From this stock solution, an accurately measured quantity (0.5ml) was dissolved in methanol in another 10ml volumetric flask. Then, the volume was made up to 10ml to achieve the concentration of 5 µg/ml. **D***etermination of Lambda max:* The prepared standard solution 5µg/ml was scanned from a wavelength of 200-400 nm range by Shimadzu UV Spectrophotometer and the lambda max was found to be 342 nm. Later, we measured the absorbance of different standard concentrations at this wavelength and plotted the calibration curve. Then, we measured the absorbance of sample solution. **Results:** The plots of concentration vs absorbance demonstrated a linear relationship. The equation of the straight line for piperine was y=0.1783x + 0.0409. The linearity range for piperine was found to be between 1 and 5 µg/ml and the regression coefficient was calculated to be 0.9954, indicating good linearity between the absorbance and concentration. Piperine concentration in the formulation was 2.5%. **Conclusions:** We conclude that the formulation Zandu Haldi drops contains Black pepper as one of its ingredients and its presence was confirmed with reference to Piperine.

PHCG423

IN-SILICO SCREENING & MD SIMULATION OF BIOACTIVE ANTI-INFLAMMATORY PHYTOCONSTITUENTS IN *DENDROCNIDE SINUATA* LEAF EXTRACT: ADME PREDICTION, HRLC-MS ANALYSIS AND PHARMACOLOGICAL PROFILING.

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NETES Institute of Pharmaceutical Science, Santipur, Mirza, Kamrup, Assam

Abstract:

Objectives: The objectives of this study were analyse to Pharmacognostical and Physiochemical characteristics, Preliminary Phytochemical Composition, HRLC-MS analysis of bioactive compounds, *In-silico* exploration of active phytoconstituents and ADME prediction of selective hit compound, *In-vitro* anti-inflammatory analysis of leaf extracts from *Dendrocnide Sinuata.* **Methods:** Screening of Pharmacognostical studies, Prepared *Dendrocnide Sinuata* leaf extract using Soxhlet apparatus and Preliminary Physiochemical analysis. HRLC-MS was performed using Agilent G6550A model which offers 0.01% mass resolution. The acquisition method was configured with MS spectrometry range of 50 to 100 m/z and a scanning rate of spectrum per second. In the present work, total 80 Phytoconstituents of *Dendrocnide Sinuata* molecular docking was done against Prostaglandin D2 *Synthase* protein to evaluate their Anti-inflammatory potential. The X-ray Crystal structure of (PDB ID:2VCX) was retrieved from the RCSB Protein Data Bank. The phytoconstituents of *Dendrocnide Sinuata* were sketched using Chem Draw Professional 15.1 and saved in SDF format, then prepared using the LigPrep module of Schrodinger 2022-4 (LigPrep, Schrödinger, LLC, New York) with default parameters. The target proteins were prepared by using the "Protein Preparation Wizard" (Protein Preparation Wizard; Epik, Schrödinger, NY). The docked complexes were subjected to MD simulation for a time period of 100ns.MD simulations were done using OPLS_2005 force field in Desmond of Schrodinger. The ADME properties of the top hit compound and standard drug were estimated by ADME tools for Swiss ADME software that predicted drug-likeness properties, evaluated Pharmacokinetic properties. For Anti-inflammatory activity, Egg albumin denaturation assay was done by UV spectroscopy. **Results:** HRLC-MS analysisidentified the bioactive compounds of

Dendrocnide Sinuata from 80 Phytoconstituents database. Selected all the bioactive compounds docked against Prostaglandin D2 Synthase protein (PDB ID: 2VCX) with standard drug. Among all bioactive compounds, 4Z,15E-Bilirubin IXa (-9.7), Debenzoylzucchini factor B (-9.3), Ciclesonide (-8.8) showed highest binding score. All the hit compounds showed good docking score than standard drug (-8.3).MD simulations found out for protein-ligand complexes of top hit compound were explored over a time scale of 100 ns in order to understand the complex's dynamic behaviour and stability. RMSD value of protein-ligand complex showed less than 2+!. The results of the Physiochemical and Pharmacological ADME properties of both hit molecule and standard drug indicated that they have suitable ADME properties. The hit molecule shows no violation against rule of five (Lipinski's rule). The anti-inflammatory activity of *Dendrocnide Sinuata* extract was assessed *in vitro* by testing it's effect on egg albumin denaturation. The ethyl acetate extract showed IC_{50} inhibition 138.01(µg/ml) where as standard drug showed IC_{50} inhibition 125.02(µg/ml). **Conclusion:** In conclusion, this research work portrayed the importance of Higher resolution Liquid chromatrograph Mass Spectrometer analysis, *In Silico* Screening, drug -interaction, ADME Prediction and *In vitro* Anti-inflammatory study of *Dendrocnide Sinuata* Leaf extract. For further advancements in drug formulation could lead to the development of authentic medications, ultimately benefiting human health and well -being.

PHCG424
PHARMACOGNOSTIC AND PHARMACOLOGICAL PROFILE OF LEAVES OF *AZADIRACHTA INDICA*

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Abstract:

Objectives: *Azadirachta incdica* A.juss , belonging to the family of meliaceae is an important medicinal plant used in the traditional system of medicine to treat various diseases for the betterment of mankind. Considering the significance of this plant, the present investigation is directed to remain some pharmacognostic parameter of the leaves as a whole and its powdered form. **Methods:** For the preliminary phytochemical analysis , the extract was prepared by weighing 100 gm of dried powdered leaf and were subjected to maceration with different solvents as per the polarity , petroleum ether , benzene , chloroform, ethyl acetate, ethanol, methanol and finally with water. **Results:** The quantitative determination of pharmacognostic parameters will help for setting standards for crude drugs. The total ash is particularly important in evaluating the purity of drugs. The pharmacognostic constants for the leaves of this plant, the diagnostic microscopic features and the numerical standards reported in this work could be useful for the compilation of a suitable monograph for its proper identification. **Conclusions:** The chemical tests on ethanolic extract and the powder material showed the presence of alkaloid carbohydrate, protein and amino acid, reducing sugars, flavonoids etc. The ethanolic extract at a dose of 500mg/kg body weight were studied for their analgesic effect by tail immersion method and found that it was showing maximum effect, using diclofenac sodium as standard.

PHCG425
EXPLORING THE POTENTIAL OF ACTIVE CONSTITUENTS OF A POLYHERBAL EXTRACT- PREPARATION AND STANDERDIZATION OF SKIN FORMULATION WITH NANOPARTICLES

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Abstract:

Objective: The primary aim of this research was to evaluate the potential of active constitutes of a polyherbal extract containing *Lagerstroemia speciosa (Banaba), Moringa oleifera seeds, and organic Mussaenda* and to develop a natural polyherbal cream formulation enriched with titanium dioxide nanoparticles. This formulation seeks to optimize the yield of bioactive compounds that contribute to antioxidant, anti-inflammatory, and antimicrobial activities, ultimately creating a safe and effective topical product for managing oxidative stress, inflammation, and microbial infections. **Methodology:** The extraction process involved a systematic approach, yielding a notable concentration of bioactive compounds. Pharmacognostic investigation of individual drugs was performed and physicochemical parameters of polyherbal powder was estimated. Phytochemical screening was performed to evaluate the presence of active constituents. Anti oxidant property, anti inflammatory and antimicrobial potential of polyherbal extract was estimated. Finally a polyherbal cream incorporated with titanium dioxide nanoparticles was formulated and its stability studies were studied. confirmed the presence of various constituents, such as alkaloids, flavonoids and tannins. , traditionally associated with antioxidant and anti-inflammatory activities. **Results and Discussion:** The extraction process yielded concentrated extracts rich in bioactive compounds, which were subjected to various *in vitro* assays to evaluate their antioxidant, anti-inflammatory, and antimicrobial properties. Preliminary phytochemical screening revealed the presence of alkaloids, flavonoids and tannins. Preliminary findings suggest that the polyherbal extract exhibits a degree of efficacy in combating oxidative stress, inflammation, and microbial infections, although specific results remain to be fully elucidated. The incorporation of TiO, nanoparticles is anticipated to enhance the cream's protective capabilities against UV radiation while potentially improving the delivery of the herbal extracts. Antimicrobial studies indicated significant inhibitory effects against E. coli and Streptococcus species. Two methods were studied to estimate the anti-inflammatory power which showed a clear picture revealing the effects on inflammation. Future research is proposed to explore the underlying mechanisms of action, optimize formulation techniques, and assess the broader therapeutic applications of the cream.

PHCG426
ENHANCING EFFICACY: A COMPREHENSIVE REVIEW OF HERBAL BIO-ENHANCERS AND THEIR THERAPEUTIC POTENTIAL

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Abstract:

Introduction: This review aims to synthesize current knowledge, highlight key research findings, and discuss the practical implications of use of plant bio-actives as herbal bio-enhancers in various fields like pharmaceuticals, nutraceuticals, and traditional medicine. **Body:** A herbal bio-active compound is a naturally occurring chemical found in plants that can exert biological effects on living organisms. They are often referred as active ingredients responsible for the therapeutic properties of medicinal plants. Their

diverse biological activities implies its medicinal and therapeutic applications, preventive health care, nutritional supplements, cosmetic and skincare products. Herbal bio-enhancers are natural compounds derived from plants that can enhance the bioavailability and efficacy of drugs, nutrients, or other bio-active compounds. They have gained attention in recent years due to their potential to improve therapeutic outcomes, reduce required dosages, and minimize side effects other compounds, such as pharmaceuticals, nutrients, and herbal constituents. The concept of bio-enhancer comes from Ayurveda to boost the bio availability of poorly bioavailable medications via different mechanism like Enhancing Drug Absorption, by Inhibiting Drug-Metabolizing Enzymes, Improving Drug Solubility and protecting against degradation. They are choice of bio-enhancer in modern medicine because of their easy absorption, safety, and lack of side effects. They also reduce drug toxicity, decrease treatment times, and lower treatment costs. Literature indicates many herbal compounds herbal compounds including quercetin, genistein, naringin, sinomenine, piperine, glycyrrhizin and nitrile glycoside have demonstrated capability to enhance the bioavailability. For last one decade many novel carriers such as liposomes, microspheres, nanoparticles, transferosomes, ethosomes, lipid based systems etc. have been reported for successful modified delivery of various herbal drugs. **Conclusion:** The role of herbal bio-actives as bio-enhancers is a promising area of research, with significant potential for improving the efficacy and safety of various therapeutic agents. The mechanisms through which these bio-actives work are diverse and multifaceted, involving modulation of drug transport, metabolism, and stability. However, further research is needed to fully understand these mechanisms, optimize the use of herbal bioactives, and ensure their safe application in clinical trials.

PHCG427

A WEED WITH PROMISING NEUROLOGICAL ACTIVITY: *ARGEMONE MEXICANA*

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Abstract:

Objectives: The study aim to evaluate the neurological activity of *Argemone Mexicana*. **Methods:** A Comprehensive research was carried out to enlighten the pharmacological benefits of *Argemone Mexicana*. The study was carried out through various search engines for an extensive analysis of various research and review articles. **Results:** *Argemone mexicana* is a potent plant with various therapeutic advantages. This plant has also exhibited various neurological effects. It has shown antiepileptic effect by hindering the voltage dependent sodium channels or by obstructing the glutamatergic neurotransmission arbitrated by NMDA receptor. It is also known to supressed the onset of seizures. This is due to presence of bioactive compunds like flavonoids, phenols etc. The alkaloids present in ethanolic extract 200mg/kg has shown anxiolytic effect similar to diazepam 2 mg/kg. This activity is mediated by the $GABA_A$ receptors without any hinderance in locomotor activity. The methanolic extract and ethyl acetate extract showed significant central analgesic activity at a dose of 200 mg/kg on photoactometer. CNS depressant activity at dosage of 100 mg/kg, 200mg/kg and 400 mg/kg is established using various animal models such as analgesic activity by hot plat method, acetic acid induced writhing test, locomotor activity, motor coordination and phenobarbitone induced sleeping time. These results suggested that the plant Argemone mexicana is a powerful neurologic medicament. **Conclusions:** The study concluded that the extract is enriched in phenols and flavonoids which may exhibit a protective role against MES and PTZ –induced seizures. So, it shows an antiepileptic effect via regulation of AChE level as well as improves antioxidant enzymes in the brain.

PHCG428

IN VITRO ANTIOXIDANT ACTIVITY OF *SYZYGIM CARYOPHYLLATUM* L USING ABTS ASSAY METHOD

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Abstract:

Objectives: Aim of the present work is to isolate the phytoconstituents and to screen the antioxidant activity of S caryophyllatum. From the literature survey it was found that no substantial work has been carried out to isolate the phytoconstituents and to screen the antioxidant activity of S caryophyllatum. Hence an effort has been made to carry out the phytochemical investigation and to screen the antioxidant activity using ABTS assay. **Methods:** Isolation of phytoconstituents were carried out using column chromatographic technique and antioxidant activity was carried out using ABTS method. **Results:** Chemical investigation of the leaves of S. caryophyllatum led to the isolation of Quercetin (IUPAC name: 2-(3,4-dihydroxyphenyl)-3,5,7-trihydroxychromen-4-one), 3,7- Dihydroxy-4-methoxy flavone (IUPAC name: 7,3'-dihydroxy-4'-methoxyflavan) and 6,4 dihydroxy 3'propen chalcone (IUPAC name: (E)-3-(4-hydroxyphenyl)-1-(2-hydroxy-3,4,6-trimethoxyphenyl)prop-2-en-1-one**)** from acetone soluble fraction of methanolic extract. These constituents were isolated for the first time from this plant. The acetone soluble fraction of methanolic extract showed significant antioxidant activity. **Conclusions:** From the Pharmacological studies carried out, it is evident that acetone soluble fraction of methanolic extract of S. caryophyllatum endowed significant antioxidant activity. The activity may be due to Quercetin (IUPAC name: 2-(3,4-dihydroxyphenyl) -3,5,7- trihydroxychromen-4-one), 3,7- Dihydroxy-4-methoxy flavone (IUPAC name: 7,3'-dihydroxy-4'-methoxyflavan) and 6,4 dihydroxy 3'propen chalcone (IUPAC name:(E)-3-(4-hydroxyphenyl)-1-(2-hydroxy-3,4,6-trimethoxyphenyl)prop-2-en-1-one**)**

PHCG429

COMPREHENSIVE HEMORRHOID MANAGEMENT: EXPLORING CONVENTIONAL METHODS, HERBAL REMEDIES, AND CLINICAL RESEARCH

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Abstract:

Objectives: The aim of this article is to comprehensively examine diverse methods of hemorrhoid treatment, with a specific focus on herbal formulations and their clinical efficacy. This includes investigating hemorrhoid herbal treatment options in response to growing interest in natural therapies, highlighting various botanical agents, their traditional uses, and scientific evidence supporting their efficacy. **Methods:** A thorough review of existing literature and clinical studies were conducted to identify and evaluate various treatment methods for hemorrhoids. The focus was on both conventional medical interventions and herbal formulations. The review included an assessment of plant-derived compounds, their traditional uses, mode of action, and safety profiles. The collected data was synthesized to highlight the efficacy and safety of these treatments. **Results:** Certain plant-based formulations demonstrated potential efficacy in alleviating hemorrhoidal symptoms, supported by scientific evidence and traditional use. Various botanical agents showed promise due to their anti-inflammatory, analgesic, and venotonic properties.

Conventional medical interventions, including surgical and non-surgical methods, were also evaluated, with evidence supporting their effectiveness in different clinical scenarios. However, gaps in current knowledge were identified, particularly in the clinical validation of herbal treatments. **Conclusions:** This review underscores the potential of integrating herbal treatments into conventional hemorrhoid therapies, highlighting the need for further research to validate their efficacy and ensure safety.

PHCG430
FORMULATION AND EVALUATION OF *SPINACIA OLERACEA* CREAM FOR ANTIBACTERIAL ACTIVITY

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Abstract:

Objectives: The aim of this study was to prepare a hydroalcoholic extraction of spinach leaves. Fresh spinach leaves are washed, dried, and ground into a powder. This powder is then mixed with a hydroalcoholic solvent (ethanol and water) and left to macerate. After filtering, a concentrated extract rich in phytochemicals is obtained. To formulate and evaluate spinach extract cream the spinach extract is blended with cream base ingredients like emollients and emulsifiers. The cream is then tested for stability, viscosity, and sensory qualities to ensure it is effective and of high quality. To check the antimicrobial activity of spinach extract the spinach extract is tested against various bacteria and fungi using methods such as disc diffusion or broth dilution. This determines the extract's effectiveness as an antimicrobial agent. **Methods:** Hydroalcoholic Extract: *Spinacia oleracea* was selected for the study. Wash and air dry 500g of fully developed leaves at room temperature (27±2 °C) for 1-2 weeks. Macerate dried leaves with 70% methanol and 30% water for one week, shaking occasionally. Filter the mixture and concentrate it using a rotary evaporator. Chill the concentrated extract at 4°C.Aqueous Extract: Grind dried leaves into a fine powder. Add 5 grams of powdered leaves to 50 ml of distilled water in a conical flask. Seal the flask and set it on a rotary shaker at 200 rpm for 24 hours. Strain the mixture to obtain the aqueous extract. **Results:** The antibacterial activity of hydroalcoholic and aqueous extracts of *Spinacia oleracea* cream was evaluated using the cup plate method. The hydroalcoholic & aqueous extracts showed higher activity(zone of inhibition) against E. coli (o/w cream -14mm and w/o cream 9mm) than A. aureus &*P. aeruginosa*. **Conclusions:** This study prepared spinach leaf extracts and formulated them into creams. The extracts showed significant antibacterial activity against *E. coli*, with the hydroalcoholic extract exhibiting higher potency than the aqueous extract. The extracts also showed activity against *A. aureus* and *P. aeruginosa*.

PHCG431
PRODUCTION AND CHARACTERISATION OF TOTAL FATTY ACIDS FROM MARINE MICRO ALGAE

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Abstract:

Objective: The aim of the present study is extraction and purification of omega 3 fatty acids (EPA and DHA) from marine micro algae. Omega – 3 (ω 3) fatty acids are essential for human health. Eicosapentaenoic acid (EPA 20:5) and Docosahexaenoic acid (DHA 22:6) are the important

ω 3 fatty acids which are involved in human physiology. **Methods:** The study was carried out to production and optimize the culture conditions, extraction techniques and characterization of EPA and DHA with the selected strains. Three microalgae KB1, KB2, KB3 were used for the present study. The microalgae were cultured in distilled water using algae culture broth (HIMEDIA- M342) containing di potassium hydrogen phosphate 0.250g, Magnesium sulphate 0.513g, Ammonium chloride 0.050g, Calcium chloride 0.058g, Ferric chloride 0.003g in 1litre solution.1.87g of algae culture broth (HIMEDIA- M342) was dissolved in1000 ml distilled water by gentle warming and then autoclaved 121^{0}C for 15min at 15lbs. **Results**: The total lipid content of the micro algae varied from 23-35 %. All the algal strains (temperature, medium composition, aeration, agitation and flux) yielded good % of EPA and DHA along with other polyunsaturated fatty acids. The results were quite promising for further commercialization aspects. **Conclusion:** The use of microalgae for large scale production of polyunsaturated fatty acids especially omega 3 fatty acids has recently attracted interest throughout the world. Over the past decade, algal biotechnology has grown steadily with more number of entrepreneurs for a large number of applications.

PHCG432
UNLOCKING SYNERGISTIC POWER OF MUCILAGINOUS LEAFY EXTRACTS AGAINST MICROBIAL INFECTIONS

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VIVA Institute of Pharmacy, Shirgaon Campus, Virar East, Thane, Maharashtra

Abstract:
Objectives: The aim of this study was synergistic findings of leaf extracts of Hibiscus rosa-sinensis and Ocimum sanctum by antimicrobial study. **Methods:** *Test Organisms:* The antimicrobial activity of the combined extracts was evaluated against two bacterial strains:*Escherichia coli* and *Staphylococcus aureus*. *Agar diffusion assay:* The disc diffusion method was used to assess the inhibitory effects of the aqueous and ethanolic extracts on the growth of the test microorganisms. *Comparative Analysis:* The antimicrobial activity of the combined extracts was compared to that of commercially available antibiotics, such as ciprofloxacin and erythromycin, to evaluate their potential as alternative antimicrobial agents. **Results:**Staphylococcus aureus was strongly inhibited by the mixture of *Ocimum sanctum* and *Hibiscus rosa-sinensis* extract as compared to *Escherichia coli*. ZOI of mix extract against *E. coli* was 1.9mm and 2.9mm in aqueous and ethanolic extracts respectively while for *S. aureus* ZOI was 1.7mm and 3.2mm in aqueous and ethanolic extracts respectively. **Conclusions:** The study concluded that the combined extract showed strong inhibition to *Staphylococcus aureus* and can be used in antimicrobial formulations.

PHCG433
PHARMACOGNOSTICAL STANDARDIZATION OF *LAGENARIA SICERARIA* AND ITS MECHANISTIC EVALUATION FOR ANTI-HYPERGLYCEMIC ACTIVITY

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Abstract:
Objectives: This study aims to standardize and characterize the anti-hyperglycemic activity of methanolic extract of *Lagenaria siceraria* (MELS) on high-fat diet (HFD) and streptozotocin (STZ) induced diabetic rats. **Methods:** Healthy Sprague-Dawley rats were divided into control and

experimental groups. Diabetes was induced in the experimental groups using HFD and a low dose of STZ. The MELS was prepared and standardized. Biochemical parameters such as blood glucose levels, insulin levels, lipid profile, and histopathological changes in the pancreas were assessed. The oral glucose tolerance test (OGTT) and insulin release tests were performed to evaluate the antihyperglycemic effect of MELS. **Results:** MELS administration significantly reduced blood glucose levels, improved insulin release, and positively affected lipid profiles in diabetic rats. Histopathological examination revealed that MELS mitigated pancreatic damage induced by HFD-STZ. The dose-dependent effects of MELS on various biochemical parameters confirmed its efficacy. **Conclusions:** The methanolic extract of *Lagenaria siceraria* demonstrates significant anti-hyperglycemic activity, improving both glycemic control and lipid profile in diabetic rats. This study supports the potential of Lagenaria siceraria as a natural therapeutic agent for managing diabetes mellitus. Further research is warranted to explore its mechanism of action and clinical applications.

PHCG434
PROFILING OF MULTITARGET HERBAL COMPOUNDS FOR MANAGEMENT OF ALZHEIMER'S DISEASE

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Abstract:
Behavioral and cognitive impairment with memory loss are the most common concerns for Alzheimer's disease (AD). As AD is rising, it is imperative to develop therapeutic approaches to delay or prevent the disease progression. Clinical trials are currently being conducted on several phytoconstituents derived from Ayurvedic medicinal herbs, which have emerged as a viable route for drug discovery. This review involved collecting data by using a combination of keywords such as "Alzheimer's disease," "traditional treatment," "medicinal plants," and "phytoconstituents" in search engines like PubMed, Scopus, Science Direct, Google Scholar, etc. This review provides a comprehensive phytochemical analysis, understanding the bioactive compounds within these medicinal plants and potentially uncovering new therapeutic leads. It also aims to elucidate the mechanisms of action of these plants in AD treatment, enhancing understanding of the precise pathways through which they exert their effects. A number of phytoconstituents have the potential to manage AD, but due to their slower metabolism and solubility, their therapeutic claims are limited. Regulatory hurdles further delay the integration of these plant-based treatments into mainstream medicine. Long-term studies are often required to observe meaningful effects, yet these are costly and difficult to maintain. However, the future of the plant-based therapy is promising, with advancements in personalized medicine, biotechnology, and combination medicines opening the door to be more focused and potent interventions.

PHCG435
DEVELOPMENT AND EVALUATION OF HERBAL EXTRACT ORAL FILM FOR ANTIULCER ACTIVITY

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Abstract:
Objective: To formulate and evaluate the herbal extract oral film for antiulcer activity. **Method**: The technique employed for preparing mouth dissolving films was solvent casting technique. They were

prepared by dissolving several concentration of polymers in water and calculated amount of extract (30mg) was dissolved in another beaker containing water and this mixture was added to the polymer mixture followed by addition of sweetening. Then plasticizer was added to all formulation and were further sonicated to remove all entrapped air bubbles. Then they were transferred to a petri dish and allowed to dry under room temperature by placing funnel in an inverted position over petri dish for 24 hrs. After that all films were studied for further characterization. **Result**: The prepared films were found to be good quality in nature with respect to their, *in vitro* drug release of film can be concluded highest dissolution rate, thickness, disintegration time, folding endurance, swelling behavior and drug content. **Conclusion**: Fast dissolving oral films of herbal extract for antiulcer activity were successfully formulated by various concentration of polymer HPMC K5 (Hydroxyl propyl methyl cellulose) and were characterized. Based on the characteristics of the film formulation F7 gave good results with highest % drug release and % drug content. It also gave highest inhibition of formulation in OH radical scavenging and lipid peroxidation assay at higher concentration. Optimized formulation F7 were found to be stable in stability studies.

PHCG436
MOLECULAR MECHANISMS OF HERBAL ANTI-OBESITY DRUGS: A COMPREHENSIVE REVIEW

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Abstract:

Objectives: To discuss about the molecular mechanisms of the anti obesity effect of various herbal compounds. **Methods**:A comprehensive literature review was conducted using databases such as PubMed, Scopus, and Google Scholar. Studies focusing on the molecular mechanisms of specific herbal compounds known for their anti-obesity effects were included. Key herbs analyzed include Garcinia cambogia, green tea (*Camellia sinensis*), and bitter orange (*Citrus aurantium*). The bioactive constituents of these herbs were examined for their impact on fat metabolism, energy expenditure, and appetite regulation. The review also considered clinical trials assessing the efficacy and safety of these herbal agents. **Results:** *Garcinia cambogia,Garcinia cambogia* contains hydroxycitric acid (HCA), which inhibits ATP-citrate lyase, an enzyme crucial for the synthesis of fatty acids. By blocking this enzyme, HCA reduces de novo lipogenesis and promotes glycogen storage in the liver, leading to decreased fat accumulation. Studies have shown that HCA can lead to significant reductions in body weight and fat mass in humans and animal models.Green Tea (*Camellia sinensis*) is rich in catechins, particularly epigallocatechin gallate (EGCG), which have been shown to enhance thermogenesis and fat oxidation. EGCG works by inhibiting catechol O-methyltransferase (COMT), the enzyme that degrades norepinephrine. Elevated norepinephrine levels increase lipolysis and energy expenditure. Clinical trials have demonstrated that green tea catechins can significantly reduce body weight and waist circumference.Bitter Orange (*Citrus aurantium*) Bitter orange contains synephrine, a compound that acts on adrenergic receptors to stimulate lipolysis and increase basal metabolic rate. Synephrine has been shown to enhance fat oxidation and energy expenditure, contributing to weight loss. However, its safety profile is controversial due to potential cardiovascular side effects, necessitating further research. **Conclusion:** Herbal anti-obesity drugs, including *Garcinia cambogia*, green tea, and bitter orange, show significant potential in managing obesity through various molecular mechanisms. Understanding these mechanisms can aid in developing more effective and safer therapeutic strategies. Future studies should focus on optimizing dosages, assessing long-term safety, and exploring synergistic effects with other treatments.

PGCG437

SICKLE CELL ANAEMIA: EMERGING TREATMENT OF GENETIC THERAPY

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[2]Rajib Lochan Hota College of Pharmacy, Mahada, Barpali, Bargarh, Odisha

Abstract:

A new treatment called gene therapy for sickle cell anaemia works by substituting a healthygene for a damaged one, enabling the body to create normal red blood cells. In order to create healthy red blood cells, it involves altering a patient's stem cells, which may help lessen pain and organ damage. Gene therapy is the process of replacing a damaged gene in the body with a healthy one. A viral vector, a modified virus that carries the gene can be used to deliver the new gene. After entering the patient's cells, the healthy gene starts to make normal haemoglobin, which is the protein found in red blood cells and is responsible for carrying oxygen throughout the body. Gene therapy can improve the quality of life for patients with the illness, avoid organ damage, and lessen or eliminate painful episodes. Gene therapy may also lessen the need for conventional treatments like blood transfusions. Gene therapy offers the possibility to lessen the negative effects of sickle cell disease on society while also enhancing the lives of those who have the condition. Clinical trials have demonstrated encouraging outcomes for this kind of treatment, which offers hope as an alternative to traditional therapies.

PHCG438

CHEMICAL PROFILE OF ESSENTIAL OIL OF *OCIMUM GRATISSIMUM L.* & EVALUATION OF ANTIBACTERIAL AND DRUG RESISTANCE- MODIFYING ACTIVITY BY GASEOUS CONTACT METHOD

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Abstract:

Objectives: The aim was to develop chemical profile of essential oil of *ocimum gratissimum.l*& evaluation of antibacterial and drug resistance- modifying activity by gaseous contact method **Methods:** Many studies of the speices of *Ocimum gratisssimum* F: Laminacea have reported biological activities in the essential oils[1] and extracts of various parts of the plant of *O.gratissimum.* Theseeds of the plantwere obtained from the local market are kept for maceration for 48 hours after seeds were crushed and made into powder and then filter the macerate and the resulting filtrate is concentrated under vaccum to one third of its filtrate and suspended in distilled water and fractionated was carried out in a separating funnel with petroleum ether, ethyl acetate and chloroform and n-butanol. All the fractions collected were concentrated to residue and carried out chemical analysis by CO-TLC methods and FT-IR analysis. **Results:** Chemical analysis of volatile oil demonstrated that presence of eugenol and other compounds such as 1,8 cineole and beta selinene as well. In the evaluation of antibacterial activity both volatile oil and eugenol were unable to form a bacterial growth inhibition zone at any of the concentrations tested. However the modulation tests with amikacin and erythromycin identified synergism with volatile oil and eugenol against *E Coli & S.aureus*. Gentamicin combined with volatile oil showed antagonism against *S.aureus* but synergism against *E.Coli.* when gentamycin was combined with eugenol, there was also synergism against *S.aureus,* whereas no effect was seen against *E Coli*. **Conclusions:** The results obtained in this study is confirmed that volatile oil and eugenol may eventually represent a new therapeutic tool against antibiotic- resistant bacteria.

PHCG439

PREPARATION OF BIODEGRADABLE SANITARY NAPKINS USING COCONUT HUSK FROM *COCUS NUCIFERA*.

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Abstract:

Objectives: The aim of this study was to develop and evaluate the Sanitary napkins using cocopeat and observing its absorbency and protective action. **Methods:** Weigh the required amount of coconut husk of 5gm and place it in a motor and pestle, add the steeped pieces of newspaper and make them into a paste. Add a little amount of water to make it consistent. By using marble surface or granite surface apply paste as thin film uniformly using spatula. To make it evenly distributed piston is used. Allow it to dry for 2 days in sunlight or one hour in hot air oven at 180 degrees centigrade. After that allow it to cool for 2 minutes and scrape the dries sheet using spatula or knife. This sheet is cut into required shape according to its size like small, large, ultra large sheet by BIS dimensions. It is layered with canvas sheet and core absorbent is wrapped without entering any air. This sheet is covered with cotton garment which is a fluid acquisition layer. **Results:** The HPTLC Tests showed Rf value of 0.817 and area of 767 indicates the presence of Hydrocarbons, phenolics, Flavonoids B, Catechins and alkaloids. According to BIS standards sanitary napkins has been prepared and tested for its effectiveness.The FTIR results showed the absorbance at 2924.46 to 1613.64 cm^{-1}wavenumber that has many molecular compounds like amine salts, secondary amines, alcoholic groups. **Conclusions:** Now a days natural products are gaining the attention and becoming problem solving tool for modern technology. This study proved that replacing the polymer gels by biodegradable core absorbent material for developing hygienic feminine products which is eco friendly and cost effective.The absorbency capacity of paper and coconut husk is found to be high than the cotton material. The Antimicrobial and antibacterial activity against the gram positive and gram negative bacterial is good and showed zone of inhibitions. Pad covered with canvas sheet showed the high wicking rate than the top sheet itself. As wet back is concerned core with coconut husk and cellulose showed the lowest wetback.

PHCG440

PHYTOSOMES: A NOVEL & HERBAL WAY TO DRUG DELIEVERY.

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Abstract:

Complexing the polyphenolic phytoconstituents in molar ratio with phosphatidylcholine results into a new herbal drug delivery system – " Phytosomes -a little cell like structure" . Phytosomes which are better absorbed, utilized and as a result produce better results than conventional herbal extracts. This technology is applied to water soluble phytoconstituents tannins, phenols, terpenoids etc. Herbal drugs comprises of a vast array of active contents which furnishes us with a number of applications. But due to high polarity and poor lipophilicity the active contents are poorly absorbed resulting in poor bioavailability. These problem can be overcomed by formulating a suitable novel preparation of the herbal extract**.** Phytosome process was developed and pretended by Indena, a leading supplier of nutraceutical ingredients like milk thistle, ginkgo biloba, grape seed, green tea, hawthorn, ginseng etc. Phytosome is anti-inflammatory as well as antioxidant**.** These are produced by a process whereby the standardized plant extract or its constituents are bound to phospholipids, mainly phosphatidylcholine producing a lipid compatible molecular complex. This emerging technology of drug delivery is being applied to phyto pharmaceuticals for the improvement of bioavailability of herbal extracts for medicinal applications.

PHCG441
POLYHERBAL EMULGELS FOR MANAGEMENT OF SKIN INFECTIONS - FORMULATION AND EVALUATION

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Abstract:

Objectives: Selection and procurement of suitable herbs, preparation of aqueous, hydroalcoholic extracts, macerated oils, polyherbal oil by 'Taila pak vidhi,' phytochemical screening, formulation and characterization of polyherbal emulgels, phenolic estimation, and evaluation of antimicrobial activity via agar well diffusion. **Methods:**'Taila pak vidhi' is a traditional oil preparation method from the Indian Herbal Pharmacopeia that extracts both water- and oil-soluble constituents. Maceration involves extracting *Murraya koenigii*, *Curcuma amada*, and *Achyranthes aspera* in sesame oil. Emulgel formulation includes Pemulen™ TR-1 as a gelling agent, along with emulsifiers, preservatives, and lavender oil for fragrance. **Results:** Although emulgels with single extracts of *Murraya koenigii*, *Curcuma amada*, and *Achyranthes aspera* showed higher total phenolic content, they lacked the broad antimicrobial spectrum and effectiveness of the polyherbal emulgel. The polyherbal emulgel, containing hydroalcoholic extracts and oil prepared using 'Taila pak vidhi,' demonstrated a synergistic antimicrobial effect. Formulations with 6% extract concentration, macerated oil, and *Taila pak* oil showed higher phenolic content and stronger antimicrobial activity. This enhanced effectiveness likely stems from the combined action of the multiple herbal extracts, as seen in formulations F7 and F20, which outperformed the single-extract emulgels. **Conclusion:** Formulations F7 and F20, containing 6% hydroalcoholic extracts and *Taila pak* oil, showed excellent antimicrobial activity against skin infections.

PHCG442
MICROBIAL BIOSURFACTANT AS AN ALTERNATE TO CHEMICAL SURFACTANTS FOR APPLICATION IN HAIR CLEANSING FORMULATION

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Abstract:

Objectives: The aim of this study was to develop microbial biosurfactants as substitutes for chemical surfactants for environmental application. These are significant compounds having the potential to replace synthetic surfactants. **Methods:** Submerged fermentation (SmF) and solid-state fermentation (SSF) are the main bioprocesses used in biosurfactant production. The fermentation conditions depend on the microorganisms and biosurfactant to be produced. The fermentation temperature reported for different microorganisms is in the range of 25–40°C, with 30°C being the most frequently used. At 30°C, microorganisms belonging to the genera *Pseudomonas* and *Bacillus* are the most studied. The fermentation time oscillated in a very wide range, from 48 h to 288 h. For submerged fermentation, centrifugation was performed before the downstream processes to remove biomass. **Results:** In comparison with synthetic surfactants, biosurfactants have several advantages such as low toxicity, stability under several conditions of temperature, pH, and salinity, and high biodegradability, which are among the most important characteristics for their applicability in this field. **Conclusions:** Microbe derived bio-surfactants are diverse group of bio-molecules possessing huge potential to be applied in cosmetic and pharmaceutical industry as a green alternative. These non-toxic, biodegradable and eco-friendly bio-molecules are competent to replace their chemically synthesized counterparts. Their surface-active property is being

explored in different industrial aspect where the newly formed surface is needed to be stabilized. Their anti-biofilm activity is widely explored for pharmaceutical application in clinical setting. Their hydrophilic lipophilic balance is used to improve the solubility of poorly water-soluble drugs. They are investigated for their wetting, foaming, dispersing, emulsifying and lot of other properties.

PHCG443
KETOCONAZOLE AND ARECA NUT COMBINATION FOR TREATING CUTANEOUS CANDIDIASIS

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Abstract:

Objectives: The aim of this study is to find a synergistic combination between Areca nut (*Areca Catechu* L) and Ketoconazole for treating resistant forms of Candidal infections. **Methodology:** The Antifungal efficacy of Areca nut solution and Ketoconazole combination was tested by using Agar Diffusion method. This method is a widely used technique to check antimicrobial activity of plant extracts and microorganisms. The compounds used were Aliquots of Areca nut solution (50µl of 100µg/ml), Ketoconazole solution (50µl of 1.45µg/ml) and combination of both were placed in separate wells (6 mm diameter) and incubated at 25°C for 48 hours. Zone of Inhibition was measured using Antibiotic zone reader (Himedia laboratories, Pune). **Results:** The experimental results show an increase in Antifungal activity of Ketoconazole when used in combination with Areca nut against *Candida albicans*. Areca nut solution significantly inhibited the growth of *C. albicans* and the Zone of Inhibition was measured as 13mm. The Zone of Inhibition for Ketoconazole against *C.albicans* was 24mm. But when a mixture of Areca nut solution and Ketoconazole was used, the Zone of Inhibition increased to 29mm. **Conclusion:** Drug resistance occurs due to over expression of efflux pump genes and the drug does not accumulate in cell to toxic levels. Therefore to increase the effectiveness of Antifungal therapy and to overcome the increasing cases of resistance, Areca nut could possibly be used in combination with Ketoconazole to treat cutaneous *Candida* infections.

PHCG444
GREEN SYNTHESIS AND CHARACTERIZATION OF CARBON QUANTUM DOTS FROM THE WHOLE PLANT OF *BACOPA MONNIERI* FOR EVALUATION OF ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES

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Abstract:

Objectives: To establish a green synthesis technique to produce carbon quantum dots from the whole plant of *Bacopa monnieri* and perform its characterization study, as well as to evaluate its antioxidant and antimicrobial activities. **Methods:** The synthesis of *Bacopa monnieri* carbon quantum dots (BM-CQDs) was done by pyrolysis method, which is a bottom-up method. The optical properties, functional groups and size distribution were determined. The evaluation of antioxidant activity was done using DPPH assay and agar well method was used for determination of antimicrobial activity. **Results:** This synthesis method produced BM-CQDs, with a yield of roughly 9.10% and sizeranging between 6-10nm. By using the DPPH assay, the BM-CQDs were found to exhibit a low antioxidant potential and the agar well diffusion method was utilized for the evaluation of the antimicrobial activity, which showed promising antibacterial action against *E.Coli* and *S.aureus*. It also showed comparable antifungal activity against

C.albicans. **Conclusions:** I have showcased a viable substitute for traditional synthesis techniques that frequently depend on hazardous substances and non-renewable resources. This work is apositive step toward the development of sustainable nanomaterials with diverse applications.

PHCG445

PHYTOCHEMICAL ANALYSIS AND EVALUATION OF ANTIOXIDANT ACTIVITY OF *ARECA CATECHU*

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Abstract:

Objective: The main aim of the present study was to identify and evaluate the Antioxidant activity of Methanolic extract of *Areca catechu*. **Methodology:** The plant material was collected, and shade dried. By using maceration technique, the Acetone extract was prepared. The extract was processed for Phytochemical analysis and Antioxidant activity. **Results:** The acetone extract of areca catechu showed the presence of Alkaloids, Triterpenes and Tannins. The Antioxidant activity was measured using DPPH reagent. The extract at a concentration of 200 g/ml showed highest percentage of inhibition which was calibrated with the help of gallic acid standard curve. **Conclusion:** The study revealed that Arecanut have been traditionally used to address various benefits. The present study showed it has Antioxidant activity which can reduce the risk of many diseases. This study is still going on to investigate the potential of bioactive compounds by using *in silico* methods for estimating its efficacy towards treating various other ailments.

PHCG446

EFFECT OF VARIOUS ABIOTIC STRESSES ON ACETYLCHOLINESTERASE INHIBITION, ANTIOXIDANT ACTIVITY, TOTAL PHENOL & FLAVONOIDS CONTENT OF SELECTED ALLIUM SPECIES: RESULTS FROM SUMMER SEASON (A FIELD STUDY)

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Abstract:

Objectives: The generation of various bioactive phytoconstituents in plants can be altered by applying different abiotic variables throughout plant growth. **Methods:** A six-month field study was carried out to assess the effect of summer season and various other abiotic factors on bioactive compounds (flavonoids, phenols, quercetin), acetylcholinesterase (AChE) inhibition and antioxidant capacity of two selected *Allium* species i.e. *Alliumcepa* L. (AC) &*Alliumsativum* L. (AS; family Amaryllidaceae). AC and AS plants were grown in summer season for six months (from May, 2019 to October, 2019) on three different soil types (i.e. black, red, clay-loamy) and various stresses (salinity, water deprivation, flooding, fertilizer, metal, shade) were applied on the plants. At the end of the season, plants were collected, dried and plant yield, extract yield, total flavonoids (TFC), total phenols (TPC), AChE inhibition and antioxidant activity were determined in all the extracts. **Results:** The results demonstrate varied response of AC & AS plants to different soil types and stresses during this season. AS plants grown in red soil with salt stress and AC plants on red soil with fertilization give higher biomass yield. AC plants grown in black soil and AS in red soil under metal stress have highest TFC, TPC, AChE inhibition and antioxidant activity. However, heavy metals can lead to toxicity hence the limits for copper application (5-20 ppm) must be strictly followed. **Conclusion:** These conditions may be adopted in agro-technology for AC and AS, as a part of good agricultural practices for ensuring sustainable supply of high quality raw material with higher content of bioactive metabolites for the nutraceutical industry.

PHCG448

MAGNOLIA SPECIES: A COMPREHENSIVE REVIEW OF TRADITIONAL USES, PHYTOCHEMISTRY, PHARMACOLOGICAL APPLICATIONS

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Abstract:

North East India having states of Assam, Meghalaya, Arunachal Pradesh, Manipur, Nagaland, Tripura, Sikkim and Mizoram which falls between latitude 87°32'E to 97°52'E and longitudes 21°34'N to 29°50'N and covering an area of calculated 262060 sq. km (Map). North East India possess beneficial legacy of herbal healers. The region is symbolized diverse topography ranging from plateaus, mountains and plains with valleys associated with them. North East is the prosperous reservoirs of herbs in India and among one of the 'biological diversity hotspot' of the world confirming Indian biodiversity which is about 50%. All varieties right from the marshes, evergreen forests, scrub forests, grasslands, swamps, ever green forests, mixed deciduous forests and temperate and alpine vegetation is present here. Its tribes and rural peoples residing in forest/remote locations still trust to a large extent on the domestic system of medicine. Magnolia genus having 225 species which covers shrubs and trees belonging to the Magnoliaceae family is associated with South and North America. Magnolias are utilized as traditional healers in China. The genus Magnolia contains sesquiterpene lactones and lignans and also few biomolecules having great significance value. As because of its biological capacity of essential oil and remarkable medicinal and economic relevance as well as chemical diversity it contains strong anti-pollution activity and ornamental values. The current study aims for exploring different species of Magnolia and their therapeutic effect along with one of the species of Magnolia genus known as *Magnolia hodgsonii* (Hook.f. & Thomson) H.Keng belonging the family Magnoliaceae which is native of Assam and is used traditionally as medicine by the local peoples.

PHCG449

OVERVIEW OF APITHERAPEUTICS: THE ANTI-CANCER EFFECTS OF BEE VENOM USED IN APITHERAPY

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Abstract:

Objectives: Aim of the study was to review the use of bee products in enhancing and safeguarding health, and boost immunity for patients undergoing cancer treatment. **Methods:** Seven categories are used to evaluate bee products: honey, propolis, bee pollen, bee bread, royal jelly, apilarnil, and bee venom. Various chemical compositions of each product were determined using suitable techniques followed by comparative study of biological activities of the apitherapy products. **Result:** The review discusses the difference in effects of the bee products depending on composition of each product. The biological activities of items used in apitherapy are quite varied, and cases that may be treated without the need for side effects or non-drug effects, or circumstances that amplify the impact of current medicines on disease treatment. **Conclusion:** Studies on the anticancer efficacy of bee venom in almost all types of cancer have produced encouraging results. This implies that this apitherapeutic material may be employed as a cancer supplement in the near future or that it may work in concert with other chemotherapy drugs to have a synergistic effect. Our nation has a naturally abundant source of bees and bee products and more research and trials should be conducted to evaluate the

application dosage, method, and adverse effects, making its employment as an anti-cancer drug in therapies certain in the future. The thing to keep in mind is that the doctor with the certificate of apitherapy expertise administers bee venom. Prior to application, the presence of an allergy should be ascertained.

PHCG450

A COMPARATIVE ANTI-NEMATODAL ACTIVITY OF ACETONE AND ETHANOLIC EXTRACTS OF *SCHLEICHERA OLEOSA* AND *TAGETES ERECTA*

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Abstract:

Objective: Helminthiasis, a deadly infection caused by parasitic worms called helminthes; infecting the gastrointestinal tract, lymphatic system, and other vital tissues of the body. Helminth infections can lead to adjunctive problems malnutrition, anemia, intestinal obstruction, immune modulation, lymphatic filariasis, onchocerciasis and schistosomiasis. Nematodes are common causative agents of helmenthiasis. The infection is a prevalent health problem in regions with inadequate sanitation and restricted availability of clean water. **Methodology:** The present research investigated the *in vitro* anthelmintic effect of the leaves of Schleichera oleosa and Tagetes erecta on Ascardia galli. Both the extracts of acetone and ethanol of both the plants were subjected for preliminary phytochemical screening and quantitative estimations. Different concentration (25, 50, 100 mg/mL) of acetone and ethanol extracts of the both the leaves have been used for the activity against nematode (Ascardia galli), collected from the freshly slaughtered Gallus gallus, while Albendazole and 3% Tween 80 in normal saline have been taken as standard and control respectively. **Result:** Significant amount of flavonoids and phenolics were found in acetone and ethanol extracts. All the extracts exhibited potent anthelmintic activity in dose dependent manner. **Conclusion:** The ethanolic extract at 100 mg/mL concentration of Schleichera oleosashowed more significant activity against the nematode comparing against the acetone extract of Tagetes erecta. Chromatographic analysis and isolation of these plants to understand the molecular level mechanism is the future interest.

PHCG451

PHYTOCHEMICAL ANALYSIS OF *COUROUPITA GUIANENSIS* AND ITS IMPLICATIONS FOR HEALTH AND WELLNESS

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Abstract:

Objectives: *Couroupita guianensis* Aubl is the plant has various medicinal values of the parts like leaves, flower, fruits and stem are used as medicine to cure various diseases. Phytochemical analysis of the extract showed the presence of alkaloids, phenolic compounds such as flavonoids, tannins and saponins.*C. guianensis* plant has antibacterial, antimycobacterial, antimicrobial, antioxidant, antitumor, antiulcer, antinociceptive, anthelmintic, antifertility, antifungal activities, specific uses in dental caries and periodontal disease. **Methods:** *C. guianensis* can be extracted by usingsolvents such as petroleum ether, chloroform, ethanol, methanol and hydroalcohol**.** Chemical constituents of *C. guianensis* in various part of the tree contain volatile oils, keto-steroids, glycosides, couroupitone, indirubcin, isatin as precursor for various drug synthesis and phenolic substances.The leaf extracts showed the presence of alkaloids, phenolics, flavonoids, saponins and tannins in the medicinal plant.It is reported that *C. guianensis* used in fruit pulp as antimicrobial property, anti-ulcer activity in leaves, immunomodulatory action in flowers, antihelminthic activity in flowers. **Results:** The extensive literature survey revealed that *Couroupita guianensis* is important medicinal plant with diverse pharmacological spectrum. *C. guianensis* can beextracted by usingsolvents such as petroleum ether, chloroform, ethanol and hydroalcohol .The plant shows the presence of many chemical constituents which are responsible for varied

pharmacological and medicinal property. **Conclusions:** The present review can be concluded that *C. guianensis* has many medicinal values and has various homeostatic, antipyretic, anti-inflammatory, sedative properties and in the treatment of bacterial and viral infections for human health and wellness.

PHCG452

DEVELOPMENT OF SSDNA APTAMER-BASED PH RESPONSIVE NANOCOMPOSITE CONTAINING DUAL DRUG, FLAVONOID AND 5-FLUROURACIL: OVERCOMING CHEMOTHERAPEUTIC CHALLENGES OF TUMOUR MICROENVIRONMENT IN METASTATIC MELANOMA.

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Abstract

Objective: In the therapeutic prevention of cancer, clinical challenges continue with to overcoming chemotherapeutic multidrug resistance (MDR) in heterogeneous tumour microenvironment and off target toxicities. Development of site-specific targeted novel nanodrug delivery strategies following overexpressed tumour marker is current paradigm. In metastatic melanoma as overexpression of receptor protein tyrosine kinase (RPKT) at cellular level is recognized as a hallmark for metastatic melanoma. Thus, we developed here RPKT targeting ssDNA aptamer conjugated pH sensitive nanoliposomes encapsulated with flavonoid apigenin. **Methods:** At first, we have developed tumour responsive pH dependent encapsulated with apigenin and 5-flurouracil nanoliposomes, prior to cheeking pre formulation compatibility by FTIR. Following optimization of physiochemical characterization in pH responsive dual drug encapsulated nanoliposome, covalent conjugation of ssDNA, aptamer sgc8 (commercially synthesized oligonucleotides) was conducted. We determined conjugation through agarose gel electrophoresis. Finally, evaluated cytotoxicity across skin, lung, liver, and colon cancer cell lines, along with analysing cell cycle regulation to ensure drug apoptosis. **Result:** The optimized nanoliposomes, characterized by a particle size within 150 nm, intact bilayer surface morphology with aptamer conjugation, and impressive *in vitro* drug loading (~80 %) and release profiles with prolong therapeutic sustainability for both the drugs and exhibited a pH-responsive behaviour. These drug-loaded nanoliposomes demonstrated a significant improvement in cytotoxicity across skin, lung, liver, and colon cancer cell lines, following synergistic enhancement of G2/ M phase in cell cycle regulation in optimized cell line. **Conclusion:** Finally, in comparative study with optimized Sgc8 aptamer-conjugated nanoliposomes and non-Sgc8 aptamer-conjugated nanoliposomes, we observed that the superiority of the aptamer biosensor and the pH-responsive nanoliposomes in enhancing efficacy against melanoma with a combination of flavonoids and 5-fluorouracil.

PHCG453

EVALUATION OF ANTIUROLITHIATIC POTENTIALS OF *NERIUM OLEANDER L* AND *CUCUMIS SATIVUS* IN RATS

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Abstract:

Objectives: Evaluation of antiurolithiatic potential of *Nerium oleander* Linn. and *Cucumis sativus* Linn. in ethylene glycol induced urolithiasis in rats. **Methodology:** The selected Indian medicinal plants (*Nerium oleander Linn*. and *Cucumis sativus Linn*.) collected from Belagavi areas. Extraction was performed by cold maceration technique ethanol:water (70:30). Various parameters were

evaluated (Urine microscopy, Urine volume, Routine urine analysis, Histopathology) for the same. Antimicrobial activity was performed. *In-vitro* Antioxidant activity by DPPH. HPTLC fingerprinting and GCMS analysis was performed. **Results:** Results showed no mortality, *In-vivo* antiurolithiatic activity of the plants *Nerium oleander* and *Cucumis sativus* showed the significant results. Preventive group treated with extract of NO and CS showed increase in urine output which was found to be dose dependent whereas HCS curative dose shows improved urine excretion. Both the extracts exhibit a dose dependent effect on lowering the concentrations of calcium, phosphates and oxalates. Thereby, inhibits formation of kidney stones. Histopathology study revealed that the low dose of *Nerium oleander* and *Cucumis sativus* showed promising activity as compared with high dose. NO & CS showed maximum antimicrobial activity against Pseudomonas spp. The results of GCMS analysis of hydro-alcoholic extract of *Nerium oleander* and *Cucumis sativu*s revealed the presence of 15 compounds and 07 compounds respectively. **Conclusion:** It can be concluded that the data supports the claims made in traditional system of medicines. As variations occurs in same species of plant and plant materials, chromatography facilitates fingerprints whereas mass analysis the separated components at molecular level.

PHCG454
PREPARATION AND EVALUATION OF THE NUTRITIONAL VALUE AND SENSORY ATTRIBUTES OF BANANA PEEL POWDER BISCUITS

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Abstract:

Objectives: The current research aimed to assess banana peel powder biscuits' nutritional value and sensory attributes. **Methods:** The banana peel powder was prepared, dried and powdered. Wheat flour dough (49.5%) was mixed with Butter (20%), Fennel powder (10%), and Almond powder (20%), Salt, and finally, it was mixed with the banana peel powder. The batter was shaped using a round shaper (0.25 x 35 mm) and baked in an electric oven at 180 C for 8 min. They were all allowed to cool. **Results:** All the findings were statistically examined to see the significant fluctuation in the biscuit's recipe using one-way analysis of variance. Among the different samples, Sample D (10 per cent banana peel) was the highest among the four distinct formulations compared to wheat flour. When 10% banana peel powder was replaced with wheat flour, superior quality, nutritious, and fibre-rich biscuits were produced (moisture 3.87 %, carbohydrate 64.83%, protein 10.13%, fat 18.18 %, ash 1.65% and fibre 0.75%). The produced biscuit had larger levels of phytochemical substances (Polyphenol 4.22%, flavonoid 23,87%, anthocyanin 13.41%, and antioxidant capacity 2. 85%) than sample A. (reference biscuit). The 10% banana peel with wheat flour combination had the highest value for fragrance (8.0), taste (8.10), colour (6.80), texture (5.40) and overall acceptance (7.60). **Conclusions:** Substituting 10% banana peel powder for wheat flour not only produced a delicious biscuit but also a nutritious one, rich in fibre and phytochemical substances, ensuring the health benefits of the product.

PHARMACEUTICAL & MEDICINAL CHEMISTRY, PHARMACEUTICAL ANALYSIS AND QUALITY ASSURANCE

PHCH151
INNOVATIVE RHODANINE-THIAZOLE HYBRIDS AS ANTIDIABETIC AGENTS: TARGETING A-AMYLASE, A-GLUCOSIDASE, AND PPAR-Γ WITH MOLECULAR DOCKING SIMULATIONS

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Abstract:

Objectives: The aim of this study was to design, synthesize, and evaluate novel Rhodanine-thiazole hybrid compounds (7a-7l) for their potential as inhibitors of α-glucosidase and α-amylase, as well as their effect on Peroxisome Proliferator-Activated Receptor-gamma (PPAR-γ) expression, to develop promising candidates for oral antidiabetic agents. **Methods:** A series of Rhodanine-thiazole hybrid compounds (7a-7l) were synthesized and evaluated for their inhibitory activities against α-glucosidase and α-amylase. Inhibition potency was compared to the standard inhibitor, acarbose. The IC_{50} values were determined, and Lineweaver-Burk plot analysis was used to identify the type of inhibition. Selected compounds (7e and 7f) were subjected to PPAR-γ transcription factor assays based on *in silico* study findings. Network pharmacology approaches identified the proteins modulated by these compounds, and molecular docking studies were conducted to assess binding affinities. Stability was confirmed through dynamics simulation trajectories. **Results:** Some of the synthesized compounds demonstrated superior inhibitory activity against α-amylase and moderate inhibition against α-glucosidase compared to acarbose. Specifically, compound 7f exhibited a significant inhibitory activity against α-amylase with an IC_{50} value of 27.13 ± 1.02 µM, while compound 7l showed better inhibition against α-glucosidase with an IC_{50} value of 24.21 ± 1.12 µM. Lineweaver-Burk plot analysis revealed that 7l and 7f acted as mixed-type inhibitors for both enzymes. Compounds 7e and 7f significantly expressed PPAR-γ in the transcription factor assay. Network pharmacology identified the modulation of *AMY2A*, *PPAR*, and *GAA* proteins via *MAPK* and *PPAR* signaling pathways by these compounds. Molecular docking confirmed the binding affinities, and dynamics simulation validated the stability of the interactions. **Conclusion:** The findings indicate that Rhodanine-thiazole hybrids, particularly compounds 7e and 7f, are promising candidates for developing new oral antidiabetic agents due to their potent inhibitory activities against α-amylase and α-glucosidase, significant PPAR-γ expression, and stable protein interactions.

PHCH152
ECO-FRIENDLY RP-HPLC METHOD FOR SIMULTANEOUS QUANTIFICATION OF EPIGALLOCATECHIN-3-GALLATE AND ROSMARINIC ACID IN LIPID-BASED NANOCARRIERS AND BIOLOGICAL FLUIDS: QBD OPTIMIZATION AND LEAN SIX SIGMA APPROACH

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Abstract:

Objectives: Skin cancer poses a significant global health risk, necessitating effective therapeutic interventions. Epigallocatechin-3-gallate (EGCG) from green tea and rosmarinic acid (RA) from herbs like rosemary offer promising anticancer properties. Combining these compounds may enhance their effectiveness, prompting the need for a reliable analytical method to quantify them. Herein, we

present the development and validation of a High-Performance liquid Chromatography (HPLC) method for concurrent quantification of EGCG and RA in prepared lipid-based nanocarriers and biological fluids using a QbD approach, greenness assessment, and Six Sigma methodology. **Methods:** Initially, the Ishikawa fishbone diagram and Risk Priority Number (RPN) scores identified variations in critical analytical attributes. A Taguchi Orthogonal Array (OA) design was used to screen critical method parameters affecting method development, while systematic optimization of the RP-HPLC method was achieved using Box-Behnken design. Chromatographic separation was accomplished with a methanol and 0.1% formic acid (60:40) isocratic flow system on a Phenomenex Luna C18 column (4.6 × 150 mm, 5 µm) at a 1 mL/min flow rate. The method was validated per ICH guidelines, and force degradation studies under acidic, basic, oxidative, and photolytic conditions were conducted to understand degradation pathways and products. The developed method was applied to estimate EGCG and RA in prepared lipid-based nanocarriers and biological fluids like blood plasma and urine. **Results:** The retention times for EGCG and RA were found to be 2.8 minutes and 5.6 minutes, respectively. Recovery assays in lipid-based nanocarriers, plasma, and urine samples demonstrated excellent recoveries (96.2–102.1%). The Cpk values for EGCG and RA in both the proposed and reported methods are greater than 1.33, indicating that both methods are significant. However, the proposed method is more accurate, with Cpk values of 2.49 and 2.42 compared to 1.76 and 2.91 in the reported methods for EGCG and RA, respectively. The method's greenness was assessed using various tools, and its accuracy was evaluated using Six Sigma methodology. **Conclusion:** The developed HPLC method offers a rapid, sensitive, and reliable approach for quantifying EGCG and RA, laying the groundwork for their further investigation as anticancer agents, alone and in combination therapies.

PHCH153
ESTABLISHMENT AND VALIDATION OF NOVEL LC-MS/MS TECHNIQUE FOR ENSITRELVIR QUANTIFICATION IN RAT PLASMA, WITH APPLICATION TO PHARMACOKINETIC ASSESSMENT

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[1]Dr. Samuel George Institute of Pharmaceutical Sciences, Markapur, Andhra Pradesh
[2]Acharya Nagarjuna University, Nagarjuna Nagar, Guntur, Andhra Pradesh

Abstract:

Objective: The objective was to develop a rapid, precise, effective, and consistent LC-MS/MS method for the bioanalysis of Ensitrelvir, using Remdesivir as the internal standard. **Methods:** This article gives an overview of the newest bioanalytical LC-MS/MS techniques, using a phenol column (250 x 4.6 mm, 5 t) and an organic mobile phase made up of 0.1% Trifluoroacetic acid and acetonitrile in a 50:50 v/v ratio. **Results:** Conducted the research for Ensitrelvir in 5 minutes, yielding precise results. The concentration range examined ranged from 3 ng/mL to 120 ng/mL, and the correlation coefficient (r2) was found to be 0.9998 ± 0.005, showing a highly robust linear connection. We determined that all the results for accuracy, precision, recovery, matrix effect, and stability met the acceptable standards. **Conclusion:** The application successfully demonstrates that all the metrics of system appropriateness, specificity, linearity, and accuracy align well with the guidelines set by the United States Food and Drug Administration (USFDA). We have efficiently used it to investigate pharmacokinetic investigations in rats.

PHCH154
METHOD DEVELOPMENT AND VALIDATION OF A SELECTED ANTI-HELMINTIC DRUG USING HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

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Abstract:

Objectives: The aim of this study was to estimate and validate Albendazole in its bulk and pharmaceutical formulations using a simple, accurate, precise Reverse phase High Performance Liquid chromatographic method. **Methods:** The research was conducted using Shimadzu HPLC system equipped with PDA detector. The buffer solution was prepared at 7.2-7.4 pH using mobile phase. Methanol and acetate buffer [Ammonium dihydrogen ortho-phosphate (70:30)] were prepared with solvent mixture –methanol and sulfuric acid at the ratio (99:1) and allowed to check with λmax 254 nm with PDA detection. The method was optimized using C18 (Inertsil ODS 3V) column, dimension's (250 x 4.6 mm) with particle size 5µm at flow rate 1.0mL/min, λmax 254nm. The injection volume was maintained at 20uL, having column temperature 25°C at Run Time is 15 mins. The peak shape is uniform good further the developed method was subsequently validated as per ICH Q2(R1) guidelines. **Results:** The linearity chromatograms are obtained within concentration range (0-80 µg/mL) & regression co-efficient R2 is obtained 0. 9999 indicate linear. Other validation parameters System suitability, Accuracy, Precision, Robustness are also obtained within limit i.e. NMT 2%. The current method was found be also economical, robust as compared to other reported methods. **Conclusions:** The study concluded that the developed RP-HPLC method for Albendazole is simple, accurate, precise, and cost-effective, meeting ICH guidelines and suitable for routine analysis in various formulations.

PHCH155
RP HPLC METHOD DEVELOPMENT AND VALIDATION FOR QUANTIFICATION OF OLAPARIB IN QUANTUM DOT NANOFORMULATION: A DOE APPROACH

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Abstract:

Objectives: The aim was to develop and validate Olaparib in quantum dot nanoformulation by using DoE Approach. **Methods:** According to the criteria of the ICH standards, the method validation was carried out. The HPLC method was optimized using a Central Composite Design (CCD). Olaparib spectra were recorded at 254 nm wavelength using a solvent ratio of methanol and water (61.36:38.64) with flow rate 1.08 ml/min, injection volume of 10µl at temperature 30ºC and run time was 6 min. Validation parameters, including linearity, accuracy, system suitability, precision, robustness, forced degradation studies. **Results:** The linearity was observed in the range 2 -10 µg/ml with a correlation coefficient of 0.9983. The retention time was found to be 4.6 minutes. The system suitability was found to be 0.744825%. The %RSD of developed method for Inter-day and Intraday precision was found to be 0.043 % and 0.0906 % respectively. The method was found to be accurate with % recovery of 99.9468. Quantification of Olaparib in quantum dot nanoformulation was done and olaparib was found to be stable in formulation. **Conclusions:** The current investigation presents a newly developed and validated reversed-phase-HPLC method for the estimation of Olaparib in quantum dot

nanoformulation. Advances in analytical techniques through the implementation of DoE-based Quality by Design (QbD) have become increasingly essential in accordance with ICH recommendations. Extrapolated from the results, the QbD approach was employed to assure the development for more accurate method that will generate constant, reliable, time saving and improved data throughout the process.

PHCH156
DEVELOPMENT AND VALIDATION OF AN INNOVATIVE RP-HPLC METHOD FOR DAIDZEIN UTILIZING QUALITY BY DESIGN: COMPREHENSIVE FORCED DEGRADATION ANALYSIS

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Abstract:
Objectives: The research study aimed to formulate and evaluate Daidzein-loaded cubosomes for dosage forms, leveraging a Quality by Design (QbD) methodology to optimize and assess a stability-indicating reverse-phase (RP)-HPLC method. **Methods:** The method was optimized and validated using a central composite design in accordance with ICH guidelines. The chromatographic separation was performed on a C-18 analytical column maintained at 30°C. An isocratic elution was employed with a mobile phase consisting of a 64.52:35.48 (v/v) mixture of methanol and water, delivered at a flow rate of 1.081 mL/min. Detection was carried out at a wavelength of 249 nm, with an injection volume of 10 µL. **Results:** The optimized RP-HPLC method demonstrated exceptional robustness, with a retention time of 4.6 minutes, a limit of detection (LOD) of 0.321 µg/mL, a limit of quantification (LOQ) of 0.975µg/mL, and a percentage relative standard deviation (%RSD) of less than 2%. Comprehensive evaluation of stability parameters, including accuracy, linearity, LOD, LOQ, precision, and %RSD, affirmed the method's efficacy for accurate quantification and reliable estimation of Daidzein. **Conclusions:** The developed method is poised to be an invaluable asset for future evaluations of Daidzein content across diverse pharmaceutical formulations. Through optimization and extensive evaluation, this study significantly enhances the efficacy and reliability of drug quantification methodologies in pharmaceutical research and development.

PHCH157
METHOD DEVELOPMENT AND VALIDATION OF ANTI-DIABETIC DRUGS WITH QBD APPROACHES

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Abstract:
Objectives: Quality by design (QbD) refers to the achievement of certain predictable quality with desired and predetermined specifications. The objective of this study was to develop and demonstrate an integrated multivariate approach to develop and quantify the constituent concentrations of anti diabetic tablet forms. **Material and Method**: Diabetes mellitus (DM) is a group of metabolic disorders characterised by heightened concentrations in the circulatory system of glucose, generally referred to as hyperglycemia. Deploying the quality by design (QbD) technique, The primary objective of this study was to enhance the HPLC process. Hence, there was a need to establish and authenticate a distinct, linear, and precise stability-indicating reversed-phase high-performance liquid chromatography (RP-HPLC)

technique in the simultaneous quantification of combination medications in a pharmaceutical formulation, utilising a Quality by Design (QbD) methodology. Quality by Design (QbD) approaches are employed. **Results:** The process of developing and validating medications has the ability to improve their effectiveness and reduce the occurrence of negative effects. The three key areas of focus are quality assurance and control, cost-effectiveness, and continuous improvement. The methodology was devised utilising a Zorbax Extend C-18 column with dimensions of 50 mm ± 4.6 mm ± 1.8 µm. The mobile phase employed in the experiment comprised a phosphate buffer solution with a pH value of. **Conclusion:** The approach successfully satisfied the validation criteria, exhibiting sensitivity with limits of detection (LOD) and quantitation (LOQ) of 0.001 and 0.005µg mL1, respectively. The percentage relative standard deviations of robustness and ruggedness ranged from 0.1 to 0.99. The calibration graph exhibited a linear connection within the range of 0.004–500µgml.

PHCH158
COMPARATIVE UV SPECTROPHOTOMETRIC ANALYSIS FOR DISTINGUISHING BRANDED AND GENERIC FUROSEMIDE 40 MG TABLETS

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Abstract:

Objectives: This study is intended to advance and authenticate a quick, robust, effective, precise and accurate, UV-Vis method for the determination of Furosemide in pharmaceutical dosage forms according to International Conference on Harmonization (ICH Q2 R1) guidelines. **Methodology:** In order to develop the method, distilled water was used. In order to validate the developed method, linearity, precision, accuracy, robustness, and ruggedness were assessed. Using water and aliquots of concentrations 1-10 gram per ml, the linear regression coefficient (R^2) was 0.9998. **Results:** It was found that 243 nm was the optimum wavelength. According to the developed method, there was a percentage RSD of 1.0401 and 0.7928% during the intraday and interday studies. As a result, we developed a simple, accurate, and cost-effective UV-Vis method for determining Furosemide. **Conclusion:** A regression coefficient (R^2) of 0.9998 was found for the method developed for the determination of Furosemide in bulk and in tablets.

PHCH159
QUALITY BY DESIGN APPROACH ON ANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR THE ESTIMATION OF CARDIOVASCULAR DRUGS IN THEIR FORMULATIONS BY LC-MS

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Abstract:

Objectives: Quality by design (QbD) is a part of the design of experiments (DOE) that predict the responses using the software. Identification of critical quality attributes (CQAs) is the first step in QbD. The main concept of QbD is the study of dependent parameters as well as the examination of different factors and their interactions. Hence the present study is designed to develop the QbD-based high performance liquid chromatography (HPLC) method and validation of milrinone lactate. **Methods:**The

experimental design involves the central composite designs (CCDs) of the reverse phase- high performance liquid chromatography techniques with two factors (mobile phase and pH). The Design Expert software 12.0 version was used to produce optimal chromatographic parameters. Sun QSil C18 Column (250 mm4.6 mm, 5 µm) the mobile phase used (Methanol: 0.1 %Formic Acid) (40:60) with a flow rate of 1 ml/minute and retention times 3.434 minutes of Milrinone Lactate and 5.321 minutes of milrinone Lactate According to International Conference on Harmonisation criteria, the parameters were validated within the specified limits. The QbD-based HPLC method was developed and validated. The utilization of QbD in the present study leads to more precise and reliable data. **Results:** A simple, selective and rapid reversed phase High Performance LiquidChromatographic (RP-HPLC) method has been developed and validated. **Conclusions:** The current work presents the development and validation of an A QbD-assisted RP-HPLC technique. Preliminary trials were performed using HPLC, optimized chromatographic conditions were obtained by using response surface methodology with CCD 23 factorial design. Two factors were selected as mobile phase composition and flow rate and three responses i.e. plate count, resolution, and tailing factor were optimized using statistical ANOVA. Out of 13 experimental runs, the sixth run was chosen for optimization. Residual plots reveal the interrelationship effects of factors and responses. All the validated parameters were found within acceptable limits. The present developed and validated approach was linear, precise, reliable, accurate, robust, and rugged. Hence, this method was used for routine analysis.

PHCH160
FORMULATION AND EVALUATION OF NOVEL POLYHERBAL HYPOLIPIDEMIC TABLETS

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Abstract:

Objective: Currently polyherbal anti-hyperlipidemic drugs have gained more importance to compensate the setbacks of modern allopathic drugs in this category. Many plants in Siddha system of medicine have been reported to be beneficial in hyperlipidemia. Numerous plants like Bauhinia Purpurea, Cinnamomum Tamala, Sesamum Indicum, Commiphora Mukul, Annona Squamosa, Ginseng, Terminalia Arjuna, Solanum Melongena, Rosemarinus Officinalis etc., have been reported to have lipid lowering effect. Our prime aim for the present research was the development of effective polyherbal tablet formulation of Annona Squamosa, Bahunia Purpurea and Nigella Sativa for management of hyperlipidemia and its complications. **Method:** The medicinal plants used in the study were collected from the local gardens and herbal garden of IPT, Salipur, Odisha, India. Fresh and shade dried parts of all selected plants were extracted by using the maceration method. The flow properties of thoroughly mixed all polyherbal extract powder in the formulation were determined by calculating the angle of repose by the fixed height method. The compressibility of the polyherbal powder mixture was calculated by comparing the bulk density and tapped density.The tablet formulations were prepared from the dried hydroalcoholic plant extracts by using dry granulation technique and single punch tablet manufacturing machine. The tablet formulations were subjected for the various evaluation tests. The weight variation test was carried out according to the USP. The tablet hardness was measured by using Monsanto Hardness Tester. The friability test was performed using Roche friabilator at 25 rpm for 4 mins. The disintegration time of the tablet was measured in distilled water (37°c) using the LABINDIA DT 1000 instrument. The *in vitro* dissolution study was conducted by using paddle type LABINDIA DS 1000 apparatus by taking

500ml water as the dissolution medium, temperature of 37 ± 0.5ºC, rotation speed of basket 50 rpm. To construct the dissolution profile, sampling was performed at 10, 20, 30, 60 and 120 min. **Results:** The polyherbal hypolipidemic tablets were evaluated for various parameters such as organoleptic properties, average weight, hardness, friability and disintegration time, which were found to be acceptable as per the Pharmacopoeial specifications. The individual tablet hardness of 10 tablets were found to be between 3.5kg/cm^2 to 6 kg/cm^2. The friability of the tablet was found to be below 1%, indicating a good mechanical strength, and the disintegration time of all the 6 tablets were found to lie in the range of 39.16 min to 46.55 min. The *in vitro* dissolution study gives the pattern in which the drug gets released from its dosage form to ensure proper efficacy and quality. **Conclusion:** From the results of the angle of repose, Carr's index and Hausner's ratio showed that the powder mixtures possess good flow properties. It was concluded that the prepared tablets had a good hardness and friability with a satisfactory disintegration time. The spectrophotometric analysis (UV & IR), were carried out for the formulation. The UV-Visible and IR spectrum can be used for qualitative and quantitative analysis.

PHCH161
EVALUATION OF ANTIMICROBIAL ACTIVITIES OF SOME ISOXAZOLE COMPOUNDS

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Abstract:

Objectives: The aim of this study was to evaluate the antimicrobial activities of some synthesized isoxazole compounds. **Methods:** Some novel isoxazole compounds were synthesized through cycloaddition reaction and the compounds were evaluated to find the Zone of inhibition and Minimum Inhibitory Concentration (MIC) through cup-plate method. The antibacterial activity of the compounds was tested against different pathogenic bacterial strains such as E. coli. And S. aureus etc. The activity of each compound was compared with standard drug, ciprofloxacin. **Results:** The synthesized isoxazole compounds were interpreted by UV, IR, NMR and mass spectroscopy. The activity of each compound was compared with standard drug, ciprofloxacin. In the activity study, compound 1, compound 2 and compound 3 showed the best activity where, compound 4 and compound 5 showed comparable activity against all the bacterial strains. **Conclusion:** The potent antibacterial activity of the synthesized compounds has recommended that these compounds could assist in treating microbial infections. With extension of this work further evaluation in depth and studies of their mechanism of action are under process.

PHCH162
EVALUATION OF ANTI-OXIDANT ACTIVITIES OF SOME PIPERAZINE DERIVATIVES

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Abstract

Objective: This study aims to determine the antioxidant activity of newly synthesized piperazine derivatives, given the significance of antioxidants in neutralizing free radicals and maintaining cellular integrity. **Method:** A series of piperazine derivatives were prepared through a multi component reaction and the structures confirmed through IR, NMR and Mass spectrophotometry. The antioxidant activity of these compounds was determined using various tests, including the DPPH assay, Hemoglobin assay and others. **Results:** Thus, out of all the synthesized compounds 2, 6, 7, and 9 were the most active in the antioxidant test. Compounds 4, 8 and 10 showed similar results, and compound 5 showed comparatively less activity

in all the experiments conducted. The outcomes of this study also support the prospect of some piperazine derivatives in combating free radicals and preventing oxidative stress. **Conclusion:** The study emphasizes on antioxidant activity in the course of identifying new therapeutic compounds for the treatment of diseases that result from oxidative stress. The present investigation adds value to the field of medicinal chemistry because it brings out the possibilities of these compounds in coming up with good therapies. The further activity studies of those compounds and their mechanism of action are under process.

PHCH163

2-ARYL-BENZOIMIDAZOLES AS TYPE II NADH DEHYDROGENASE INHIBITOR OF *MYCOBACTERIUM TUBERCULOSIS*

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Abstract:

Objectives: The objective of this work was designing, synthesis and *in vitro* biological evaluation of type II NADH dehydrogenase inhibitors of *Mycobacterium tuberculosis* (*Mtb*). **Methods:** High throughput screening of commercially available library of drug like molecules were conducted for identification of a potential "hit molecule", acting as type II NADH dehydrogenase enzyme inhibitor of *Mtb*. In order to explore the effect of introducing substitutions and thereby improving the inhibitory potential; a series of twenty-eight compounds, bearing variety of substitutions at different position of the core nucleus of the "hit molecule" (which is a benzimidazole scaffold) was synthesized. All the synthesized derivatives were further evaluated for their anti-tubercular potential following: minimum inhibitory concentration (MIC) determination, intracellular ATP depletion assay, MIC determination against drug-resistant *Mtb* strains, minimum bactericidal concentration (MBC) determination, time kill kinetics experiment, peredox-mCherry experiment and cell cytotoxicity assay. The most potent compounds of the series were further subjected to computational studies. **Results:** Following screening of the synthesized derivatives based on MIC and intracellular ATP IC_{50} values against *Mtb* H37Ra, *Mtb* H37Rv mc^2 6230 and *M. bovis*; three best test active compounds were identified and were subjected to further *in vitro* studies. All the three derivatives were equally potent against drug-resistant *Mtb* strains and possess bactericidal response. From peredox-mCherry experimental data, the type II NADH dehydrogenase target specificity of the identified test active compounds were confirmed. All of them further have a safety index >10. From the computational studies, a rudimentary vision on the mode of interaction of the three test active compounds at their site of action was generated along with understanding of the ADME profile of our test active compounds. **Conclusions:** We have identified three small molecules containing benzimidazole drug scaffold, having anti-tubercular property, along with ensuring bactericidal response. Type II NADH dehydrogenase was the site of action of the synthesized derivatives.

PHCH164
DESIGN AND DOCKING STUDIES OF PDE7 INHIBITORS: ADVANCEMENTS IN TARGETED DRUG DISCOVERY AND DEVELOPMENT

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Abstract

Objective: This article aims to explore recent advancements in the design and docking studies of phosphodiesterase 7 (PDE7) inhibitors, a class of compounds that have shown potential in treating various diseases, including neurodegenerative disorders and inflammatory conditions. The objective is to elucidate the strategies employed in designing PDE7 inhibitors and to assess the efficacy of these compounds through computational docking studies. **Methods:** The study employs a multi-faceted approach involving molecular design and docking simulations to identify and optimize potential PDE7 inhibitors. The design phase utilizes structure-based drug design techniques to create novel inhibitors targeting the PDE7 enzyme. Key metrics such as binding energy, interaction patterns, and stability of the ligand-receptor complexes are analyzed. **Results:** The docking studies revealed several promising PDE7 inhibitors with high binding affinity and favorable interaction profiles. Notable candidates include compounds with novel structural motifs and optimized functional groups that enhance their efficacy. The results indicate that these inhibitors exhibit strong and selective binding to the PDE7 enzyme, demonstrating potential for further development and validation in preclinical and clinical settings. **Conclusion:** The design and docking studies of PDE7 inhibitors have led to the identification of several promising candidates with high potential for therapeutic application. The computational approach used in this study has provided valuable insights into the binding mechanisms and optimization strategies for PDE7 inhibitors. These advancements pave the way for the development of targeted therapies for diseases associated with PDE7 dysregulation, underscoring the significance of integrating molecular design with docking studies in drug discovery. Further experimental validation is needed to confirm the efficacy and safety of these inhibitors in clinical settings.

PHCH165
DEVELOPMENT AND EVALUATION OF HILIC-TLC METHOD FOR THE ANALYSIS OF POLAR DRUG MIXTURE OF REMOGLIFLOZIN, VILDAGLIPTIN AND METFORMIN

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Abstract :

Objectives: To develop and validate HILIC-TLC method to improve separation efficiency, resolution and sensitivity in the analysis of polar drug mixutres of Remogliflozin, Vildagliptin and Metformin. **Methods:** The development of the HILIC-TLC method involved optimizing various parameters, including TLC plate composition, mobile phase composition acetonitrile and water in the ratio of 7:3 (v/v), and pre-treatment conditions. HILIC principles were applied to enhance the interaction between polar analytes and the stationary phase. Method was validated for linearity, precision, accuracy, and reproducibility. **Results:** The HILIC-TLC method provided enhanced separation and resolution of polar drug mixtures compared to traditional TLC methods. Validation results demonstrated high reproducibility, accuracy, and linearity with the method effectively resolving complex drug mixtures into distinct bands

for precise analysis. The Rf values for Remogliflozin (0.76), Vildagliptin (0.68) and Metformin (0.24) respectively. RSD was less than 2 percent in this study. Thus, the approach was shown to be accurate and exact for both interday and intraday accuracy, indicating that it is reliable. **Conclusions:** The integration of HILIC principles into TLC significantly improves the analytical performance for polar drug mixtures. This method offers a reliable and efficient tool for the pharmaceutical industry, facilitating accurate and effective analysis of polar drug formulations. The method shows good linearity, accuracy, and can be successfully applied for quality control analysis.

PHCH166
AN ASSAY METHOD DEVELOPMENT AND VALIDATION OF CANAGLIFLOZIN BY UV-VIS SPECTROPHOTOMETER

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Abstract:
The development and validation of an assay method for Canagliflozin using UV-VIS spectrophotometry is presented. Canagliflozin, an antidiabetic drug used in the treatment of Type II diabetes mellitus, acts by inhibiting the sodium-glucose cotransporter-2 (SGLT-2), thereby preventing cardiovascular toxicity and diabetic nephropathy. The aim of this study was to develop and validate a precise and accurate method for the assay of Canagliflozin. Introduction: Canagliflozin is a crucial medication in the management of Type II diabetes mellitus. It functions by inhibiting SGLT-2, which reduces glucose reabsorption in the kidneys, thus aiding in glycemic control and reducing the risk of cardiovascular events and nephropathy associated with diabetes. Accurate quantification of Canagliflozin in pharmaceutical formulations is essential for quality control and ensuring therapeutic efficacy. This study focuses on the development and validation of a UV-VIS spectrophotometric method for this purpose.To develop and validate an assay method for Canagliflozin using a UV-VIS spectrophotometer. Method: The solubility of Canagliflozin was tested in various organic solvents, with the drug found to be soluble in ethanol, methanol, and dimethyl sulfoxide (DMSO). Methanol was chosen as the working solvent for this study. Standard and working solutions of Canagliflozin were prepared and subjected to UV absorbance measurements. Standard stock solution of Canagliflozin was prepared in methanol. Working Solutions were prepared by Serial dilutions were made from the stock solution to obtain concentrations ranging from 1 to 20 µg/ml. The absorbance of the solutions was measured at 289 nm, the determined λmax for Canagliflozin. A calibration curve was plotted to assess linearity. Results: The absorbance maximum (λmax) for Canagliflozin was determined to be 289 nm. The method exhibited linearity over the concentration range of 1 to 20 µg/ml, with a correlation coefficient (R^2) indicating high linearity. Validation of the method was conducted according to International Council for Harmonisation (ICH) guidelines Q2(R1), confirming the method's precision, accuracy, and reproducibility. Conclusion: The developed UV-VIS spectrophotometric method for the assay of Canagliflozin is definitive, accurate, highly precise, reproducible, and economical. It is suitable for routine analysis of Canagliflozin in active pharmaceutical ingredients and can be employed in quality control laboratories to ensure the consistency and efficacy of Canagliflozin-containing products.

PHCH167

DESIGN, DOCKING, ADME PROPERTIES, SYNTHESIS OF SOME 1, 2, 3-TRISUBSTITUTED-1*H*-INDOLE DERIVATIVES FOR ACTIVATING EFFECT ON GLUCOKINASE ENZYME

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Abstract:

Objectives: Maintenance of glucokinase enzyme in its active mode (closed conformation), for improved utilization of glucose by liver and muscle cells, is being looked as a promising novel strategy for treating Type II diabetes mellitus. Plethora of compounds – phenylacetamides and benzamides, were reported for their ability as glucokinase activators in the *in vitro* assays and also the *in vivo* glucose lowering effects in diabetic animal models. However, many of the promising benzamide derivatives failed to advance beyond the pre-clinical trials as most of these reportedly showed mutagenic effects in animal models.These mutagenic effects can be attributed solely to the presence of aromatic primary amino group present in the structures of these derivatives. This amino group is supposed to be important as it is involved with binding interactions with few amino acid residues (Tyr 215) on the protein, Glucokinase enzyme, to maintain it in the active conformation. Hence, finding appropriate replacement of this group, *i.e.* other groups that could interact with the amino acid residue in the binding pocket of the enzyme to maintain it in closed conformation, is a challenging task.Searchingan isosteric replacement of the toxic aromatic primary amino group present in the structures of benzamide derivatives that had surfaced in the literature related with promising glucokinase activators has resulted into plethora of 2, 3-Disubstituted-1*H*-indole derivatives, that succeeded binding and activating the enzyme, glucokinase, when tested for their activity in an *in vitro* bioassay, and also in lowering elevated blood glucose levels in experimental animals administered with a high dose of glucose (modified OGTT).

Methods: Amide motif has been evolved as an important aspect of several HIT molecules ensued successful to interact and prolong the active conformation of glucokinase enzyme. Using this motif as a linkage within heterocyclic scaffold would probably generate possible ligands that would fruitfully fit into the ligand- binding domain of the enzyme. Aiming at achieving the structures, molecular docking was achieved using IV4S crystal structure in the *in silico* environment of Discovery Studio Visualizer. **Results:** Accordingly, present article displays the Markush-structure of the designed molecules, reports of *in silico* studies including the interactions between the designed ligands and amino acid residues (TYR-215 & MET-210) in the allosteric site of 1V4S (RCSB PDB site), their drug-likeliness studied in *SwissADME*. The report also includes the scheme of synthetic reactions executed to realize the molecules which displayed drug-like properties, their characterization accomplished through spectral and elemental analysis, results of *in vitro Glucokinase assay* in comparison with the activation induced by the standard *RO-28-1675,* and *in vivo* glucose lowering effect of the derivatives when tested in experimental animals. **Conclusion:** Few of the synthesized 1, 2, 3-Disubstituted-1*H*-indole derivatives had displayed lower $S_{0.5}$(high potency) nearing to the values displayed by the standard, *RO-28-1675* (*Sigma*) in the *in vitro GK assay.* The same compounds displayed a glucose-lowering effect (55-60 % as compared to Metformin) when administered orally to *Wistar Rats* prior to subjecting them to oral glucose load.

PHCH168
QSAR, DOCKING, AND SYNTHESIS OF NOVEL INDOLE [3, 2-C] QUINOLINE DERIVATIVES AS POTENT ANTI-OXIDANTS AND ANTI-TYROSINASE AGENTS

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Abstract

Objectives: This study aims to create 3D QSAR models to confirm the Antioxidant and anti-tyrosinase activity of indolo[3,2-c] quinoline analogs and determine the most favorable structural features for developing novel medicinal medicines. **Methods:** To evaluate the predicted accuracy of the QSAR models, the datasets were divided into a training set and a test set. The training set comprised 39 compounds, chosen randomly, whereas the test set comprised 10 compounds. The chemicals were selected to guarantee a variety of structures and a broad spectrum of biological effects in the dataset. The IC_{50} values were transformed into pIC_{50} to get higher numerical values. **Results:** The cross-validated r^2 (q^2) values for the training set of 39 analogs in the CoMFA, CoMSIA, and HQSAR models are 0.470, 0.572, and 0.639, respectively. Conversely, the conventional r^2 values for the identical models are 0.982, 0.809, and 0.960. A total of 49 derivatives of the indole [3,2-c] quinoline core were subjected to docking and quantitative structure-activity relationship (QSAR) analyses. The final results act as a prototype for the development of a chemical compound that is more powerful in combating oxidative stress. **Conclusion:** The utilization of 3D-QSAR models, in conjunction with the inventive incorporation of contour maps and chemical descriptors, presents new ideas and methods for the creation of indole [3,2-c] quinoline analogs with antioxidant and antityrosinase properties.

PHCH169
IN SILICO MOLECULAR DOCKING STUDIES OF 1,2,4 TRIAZOLE-NORFLOXACIN HYBRIDS WITH TOPOISOMERASE II AS POTENT ANTITUBERCULAR AGENTS

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Abstract:

Objectives: The aim of this study was to perform *In silico* molecular docking Studies of 1,2,4 Triazole-Norfloxacin Hybrids with Topoisomerase II as Potent Antitubercular agents. **Methods:** In this study, molecular docking was utilized to find out the potential of 1,2,4 triazole-norfloxacin hybrids as inhibitors of MtTopo II. The selection of these hybrids was based on their structural diversity and documented antimicrobial properties. Utilizing BIOVIA Software, simulations were performed to predict the binding modes and affinities of these hybrids within the active site of MtTopo II. **Results:** The compounds that were designed were assessed for their binding ability to the DNA gyrase target. The molecular docking performed using LibDockScore function indicated compounds N11, N10, N6, N52, N48, N9, N38 and N14 to exhibit promising binding affinity (LibDock score 128.77, 127.73, 124.47, 122.10, 119.84, 119.17, 118.49 and 117.07 respectively) when compared to the reference norfloxacin (LibDock score 106.20) with the target 5BTC (topoisomerase II). **Conclusions:** This computational investigation provides valuable insights into the structural prerequisites required for effective inhibition and directs subsequent experimental verification of these compounds. The results emphasize the efficacy of molecular docking studies in rational drug design against tuberculosis, with the objective of advancing novel therapeutic approaches to combat this challenging infectious disease.

PHCH170
ANTIDIABETIC POTENCY AND MOLECULAR INSIGHTS OF NATURAL PRODUCTS BEARING INDOLE TARGETING AKT1 THROUGH A SYSTEMATIC BIOINFORMATICS APPROACH

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Abstract:

Objectives: Therapeutic repurposing of natural indole-derivatives, Anti-diabetic potency of plant and arine derived indoles, and Computational platform to select potential antidiabetic candidates. **Methods:** Ligand, target protein structures preparation and molecular docking study,Molecular Dynamics Simulation, Physicochemical and toxicity profile prediction,Pharmacokinetics and drug-likeness profile prediction, Structural Activity Relationship and Hierarchical Cluster Analysis: **Results:** Finally, all predictions and analyses, herdmanine A (HERD) and penerpene D (PERD) were selected as the most potential antidiabetic activity with all ideal profiles. **Conclusion:**Based on this concept, we gathered 89 bioactive natural indole derivatives (of which 64 came from plants and 25 from the sea) and evaluated their efficacy against three novel target enzymes, namely AKT1, ACACB, and CDK4, in the application of diabetic medication. Upon doing a thorough computer analysis, two antidiabetic possibilities with a greater success rate in experiments were identified: herdmanine_A and penerpene_D. AKT1 is implicated in the development of diabetes, obesity, and insulin resistance; however, there are less findings on AKT1 in diabetics. Our network pharmacology investigation, which is corroborated by current literature, demonstrated this. Currently, the most efficient method for finding strong, drug-able candidates in the drug-development module is to combine computational chemistry with bioinformatics. Certain penerpene_D may be taken into consideration as a possible antidiabetic option after pharmacological investigations.

PHCH171
FLUORO APIGENIN HYBRIDS AS VEGFR-2 INHIBITORS: DESIGN, SYNTHESIS, *IN-SILICO* STUDY, ANTIOXIDANT, AND ANTICANCER ACTIVITY

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Abstract:

Objectives: Apigenin and its analogs have distinct structural properties, they are valuable in medicinal chemistryand often used precursor in synthesizing bioactive compounds. In this research, a distinct series of 7- [(substituted nitrogen-containing heterocyclic compound) alkoxy] were designed, synthesized, and screened for antioxidant and anticancer activity. **Methods:** Designed derivatives were docked with Vascular endothelial growth factor receptor 2 (VEGFR-2) with PDB ids-4ASD, 4ASE, 2OH4using Insilco molecular docking software. some physical-chemical variables have been determined to predict the toxicity profile and ADME parameters.Some designed derivatives were considered for synthesis based on their good affinity with relevant receptors, binding energy, toxicity profile, and Lipinski rule of five. Synthesis of selected derivatives was performed in two steps. In the first step, Fluoro apigenin and 1,4-dibromo butane were incorporated with potassium carbonate as a base and anhydrous DMF as a solvent to create 4'-fluoro-5,7-dihydroxy flavones (**S1–S10**), which were then

further processed with different substituted piperazines in the second step. All the synthesized derivatives were characterized by elemental and spectral analysis (UV, IR, NMR, Mass), confirming the proposed structure of the derivative. The newly synthesized fluoro apigenin derivatives were screened for *in vitro* antioxidant using DPPH (1,1-diphenyl-2-picrylhydrazyl) free radical scavenging capacity and anticancer activities were performed on the MCF cell line followed by an MTT assay. **Result:** All compounds exhibit favourable toxicological profiles, docking results, and pharmacokinetic parameters. Furthermore, compared to Standard (ascorbic acid) and Apigenin (S), most derivatives (S2, S4, S6, S8) exhibit noticeably higher antioxidant activity. The synthesized derivatives S2, S4, S7, S8 and S9 show good anticancer activity as compared to Apigenin(S) and other derivatives. **Conclusion:** According to our investigation, commercially produced Fluoro Apigenin Hybrids may be used as a potential drug to treat cancer.

PHCH172
RP-HPLC METHOD DEVELOPMENT AND VALIDATION FOR SIMULTANEOUS ESTIMATION OF CURCUMIN, SILYMARIN AND PIPERINE.

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Abstract:

Objectives: A precise and accurate method for simultaneous estimation of Silymarin (SLY), Piperine (PIP) and Curcumin (CUR) was developed and validated as per ICH guidelines. **Methods:** The mobile phase consisted of 0.1% perchloric acid and acetonitrile (60: 40, % v/v) by using Agilent Zorbax Bonus RP (250 x 4.6 mm, 5µ) as stationary phase. The wavelength was set at 215 nm with 10 µl injection volume. The samples allowed to run for 20 minutes. **Results:** The SLY, PIP and CUR peaks eluted at 4.09, 7.39 and 10.25 minutes, respectively. The % RSD for instrument precision was found to be 0.21%, 0.19% and 0.19% for SLY, PIP and CUR, respectively. The % RSD of accuracy for SLY at 80%, 100% and 120% was found to be 0.24%, 0.04% and 0.30%, respectively. The % RSD of accuracy for PIP at 80%, 100% and 120% was found to be 0.29%, 0.26% and 0.39%, respectively. The % RSD of accuracy for CUR at 80%, 100% and 120% was found to be 0.43%, 0.20% and 0.08%, respectively. The coefficient correlation was 0.999 for SLY, PIP and CUR. The % RSD for inter and intra-day precision for SLY, PIP and CUR was found to be 0.13%, 0.26% and 0.38%, respectively. The LOD for SLY, PIP and CUR was below 2 µg/ml and the LOQ for SLY, PIP and CUR was below 6 µg/ml. **Conclusions:** In this research article, a precise and accurate method was developed and validated for simultaneous estimation of SLY, PIP & CUR in bulk drugs by RP-HPLC technique as per ICH guidelines. The proposed methods found to be appropriate due to its simplicity, reliability, sensitivity, rapidness and selectivity for detection at very low concentrations.

PHCH173
DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR PROCHLORPERAZINE MALEATE IN PHARMACEUTICAL DOSAGE FORM

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Abstract:

Objectives: The aim of this study was to develop and validate an easy, fast & accurate RP-HPLC technique for the analysis of Prochlorperazine Maleate in pharmaceutical dosage form. **Methods:** Parenteral prochlorperazine maleate (PCM) dosage form and pure drug were selected for the study. 125 µg/ml concentration of PCM of both dosage form and pure drug was prepared. The method was verified successfully in accordance with the ICH standards for accuracy, precision, specificity, linearity, ruggedness, & robustness. **Results & Discussion:** An attempt has been made to develop RP-HPLC method for the development of PCM in API & dosage form and to validate the developed methods according to ICH Q2 (R1) guidelines.Initial investigations of PCM served as the basis for the development of analytical methods. Stock solutions of the PCM was made in the diluent & mobile phase Acetonitrile: 0.1% and formic acid (50:50).The PCM in API & pharmaceutical formulation RP-HPLC method was created. Acetonitrile: 0.1% with formic acid (30:70) was used as the mobile phase, while a ZOROBAX Bonus-RP Column (250 x 4.6 mm, 5 m) was used as the stationary phase. A flow rate of 1.0 ml/min of mobile phase was kept at 258 and it was eluted at 2.25 minutes. **Conclusion:** The RP-HPLC method is determined to be suitable for its ease, dependability, sensitivity, speed & selectivity for detection at extremely low concentrations.

PHCH174
DEVELOPMENT AND VALIDATION, ANALYTICAL METHOD OF RP-HPLC FOR SIMULTANEOUS ESTIMATION OF ANTI-VIRAL DRUGS AND ITS PHARMACEUTICAL DOSAGE FORMS

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Abstract:

Objectives: The study aims to develop a single analytical method for estimating individual medications from a multidrug mixture. The three medications, emtricitabine and tenofovir in bulk drug mix and pharmaceutical dosage forms were separated and estimated using an easy-to-use, quick, accurate, and dependable simultaneous stability indicating RP - HPLC technique. **Method:** Using a gradient composition of 0.65g of precisely weighed potassium dihydrogen phosphate diluted in around 500 ml of distilled water and pH adjusted to 7.0 with triethyl amine, chromatography was performed on an Inertsil ODS 3V column. Emtricitabine and tenofovir disoproxil fumarate had retention durations of around 5.875, and 8.800 minutes, respectively. Emtricitabine and tenofovir have linear detector responses between 8 and 120 µg/ml and 12 and 180 µg/ml, respectively, of test concentration. **Results:** For emtricitabine, the corresponding linear regression equation was Y=10175x-76883, while for tenofovir disoproxil fumarate, it was Y=6280.8x+219800. For emtricitabine and tenofovir, respectively, the limits of detection and quantification were 0.06 and 0.07 µg/ml and 0.14 and 0.12 µg/ml. Emtricitabine and tenofovir disoproxil fumarate had percentage assays of around 99.50 and 100.2 percent, respectively, and 99.65% and 99.62%, respectively, for the average of five distinct concentrations. **Conclusion:** The study concluded that the procedure was verified as a last check for accuracy, ruggedness, precision, linearity,

and robustness during the method's development. The commercially available pharmaceutical dosage form was effectively treated with the proven approach, producing excellent and repeatable outcomes.

PHCH175
DEVELOPMENT OF UV-VISIBLE AND SPECTROFLUORIMETRIC METHODS FOR RAPID AND SENSITIVE DETERMINATION OF CRISABOROLE.

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Abstract:

Objectives: This study aims to develop and validate two novel analytical methods using UV- Visible and fluorescence spectroscopy for rapid and sensitive determination of crisaborole (a non-steroidal topical phosphodiesterase-4 inhibitor) in bulk and pharmaceutical dosage forms. **Methods:** The proposed quantitative methods for crisaborole analysis were based on measurement of UV absorbance and fluorescence intensity using water as the solvent. In Method A, UV absorbance is measured at λmax of 250 nm, while Method B recorded emission intensity at λem 458nm after excitation at λex227nm. **Results:** Method A was found to be linear in the concentration range of 0.5 to 40 µg/mL (r^2 = 0.999), limit of quantitation (LOQ) was 2.72 µg/mL and precision (RSD <2%). In Method B, crisaborole was successfully analysed in the linearity range of 0.5 to 1.5 µg/mL (r^2 = 0.999) with LOQ of 0.059 µg/mL and precision (RSD < 2%). The methods were successfully validated, satisfying criteria set by ICH Q2(R2) guideline. The developed methods were successfully applied for crisaborole determination in ointment formulation with mean percentage recovery of 99.47 ±1.36 and 100.13±1.19 for Method A and B, respectively. **Conclusions:** The study presents first of its kind two simple and sensitive spectroscopic methods for rapid analysis of crisaborole. Both methods are suitable for routine quality control of crisaborole in pharmaceutical dosage forms.

PHCH176
DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATION OF NOVEL MOLECULES

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Abstract:

Oxadiazole, a heterocyclic core, is known for its anti-tubercular, anti-epileptic and analgesic properties. In this study, 1,3,4-oxadiazole derivatives were designed through molecular docking against the Mycobacterium enoyl acyl carrier protein reductase (InhA) enzyme target and subsequently synthesized using microwave irradiation. The newly synthesized compounds were characterized using spectral techniques. Their anti-tubercular activity was evaluated via the MABA assay, where compound 7g demonstrated notable activity at lower concentrations. Additionally, these target compounds were tested for antibacterial efficacy using the well diffusion method, with 6f, 6i, and 6j to be active against *Staphylococcus aureus*, *Corynebacterium pseudodiphthereticum* and *Escherichia coli*. **Objectives:** The main objectives of this study were to design a set of novel molecules using a combined approach of *in-silico* techniques, to synthesize the best-fit molecules using greener methods, to purify and characterize such compounds by IR, MS and NMR, to perform anti-tubercular and anti-bacterial activity using suitable methods. **Methods:** The main objective of selecting the InhA enzyme was its exclusive presence in Mycobacteria. Thus the drugs acting on InhA enzyme will also lead to decrease in hepatic and renal side-effects in humans. Docking was done by PyRx while Biovia Discovery Studio was used for visualization. A microwave synthesizer having a mono-mode open vessel was

used for the synthesis. Isonicotinohydrazide, an aromatic aldehyde, 1,4-dioxane and zinc chloride were combined at room temperature and then exposed to microwave irradiation (MWI) to give *N'*-substituted benzylidene isonicotinohydrazide (3a,3b). This compound was further reacted with acetic anhydride and zinc chloride under MWI, yielding 1-(2-substituted phenyl-5-(pyridin-4-yl)-1,3,4-oxadiazol-3(2H)-yl)ethanone (5a,5b). Subsequently, a reaction with an aromatic aldehyde, ethanol, and sodium hydroxide under MWI produced (3-substituted phenyl-1-(2-substituted phenyl-5-(pyridin-4-yl)-1,3,4-oxadiazol-3(2*H*)-yl)prop-2-en-1-one (6a-6j and 7a-7j). The representative molecules were characterized using IR, NMR and MS. All the target molecules were subjected to anti-tubercular (MABA assay) and antimicrobial evaluation (well diffusion assay). **Results:** Microwave-assisted synthesis was performed, and the resulting compounds were characterized using various spectral techniques. The signals and peaks observed in the spectra confirmed the formation of the target compounds. In the evaluation of anti-tubercular activity, molecules 6a, 6b, 6d, 6f, 6g, and 7a-7g exhibited sensitivity at higher concentrations but showed resistance at lower concentrations, with compound 7g demonstrating sensitivity even at lower concentrations. In terms of antibacterial activity, compound 6b was active against *Staphylococcus aureus*. Additionally, compounds 6a, 6b, 6c, 6d, 6e, 6f, 6i, 6j, 7a, 7b, 7d, 7e, 7f, 7g, 7i, 7j, 11b, and 11d were effective against *Corynebacterium pseudodiphthereticum*, while compounds 6f, 6g, 6h, 6i, 6j, 7b, 7c, 7d, 7e, 7f, 11g, and 12j were active against *Escherichia coli*. **Conclusions:** In this study, ligands with various scaffolds were docked onto the InhA enzyme. The synthesis of (3-substituted phenyl-1-(2-substituted phenyl-5-(pyridin-4-yl)-1,3,4-oxadiazol-3(2*H*)-yl)prop-2-en-1-one (6a-6j, 7a-7j) was achieved using microwave irradiation. The 1,3,4-oxadiazole ring in these compounds featured a range of substituents, including 2-nitrophenyl, 2,3-dichlorophenyl, 2-chlorophenyl, 3-fluorophenyl, 2-bromophenyl, 3-bromophenyl, 2-fluorophenyl, 3,5-dibromophenyl, 2,3-difluorophenyl, and 3-chlorophenyl. The synthesized compounds were then evaluated for anti-tubercular activity using the MABA assay and for antibacterial activity using the well diffusion method at varying concentrations. Several of these molecules demonstrated significant antimicrobial and antibacterial properties.

PHCH177

DEVELOPMENT AND VALIDATION OF GAS CHROMATOGRAPHY METHOD FOR THE DETERMINATION OF S-METHOPRENE AND ITS RELATED SUBSTANCES.

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Abstract:

Objectives: The aim of this study was to develop and validate a chromatographic method for the separation of S-Methoprene (S-MP) and its related substances namely cis-Methoprene and 7-methoxy citronellal in bulk API. **Methods:** Gas chromatography using Flame ionization detector (FID) was chosen for the separation of separation. The separation of the chiral enantiomers namely cis-Methoprene and S-MP formed the major objective of the analysis. A careful choice of the GC temperature programming coupled with column selection helped analysis with highest accuracy and precision. The method was further validated as per ICH guidelines. **Results:** Method validation involved specificity, Linearity & Range, Accuracy and Precision, LOD & LOQ determination. Spiked studies for recovery testing were performed. Robustness studies were also conducted. The results are within the ICH limits and within the acceptance criteria. **Conclusions:** A validated Gas chromatographic method with FID detection was validated for the determination of S-MP in bulk API. S-MP has widespread use in veterinary applications. The method is specific and successfully separated the known and unknown impurities. The method was successfully applied for determination of S-MP in bulk API.

PHCH178
ANALYSIS AND SURFACE TOPOGRAPHY OF NATURAL STARCH-CURCUMIN BASED CEFTRIAXONE GEL

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Abstract:

Objective: This work intended to explore the possibility of applying phase contrast microscopy for surface characterization and topographic study of natural corn starch-curcumin based Ceftriaxone Sodium Gel. **Method:** Ceftriaxone Sodium was taken as a model drug for the study. Different formulations of corn starch gels were prepared using varying concentrations of corn starch (from 6 to 12%) with and without curcumin (0.1%), microcrystalline cellulose (2%), sodium alginate (15%). Along with *in vitro* pharmaceutical evaluation, surfaces properties of gels have been investigated with and without the presence of corn starch. High quality topographic images were captured by phase contrast microscope. These images were further investigated for their surface roughness, wetness and fractal nature. **Result:** The roughness of gel surfaces was quantified in terms of root-mean-square surface roughness (R_q) and arithmetic surface roughness (R_a). It was found that the gel with corn starch addition had a very smooth mushroom shaped upside-down surface with R_q of 0.30 and 0.19 μm, respectively, but the gel without corn starch had a much rougher surface with large R_q and R_a (greater than 2.49 and 1.98 μm, respectively). The fractal nature of the surface was also revealed for these gels. **Conclusion:** This work successfully applied phase contrast microscopic technique for exploring surface geometry of wet corn starch gels. The unique advantage of this technique is its no surface contacting, no surface dehydration, and therefore, no surface distortion. As a non-conventional light microscope, it has a number of advantages for microstructure observation of gels and colloidal systems. With this technique, one can obtain images of the microstructure of the surface or an internal region of a sample without having to slice it.

PHCH179
UV-SPECTROPHOTOMETRIC METHOD DEVELOPMENT AND VALIDATION FOR ESTIMATION OF KETOCONAZOLE IN BULK AND PHARMACEUTICAL DOSAGE FORM

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Abstract:

Objective: For the determination of ketoconazole in bulk and pharmaceutical dosage form in accordance with ICH guidelines, a new, economical, precise, sensitive, linear, accurate, and quick UV-Spectrophotometric approach has been developed in Methylene chloride. **Method:** The UV-visible spectrum of Ketoconazole was examined to determine its maximum absorption wavelength that is λ max at 255.2 nm. Linearity, accuracy, precision and robustness tested for this procedure. **Results**: Ketoconazole was found to have a maximum absorbance at 255.2 nm. The regression coefficient for the concentration range of 5–25 μg/ml was discovered to be 0.9982. Ketoconazole. LOD and LOQ were determined to be 0.0225 and 0.75 μg/ml, respectively. The procedure was successfully used on ketoconazole in commercial formulation, and the outcomes were in good agreement with label claims. The accuracy of the proposed method was estimated by % recovery of the method at the three level of percentage addition. The % recovery Ketoconazole was found to be 97.5% to 99.25%. Precision is determined by the coefficient of variation or the

standard deviation (spread of data) over the mean. Precision was determined by taking five readings of 20µg/ml concentration intra-day and inter-day. The results were confirmed to be within tolerance, or less than 2% RSD. **Conclusion:** Depending on the results, the given method can be successfully applied of Ketoconazole in bulk and Pharmaceutical dosage form.

PHCH180
UNVEILING THE PHARMACOLOGICAL POWER OF SENNA: A COMPREHENSIVE ANALYSIS OF AYURVEDIC HERBAL MEDICINE

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Abstract:

Objective: This study investigates the pharmacological properties and formulation characteristics of Senna (Cassia Angustifolia), a medicinal plant known for its laxative effects due to the presence of active ingredients Sennoside A and Sennoside B. Given the growing interest in herbal medications, understanding the solubility, purity, and formulation parameters of Senna is crucial for its pharmaceutical application. **Methods**: The study utilized HERBAL HILLS senna tablets and a range of laboratory equipment, including a weighing balance, UV Spectrophotometer, HPLC, UV cabinet, pH meter, hot plate, friability tester, digital tablet disintegration tester, LC-MS system, and column chromatography. Various chemicals and reagents such as methanol, ethanol, dimethyl sulfoxide, chloroform, glacial acetic acid, n-hexane, propanol, acetonitrile, water, petroleum ether, and ethyl acetate were employed for analysis. **Results**: The investigation yielded comprehensive insights into the pharmacological and formulation characteristics of Senna. Solubility testing across various solvents demonstrated the compound's favorable dissolution behavior. Bontrager assays confirmed the presence of sennosides. Thin Layer Chromatography (TLC) further characterized the compound, with column chromatography facilitating the separation of calcium sennoside. UV-visible spectrophotometry and HPLC analysis affirmed the concentration and presence of sennosides, with an observed absorbance of 18.77%. Quality assessment of Senna tablets revealed adherence to pharmaceutical standards, encompassing organoleptic properties, hardness, thickness, diameter, weight uniformity, friability, disintegration time, and content uniformity. **Conclusion**: The study underscores the significance of safety and quality in the global acceptance and utilization of Ayurvedic herbal medications, as advocated by regulatory bodies such as the WHO and various pharmacopoeias. Additionally, liquid chromatography-mass spectrometry (LC-MS) proved effective in detecting sennosides, providing valuable insights into the compound's pharmaceutical potential.

PHCH181
METHOD DEVELOPMENT AND VALIDATION FOR INHOUSE COMPRESSED TABLET OF ATORVASTATIN BERBERINE SOLID DISPERSION

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Abstract:

Objectives: To prepared the solid dispersion of Atorvastatin – Berberine by using polymer aiming to enhance solubility and bioavailability of both in combination and compress the solid dispersion in form of tablet by using tablet machine. Also to develop and validate a method for the compressed tablet. Further to ensure the tablet formulation, stability, reproducibility, and compliance with regulatory

standards. **Methods:** Co-precipitation method was used to formulate the solid dispersion of Atorvastatin and Berberine with the help of polymer PVP K 30. The solid dispersion was further mixed with regular excipient used in tablet and then the material was compressed by using six station tablet machine. The compressed tablet was evaluated further for the specification of tablet to meet the standard values as per IP. A method was developed and validation on parameters like accuracy, precision (Intraday Precision, Interday Precision), specificity, limit of detection (LOD), limit of quantitation (LOQ), Repeatability, linearity, range of linearity, robustness and ruggedness was carried out by using UV Visible spectrophotometer. **Results:** It was found that, the compressed tablet of solid dispersion of ATV-BER meet the specification like friability was in the range of 0.60%. The hardness of the compressed tablet was 5.1 kg/cm^2. The disintegration time of the compressed tablet of solid dispersion was in the range of 15 min. The dissolution rate of the compressed tablet in the interval of 5,10,15,25,35,45 min was found to be 85 % dissolution of drug as compared with the marketed drug. The range of weight variation was in the acceptable range of 0.651 ±5. For the method development the liner range was found to be in the concentration of 2 to 12 (µg/ml). The % RSD was within an acceptable limit of less than 2%. The % recovery at 80%, 100% and 120% was found to be within acceptable criteria of 95 %-105% establishing accuracy of the developed method. The data of LOD and LOQ measurement proved that developed method was sensitive. For a specific analytical method, there should be no interfering peak of diluent and possible excipient with the analyte that no interfering peaks were observed during analysis. Method development by using UV-Visible spectrophotometer is reliable and accurate. **Conclusions:** It is found that the solubility of Atorvastatin and Berberine is increase by the application of solid dispersion method, also the two API are easily mixed and complex together by using this NDDS approach i.e., solid dispersion. When solid dispersion compressed in-house by the compression machine, it is easily compressible and gives good formulation of tablet. The compressed tablet when estimated for the parameters, it is observed that all are in standard limits. This UV-Visible spectrophotometric developed method on in-house Atorvastatin and Berberine Solid dispersion was found to be reliable, accurate and specific. So, it is concluded that, this method can be further used for the estimation of both drugs individually and in formulation also.

PHCH182

IN-SILICO PREDICTION, SYNTHESIS AND ANTI-MICROBIAL EVALUATION OF NOVEL PYRAZOLE-BENZOHYDRAZIDE DERIVATIVES

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Abstract:

Objectives: The development of novel anti-microbial drugs for multi-drug resistance (MDR) is a significant challenge. The aim of this study was to synthesize various derivatives of Benzylidene-4-(pyrazole-5-yl)benzohydrazide (SL01-SL10) that are active against a wide variety of antibacterial and antifungal pathogens. **Methods:** The derivatives were subjected to molecular docking studies; the best affinity molecule underwent a 1000 picosecond molecular simulation using Gromacs; the molecules were then synthesized and characterized via IR, ^{1}H-NMR, ^{13}C-NMR, and MASS; the antimicrobial activity of the synthesized derivatives was evaluated using MIC and zone of inhibition method, along with cytotoxicity using the MTT Assay. **Results:** The binding energy of the compounds ranged from -9.0 to -10.0 Kcal/

mol. Molecular simulation of the best binding affinity compound produced a major result in improving the representation of the real biological conditions with an average RMSD of 0.110 nm. The derivatives SL03, SL04, and SL06 showed overall good anti-microbial activity at lower concentrations of 1.8 µg/ml. Compound SL03 showed significant activity against Gram-positive, Gram-negative bacteria and fungal strains, with inhibition zone diameters of 17, 19 and 16 mm respectively. Compound SL04 showed promising anti-bacterial effects against *S.mutans* and *C.albicans*, with inhibition zone diameters of 18 and 17 mm, and moderate activity against *B. cereus*. Compound SL06 showed enhanced activity against *P.aeruginosa*. **Conclusions:** The derivative (2-nitrobenzylidene)-4-(1H-pyrazol-5-yl)benzohydrazide (SL06), which contained a nitro group, displayed potent activity at 1.8 µg/ml with an IC_{50} of 50.31 and a selectivity index of 61.33.

PHCH183

SYNTHESIS, SEPARATION BY PREPARATIVE SCALE HPLC, AND CONFIGURATION OF ENANTIOMERS BY CIRCULAR DICHROISM SPECTROSCOPY OF RACEMIC 1,4-DIHYDROPYRIMIDINE DERIVATIVES

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Abstract:

Objective: Synthesized the novel 1,4-Dihydropyrimidines Derivatives for treating calcium channel blocker activity. The synthetic pathway involves the condensation of carefully selected aldehydes with urea, leading to the formation of target compounds. The compounds are chiral, hence subsequent focus shifts to separation of enantiomers through preparative HPLC. **Method**: Enantiomers were separated using a Cellulose SC (250*30mm 5µm) column with the mobile phase consisting of Hexane/Isopropyl alcohol/Methanol/Diethylamine (70:15:15:0.1) and flow rate 30ml/min. The separated enantiomers are collected in individual fractions for Further analysis. In addition, the configuration of the separated isomers was done by a Circular Dichroism spectrometer (CD). Circular dichroism spectroscopy emerges as a powerful tool for the determination of the isolated enantiomers. Each enantiomer is dissolved in a suitable solvent, and CD spectra are recorded over various wavelengths. **Results**: The resulting spectra are scrutinized for characteristic peaks, allowing for the assignment of absolute configurations. This integrated approach showcases the successful synthesis and separation of enantiomers and emphasizes the importance of employing multiple analytical techniques for accurate configuration determination. **Conclusion**: The findings contribute to expanding knowledge in the field of asymmetric synthesis and chiral resolution, paving the way for the development of novel 1,4-dihydropyrimidine derivatives with defined stereochemistry

PHCH184

DRUG DESIGN AND SYNTHESIS OF NOVEL CHIRAL ISOQUINOLINE DERIVATIVES FOR ANTI-CANCER ACTIVITY

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Abstract:

Objectives: CDK4/6 inhibitors are a substantially current menage of drugs that are used to treat hormone-receptor-positive, HER2-negative breast cancer. These inhibitors interfere with the mechanism through which breast cancer cells divide and grow by shepherd cyclin-dependent kinase 4 and 6 (CDK4/

6). The hormones estrogen, progesterone, or both play key role in breast cancer development. Herceptin a protein that stimulates cancer cell proliferation, has been found to be absent in HER2-negative tumors. **Methods:** Proposed project is related to the drug development of chiral isoquinoline analogues. It focus on redesign and synthesis of chiral isoquinoline compounds, evaluation of anticancer activity. Separating the racemic mixture of active molecule by HPLC methods. Further, cell line studies of individual enantiomers and analytical method development of chiral molecules. **Results:** We anticipate a one or more molecules of them would emerge as potential anticancer agent. Such molecule will be taken further for optimization to get improved efficacy. **Conclusion:** The proposed work may results in emerging good potential drugs against breast cancer and also to overcome the drug resistance in the treatment.

PHCH185
STRATEGIC DEVELOPMENT OF QUERCETIN PRODRUGS: *IN SILICO*, SYNTHESIS AND ALZHEIMER'S THERAPEUTIC ASSESSMENT

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Abstract:

Objective: This research aims to design and synthesize a dipeptideprodrugofQuercetin withaminoacids,followedbycharacterizationand evaluation of its physicochemical properties, as well as its *in-vivo* and *in-vitro* anti-Alzheimer'sactivity. **Methods:** Using t-BOC as a protective agent, DCC as a coupling agent and LiOH as a deprotecting agent, the dipeptide prodrug of quercetin conjugated with alanine and glycine were synthesized. IR, ^{1}HNMR, and MASS spectrometry were used to characterize the derivatives. In addition to ADMET prediction, molecular docking with enzymes known to cause Alzheimer's disease were carried out, and the physicochemical characteristics were assessed. The prodrug's acute oral toxicity, *in vitro* and *in vivo* anti-Alzheimer's activity were evaluated. **Result and Discussion:** The structural configuration of the novel compound was confirmed through spectral analysis and indicated the presence of several structures such as aliphatic, aromatic, and asymmetry. The Huckel analysis confirmed the presence of aromatic rings in the compound. The molecular docking studies suggested affinity towards beta-secretase and acetylcholinesterase, also indicating that the compound has ideal characteristics for the oral route (Log P = 1.90), cellular absorption (TPSA = 132.23), and oral bioavailability (number of rotatable bonds = 10). The toxicity profile showed a likelihood of very mild cytotoxicity with no significant systemic damage. The *in-vivo* analysis showed that the Quer-prodrug significantly ($P < 0.001$) reversed the changes induced by aluminium chloride and restored histomorphological features in brain tissue. **Conclusion:**The results indicated that the conjugate of quercetin may have the ability to treat the side effects of AD. The suppression of acetylcholine esterase and beta-secretase activities appears to be the mechanism of action. Further research may help pinpoint a particular therapeutic approach that is still missing from the treatment of AD.

PHCH186
MANGO LEAVES TO MOLECULAR INSIGHTS: ISOLATION AND STANDARDIZATION OF BIOACTIVE PHYTOCOMPOUNDS

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Abstract:

Objective: This study delves into the isolation and standardization of pivotal phytocompounds extracted from the leaves of *Mangifera indica*. The principal objective is to identify the bioactive constituents and

verify their structural authenticity. **Methodology:** The methanolic extract of the leaves was partitioned using a water-ethyl acetate system, followed by column chromatography on silica gel, which produced twelve fractions. HPLC and HPTLC were employed for the separation and accurate identification of the compounds. The standardized extracts were then characterized through IR, ^{1}HNMR and Mass to confirm their structural integrity. **Results:** The fractionation strategy aided in isolation of 3β-taraxerol, a triterpenoid compound. HPLC analysis, revealed a retention time of 20 minutes. HPTLC with n-hexane and ethyl acetate (80:20 v/v) mobile phase yielded an Rf value of 0.5. Spectro-photometric analysis of 3β-taraxerol showed distinctive IR peaks at around 3400 cm{ ^{1} for O-H stretching and 2950 cm{ ^{1} for C-H stretching. NMR data identified methylene and methine protons in the δ 0.80-2.00 ppm range and a hydroxyl proton at δ 3.00-3.20 ppm. Mass spectrometry detected the molecular ion peak at m/z 426. **Conclusion:** The isolation and standardization of phytocompounds from the leaves of *Mangifera indica* have demonstrated significant success, particularly with the identification of 3β-taraxerol. Utilizing advanced chromatographic and spectroscopic techniques, high-purity extracts were obtained and structurally validated. This study not only underscores the value of *Mangifera indica* in pharmaceutical applications but also sets a solid foundation for further research into its medicinal benefits.

PHCH187
ISOLATING NATURE'S REMEDIES: PHYTOCHEMICAL EXTRACTION FROM *STEREOSPERMUM SUAVEOLENS* BARK

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Abstract:

Objectives: This research on the bark of *Stereospermum suaveolens*, or Patala, aims to isolate and standardize key phytocompounds. The study's objectives are to characterize the bioactive constituents, authenticate their structures, and evaluate their therapeutic potential. **Methodology:** The methodology for isolating and standardizing phytocompounds from Patala bark involves extracting the bark with methanol, followed by partitioning with a water-ethyl acetate-butanol system. The ethyl acetate fraction is then separated using silica gel column chromatography. The isolated compounds were analyzed using High-Performance Thin Layer Chromatography and High-Performance Liquid Chromatography for identification, and their structures are confirmed with mass spectrometry, nuclear magnetic resonance and infrared spectroscopy. **Results:** The isolation and standardization of Cycloolivil from Patala bark resulted in a pure extract of the compound. HPTLC revealed distinct and well-separated bands for Cycloolivil using mobile phase, chloroform: methanol (90:10 v/v) confirming its identity. HPLC further verified its purity and showed a retention time of 18.557 minutes. Structural confirmation was achieved through mass spectrometry, NMR and IR. The standardized cycloolivil demonstrated consistent quality, supporting its potential for therapeutic use. **Conclusion:** The isolation and standardization of Cycloolivil from Patala bark achieved a highly purified and accurately characterized compound. Comprehensive analyses using HPTLC, HPLC, MS, NMR, and IR confirmed its identity and structural integrity. The standardized cycloolivil demonstrated consistent quality, supporting its potential for therapeutic applications and providing a robust basis for further research and development.

PHCH188
UNVEILING BIOACTIVE MARVELS: ISOLATION AND STANDARDIZATION OF PHYTOCOMPOUNDS FROM *SYZYGIUM CUMINI* SEEDS

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Abstract:

Objectives: The present study deals with the extraction and isolation of active compounds from the seeds of *Syzygium cumini*. The main objective of the study is to isolate and standardize the therapeutically important phytocompounds present in the seeds of *Syzygium cumini*. **Methodology:** Extracting the seeds with methanol yielded an extract that was partitioned using a water-ethyl acetate system. The ethyl acetate fraction underwent silica gel column chromatography and was further purified by rechromatography with diaion as stationary phase. High-Performance Liquid Chromatography and High-Performance Thin Layer Chromatography facilitated the separation and identification of the compounds. The structural integrity of the standardized extracts was verified using Infrared Spectroscopy, Nuclear Magnetic Resonance and Mass Spectrometry. **Results:** The isolation of Maslinic acid, a pentacyclic triterpene acid; Valoneic acid dilactone and Rubuphenol was successfully achieved through a fractionation strategy. HPLC analysis, using Phosphate buffer and Acetonitrile as the mobile phase, indicated retention times of 20, 12 and 14 minutes. HPTLC with a toluene:ethyl acetate:methanol:formic acid (3:6:1:1.5 v/v) mobile phase resulted in Rf values of 0.8, 0.6, and 0.8 and the structures of the isolated compounds were confirmed through spectrophotometric analysis. **Conclusion:** Phytocompounds were successfully isolated and standardized from the seeds of *Syzygium cumini.* High-purity extract that was structurally validated was produced using sophisticated chromatographic and spectroscopic techniques. This study provides insights into isolating the active constituents of the plant's seeds and aids in developing pharmacologically active compounds for therapeutic use in various ailments.

PHCH189
SYNTHESIS, CHARACTERIZATION AND *IN-SILICO* ANTIOXIDANT AND ANTICANCER ACTIVITIES OF NOVEL PYRIMIDINE, OXAZINE AND THIAZINE DERIVATIVES

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Abstract:

Objective: The main aim of the study is to synthesize and characterize novel pyrimidine, oxazine and thiazine derivative and to understand the *in-silico* antioxidant and anticancer activities of the above-mentioned derivatives and objective is to synthesis and characterize the derivative and also study the *in-silico* antioxidantand anticancer activities of the derivatives. **Method**: The synthesis take place in two steps – 1) Synthesis of heterocyclic chalcones using Claisen Schmith condensation method; 2) The chalcones upon reaction with urea and thiourea respectively gives pyrimidine, oxazine and thiazine derivatives. The synthesized compounds were confirmed by the physical (melting point, solubility and Thin Layer Chromatography) and spectral (InfraRed spectroscopy) characterization. Molecular docking studies were carried out for antioxidant activity on Kelch-like ECH –associated protein 1 (PDB ID:2FLU) and anticancer activity on Liganded X-ray structure of Cyclin dependent kinase 6 (CDK6) (PDB ID: 4AUA). **Results**: The synthesized compounds were characterised and undergone *in-silico* biological screening for antioxidant and anticancer activities. In the *in-silico* anti-oxidant study

the *pyrimidine derivative***pc2** and **pc1** showed the highest binding affinity affinity against the standard drug ascorbic acid and in case of *in-silico* anti-cancer study the *oxazine derivative***oc2** and **oc3** showed highest binding affinity against the standard drug Ribociclib. **Conclusion**: This study focuses on generating novel heterocyclic derived less toxic and cheaper antioxidant cum anticancer drugs with the help of *in-silico* techniques. This derived drugs, up on processing further can replace the resistant drug category and provide efficient and cheaper therapy for cancer treatment with enhanced antioxidant content in body.

PHCH190
FORMULATION AND DEVELOPMENT OF LIPOSOMES OF ANTIPARKINSONIAN DRUG

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Abstract:

Objectives: The objective of this study was to formulate liposomes containing an antiparkinsonian drug to enhance its bioavailability, aiming to improve therapeutic efficacy. The research seeks to enable higher absorption and prolonged release of the drug, thereby reducing the frequency of dosing required for effective treatment. Additionally, the study will focus on developing and evaluating a transdermal drug delivery system using liposomes, designed for sustained release of the antiparkinsonian drug when administered via the transdermal route. The effectiveness and characteristics of the formulated drug delivery system will be analyzed using various analytical methods. **Methods:** Rasagiline mesylate, an antiparkinsonian drug, was selected for this study to enhance its bioavailability using liposomal formulations. The liposomes were prepared by the ethanol injection method. Phospholipon 90 H was used as the phospholipid, and cholesterol was incorporated to stabilize the liposomal bilayer. The resulting liposomes were characterized for particle size, zeta potential, and encapsulation efficiency. *In vitro* drug release studies were conducted to assess the sustained release properties of the liposomes. **Results:** The liposomal formulation of rasagiline mesylate significantly enhanced the drug's bioavailability, with a notable improvement in its absorption rate. The liposomes effectively encapsulated rasagiline mesylate, resulting in prolonged drug release and reduced dosing frequency. The transdermal delivery system demonstrated sustained release over an extended period, ensuring consistent therapeutic levels. Particle size analysis revealed that the liposomes maintained a uniform and small size distribution, contributing to improved permeability. *In vivo* studies confirmed that the enhanced bioavailability of rasagiline mesylate led to better therapeutic outcomes, with the liposomal formulation showing the most significant improvement in sustained drug release and overall efficacy. **Conclusions:** The study concludes that the liposomal formulation of rasagiline mesylate successfully enhances the drug's bioavailability and absorption rate, offering a promising approach for improving the therapeutic management of Parkinson's disease. The sustained release achieved through the transdermal delivery system reduces dosing frequency, potentially improving patient compliance. The uniform particle size and stability of the liposomes contribute to their effectiveness in delivering rasagiline mesylate consistently over time. Overall, the liposomal approach demonstrates significant potential for enhancing the clinical efficacy of antiparkinsonian drugs, with promising implications for future therapeutic strategies.

PHCH191
QUALITY BY DESIGN APPROACH (QBD) TO ANALYTICAL RP- HPLC METHOD DEVELOPMENT AND ITS VALIDATION

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Abstract:

Objectives: The primary objective of applying the Quality by Design (QbD) approach to RP-HPLC method development and validation is to enhance the robustness and precision of the method. **Methods:**The work plan includes drug procurement, selecting factors and their levels using QbD design, choosing responses, analyzing QbD data, optimizing chromatographic parameters, applying these parameters for mangiferin estimation, and validating the method. Key validation aspects are accuracy, reproducibility, precision (repeatability and intermediate precision), range, and ruggedness. **Results:**The Analytical Target Profile (ATP) outlines the key variables to measure, such as impurity levels, and the required performance characteristics like accuracy, precision, and range. It bridges the gap between the analytical method and the chemical/ formulation process. Establishing an ATP involves identifying the target measurement, selecting the appropriate technique, conducting a risk assessment and experimental planning, using Design of Experiments (DoE) to explore factors, and finally optimizing and validating the method to ensure it meets performance standards. **Conclusion:**A novel, fast, and robust RP-HPLC method for Mangiferin (MGN) was developed using the Quality by Design (QbD) approach with a Box-Behnken design (BBD) and validated per ICH guidelines. The automated QbD approach improved method performance and robustness, offering faster development compared to manual methods.

PHCH192
FORMULATION AND DEVELOPMENT OF SUMATRIPTAN SUCCINATE LOADED LIPOSOME FOR THE TREATMENT OF MIGRAINE

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Abstract:

Objectives: The objective of this study was to formulate and evaluate liposomes containing sumatriptan succinate to enhance its bioavailability and therapeutic efficacy in the treatment of migraines. The research aimed to achieve higher drug absorption and sustained release, potentially reducing the dosing frequency required for effective management of migraine symptoms. Additionally, the study focused on developing a stable liposomal drug delivery system and assessing its characteristics, including particle size, encapsulation efficiency, and *in vitro* release profile, using various analytical methods to determine the effectiveness of the formulation. **Methods:** Sumatriptan succinate, a selective serotonin receptor agonist used in the treatment of migraines, was selected for this study to enhance its bioavailability through liposomal formulations. The liposomes were prepared using the ethanol injection method. Phospholipon 90 H was employed as the phospholipid, and cholesterol was incorporated to stabilize the liposomal bilayer. The prepared liposomes were characterized for particle size, zeta potential, and encapsulation efficiency. *In vitro* drug release studies were conducted to evaluate the sustained release properties of the liposomes, ensuring an improved therapeutic profile for sumatriptan succinate. **Results:** The liposomes of sumatriptan succinate significantly improved the drug's bioavailability, resulting in a more efficient absorption

profile. The liposomes successfully encapsulated sumatriptan succinate, leading to a sustained release of the drug and a potential reduction in dosing frequency. *In vitro* drug release studies confirmed a prolonged release profile, ensuring consistent therapeutic levels over an extended period. This formulation demonstrated a significant improvement in the overall therapeutic efficacy of sumatriptan succinate, making it a promising candidate for enhanced migraine treatment. **Conclusions:** The liposomes of sumatriptan succinate demonstrated significant potential in enhancing the drug's bioavailability and therapeutic efficacy. By effectively encapsulating the drug, the formulation provided sustained release, improved absorption, and the possibility of reduced dosing frequency. The uniform particle size and stable zeta potential contributed to enhanced permeability and stability, making this liposome gives a promising approach for optimizing migraine treatment. These results suggest that liposomal delivery of sumatriptan succinate could lead to improved patient outcomes and provide a more effective therapeutic option.

PHCH193

FORMULATION AND EVALUATION OF HERBAL GEL FOR MOUTH ULCER

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Abstract:

Objectives: The objective of this study was to formulate and evaluate an herbal gel specifically designed for the treatment of mouth ulcers. This study aims to harness the therapeutic properties of natural ingredients to create a safe, effective, and affordable treatment option. It focuses on assessing the gel's efficacy, stability, and patient acceptability, contributing to alternative remedies for oral health issues. **Methods:** The *Acacia catechu*, was used to prepare an herbal gel for treating mouth ulcers. The gel was formulated using Carbopol 940 as a gelling agent, sodium CMC, and HPMC E15 as stabilizers. The preparation involved dispersing Carbopol 940 in distilled water and neutralizing it with triethanolamine. *Acacia catechu* extract was incorporated into the gel base along with sodium CMC and HPMC E15. The formulations were evaluated for pH, viscosity, spreadability, and stability. *In vitro* release studies were conducted using a Franz diffusion cell, and the efficacy was assessed through *in vivo* studies on animal models. **Results:** The formulation of the herbal gel for mouth ulcers showed promising results. The raw material evaluation included an identification test and preliminary phytochemical screening, confirming the presence of tannins and flavonoids in *Acacia catechu* powder. FTIR analysis confirmed the characteristic functional groups, ensuring the extract's purity. Preformulation studies demonstrated compatibility with excipients, and the prepared gel showed optimal pH, viscosity, and spreadability. The *in vitro* release studies indicated a sustained release of active ingredients. Stability studies showed no significant changes in formulation, indicating a stable product suitable for therapeutic use. **Conclusions:** The study concludes that the formulated herbal gel containing *Acacia catechu* is effective in treating mouth ulcers. The successful identification and characterization of the raw materials, along with the preliminary phytochemical screening, confirm the presence of beneficial compounds. The prepared gel demonstrated optimal physicochemical properties, including appropriate pH, viscosity, and spreadability, while stability studies indicated a robust formulation. The *in vitro* evaluations supported the gel's efficacy, showcasing significant healing effects and enhanced release of active ingredients. Thus, this herbal gel offers a promising, natural alternative for managing mouth ulcers, highlighting its potential for further clinical development and application.

PHCH194

DEVELOPMENT OF QUALITY CONTROL PARAMETERS AND FORMULATION EFFICACY FOR THE BIOLOGICAL ACTIVITY OF PROPRIETARY VAGINAL LUBRICATING GEL

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Abstract:

Objectives: To ensure consistent quality of the vaginal lubricating gel, quality control parameters were established. These included evaluating effectiveness in relieving dryness, identifying active ingredients like glycerine using gas chromatography (GC), and assessing biological activity, pH balance, skin irritation, viscosity, spreadability, and homogeneity through *in vivo* studies. **Methods:** To ensure the quality of the proprietary vaginal lubricating gel, we implemented stringent quality control measures. We used gas chromatography to accurately identify and quantify glycerine and other active ingredients, ensuring formulation consistency. The gel's effectiveness assessed through *in vivo* studies, focusing on lubricating properties and comfort. Additionally, we analysed the gel's pH balance, skin irritation, viscosity, spreadability, and homogeneity to confirm it met safety and efficacy standards. **Results:** The proprietary vaginal lubricating gel consistently met quality control standards. Gas chromatography confirmed accurate glycerine quantification, ensuring formulation consistency. *In vivo* studies showed the gel effectively alleviates dryness, maintains pH balance, and has favourable viscosity, spreadability, and homogeneity with minimal skin irritation. **Conclusions:** The study confirmed the vaginal lubricating gel's quality through gas chromatography for precise glycerine measurement and *in vivo* tests showing it relieves dryness and improves comfort while maintaining its biological properties. Overall, the gel is reliable and effective.

PHCH195

HPLC METHOD DEVELOPMENT AND VALIDATION OF SOME NUTRACEUTICAL'S

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Abstract:

Introduction: This study presents the development and validation of a high-performance liquid chromatography (HPLC) method for the determination and quantification of cholecalciferol in its formulation. Cholecalciferol, also known as Vitamin D3, is an essential nutrient crucial for various physiological functions. Accurate quantification of cholecalciferol in formulations is imperative to ensure product quality and efficacy. **Objectives:** The objective of this study was to develop and validate an HPLC method for the precise determination and quantification of cholecalciferol in its formulation. The validation aimed to ensure that the method meets the required standards for specificity, linearity, precision, accuracy, and robustness as outlined by ICH guidelines. **Methods:** The HPLC method was developed using a ZORBAX Eclipse XBD-C18 column (4.6 × 150 mm, 5 micron) with a mobile phase consisting of acetonitrile and methanol (95:5). The wavelength used for detection was 265 nm, with a flow rate of 1.5 mL/min. The drug exhibited a sharp peak under these conditions. The analysis was performed in isocratic pump mode with a 20 µL injection volume, and methanol was used as the diluent. The method was validated according to ICH guidelines for various parameters: Specificity, Linearity, Precision and Accuracy. **Results:** The method provided clear and sharp peaks for cholecalciferol,Validation results demonstrated linearity within the concentration range of 50-150 IU/ml,Precision studies showed low % RSD values, and accuracy was confirmed through spike recovery experiments with results within

acceptable limits,Specificity was verified by the absence of interference from other formulation components. **Conclusions:** The HPLC 3000 series chromatograph was employed for the quantitative estimation of cholecalciferol using a mobile phase of acetonitrile and methanol (95:5) and a ZORBAX Eclipse XBD-C18 column, with methanol as the diluent. The developed method is simple, specific, linear, and precise, validated according to ICH guidelines. Key validation parameters such as recovery, linearity, and precision were confirmed. The method is effective for routine quality control of cholecalciferol in dosage forms, free from interference by common excipients and impurities, and is ready for routine laboratory analysis and assay.

PHCH196

DESIGN, SYNTHESIS, *IN-SILICO* ADMET & MOLECULAR DOCKING STUDIES WITH *IN-VITRO* ANTI-INFLAMMATORY ANALYSIS FOR NOVEL CHALCONE-LINKED PYRAZOLE AMINE DERIVATIVES

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Abstract

Objectives: This research involves the development, synthesis, *In-silico* ADMET and molecular docking studies, and *In-vitro* anti-inflammatory analysis of chalcone-linked pyrazole amine compounds. **Methods:** This study focuses on the synthesis of chalcone-linked pyrazole amine derivatives via molecular hybridization. Two synthetic schemes were designed, each using different hydrazide and amine derivatives, resulting in a library of 100 compounds (50 per scheme). *In-silico* ADMET analysis and molecular docking studies were conducted via different tools for all compounds, leading to the selection of six derivatives based on their scores. These selected compounds were synthesized and subsequently evaluated *in-vitro* for anti-inflammatory activity using the egg albumin protein denaturation method. **Results:** The structural identification of the synthesized chalcone-linked pyrazole amine derivatives was confirmed through FT-IR, ^{1}H NMR, ^{13}C NMR, MASS and elemental analysis, with the observed peaks consistent with the expected products. These compounds were selected based on favorable ADMET and molecular docking scores obtained from *In-silico* analyses using various computational tools. *In-vitro* anti-inflammatory evaluation suggests that these derivatives hold significant potential as anti-inflammatory agents, likely due to the synergistic effects of the pyrazole-linked chalcone moiety. **Conclusion**: In conclusion, the chalcone-linked pyrazole amine derivatives were successfully synthesized and validated, showing promising *In-silico* and *In-vitro* anti-inflammatory activity, making them potential candidates for further development as anti-inflammatory agents.

PHCH197

DESIGN, SYNTHESIS, *IN-SILICO,* ADMET & MOLECULAR DOCKING STUDIES WITH *IN-VITRO* ANTI-INFLAMMATORY EVALUATION OF COUMARIN AND THIAZOLE DERIVATIVES

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Abstract:

Objectives: This research intends to design and synthesis the coumarin-thiazole derivatives followed by *In-silico* ADMET analysis, molecular docking studies, spectroscopic characterization of the synthesized compounds by FT-IR, MASS spectroscopy, NMR (^{13}C NMR and ^{1}H NMR) and

evaluate the *in-vitro* anti-inflammatory activity. **Methods: N**ovel orcinol based coumarin-thiazol derivatives were designed and synthesized via molecular hybridization. *In-silico* ADMET analysis, molecular docking and molinspiration were conducted via different tools for all the compounds , leading to the selection of four derivatives based on their scores. Four compounds were seleceted and synthesized and subsequently evaluated for physicochemical parameters such as melting point and sloubility, spectral analysis which included IR analysis, Mass spectroscopy and NMR (^{13}C and ^{1}H NMR). The compounds were also evaluated for *in vitro* anti-inflammatory activity using egg albumin protein denaturation method. **Results:** The structural identification of the synthesized coumarin-thiazole derivatives were confirmed through FT-IR, Mass spectroscopy and NMR (^{13}C and ^{1}H NMR), with the observed peaks consistent with expected products. These compounds were selected based on favourable ADMET and molecular docking scores obtained from *in silico* analysis using various computational tools. *In vitro* anti-inflammatory evaluation suggested that these derivatives hold significant potential as anti-inflammatory agents, likely due to synergistic effect of coumarin-linked thiazole moiety. **Conclusion:** In the conclusion of this research, the coumarin-linked thiazole derivatives were successfully synthesized and validated, showing promising *in silico* and *in vitro* anti-inflammatory activity, making them potential candidates for further development as anti-inflammatory agents.

PHCH198

DESIGN, *IN-SILICO* SCREENING, SYNTHESIS AND EVALUATION OF ANTI-MICROBIAL ACTIVITY OF NOVEL TYROSINE DERIVATIVES

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Abstract:

Objective: This study focuses on the design, *In-silico* screening, synthesis, and evaluation of the antimicrobial activity of novel tyrosine derivatives. **Methodology:** The research started with the design of a library of compounds using CHEMDRAW software. Modification of functional groups was done at different positions based on literature. The Swiss ADME tool used to evaluate the molecules according to various parameters in order to select the most promising molecules for further study. The PyRx tool was used to perform the docking of the compounds to analysed their binding affinity. Based on *In-silico* parameters, best five compounds were synthesized and evaluated for antimicrobial activity. **Results:** The structural identities of the synthesized tyrosine derivatives were confirmed through FT-IR, NMR, and mass spectroscopy. Compound selection was based on docking scores and ADME properties. The antimicrobial activity of the five synthesized compounds was assessed taking ciprofloxacin and dimethyl sulfoxide (DMSO) as Positive control and negative control respectively revealing significant efficacy against *Staphylococcus aureus.* **Conclusion**: The study successfully designed, synthesized, and performed five tyrosine derivatives. Structural identities were confirmed using FT-IR, NMR, and MASS spectroscopy. The synthesized compounds showed significant antimicrobial activity against *Staphylococcus aureus*, indicating potential for further development.

PHCH199

REVIEW ON METHOD DEVELOPMENT AND SIMULTANEOUS ESTIMATION OF HMG-COA REDUCTASE INHIBITORS AND ANTIPLATELET DRUGS BY HPTLC

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Abstract:

The current review aims to report the comparative high performance thin layer chromatographic methods (HPTLC) including all method development parameters for the simultaneous estimation of different HMG-CoA reductase inhibitors and antiplatelet drugs. Simple, precise, accurate, robust, and reproducible HPTLC protocols are required to ensure the efficacy, safety, and quality of the drug product. Method development for simultaneous estimation of different HMG-CoA reductase inhibitors and antiplatelet drugs were reported with stationary phases like silica gel $60F_{254}$ precoated in aluminium foil plate. The chromatographic separation was reported using a mobile phase composed of either toluene, methanol, and formic acid; or benzene, ethyl acetate, toluene, methanol, and glacial acetic acid or with methanol, benzene, ethyl acetate, and glacial acetic acid. Detection was normally done using ultraviolet detection within a range of 220 nm to 254 nm. The review aims to compare various stationary phases and solvent systems used for simultaneous quantification of different HMG-CoA reductase inhibitors and antiplatelet drugs in dosage forms by HPTLC.

PHCH200

COMPARATIVE ANALYTICAL STUDY OF SOME PHYSICOCHEMICAL PARAMETERS ON LOCALLY MANUFACTURED SOAPS

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Abstract:

Objective: The aim of this study was to determine the physicochemical properties of locally available soaps. **Methodology:** pH determination of different soap samples using pH indicator paper. Foaming capacity of soap samples was determined by heated the soap solution and observe the rate of disappearance of 2mm of froth. Total alkali content and total fatty matter of soaps determined using HNO3 and the remaining fatty acids was removed with chloroform and titrated against NaOH. **Results:** After determining the pH of soaps, revealed the soaps that have pH 7 are neutral and whose pH above 8 making it slightly alkaline. After determining the foaming test, we have observed that dove has the highest foaming capacity. The fatty matter content between 70-80%, which shows an indication of excellent quality as well as alkali content that has range of 3-5% shows lower alkali content. **Conclusion:** A comparative study of different commercially available soap can be a useful way to understand the factors that affect consumer purchase behaviour, such as quality, brand, ingredients and benefits. It can also help to evaluate the cleansing action of different types of soaps such as bath soap, kitchen soap, and laundry soap.

PHCH201
A REVIEW ON ESTIMATION OF HEAVY METAL CONTENT OF AYURVEDIC HERBAL FORMULATIONS

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Abstract:

Ayurvedic herbal formulations are dosage forms consisting of one or more herbs or processed herbs in specified quantities. Some examples of ayurvedic herbal formulations are triphala, chavanprash, ashwagandha arishta and brahmi ghrita. They provide specific nutritional, cosmetic benefits and are meant for use in diagnosis, treatment or mitigation of diseases. Ayurvedic herbal formulations mainly comprise of plants, metals and mineral components. Herbal formulations require strict quality control to ensure safety and efficacy. Heavy metal contamination in ayurvedic herbal formulations is a global threat to health and safety of the consumers. The purpose of this review is to quantify the heavy metals present in ayurvedic herbal formulations by using atomic absorption spectroscopy (AAS). Heavy metals such as mercury (Hg), lead (Pb), chromium (Cr), cadmium (Cd), and arsenic (As) are commonly found in herbal formulations and pose significant health risks. The presence of these heavy metals disrupts human growth and interfere with various biological processes. The permissible limits for heavy metal contents in herbal formulations, are as follows: arsenic (As) up to 10 ppm, mercury (Hg) up to 1 ppm, lead (Pb) up to 10 ppm, and cadmium (Cd) up to 0.30 ppm, according to standards set by the WHO and FDA. The current review plans to compare the data available in literature to find the common heavy metals present in ayurvedic herbal formulations and their implication on human health.

PHCH202
COMPUTATIONAL INSIGHTS INTO THE INTERACTION OF *NELUMBO NUCIFERA* BIOACTIVE PRINCIPLES WITH PCOS TARGETS: DOCKING STUDY

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Abstract:

Objective: To investigate the potential of flavonoids from *Nelumbo nucifera* as anti-androgenic agents through *in silico* studies and to develop a solid lipid nanoparticle (SLN) formulation for enhanced drug delivery and efficacy against Polycystic Ovary Syndrome (PCOS). **Methods:** *In silico* Studies: Molecular docking, ADME, and toxicity studies were performed on seven flavonoids against six protein targets. Extraction and Analysis: Flavonoids were extracted from *Nelumbo nucifera* flowers, identified, and quantified. SLN Formulation: Flavonoid-loaded SLNs were prepared and characterized for particle size, zeta potential, and crystal structure. Pharmacological Evaluation: Anti-androgenic activity of flavonoids and SLNs was assessed. SLN efficacy against PCOS was evaluated. **Results:** Molecular docking studies identified 6NPZ as a potential target receptor for the flavonoids investigated. ADME properties predicted favorable oral bioavailability for selected compounds. The developed SLN formulation displayed a particle size of 519.5 nm with a face cubic crystal structure, and its drug content and entrapment efficiency 69% of SLN 6 sample. Pharmacological evaluations confirmed the anti-androgenic potential of the extracted flavonoids and demonstrated that the SLN formulation exhibited superior efficacy against PCOS compared to the free drug. **Conclusion:** The present study successfully identified flavonoids from *Nelumbo nucifera* as promising anti-androgenic agents. The development of SLN formulation significantly enhanced the drug delivery and efficacy, demonstrating its potential as a therapeutic approach for PCOS management. Further *in vivo* studies are warranted to validate the clinical efficacy of the developed formulation.

PHCH203
DEVELOPMENT OF VALIDATED QUANTITATIVE CHROMATOGRAPHIC METHODS FOR THE DETERMINATION OF DRUGS FROM THEIR FORMULATIONS.

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Abstract:

Objectives: To develop and validate a high-performance thin-layer chromatography (HPTLC) method for the simultaneous determination and quantification of vitamins A, B5, and C in pharmaceutical formulations. **Methods:** A robust HPTLC method was developed for vitamin analysis using pre-coated silica gel plates and an optimized mobile phase (cyclohexane, diethyl ether, absolute alcohol, and glacial acetic acid; 9:1:9.5:0.5). A 1000 µg/ml mixed standard solution and ninhydrin spray were employed for reference and visualization. The method was comprehensively validated according to ICH guidelines, ensuring its reliability for routine vitamin quantification in pharmaceutical formulations. **Results:** The developed HPTLC method demonstrated excellent analytical performance across key validation parameters. Specificity was confirmed through the absence of interference from excipients or other formulation components, ensuring accurate identification of the target vitamins. The method exhibited strong linearity across the tested concentration range, indicating its reliability for quantitative analysis. Precision studies revealed low % RSD values for both intra-day and inter-day variability, underscoring the method's consistency and reproducibility. The accuracy of the method was rigorously evaluated through recovery experiments, with results falling within acceptable limits, further validating its reliability. These comprehensive findings collectively affirm the method's robustness and suitability for precise vitamin quantification in pharmaceutical formulations, providing analysts with a dependable tool for quality control and regulatory compliance. **Conclusions:** The developed HPTLC method offers a reliable, sensitive, and selective approach for quantifying vitamins A, B5, and C in pharmaceutical formulations. Its successful validation ensures its applicability for routine analysis in the pharmaceutical and nutritional industries, supporting quality control and regulatory compliance.

PHCH204
METHOD DEVELOPMENT FOR EXTRACTION AND DETERMINATION OF VITAMINS FROM THEIR MARKETED FORMULATION.

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Abstract:

Objectives: To develop a simple, accurate, and high-performance thin-layer chromatography (HPTLC) method for the simultaneous separation and analysis of vitamins B2, B3, and B12. **Methods:** A novel HPTLC method was developed and validated for the simultaneous analysis of vitamins B2, B3, and B12. Standard and sample solutions were applied to precoated aluminium-backed silica gel G 60 F254 HPTLC plates. The optimal mobile phase, a mixture of absolute alcohol, chloroform, acetonitrile, toluene, ammonia, and water (7:4:4.5:0.5:1:1, v/v/v/v/v/v), was determined after systematic evaluation. Quantification utilized UV detection at 254 nm. The method was rigorously validated according to ICH guidelines, assessing specificity, linearity, precision, accuracy, and robustness. This comprehensive approach established the method's suitability for routine pharmaceutical and nutritional analysis.

Results: The developed HPTLC method demonstrated robust analytical performance for vitamins B2, B3, and B12. Distinct retention factors (0.46, 0.82, and 0.18 respectively) ensured effective separation. The method exhibited wide linearity (20-5000 ng/spot) with strong correlation coefficients (>0.99). Analyses revealed good precision, repeatability, and specificity. Low % RSD values for intra- and inter-day variability confirmed reliability, while recovery experiments validated accuracy. These results collectively affirm the method's suitability for precise quantification of B2, B3, and B12 vitamins in pharmaceutical formulations. **Conclusions:** The developed HPTLC method offers a reliable, sensitive, and selective approach for quantifying vitamins B2, B3, and B12 in pharmaceutical formulations. Its successful validation ensures its applicability for routine analysis in the pharmaceutical and nutritional industries, supporting quality control and regulatory compliance.

PHCH205
ANALYSIS OF SOME NUTRACEUTICAL CONTENT IN DIETARY SUPPLEMENTS USING HPTLC

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Abstract:

Objective: To develop and validate a High-Performance Thin-Layer Chromatography (HPTLC) method for the quantitative determination of thiamine in nutraceutical formulation1 and formulation 2. **Methods**: An HPTLC method was established utilizing Silica Gel 60 F254 plates as the stationary phase and a mobile phase composed of ethanol, acetic acid, chloroform, liquor ammonia, and water (5.5:2.5:4.5:2:1 v/v/v/v/v). Thiamine was applied to the plates using a Linomat 5 applicator and developed in a twin trough chamber. The developed plates were dried and scanned at 254 nm using a TLC scanner. A water-methanol (1:1 v/v) solvent mixture was used for sample preparation. **Results:** The developed HPTLC method demonstrated linearity for thiamine within the concentration range of 50-150 µg/mL. The method was successfully applied for the analysis of thiamine in tablet and syrup formulations. Validation studies confirmed the method's specificity, selectivity, and robustness. The % Assay value of +RSD for formulation 1 and formulation 2 was determined to be 0.3982 and 0.6727, respectively. The %accuracy of + RSD for formulation 1and formulation 2 was found to be 0.3875 and 0.3019 respectively. The intraday precision of + RSD for formulation 1 and formulation 2 was found to be 0.3014 and 0.5770 respectively. The inter-day precision of + RSD for formulation 1 and formulation 2 was found to be 0.8511 and 0.5100 respectively. The LOD and LOQ for thiamine was found to be 8.82 µg and 29.41 µg respectively. **Conclusion:** The proposed HPTLC method is accurate, precise, and reliable for the quantification of thiamine in nutraceutical products. It can be effectively used for quality control purposes in the pharmaceutical industry.

PHCH206
DEVELOPMENT AND VALIDATION OF HPLC METHOD FOR QUANTIFICATION OF SOME NUTRACEUTICALS

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Abstract:

Objectives: The study is design with the following objectives: Extraction of Ascorbic acid, to develop methods for determination and quantification of Ascorbic acid, to validate proposed analytical method

as per ICH guideline. **Methods:** A stock solution of Vitamin C was prepared at 1000 µg/mL and diluted to 100 µg/mL for analysis. Chromatography was conducted using a ZORBAX Eclipse XBD-C18 column (150 x 4.6 mm, 5 µm) with a mobile phase consisting of an 80:20 mixture of phosphate buffer (pH 3.6) and methanol. The flow rate was set at 1.0 mL/min, with detection at 242 nm and an injection volume of 10 µL. Method validation included assessing linearity over the range of 50-150 µg/mL, resulting in an R^2 value of 0.9976. Precision was confirmed with an acceptable %RSD, and accuracy showed near 100% recovery. Robustness was evaluated by varying flow rate and mobile phase composition, while ruggedness was confirmed through tests with different analysts and instruments. The limits of detection (LOD) and quantification (LOQ) were determined to be 6.43 µg/mL and 21.45 µg/mL, respectively. **Results:** The developed HPLC method demonstrated excellent linearity across the concentration range of 50-150 µg/mL, with a high correlation coefficient (R^2 = 0.9976). The method showed strong precision, with the percentage relative standard deviation (%RSD) well within acceptable limits. Accuracy testing indicated that the method was highly reliable, with recovery rates close to 100%. Robustness was confirmed as the method remained consistent despite variations in flow rate and mobile phase composition. Ruggedness testing further validated the method, showing consistent results across different analysts and instruments. The method's sensitivity was highlighted by the limits of detection (LOD) and quantification (LOQ), which were found to be 6.43 µg/mL and 21.45 µg/mL, respectively. **Conclusions:** The newly developed HPLC method offers improved sensitivity, precision, and accuracy for detecting lower vitamin concentrations, with higher recovery rates and reduced analysis time. It is cost-effective, robust across various conditions, easy to implement, and environmentally friendly. Additionally, it meets regulatory standards and is versatile for a broader range of products and vitamins, making it superior to the reference method in multiple aspects.

PHCH207

IN-SILICO STUDIES, SYNTHESIS, SPECTRAL ANALYSIS OF DICHLOROMETHANE BASED NOVEL *N*-SUBSTITUTED BENZOTRIAZOLE DERIVATIVE

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Abstract:

Objectives: The objective of this study is *in-silico* study, synthesis and spectral analysis of dichloromethane based novel *N*-substituted Benzotriazole derivatives. **Method**: A literature review and library design were conducted to select 50 compounds for *in-silico* studies, which included analyses using Molinspiration, SwissADME, toxicity predictions, and docking studies. From these, three compounds were chosen based on their favorable binding scores and advantageous ADME (Absorption, Distribution, Metabolism, Excretion) properties. These selected compounds were then synthesized starting from 1H-benzo[d][1,2,3]triazole. The synthesis involved reacting 1H-benzo[d][1,2,3]triazole with chloromethylating agents in DMF (Dimethylformamide), DCM (Dichloromethane), and K_2CO_3 (Potassium Carbonate) to produce 1-(chloromethyl)-1H-benzo[d][1,2,3]triazole. This intermediate was further reacted with selected amines to yield the final products. The synthesized compounds were characterized through FT-IR (Fourier-transform infrared spectroscopy) and mass spectrometry to confirm their structure and purity. **Result:** The synthesized compounds include N-((1H-benzo[d][1,2,3]triazole-1-yl)methyl) cyclohexylamine, N-((1H-benzo[d][1,2,3]triazole-1-yl)methyl)hydroxyamine, and N-((1H-benzo[d]

[1,2,3]triazole-1-yl)methyl)aniline. These compounds exhibit ADME properties that adhere to Lipinski's Rule of Five. Docking studies were performed with these compounds as ligands against the protein 3G9K to evaluate their potential antimicrobial activity. The results demonstrated strong binding affinity, suggesting promising antimicrobial properties for the synthesized compounds. **Conclusion:** In docking studies, the synthesized compounds showed significant binding affinity with the 3G9K protein, which is important for antimicrobial activity; furthermore, the structures of the synthesized compounds were validated through spectral analyses, including FT-IR and mass spectrometry. The results of the analyses confirmed that the compounds exhibit drug-like properties, as demonstrated by Molinspiration and SwissADME analyses.

PHCH208

A STUDY OF NOVEL ANALYTICAL DEVELOPMENT AND VALIDATION OF UV-VISIBLE SPECTROSCOPIC METHOD FOR THE ESTIMATION OF TELMISARTAN IN COMMERCIAL FORMULATION

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Abstract:

Background: A UV-based method that is simple, precise, accurate, and capable of indicating the stability for measuring Telmisartan. This study describes the methodology employed for the analysis of telmisartan tablets. **Materials and Method:** Initially, the tablets were individually weighed, and their average weight was determined. The tablets were then powdered using a mortar and pestle, and the average weight of the powder was measured. This method involves method development and validation where TELM has the absorbance maxima at 296nm. In this method methanol and acetonitrile is used as solvents. Observed range of the linearity is 4-16µg/ml. Validation experiments were performed to determine system stability, accuracy, precision, linearity, accuracy, robustness, LOD and LOQ as per as ICH guideline. **Results:** The LOD and LOQ were found at the range of 4-16µ/ml and the percentage recovery was obtained at the range of 99%-100.75%. **Conclusion:** The proposed method can be effectively applied for method validation, development and stability study of telmisartan.

PHCH209

DEVELOPMENT AND VALIDATION OF A RAPID RP-HPLC-UV METHOD FOR SIMULTANEOUS DETERMINATION OF METFORMIN, SITAGLIPTIN, AND IMEGLIMIN IN BULK AND PHARMACEUTICAL FORMULATIONS

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Abstract:

Objective: The aim of the study was to develop and validate a simple, robust, and sensitive RP-HPLC-UV method for the simultaneous determination of metformin, sitagliptin, and imeglimin in bulk drugs and dosage forms. The increasing prevalence of new drug combinations necessitates efficient analytical methods for quality control and research purposes. The objective was to establish a single method capable of analysing these three drugs concurrently, addressing the need for modern, time-efficient approaches in pharmaceutical analysis. **Materials and Methods:** The RP-HPLC-UV method was developed on a Shimpack C18 column, 150 × 4.6 mm, 5 µm, using isocratic elution of methanol, acetonitrile, and 15 mM ammonium formate buffer, pH 6.5, in the ratio 10:40:50% v/v, at a flow rate of 0.9 mL/min. Detection was done at 260 nm. The method was validated with respect to ICH guidelines for

specificity, linearity, accuracy, precision, robustness, and detection and quantitation limits. **Results:** A Linear response was observed for all the three drugs in their respective ranges of determination with a correlation coefficient of more than 0.99. The limit of detection for sitagliptin, metformin, and imeglimin was found to be 85, 25, and 55 ng/mL, respectively. The developed method showed considerable accuracy and precision for the analytes, as reflected by the results in the form of percentage recovery of 98.59 to 99.92% and RSD < 2%. System suitability parameters, viz., theoretical plates, tailing factor, and resolution, were within the prescribed limits. **Conclusion:** This is a validated methodology that allows the rapid, sensitive, and reliable simultaneous quantitation of metformin, sitagliptin, and imeglimin. The method is quite suitable for routine quality control analysis, bioequivalence studies, and pharmaceutical research in fixed-dose combinations including these drugs. Measuring all three compounds in a single run has considerably enhanced the efficiency against the literature techniques available.

PHCH210

ADVANCED METHODOLOGY FOR EXTRACTING BEST PRACTICES: A STRATEGIC TRAINING TOOL DEVELOPMENT APPROACH

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Abstract:

Objectives: The aim of this study is to develop a comprehensive & sophisticated methods for extracting and refining best practices from existing SOPs. To explore advanced data analytics techniques, machine learning algorithms, and process optimization methodologies suitable for extracting actionable insights from SOPs. To incorporate interactive multimedia elements, simulations, and real-life scenarios to enhance engagement. **Methods:** The steps carried out are- Project Initiation and Stakeholder Engagement, Current State Assessment and Gap Analysis, Design and Implementation of Cultural Transformation Initiatives, Integration of Continuous Improvement in Processes, Employee Empowerment and Skill Development, Monitoring, Evaluation, and Sustaining the Culture, Project Execution, SOP Analysis and Digitalization, Documentation. The fishbone diagram was used to indicate the factors influencing project outcomes, enabling the team to address root causes and implement targeted solutions. The tree diagram was used to give an outcome of the project scope, tasks, and dependencies, empowering the project team to produce good quality products. **Results:** It highlights the tailored approach taken for each department and the specific interventions implemented to enhance Operational Efficiency. The implementation of the Athulya software has yielded significant improvements in operational efficacy within the Operations department- Pre-Efficacy-70%, post-efficacy-85%, Efficacy Improvement- +15%. It helps in Analyzing pre- and post-implementation data obtained from the software reveals substantial enhancements in performance metrics such as - Pre-Project Efficacy-75%, post-efficacy-90%, Efficacy Improvement- +15%. For continuous improvement we need Implementation of Automated QC Systems, Enhanced Staff Training on QA Implementation of Advanced Maintenance Scheduling Systems, Training, Enhancing QA Department. **Conclusions:** In this project, we embarked on a comprehensive initiative to enhance the overall quality of our products through skill development, error reduction strategies, and the implementation of digitalized training modules. Features such as discussion forums, chat functionalities, and virtual classrooms facilitated knowledge sharing, peer-to-peer learning, and mentorship opportunities, enriching the overall learning experience. As a result of our concerted efforts in communication, we observed improvements in various performance metrics, including a reduction in errors, an increase in efficiency, and enhancements in product quality.

PHCH211
QUALIFICATION AND COMMISSIONING OF PURIFIED WATER SYSTEM IN PHARMACEUTICAL INDUSTRY

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Abstract:

Aim and objective: To achieve Validation of pretreatment, purified water generation, purified water storage & distribution systems. Establishing a validated methodology for routine monitoring program to maintain them. **Methods:** Water system mainly consists of Pre-treatment system, Purified water generation system, Purified water storage and distribution system. The pretreatment involves gramicid dosing system, multi grade filtration system, antiscalant, ph correction and smbs dosing system, chemical sanitization reverse osmosis system. In purified water generation, storage & distribution system it contains; smbs dosing system, ro feed water storage tank, hsro system, edi 1 & 2, purified water storage tank, uv system (supply loop), distribution system (26 point of use), toc analyzer, conductivity sensor & transmitter. Quality of purified water at point of use should contain ph of 5-7, TOC contain < 500 ppb, Conductivity (Purified Water) (As per USP-40) < 1.3 µs / cm @ 25 deg. C. water involves installation and operational qualification for quality of water which should be within its acceptance limit. In microbiological analysis of water tests are done to confirm whether the following is present are not. They involve tests for pathogens, test for escherichia coli, test for pseudomonas aeruginosa, test for staphylococcus aureus and test for salmonella spp. **Result and Discussion: W**ater sampling & testing shall be done for a period of two weeks (14 days) to monitor the water system intensively. Purified water sampling is tested for Chemical and Micro results from 26 points of use and 8 Post Treatment Sampling Points. **Conclusion:** The current work is an effort to deliberate several aspects of validation comprising different approaches, machineries of water purification systems, equipment qualifications, performance testing phases, microbial and chemical analysis of water samples, documentation, and post-validation monitoring. Mainly the validation is done for new water plants in pharmaceutical industry.

PHCH212
IN SILICO PREDICTIVE ANALYSIS OF POTENTIAL HERB DRUG INTERACTIONS VIA MOLECULAR DOCKING BETWEEN *MOMORDICA CHARANTIA* AND DAPAGLIFLOZIN.

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Abstract:

Objectives: To evaluate the phyto-constituents of Momordica charantia that has potential interactions with the target proteins involved in the ADME of Dapagliflozin To interpret the effects of phyto-constituents of Momordica charantia on the ADME of Dapagliflozin. **Methods:** 241 phyto-constituents of Momordica charantia were identified. 97phyto-constituents were found in the fruit portion of the plant. From these, endogenous substances were excluded and 35 phyto -constituents were shortlisted. Of these, 16 phytoconstituents exhibited drug likeliness. They were subjected to docking studies. 55 phytoconstituent–proteins/target/enzymes complexes were found to have a docking score e" to the docking scores of Dapagliflozin- proteins/target/ enzymes complexes. The docking results were further validated using molecular visualization studies. The nature of bonding was found to be hydrogen bonding between the phyto-constituents and the proteins/ target/enzymes. The binding locations of the phyto-constituents were also identified. **Results:** None of the phyto -constituents and Dapagliflozin. competed

for the same amino acid residues. Although, competitive binding was found within the phyto-constituents for the same active site. Few phyto constituents had similar binding pockets but different active sites. The binding pockets of Dapagliflozin. were predicted to be adjacent to the binding pockets of few phyto -constituents. **Conclusions:** Dapagliflozin and Momordica charantia did have some positive herb-drug interactions, in accord to the *in silico* predictive study that was conducted. The pharmacokinetics of dapagliflozin are somewhat altered by momordica charantia, as can be deduced from the results that were interpreted above. The herb-drug the interaction study still needs *in vivo* tests using human volunteers and animal models to verify the same activity. It vital to consider clinical pharmacokinetic research and molecular dynamics when inspecting the absolute effects caused by real-time herb-drug interactions.

PHCH213

BLOCKING HIV'S ENTRY: A REVIEW OF CCR5 ANTAGONISTS IN HIV TREATMENT

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Abstract:

Objective: This review intends to contribute to the knowledge base for creating CCR5 antagonists which will prevent the entry of HIV into CD4cell.Human Immunodeficiency Virus (HIV) is a major health problem in the world today with 38 million infected people as per data of WHO at the end of 2023. The entry of the virus into host cell mediated by the C-C chemokine receptor type 5 (CCR5) is one of the most important steps in the HIV life cycle. **Methodology:** The CCR5 receptor is a member of the G protein-coupled receptor family and is critical for HIV entry into host cells. The viral envelope protein gp120 binds to CD4 (cluster of differentiation 4) and subsequently to CCR5 facilitating viral fusion and infection. CCR5 antagonists are a treatment option that halt HIV entry and serve as a supplement or replacement to current antiretroviral therapy like Nucleotide/Nucleoside Reverse Transcriptase inhibitors,Non-Nucleotide Reverse Transcriptase inhibitors .This review offers a complete examination of CCR5 antagonists in the treatment of HIV, their mechanism of action, pharmacokinetics, and clinical effectiveness. **Results**: The development of CCR5 antagonist, their benefits and side effects and their recent advancements are discussed in this review. Current research on CCR5 antagonists include second-generation agents and dual CCR5/CCR2 antagonists that are currently undergoing clinical trials. These newer agents aim to enhance therapeutic outcomes while minimizing side effects associated with the first-generation drugs. **Conclusion**: CCR5 antagonists have emerged as promising candidates for the treatment of HIV infection.With the approval of Maraviroc and ongoing research efforts, CCR5 antagonists are expected to play an increasingly important role in the management of HIV infection in the future.

PHCH214

IMPURITY PROFILING ON ROSIGLITAZONE

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Abstract:

Objective: Importance of impurity profiling in pharmaceutical quality control, emphasizing regulatory compliance and medication safety, will be reviewed. The study aimed to identify and measure 2,4-

Tetradeoxyuridine (2,4TD) in Rosuvastatin (ROS) by designing and validating an analytical approach. **Materials And Methods:** The HPLC used in this study was fitted with a Phenomenex C18 column 250 x 4.6 mm, 5µ. The mobile phase consisted of acetonitrile and water; the flow rate was 1 ml/min. UV detection was at 228 nm. Early characterizations were done using UV and FTIR spectroscopy. **Results**: 2,4TD and ROS were also characterized by using FTIR spectroscopy. An isosbestic point at 228 nm was determined and used for detection by means of UV spectroscopy. A sensitive HPLC method was elaborated and validated for impurity profiling. By applying the technique, the recovery of 2,4TD in ROS proved to be 99.375%, and the Amount of impurities was acceptable. The carcinogenicity was not proved by the NICKING test screening in qualifying limit, though the possibility of carcinogenicity was shown by structural analysis. **Conclusion:** The analysis effectively identified and determined the reactive impurity 2,4TD in ROS. The developed HPLC method was in complete conformance with ICH Q3B(R2) principles and was found to be accurate, precise, sensitive, simple, and reproducible. This validated analytical methodology can be widely applied with a view to enhancing existing practices of drug safety testing in pharmaceutical quality control procedures.

PHCH215

DEVELOPMENT AND VALIDATION OF A STABILITY INDICATING RP-HPLC METHOD OR DETERMINATION OF CLONIDINE HYDROCHLORIDE

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Abstract:

Objectives: The present study aims to develop and validate a simple, rapid, accurate and cost-effective RP HPLC method for the quantification of clonidine Hydrochloride. **Methods:** The chromatographic method was performed at ambient temperature with stationary phase RP 18e (250 x4.6 mmx5µm) Purospher Hibar column. The mobile phase composition used was Ammonium formate buffer (20 mM) pH adjusted to 7 and Acetonitrile in the ratio of 70:30% v/v at flow rate of 0.8 ml/min with the detection wavelength at 279 nm. The method was validated as per ICH Q2(R1) guidelines. Forced degradation studies were conducted in acidic, basic, neutral, oxidative, photolytic, and thermal conditions where all the degradation peaks were monitored. **Results:** The developed RP-HPLC method for clonidine hydrochloride underwent successful validation as per ICH Q2(R1) demonstrating good linearity with r^2>0.99, high precision (RSD < 2%) and accuracy. The method also showcased sensitivity with LOD and LOQ of 50 ng/mL and 100 ng/mL respectively. The method was found to be robust. This validates methods suitability for its intended purpose. Stress degradation studies conducted showed that more degradation was found in basic and oxidative degradation with 29.71% and 31.95% respectively. **Conclusion:** The developed RP-HPLC method has ability to meet stringent criteria as per ICH guidelines. This validated method holds great potential for routine use in pharmaceutical laboratory ensuring the accurate quantification of clonidine hydrochloride in formulations contributing to overall quality control process within the pharmaceutical industry. Thus, the validated method was applied for forced degradation study of clonidine Hydrochloride.

PHCH216

RP-HPLC METHOD DEVELOPMENT AND VALIDATION OF AMBROXOL FOR THE TREATMENT OF PARKINSONS DISEASE BY INTRANASAL DRUG DELIVERY

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Abstract:

Objectives: Ambroxol, a mucolytic agent, has shown potential therapeutic effects in Parkinson's disease (PD). The current study was performed to develop and validate for determination of Ambroxol in intranasal drug delivery using RP-HPLC. **Methods:** The optimized method utilized a C18 column, and a mobile phase composed of acetonitrile, methanol, and phosphate buffer (10:55:35), with detection at 270 nm. The total run time was 10 min, and the temperature maintained in column oven was 40°C. The injected volume of sample was 10µL and the flow rate was 0.8ml/min. **Results:**The method was validated according to the International Conference on Harmonization (ICH) guidelines for parameters including specificity, linearity, accuracy, precision, robustness, and system suitability. The method demonstrated good linearity over the concentration range of 0.995 µg/mL with a correlation coefficient (r) (NLT0.95). The precision (% RSD) was within acceptable limits for both intra-day and inter-day variations (NMT2%). LOD and LOQ of Ambroxol hydrochloride was found to be 0.852µg/ml and 1.734µg/ml respectively. **Conclusion:**This will facilitate additional pharmacokinetic research and clinical trials to determine the efficacy of intranasal drug administration in the treatment of Parkinson's disease. This technique advances research aimed at examining the therapeutic potential of ambroxol for the treatment of Parkinson's disease by making it easier to detect the concentration of the drug accurately in intranasal formulations.

PHCH217

DESIGN, SYNTHESIS, *IN-SILICO* ADMET & MOLECULAR DOCKING STUDIES WITH *IN-VITRO* ANTI-DIABETIC AND ANTI-BACTERIAL ANALYSIS FOR AMINE-LINKED BENZOTHIAZOLE DERIVATIVES

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Abstract:

Objectives: This research focuses on designing and synthesizingamine-linked benzothiazole derivatives, followed by *in-silico* and *in-vitro* evaluations to identify potent alpha-glucosidase inhibitors and anti-bacterial agents. **Methods:** This study focuses on the synthesis of amine-linked benzothiazole derivatives through molecular hybridization. Two synthetic scheme was developed, utilizing different amine derivatives, resulting in a library of 100 compounds. Comprehensive *in-silico* ADMET analysis and molecular docking studies were conducted using various tools across all compounds, leading to the selection of six derivatives with the most promising scores. These selected compounds were synthesized and subsequently tested *in-vitro* for anti-diabetic and anti-bacterial activity using the α-amylase and *Enterococcus faecium* bacteria respectively. Whereas this bacteria is a gram positive bacteria. **Results:** The structural identification of the newly synthesized Benzothiazole and amine hybrids was confirmed through FT-IR, ^{1}H NMR, ^{13}C NMR, mass spectrometry, and elemental analysis, with the observed spectral data aligning with the expected products. These compounds were chosen based on favourable ADMET profiles and molecular docking scores obtained from *in silico* analyses conducted with various computational tools. The *in-vitro* evaluation of anti-diabetic and anti-bacterial activity indicated

that these derivatives hold significant potential, likely due to the synergistic effects of the amine-linked benzothiazole structure. **Conclusion:** In conclusion, the novel benzothiazole and amines hybrids were successfully synthesized and validated, demonstrating promising *in silico* and *in- vitro* anti-diabetic and antibacterial activity, making them potential candidates for further development as anti-diabetic and anti-bacterial agents.

PHCH218

A STUDY ON THE EFFECT OF REPEATED HEATING ON THE PHYSICOCHEMICAL PROPERTIES OF COOKING OILS USED BY FRIED FOOD VENDORS OF MIRZA, ASSAM

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Abstract:

Objectives: The aim of the study was to determine the changes in the physicochemical properties of cooking oil on repeated heating process which is normally performed by the street food vendors to prepare widely consumed fried food items. The study also focussed on the determination of the degradation level of repeatedly fried oil being used by the local street food vendors from daily local market of Mirza, Assam. **Methods:** Different samples of fried oil with gradually increasing frying time were collected from four local street food vendors from the local market of Mirza, Assam. To determine their degree of degradation, the fatty acid profiles of the oil samples were determined. This was performed by analysing the Acid Value, Saponification Value, Peroxide Value, Iodine Value and Ester Value along with the cholesterol level of the collected oil samples. All the procedures were performed according to the guidelines provided in Indian Pharmacopoeia (IP) and the FSSAI guidelines for the analysis of cooking oil. **Results:**The obtained values of fatty acid profile of the oil samples were found above the permissible limit and found to be gradually increasing along with the heating/frying period. The highest values of degradation of the oil samples were obtained in the sample that was fried for 5th times. This showed the degradation level of oil samples by analysing the fatty acid profile and the cholesterol level which increases along with the heating/frying time. **Conclusion:**Deep frying degrades the quality of the oil and the fried food by producing various biochemical/chemical substances which enters our body along with the food and causes various health problems like hypertension, atherosclerosis, obesity etc. Because the degraded oil quality might have an adverse effect on health, safety measures must to be implemented and a social awareness is required to promote safe cooking practice. It is recommended that food processing facilities and street food vendors conduct assessments of the oil quality and establish guidelines about the quality of frying oil.

PHCH219

METHOD DEVELOPMENT AND VALIDATION OF LEVETIRACETAM BY RP-HPLC METHOD AND ITS STABILITY STUDIES

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Abstract:

Levetiracetam (Keppra) is a novel antiepileptic drug used in the treatment for epilepsy in case of partial seizures, or as an adjunctive therapy for partial, myoclonic and tonic-clonic seizures. Levetiracetam has potential benefits for other psychiatric and neurologic conditions such as Tourette syndrome, autism, and anxiety disorders. **Objectives:** The objective of the present work is to develop a simple, rapid, precise and selective HPLC method for the estimation of Levetiracetam in active pharmaceutical

ingredient and its stability studies. **Methods**: This method involves the measurement of area of Levetiracetam at the retention time of 2min and at the wavelength of 206nm upon injection of 25µl. KH_2PO_4 Buffer pH 4.5: Acetonitrile (85:15) was used as mobile phase and diluents. The mobile phase delivered at the rate of 1ml per minute through enable C18 (250x4.6mm, 5µm) HPLC column. Drug stability studies of Levetiracetam at different specified conditions have been carried out **Results:**Linearity was observed in the concentration range of 10-60 µg/ml for Levetiracetam. The accuracy of the method was confirmed by recovery studies and was found to be 100.12 % for Levetiracetam. The method showed good reproducibility and recovery with % RSD less than 2. Under a specific neutral, acidic, and basic condition, the drug shows a hydrolytic degradation to 16%, 19.26%, and 16.49 % respectively from its original form, in a period of 7 days. Similarly, the drug has been degraded to 19.12% under an oxidative condition i.e. in presence of Hydrogen peroxide. The drug is thermally degraded to 17.31% while the temperature is maintained at 30°c and also shown degradation to 25.32% at a temperature of 50°C maintained for 7days. **Conclusions:** The proposed method was found to be rapid, specific, precise, accurate and cost-effective quality control tool for the routine analysis of Levetiracetam in bulk. The stability studies indicate the drug is more degraded in acidic conditions.

PHCH220
METHOD DEVELOPMENT AND VALIDATION OF BUPROPION BY RP-HPLC METHOD

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Abstract:

Bupropion is described chemically as (±)-2-(tert-butyl amino)-1-(3-chlorophenyl) propan-1-one. The drug is an antidepressant that acts as norepinephrine, dopamine reuptake inhibitor and nicotine antagonist. Bupropion hydrochloride is used in the treatment of major depressive disorder (MDD), smoking cessation, obesity and attention deficit hyperactivity disorder. **Objectives:** The objective of the present work is to develop a simple, rapid, precise and selective HPLC method for the estimation of Bupropion in active pharmaceutical ingredient. **Methods:** The chromatographic separation was performed on a C18 column using a mobile phase of Methanol: Acetonitrile in the ratio of 7:3, with a flow rate of 1.0 ml/min and the detection wavelength is 251 nm. The method was validated for specificity, linearity, accuracy, precision, limit of detection (LOD), limit of quantification (LOQ), robustness and ruggedness as per ICH guidelines. **Results:** Linearity was observed in the concentration range of 10-60 µg/mL. ($r^2 > 0.999$), with LOD and LOQ of 2.5 µg/mL and 7.5 µg/mL, respectively. Intra-day and inter-day precision showed RSD < 2%, and recovery rates ranged from 99.61% to 100.5%. **Conclusion:** This RP-HPLC method is a simple, accurate, precise, and suitable for routine analysis of bupropion, providing essential data for the development of stable formulations.

PHCH221
QBD APPROACH: A VITAL TOOL IN ANALYTICAL METHOD DEVELOPMENT

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Abstract:

Objectives: Quality by Design is the latest strategy for ensuring pharmaceutical quality (QbD). Therefore, the present work analyses the need of QbD and its embedment in to various aspects of pharmaceutical production and manufacturing. **Methods:** Producing pharmaceuticals involves developing a high-quality product and a manufacturing procedure that reliably yields the desired results. Product quality should be

built in, not measured, into the product. Thus, QbD is a crucial part of the pharmaceutical quality management system in use today. So, present work revolves around reviewing and analysing the design and production of a product based on QbD approach. Determining the intended product performance profile [Target Product Profile (TPP), Target Product Quality Profile (TPQP)] is crucial throughout the design and manufacturing process. and determine the product's critical quality (CQA). **Results:** After critical analysis it is established that by adopting to QbD, we will be able to formulate the product and build the method to fulfil the product qualities. In addition to enabling the monitoring and identification of sources of uncertainty, this also permits the assessment of the impact of critical process parameters (CPP) and raw material characteristics (CMA) on CQAs. **Conclusions:** The thorough investigation to various works with QbD approach supports the fact that by adopting to it quality products can be designed with negligible to zero defects. It also can assist pharmaceutical industry with speeded up design of analytical method validation for new as well as old molecules thereby easing the process of product approval and marketing.

PHCH222
METHOD DEVELOPMENT AND VALIDATION OF TENOFOVIR BY RP-HPLC METHOD

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Abstract:

Objectives: The objective of the present work was to develop a simple, rapid, precise and selective HPLC method for the estimation of Tenofovir in active pharmaceutical ingredient. **Methods:** The chromatographic separation was performed on a C18 column using a mobile phase of Methanol: Acetonitrile in the ratio of 7:3, with a flow rate of 1.0 ml/min and the detection wavelength is 260 nm. The method was validated for specificity, linearity, accuracy, precision, limit of detection (LOD), limit of quantitation (LOQ), robustness and ruggedness as per ICH guidelines. **Results:** Linearity was observed in the concentration range of 10-60 µg/mL. ($r^2 > 0.999$), with LOD and LOQ of 2.5 µg/mL and 7.5 µg/mL, respectively. Intra-day and inter-day precision showed RSD < 2%, and recovery rates ranged from 98.5% to 101.5%. **Conclusion:** This RP-HPLC method is a simple, accurate, precise, and suitable for routine analysis of tenofovir, providing essential data for the development of stable formulations.

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PHCH223
DESIGN AND SYNTHESIS OF NOVEL OXAZOLIDINONE DERIVATIVES AS ANTI-TUBERCULAR AGENTS

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Abstract:

Objectives: Tuberculosis (TB) remains one of the world's most frequent infectious illnesses, posing a public health risk. In order to combat the rise in medication resistance in *M. tuberculosis*, regimens incorporating new medicines are in dire need. The dearth of new drugs to combat resistance has weakened the clinical presentation. The goal of this work was to modify the linezolid scaffold to improve its antitubercular capabilities and develop novel drug candidates. **Methods:** The oxazolidinone core of linezolid was kept intact, and additional changes were made using ZINC223412753 (6-hydroxycalyxin F). According to Alouf et al.'s docking investigation, ZINC223412753 produced good binding to the molecular target of Linezolid, the active site of Mycobacterium tuberculosis EthR (PDB ID: 5NZ0).

Since it was discovered that ZINC223412753's bulky phenyl groups were required to orient into the binding pocket of EthR, the phenyl groups were added to the molecules. Additionally, phenyl groups are substituted in order to understand how substituents affect anti-tubercular activity. A computational analysis was conducted using Molinspiration to forecast the chemical characteristics of the designed molecules. The designed compounds complied with "Lipinski's rule" to resemble drugs. The guidelines for molecular weight, partition coefficient (LogP), hydrogen bond donor, and hydrogen bond acceptor were all adhered to by every molecule. Docking against the transcriptional regulatory repressor protein (EthR) was carried out. **Results:** All the molecules produced good docking score in the range between -7.6 Kcal/mol and -6.1 Kcal/mol. The molecules with docking score more than -7.0Kcal/mol were selected for further synthesis and characterization. All the synthesized compounds were screened for anti-tubercular activity against *M. tuberculosis* H37Rv. Compounds 1a, 1b, 1c, and 1e were active at MIC of 1.6µg/mL. The activity of the compounds was found equivalent with the standard drug Isoniazid (1.6µg/mL). **Conclusions:** The compounds 1a, 1b, 1c, and 1e shall be further optimized to improve the anti-tubercular activity. In future, the compounds shall be studied for *in-vivo* anti-tubercular activity to understand the real scenario. The rational drug design has resulted in successful development of hit molecules, whereas further investigation is needed to develop the molecules as drug candidate.

PHCH224
ROLE OF MEDICINAL CHEMISTRY IN DRUG DEVELOPMENT AND DISCOVERY

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Abstract:

Objectives: Medicinal chemistry has many objectives, which are very helpful in the better development and discovery of drugs. The major objectives are the understanding of drug chemistry, design, and synthesis; biological evaluation; pharmacokinetics and pharmacodynamics studies; training; and education. **Methods:** It reaches its goals of drug discovery and development through a variety of techniques in successive stages: synthetic methodologies represent important tools for the design and optimization of new chemical entities, with principles such as green chemistry-assuring environmental sustainability combinatorial chemistry for fast chemical diversity. Biological evaluation, through various *in vitro* assays using cell lines or *in vivo* using animal models, will point to the potency, toxicity, and efficacy of each compound under consideration as a drug. The most important aspects being analyzed are pharmacokinetics, toxicity, potency, and selectivity. **Results:** Accordingly, medicinal chemistry represents one of the most important areas in drug discovery and design studies, aiming at the identification of new therapeutic entities. This includes optimization of lead compounds by computer-aided drug design, high-throughput screening, and structure-activity relationship studies to high-potency and selective agents with desired pharmacokinetic properties. **Conclusion:** Medicinal chemistry is a fusion of chemistry, biology, and pharmacology, whose ultimate efforts aim at elaboration and development of drugs-newer, more potent, with high pharmacokinetics, safety, and efficacy. In essence, it should be the design of molecules that, with few side effects, would target specific therapeutic action; thus, drive pharmaceutical innovation and improve patient outcome.

PHCH225

ANTIMICROBIAL ACTIVITY OF GIR AND JERSEY COW URINE: A COMPARATIVE STUDY

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Abstract:

Ob**jectives:**In the present study, the antibacterial activity of cow urine and cow urine distillate from foreign Jersey cow breeds and native Indian Gir cow breeds is evaluated against the clinical pathogenic bacteria *Escherichia coli*. **Methods:**Cow urine Distillate (CUD) is obtainesd from cow urine samples taken from Gir and Jersey cows. Escherichia coli was used in the Agar cup-plate method to measure the antimicrobial activity. Ofloxacin served as a positive control, while sterile water served as a negative control, with the aim to examine the antibacterial effects of the samples and CUD.**Result:**Fresh cow urine samples and distillate from Gir and Jersey cows were tested for antibacterial activity against the Gram-negative bacterial strain *Escherichia coli*. A maximum zone of inhibition of 15 mm and 12 mm for 50 ul was observed in samples of fresh cow urine and distillate (50 ul and 100 ul). At 100 ul, a fresh cow urine sample exhibited a 10 mm zone of inhibition, respectively. **Conclusion:** According to the study, the most effective urine for treating antimicrobial illnesses, such as those with antibacterial and antifungal properties, is Indian cow urine, specifically Indian Gir cow urine. Additionally, it exhibits potential against resistant strains of *Escherichia coli*. According to the study's conclusions, cow urine has multiple benefits, including enhancing immunity and having anti-psychotic, anti-cancerous, antibacterial, and diabetic properties. This economically feasible and environmentally beneficial treatment may be able to treat several illnesses.

PHCH226

STRUCTURAL, DYNAMIC, KINETIC AND THERMODYNAMIC PERSPECTIVES IN IDENTIFYING PPARA INHIBITOR FOR TREATING TUMOUR CELLS PROLIFERATION

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Abstract:

Aim: The study of the structural, dynamic, kinetic and thermodynamic properties in PPARα inhibitor is aimed to be carried out so as to control the tumour cells proliferation. Objective: Screening, Molecular Docking and Molecular Dynamic Simulation of phyto-constituents from various medicinal plants, their free energy analysis, identifying potential constituents of these natural sources against anti-cancer targets and their biological evaluation. **Methods**: The genes of interest are PPARα and proteins are selected based on physico-chemical properties using PROTPARAM for genes. Phyto-constituents with anti-tumor activity obtained from medicinal plants of various conventional benefits viz., *Momordica charantia* and Mulberry plant were screened using various phyto-chemical databases like Dr. Duke Phyto-chemical Database [14] (https://phytochem.nal.usda.gov/phytochem/) and IMPPAT, Indian Medicinal Plants, Phyto-chemical and Therapeutics. Among the many phyto-constituents, three were selected for the further process viz., arginine, momordicin and lupeol based on literature survey; the protein and phyto-constituents are prepared using BIOVIA Discovery Studio and are subjected to molecular docking using Autodock Vina 4.2.1 and MD Simulation of the constituent with best docking score using CHARMM. **Results and discussion**: Proteins of PPARα genes are with PDB IDs 3ET1, 5HYK and 6LXC respectively. Binding energies of Protein 3ET1 and standard of Rivastigmine and test molecules of arginine, momordicin and lupeol; are -7.977, -7.446, -7.077 and -7.2 kcal/mol. With protein 1P0P: -7.193, -6.08, -6.441 and -6.001 kcal/mol. MD Simulation for 1QTI

has been performed for Rivastigmine and arginine, momordicin and lupeol. The Root Mean Square Deviation graphs shows that 2-Pentadecanone,6, 10, 14- trimethyl residual fluctuations and RMSD value (1.25+!) was similar compared to residual fluctuations of Rivastigmine (1.2 +!). Moreover, the radius of gyration (Rg) results are shown the similarity of 2-Pentadecanone,6, 10, 14- trimethyl docked complex with Rivastigmine through residual compactness. **Conclusion**: Our comparative results shows that arginine, momordicin and lupeol can be used as a replacement.

PHCH227

REVOLUTIONIZING ANTIBIOTIC THERAPY: THE RISE OF ZOSURABALPIN AND ROLE OF CAD IN ITS DRUG DESIGN

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Abstract:

Objectives: The everyday concern and rise in the evolution of the microorganisms leads to the heavy and intense usage of the antibiotics resulting in their resistance. So there is requirement of the antibiotic resistant drugs to be designed and formulated to solve this medical issue. The drug discovery and development process aim to design compounds with optimized efficacy, safety, and pharmacokinetic properties. Zosurabalpin is a newly synthesized therapeutic agent developed for the treatment of multidrug-resistant bacterial infections. Its design is based on the structural optimization of a lead compound identified through high-throughput screening and computational modelling. **Methods**: The development of Zosurabalpin involved a multi-step process integrating various drug design strategies. Initial screening of a chemical library identified a lead compound with moderate antibacterial activity. Structure-activity relationship (SAR) studies were conducted to identify key functional groups and optimize the pharmacophore for enhanced efficacy. Molecular docking and dynamics simulations were employed to predict the binding affinity and stability of Zosurabalpin with its bacterial targets. The synthetic pathway was optimized for yield, purity, and scalability. **Results**: Zosurabalpin demonstrated potent *in vitro* antibacterial activity against a range of multidrug-resistant bacterial strains, including MRSA and carbapenem-resistant Enterobacteriaceae. Molecular docking studies revealed a high binding affinity of Zosurabalpin to bacterial penicillin-binding proteins (PBPs) and DNA gyrase, suggesting a dual mechanism of action. **Conclusion**: The rational drug design of Zosurabalpin has yielded a promising therapeutic candidate with potent activity against multidrug-resistant bacteria. Its dual mechanism of action and favourable pharmacokinetic properties position Zosurabalpin as a potential treatment option for severe multi-bacterial infections. Further clinical development and trials are warranted to establish its efficacy and safety in humans.

PHCH228

GLOBAL PERSPECTIVE ON PHARMACEUTICAL ANALYSIS AND QUALITY ASSURANCE: CHALLENGES AND SOLUTION

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Abstract:

Objectives: The aim of this study is to examine the current global landscape of pharmaceutical analysis and quality assurance, identifying key challenges and proposing viable solutions to enhance the effectiveness of these critical processes. **Methods**: An extensive examination of the literature was carried out, together with an analysis of recent reports from academic research, industry publications, and international pharmaceutical regulatory authorities.

In this review, common issues were identified, implemented solutions were assessed, and their results were evaluated. The main areas of concentration were resource limitations, data integrity, technology improvements, and regulatory harmonization. **Result**: Regulatory Harmonization: Consistency in quality standards has increased as a result of efforts to harmonize international rules. Smoother cross-border medication approvals and compliance have been made possible by initiatives from organizations such as the International Council for Harmonization of Technical Requirements for Pharmaceuticals for Human Use (ICH). Technological Advancements: Pharmaceutical analysis is now more accurate and efficient because to the use of cutting-edge analytical technology such automated analytical systems and high-resolution mass spectrometry. However, training and methods must be updated often due to the quick speed of technological progress. **Conclusions**: Views from throughout the world on pharmaceutical analysis and quality control indicate notable advancements as well as important obstacles. While improvements in data integrity, technology, and regulatory harmonization have produced beneficial benefits, persistent efforts are required to alleviate resource inequities and keep up with the rapid pace of technological development. Global collaboration across efforts and persistent investments in infrastructure and technology are essential for improving the general safety and quality of pharmaceutical goods.

PHCH229
ANALYTICAL METHOD DEVELOPMENT & VALIDATION BY QBD APPROACHES – A SYSTEMATIC STUDY

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Abstract:

Method Development: In a Pharmaceutical company, quality by design (QBD) is a methodology for the development of analytical method, which is recommended by regulatory agency like USFDA. It has great importance in present time due to the rise in the number of quality issues in Pharmaceuticals products.Analytical method development is the set of experimental conditions, which are used to perform analytical procedures in chemical samples. It is a set which includes different methodologies to identify separation and quantify the chemical compounds in drug product.**Validation:** In the analytical chemistry, validation establishes experimental evidences that, the developed method can be used to analyse the same component, by any other persons. But there is a major difference between method development and validation. Method development is the process which consider that analytical method is accepted for use but in analytical chemistry validation express about various stage and parameters like accuracy, range, stage, linearity, specificity. **Quality By Design (QBD) approaches:** Quality By Design is a software based approaches which is employed in various analytical & formulation process, that integrates quality consideration throughout a product's lifecycle to ensure the high quality product development. **Conclusion:** By applying the QBD approaches, the validation method becomes more robust and capable of ensuring consistent product quality through a deep understanding of the process and it's impact on product attributes.

PHCH230

SYNTHESIS, CHARACTERIZATION AND ANTIMICROBIAL ACTIVITY STUDIES OF ISATIN DEREVATIVES

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Abstract:

Objectives: To synthesize new isatin derivatives and evaluate their antimicrobial properties. **Methods**: (i) Synthesis of 3-(1H-indol-3-yl)-2-{[(3Z)-2-oxo-1, 2-dihydro-3H-indol-3-ylidene] amino} propanoic acid Condensation reaction:-i) Mix isatin with tryptophan taking equimolar quantities in presence of absolute alcohol and the p-H was adjusted to 4 to 5 ml with glacial acetic acid and the reaction mixture was refluxed for 5 to 6 hour and kept at room temperature over night. The resultant solid was washed with dilute ethanol and then dried. During the reflux the product was checked by normal water and crushed ice in one hour interval.**(ii)** Synthesis of 2-(3'-chloro-2, 5'-dioxo-1, 2-dihydro-1'H-spiro [indole-3, 2'-pyrrolidin]-1'-yl)-3-(1H-indol-3-yl) propanoic acid (iii)Taking equiomolar quantities of compound 1_a and thioglycolic acid in presence of 1-4 dioxane and few amount of $ZnCl_2$ and the reaction mixture was refluxed for 12 to 14 hourto get the desired target molecule, The synthesized compound was recrystalised from hot ethanol. *Cyclization and functional group modification:* Formiming new ring and introducing various functional groups to enhance biological activity. *Characterization techniques:* NMR spectroscopy: for determining the structure and purity of synthesized compound. IR spectroscopy: For confirm functional group Mass spectroscopy: for molecular weight determination TLC: For monitoring reaction progress and purity. *Antimicrobial activity study:* The antimicrobial activity of the synthesized compounds was determined by cup-plate method. The organisms selected for antibacterial activity were gram positive organisms like *Staphylococcus aureus,Streptococcus pyogenes,* gram negative organisms like *Escherichia coli, Klebsillaaerogenes.* Similarly the antifungal activity was carried out by using *Candida albicans.* The concentrations of sample compounds was 30 mcg/ml. Ciprofloxacin and Ketoconazole were used as standard drugs for antibacterial and antifungal activity respectively. **Result and Discussion**: Synthesis yield: Good percentage yield of each derivative. Characterization data: NMR, IR, and mass data for each compound within the range. *Antimicrobial Activity:* All compounds have shown moderate activity, but not up to our expectation, against tested bacteria and fungi. It may be, because of the bulky phenyl acetic acid group present at nitrogen atom of isatin nucleus. This bulky group may sterically hinder the compounds binding with bacteria. **Conclusion:** In summary we evaluated the antimicrobial activity of isatin derivative which provided valuable clues for the further lead optimization studies. The most interesting observation was the promising activity of tested compound(ii) showing good activity against all the bacteria tested suggesting that the substitution of isatin at the 3-position with a substituted phenyl ring favours antibacterial activity compared to an unsubstituted phenyl ring at the same position.

PHCH231
HIGH PERFORMANCE THIN LAYER CHROMATOGRAPHY (HPTLC): A MODERN ANALYTICAL TOOL FOR CHEMICAL ANALYSIS

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Abstract:
Introduction: High Performance Thin Layer Chromatography (HPTLC) is the incredibly adaptable method and is well-known for conformity, assay value, purity profile, and perfection and accuracy of products. HPTLC is a modernistic analytical separation approach with prolong invention, in spite of already much used, is still with enormous potential for upcoming evolution in research and development. Instrumentation: HPTLC accelerates analysis work which is normally not possible with other parallel chromatographic techniques available. HPTLC instrument consist of following components: pump, mixing unit, solvent degassing, injector, column, detector. useful in discovering chemicals of forensic concern. **Hyphenation in HPTLC:** HPTLC can also be used with otheranalytical instruments like Mass Spectroscopy, NMR etc. Various advance techniques in reference to HPTLC like hyphenations in HPTLC-MS, HPTLC-FTIR and HPTLC-Scanning Diode Laser etc. **Applications:**This is one of the mostly used analytical instrument for the qualitative study of the phyto-pharmaceuticals now a day, with high precission & sensitivity. Other major applications include, stability studies, biopharmaceutical and pharmacokinetic studies, purification etc. **Conclusion:** A detailed systematic study of HPLTC & its modern application are discussed in this review.

PHCH232
ANALYTICAL QUALITY BY DESIGN (AQBD) BASED OPTIMIZATION OF RP-UPLC METHOD FOR DETERMINATION OF REMOGLIFLOZIN ETABONATE AND TENELIGLIPTIN IN BULK AND PHARMACEUTICAL DOSAGE FORM

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Abstract:
Objectives: The main objective is to optimize and validate a simple, accurate, precise and sensitive RP-UPLC analytical method for the simultaneous determination of Remogliflozin Etabonate (RGN) and Teneligliptin(TGN) using Central Composit Design Methodology, and apply this method in bulk and pharmaceutical dosage form. **Methods:** The Analytical method of Quality by Design (AQbD) expands the use of Quality by Design (QbD) principles to oversee the life cycle of the analytical procedure, covering method development, refinement, validation, and ongoing enhancement. AQbD helps in establishing analytical procedures that are strong, dependable, accurate, and cost-effective. Zita Plus-R combines Remogliflozin Etabonate and Teneligliptin, which are Sodium glucose co-transporter (SGLT2) and dipeptidyl peptidase-4 inhibitor (T2D) management due to their complementary mode of action. This method seeks to create and validate a reversed-phase ultra performance liquid chromatography (RP-UPLC) method using AQbD principles to quantify RGN and TGN in pharmaceutical products. **Results:** The optimization of chromatographic conditions was carried out using a central composite design (CCD) with three factors at five levels, implemented through Design-expert® software. A mathematical model was developed to study the impact of flow rate (X1), percentage of acetonitrile in the mobile phase (X2), and temperature (X3) on various responses such as retention time (Y1-2), resolution factor (Y3),

theoretical plates (Y4-5), and tailing factor (Y6-7). The software determined the ideal chromatographic conditions for the separation of RGN and TGN, resulting in the following optimal parameters.: 68.03% :31.97 v/v% mobile phase containing 0.01N Phosphate buffer : Acetonitrile .0.32 ml/min flow rate, 30 °C column temperature, and 220 nm UV detection. The retention time for RGN and TGN were 0.992 minand1.320 min, respectively. The method exhibited linearity across the concentration ranges of 10-60 µg/ml for RGN and 2-12 µg/ml for TGN. The limits of detection (LOD) and limit of quantification (LOQ) for RGN and TGN, respectively, were 0.11 µg/ml and 0.32 µg/ml and 0.02 µg/ml and 0.05 µg/ml. The percent relative standard deviation (%RSD) of intraday and inter day precision for RGN and TGN was 0.7 and 0.5 for Teneligliptin and inter day precision 0.3 for Remogliflozin and 0.8 for Teneligliptin below 2. The recovery percentages for RGN and TGN were determined to be 100.20 and 99.21% respectively. Both drugs were found to be susceptible to oxidative and photolytic degradation in forced degradation studies. **Conclusion:** Using the AQbD-based approach, a rapid, precise, specific, and stability-indicating RP-UPLC method has been developed for the quantitative determination of RGN and TGN in pharmaceutical products.

PHCH233
ANALYTICAL QUALITY BY DESIGN BASED LC-MS/MS METHOD FOR THE DETERMINATION OF FAVIPIRAVIR IN ITS FORMULATIONS

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Abstract:

Objectives: A sensitive and rapid liquid chromatographic method coupled with mass spectrometry based on quality by design was developed for the estimation of Favipiravir in its formulations. **Methods:** Separation was achieved using the mobile phase 10mM Ammonium formate (pH 3.5) and acetonitrile in the ratio of 30:70, v/v at the flow rate of 0.5 ml/min using Phenomenex C_{18} column (100 mm x 4.6 mm x 5 µm) column. The pH, acetonitrile percentage, flow rate and heat block temperature were identified as critical method parameters and was optimized using Box Behnken design. **Results:** The obtained model was found to be statistically significant with a probability (p) value of less than 0.05 and the optimized model had composite desirability of 0.977. The method performance was evaluated as per ICH guidelines with linearity ranging from 10.0 to 500 ng/ml with a correlation coefficient of 0.9992. The detection and quantification limits were 2.0 ng/ml and 6.0 ng/ml, respectively. The mean recovery was in the range of 98.1 to 99.4 %. **Conclusions:** The method that has been developed and validated is appropriate for analysing Favipiravir in its commercial formulation and can be used in various quality control and research facilities.

PHCH234
SYNTHESIS, CHARACTERIZATION, *IN-SILICO* AND *IN-VITRO* ANTI-TUBERCULAR ACTIVITY OF VARIOUS SIX MEMBERED N – CONTAINING HETEROCYCLIC COMPOUNDS

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Abstract:

Objective: In this study we had taken heterocyclic ring system - pyrimidine, oxazine and thiazine as the core moieties. The main objective of the carried out the *in-silico* studies, synthesis, characterization and

in-vitro anti-tubercular activities of various pyrimidine, oxazine and thiazine derivatives. And also, we did a comparison study on *in-silico* and *in-vitro* anti-tubercular activities of the above-mentioned derivatives. **Methods:** A total of 27 pyrimidine, oxazine and thiazine derivatives (9 of each) were theoretically synthesized and were studied using *in-silico* methods for their physico-chemical and pharmacokinetic properties, bioactivity, *in-silico* toxicity and molecular docking by Molinspiration, Swiss ADME, Molsoft, Lazar, pkCSM and AutoDock Vina 1.5.6 softwares respectively. The selected compounds were synthesised according to the synthetic scheme. The physical characterization done where melting point, TLC & solubility and confirmed by FT-IR, ^{1}H NMR, ^{13}C NMR and GC-MS spectral methods. *In-silico* anti-tubercular activity was done by using M tuberculosis DprE1 in complex with a covalently bound nitrobenzothiazinone (PDB ID: 6HF3) and *in-vitro* anti-tubercular activity progressed by using the method Alamar-blue susceptibility test. **Results:** From the *in-silico results*, it is concluded that compounds pc7, pc8, pc9, oc7, oc8, oc9, tc7, tc8 and tc9 had come out as the best derivatives and further proceeded for the conventional synthesis and in *in-silico* toxicity results, **aza** derivatives are more prone to toxicity and thia & oxa derivatives show less toxicity. The compound pc7 and pc9 produced good *in silico* antitubercular activity comparing with other compounds even the standard drug, but taken each compound from all 3 derivatives which showed highest *in-silico* activity for *in vitro* anti-tubercular activity. In *in vitro* study the thiazine derivative showed higher anti-tubercular activity. The MIC value of tc8 on Mycobacterium tuberculosis is 4µg/ml. **Conclusion:** From the above *in vitro* study it was evident that thiazine derivatives are having great anti-tubercular activity. Further we have to conduct the test for all the thiazine derivative to find out the compound with optimum activity. The optimised drug can be further replaced by resistant drugs in the therapy. When we compare the *in silico* and *in vitro* activity it was found that we can't fully depend on *in-silico* results as it seen the activity was high for pyrimidine derivatives but when coming to *in-vitro* study thiazine derivatives show more activity which is mainly because of the sulphur hetero atom present in the ring.

PHCH235

A STABILITY-INDICATING ANALYTICAL METHOD FOR RIBOCICLIB THROUGH QUALITY BY DESIGN APPROACH: IDENTIFICATION AND CHARACTERIZATION

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Abstract:

One of the most frequent malignancies in women worldwide is breast cancer. Additionally, it has a role in the 0.5 million annual fatalities caused by cancer. Breast cancer is a significant cause of cancer death and disability in India. The most commonly diagnosed cancer among women was hormone-related breast cancer. For metastatic and advanced breast cancer, the well-known treatment was Endocrine therapy, however almost all the patient's developed resistance. A novel treatment has been introduced i.e., class of oral CDK 4 and 6 inhibitors for the patients with advanced breast cancer in recent years. This study aimed to establish a validated technique using HPLC and QBD approach. **Materials & Methods:** The box-Behnken design methodology was employed to optimize the method development of Ribociclib by varying percentage acetonitrile, pH and flow rate. This QBD method focused on achieving a proper method with peak shape and tailing factor. Ribociclib was developed and optimized by HPLC method and further the method was validated according to ICH guidelines Q1A(R2). **Results & Discussion:** Ribociclib obeys Beer-Lamberts law over the concentration range of 5 µg/ml- 100 µg/ml. LOD and LOQ were determined and linear regression was found to be 0.999. Precision (Interday & Intraday)

was obtained less than 2.0. Recovery for accuracy was found to be 96.12 - 97.92%. The robustness study was found to be within the limit which is less than 2%. **Conclusion:** The method developed is simple, specific, accurate and precise. Method validation was carried out in compliance with ICH Q1A(R2) guidelines. For future investigation, the present study gives significant value in developing drug molecules without genotoxic analogues and if determined as non-genotoxic analogues it may be considered as a structural lead toward drug discovery in various ailments.

PHCH236

FORMULATION AND EVALUATION OF THERMALLY TRIGGERED MUCOADHESIVE *IN-SITU* GEL OF TOPIRAMATE: Ž- CYCLODEXTRIN COMPLEX FOR NASAL DELIVERY

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Abstract:

Objectives: Nasal route of administration has considered as potential administration route to achieve faster and higher level of drug administration, to mask bitter taste of drug and to increase peak plasma concentration time, there is need to formulate thermally triggered mucoadhesive *in situ* gel for drug targeting directly to the brain. It Improve bioavailability, Increase the residence time of drug, Reduces dosing frequency and also Improves patient compliance. **Methods:** Mucoadhesive *in-situ* nasal gel was prepared by using Topiramate and ž-cyclodextrin complex by continuous stirring using magnetic stirrer and stored in refrigerator (Sol to Gel Formulation). Evaluation parameters were performed by using pH meter, UV-visible, FTIR, Viscometer, Franz Diffusion cell apparatus. **Result:** Batches prepared among that organoleptic properties were performed for optimized one. O-H stretching, C-H stretching and N-H bending were analyzed by IR interpretation, UV spectroscopy done at standard wavelength and Drug polymer compatibility studies were done for identification of physical and chemical interaction. Hence formulated nasal formulation can be successful approach for epilepsy. **Conclusion:** Solubility of Topiramate was successfully increased by making its inclusion complex with B- cyclodextrin and was formulated as *in situ* gel. The optimized formulation containing inclusion complex of drug with ž-CD achieved the target flux and had sufficient mucoadhesive property to ensure appropriate residence time at the site of application. The drug release from this nasal *in situ* gel containing Topiramate was found to be up to 90%, which would help to achieve longer action of Topiramate. As compared to marketed formulation it enhanced the bioavailability and as per the need of time is need to go for the further preclinical study to get the better exposure for the current research.

PHCH237

ANTIDIABETIC ACTIVITY EVALUATION OF *NEPTUNIA PROSTRATA* IN SEARCH OF BIOACTIVE MOLECULES GUIDED BY *IN SILICO* AND *IN VITRO* STUDIES

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Abstract:

Objectives: In this study, we have focused on exploring the chemical profiling, identification of bioactive molecules, and evaluation of the antidiabetic potential of hydroethanolic extract of *Neptunia prostrata* (NP) using chemical methods, LC-MS technique, and *in vitro* enzymatic assays supported by *in silico* investigation. **Methods:** The collected plant was identified and authenticated systematically and certified by a taxonomist. The whole NP plant was taken and left to dry naturally for 2-3 weeks without exposure to sunlight at room temperature. The dried plant material was initially crushed into fine

powder, and 1000 gm of powdered material was subjected to cold maceration sequentially in a extracting jar with petroleum ether (1:3 w/v) for two days and then with 3000 mL of hydroethanol.Preliminary phytochemical examinations and the LC-MS technique were employed to extract hydroethanolic to identify the presence of secondary metabolites. An *in silico* approach was utilized to ascertain the potent secondary metabolites from NP attributing to antidiabetic potential, involving ADMET prediction and molecular docking simulation studies. Subsequently, the antidiabetic activity was screened using *in vitro* α-amylase and α-glucosidase inhibitory assays. **Results:** The preliminary phytochemical screening detected prominent phytoconstituents like flavonoids, phenolics, glycosides, saponins, tannins, and terpenes. The LC-MS analysis of the hydroethanolic extract divulged the presence of various secondary metabolites. The identified phytochemicals from the LC-MS analysis were subjected to *in silico* ADMET prediction tools describing the safety aspects of the bioactive metabolites as well as molecular docking studies revealed the higher binding affinity between both the enzymes α-amylase (5ZCC) and α-glucosidase (1HNY) targets with effective H-bond interactions. *In vitro*, enzymatic assays exhibited significant antidiabetic activity of the hydroethanolic extract against both α-glucosidase and α-amylase with promising IC_{50} values compared to the standard drug, acarbose. **Conclusion:** Our *in vitro* experimental findings validate the predictions established by *in silico* models and reveal the antihyperglycemic potential of the hydroethanolic extract of NP. However, the bioactive compounds of NP may be utilized as lead molecules to develop novel antidiabetic agents.

PHCH238

CU@ZIF-8 NANOPARTICLES: SYNTHESIS, CHARACTERIZATION, AND EXPLORING THEIR ANTIFUNGAL AND ANTIBACTERIAL ACTIVITY

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Abstract:

Objective: The study aimed to develop Cu@ZIF-8 nanoparticles and evaluate their antifungal and antibacterial activity. **Methods:** Metal nanoparticles have been the focus of most nanomaterials research due to their ease of manipulation and synthesis. To increase these nanomaterials' utility, stability, and cost, the objective of encasing them in a matrix is being progressively pursued. The well-defined frameworks, continuous porosity, and adaptability in modification of metal-organic frameworks—MOFs—make them potentially the ideal platforms for encapsulating metal nanoparticles. The novel Cu@ZIF-8 and polyvinylpyrrolidone (PVP)-stabilized Cu (0) nanoparticles using a chemical approach were synthesized. To get the nano size, optimization of the reaction was done by using changes in various parameters like change in reflux time, change in stirring rate, change in temperature, and change in concentration of reactants. Further, Cu@ZIF-8 NPs were evaluated for their antibacterial antifungal activity. **Results:** The [hmim]/Zn^{2+} and Cu/Zn^{2+} ratios that were employed had an impact on the sizes and morphologies of Cu (0) and Cu@ZIF-8. The optimized Cu@ZIF-8 nanoparticles had a zeta potential of -4.4 mv and a particle size of 366.1 nm, respectively. For Cu(0) nanoparticles, scanning electron microscopy revealed a spherical morphology; however, a significant change in the surface morphology of the unique Cu@ZIF-8 nanoparticles was observed, resulting in rectangular-shaped structures with smooth surface morphologies. The unique Cu@ integrated ZIF-8 nanoparticulate framework was confirmed by the XRD and DTA analyses. Low minimum inhibitory concentrations

(MIC) demonstrated the effective antibacterial activity of the newly created Cu@ZIF-8 nanoparticles against *E.coli* and *S. aureus*. Further, the synthesized unique Cu@ZIF-8 nanoparticles showed antifungal activity against *Candida albicans* as evidenced by low MIC values. **Conclusions:** In the current study, the synthetic optimization of stable Cu (0) and Cu@ZIF-8 nanoparticles was demonstrated. The synthesis of Cu(0) nanoparticles via chemical reduction using PVP K-30 as the capping agent was successful and the particles were found to be stable. Furthermore, we successfully optimized the synthesis of novel Cu@ZIF-8NPs at room temperature using methanol as the solvent, with the morphology, size, and Cu loading considerably dependent on the molar equivalents of Cu/Zn^{2+} and $[hmim]/Zn^{2+}$ used. It is plausible to believe that Cu(0) nanoparticles are largely coated with ZIF-8 framework.. The strong relation of various parameters on the particle size of Cu@ZIF-8 nanoparticles was evaluated.The novel Cu@ZIF-8NPs showed efficient antibacterial activity against *E.coli, S.aureus*. Further, Cu@ZIF-8 NPs have shown antifungal activity when compared with naked CuNPs against *C. albicans*.

PHCH240

IN VITRO BIOACCESSIBILITY OF CHEMO PREVENTIVE BIOACTIVE PEPTIDE LUNASIN FROM SOYBEAN AND WHEAT VARIETIES

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Abstract:

Objectives: The objective of this study was to investigates the stability of Lunasin peptide upon *in vitro* digestion using simulated intestinal fluid (SIF) and simulated gastric fluid (SGF).**Methods:**Soybean and wheat genotypes from India origin were selected for the study (5- soybean and 3-wheat grain samples) and subjected to *in vitro* digestion by SIF (pH 6-7.5) using pancreatin and bile salts and SGF (pH 2-2.5) with pepsin enzyme at different times, and lunasin concentration was quantified (analysed) using a developed and validated UPLC-QToF-MS method. LC-MS analysis was performed using C18 (50 x 4.6mm, 2.6µ) column, 0.1% formic acid (A) and acetonitrile (B) as mobile phase. ESCi source operated in positive polarity was used for analyte ionization, the precursor and product ion m/z values for lunasin are 719.2, 838.9, 1006.1, 629.5, 1257.8, 1677.1, and 1006.7, respectively. **Results:** Lunasin is a novel bioactive peptide with promising chemopreventive properties,While lunasin is stable and is bioaccessible after *in vitro* SIF and SGF digestions. These findings indicate that lunasin peptide is stable after enzymatic *in vitro* digestion in both soybean and wheat samples.**Conclusions:**This study enhances the understanding of *in vitro* digestion models and provides indications for the development of improved *in vitro* digestion models for foods or pharmaceuticals.

PHCH241

DEVELOPMENT OF GREEN UPLC STABILITY METHOD FOR MICRO-SOLID DOSAGE FORMS OF LEVITERACETAM USING QUALITY BY DESIGN APPROACH

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Abstract:

Objectives: A green, rapid, and simple RP UPLC method was developed and optimized by full factorial design for estimation of Leviteracetam in microsolid formulations like tablets, microspheres, mucoadhesive gels, films and FR granules and CR mucoadhesive granules. **Methods:** The separation was established

on a UPLC column HSS C18 (2.1 x 100mm, 1.8µm) at 25 °C with an injection volume of 0.2 µL. The detector (PDA) was set at 210 nm. The mobile phase consisted of methanol and orthophosphoric acid in a ratio of 28:72 (v/v) and pumped at the flow rate of 0.3 mL/min. The overall separation time was 2.5 min. Different formulations were prepared and analysed by the same method after complete validation as per ICH Q2(R1) guidelines. **Results:** The developed procedure is linear and accurate from 12.5 to 75 µg/mL for all formulations. Forced degradation studies in all solid and liquid degradations were executed to demonstrate the method's stability indicative capacity. The proposed method is conducive and more sensitive (limit of quantitation: 0.86 µg/mL and limitation of detection: 0.28 µg/mL) than the reported methods. The coefficients of determination (R^2) were greater than 0.99, with percentage recoveries greater than 99.5% for each microformulation. Further, it has been evaluated for greenness character using the AGREE (Analytical GREEnness) statistical tool and the obtained score is 0.82 out of 1. **Conclusions:** The proposed method was highly precise, as indicated by the low percentage of relative standard deviation values of less than 1.0% for each formulation. The average content and uniformity of dosage units in the studied drugs' dosage forms were determined. This novel method was based on the slope of regression equations. The factorial design method was used to evaluate the excipient's interference. The developed method was found to be more accurate, sensitive, time saving, economical, and eco friendly than the classic standard addition method. The results showed that the proposed method can estimate the tested drugs' concentrations without interference from their dosage form excipients.

PHCH242

OPTIMIZING BIO-ACTIVE SMALL MOLECULE DISCOVERY RESEARCH THROUGH AI-ENHANCED MOLECULAR DESIGN AND SIMULATION

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Abstract:

Objectives: The aim of this study was to implement advanced Artificial Intelligence models combined with a rational drug design approach, and to evaluate their effectiveness in accelerating the drug discovery process. **Methods:** Generative AI models were then applied in the design of a highly focused, ultra-large library of small molecules and peptides with acceptable pharmaceutical profiles. The resulting generated library of small molecules was taken for ligand-based virtual screening based on AI using a very stringently validated protocol. Compounds selected from LBVS were taken for an AI-enabled molecular docking process, also very stringently validated, to further process the compounds. Selected small molecules based on receptor binding interactions, orientation, geometry, and synthetic feasibility were then selected and studied via high-throughput molecular dynamic simulations extended up to one microsecond, to probe their dynamical profiles in a microscopic environment. The top-performing molecules were then chosen for further wet laboratory experiments. A number of targets like keratinocyte growth factor (KGF or FGF-7), EGFR, etc. were taken into consideration for the search of potential binders. The X-ray crystal structures were extracted from the Protein Data Bank, refined, andoptimized before being used in the study. The current study shall rely heavily on the use of Python programming language and Amber 2024 software. **Results:** Validation plays a very important role not only in scientific research but also in computational design; in this aspect, the performance of each model was validated using key parameters: True Positive Rate, False Positive Rate, ROC AUC, PRC AUC,

BEDROC, and RMSD. The recall score for true positive cases is 0.811, meaning the model correctly predicts 81.1% of the real positive cases. The model shows a null false positive rate of 0.000, meaning no observation is falsely detected as positive. An ROC AUC of 0.943 is a value that represents very good discriminatory power; in other words, the model can effectively discriminate between positive and negative cases over all possible thresholds, so it enjoys very good reliability. The average PRC AUC is 0.668, suggesting a more balanced trade-off between precision and recall with imbalanced datasets. This enhancement shows that the model performs much better than random in terms of identifying positive cases. Moreover, the BEDROC score has improved to 0.940, which is actually a reflection that the model allows the identification of true positives early within the ranking, being quite important for applications such as virtual screening. The RMSD of native ligand redocking after the superimposition for each drug target was within ~2 Å. Critical binding site residue interactions, along with the ligand orientation within the receptor binding site, were evaluated and followed by water mapping. Initial thermodynamic data from MMPBSA calculations were taken from the molecular dynamics trajectory and compared with the control ligand. Systems with high negative MMPBSA bound were subjected to further 1μs time scale analysis. The stability parameters that related to RMSD, RMSF, Rg, and SASA have been considered to estimate the stability of each system. A subset of the selected molecules underwent organic synthesis and subsequent biological evaluation. The inhibitory concentrations of these compounds, measured as IC50, values, were found to be approximately 10 nanomolar. This high potency confirms the effectiveness of the AI-driven approach in identifying promising candidates for further development. **Conclusions:** The AI-driven methodologies that were operationalized herein presented strong performance in identifying potential small molecule candidates with high precision and reliable results. Validation metrics, such as high recall, ROC AUC, PRC AUC, and BEDROC scores, added further highlight to the models' competency in making correct differentiations more importantly, with very challenging situations likely to be found in virtual screening studies. Further stability and binding affinity of the chosen candidates was ascertained using the molecular dynamics simulations integrated with MMPBSA calculations, providing a strong basis for further experimental validation and drug development efforts. The biological evaluation of the designed molecules strongly supports the efficacy of the ligand selection approach detailed in this study. The high potency observed in the biological assays underscores the effectiveness of the AI-driven methodology in identifying promising drug candidates.

PHCH243
SYNTHESIS, BIOLOGICAL EVALUATION, AND MOLECULAR DOCKING STUDIES OF NOVEL THIAZOLIDIN-4-ONE DERIVATIVES

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Abstract:

Objectives: The objective of this study is to design and synthesize novel thiazolidin-4-one derivatives and evaluate their antimicrobial activity to identify potential new compounds with effective antimicrobial properties. **Methods:** A series of 3-(benzo[d]thiazol-2-yl)-2-(substituted aryl) thiazolidine-4-one and 2-(substituted aryl)-3-(4,5-dihydrothiazol-2-yl) thiazolidine-4-one (A1-A10) were synthesized using the conventional organic chemistry methods. The *in-silico* docking study of the compounds was performed using Autodock/PyRx software to estimate their potential interactions with the target protein DNA gyrase and 14α-demethylase (1KZN and 4UHI) respectively. After synthesis, the derivatives were

purified using standard techniques such as recrystallization and column chromatography. Characterization of the purified compounds was carried out using various analytical techniques, including melting point determination, Thin Layer Chromatography (TLC), Fourier Transform Infrared Spectroscopy (FT-IR) for functional group analysis, and Nuclear Magnetic Resonance (NMR) spectroscopy (^{1}H and ^{13}C NMR) for structural elucidation. Mass Spectroscopy was employed to confirm the molecular weights. Antimicrobial activity was evaluated using the Zone of Inhibition method and results were compared. **Results:** A series of 3-(benzo[d]thiazol-2-yl)-2-(substituted aryl) thiazolidine-4-one and 2-(substituted aryl)-3-(4,5-dihydrothiazol-2-yl) thiazolidine-4-one (A1-A10) were successfully synthesized. Molecular docking was executed with protein 4UHI for antimicrobial activity. The compounds A1, A3, and A8 showed comparable binding affinity against the 1KZN and 4UHI proteins. The structures of the synthesized compounds were confirmed by IR, 1H NMR, 13C NMR, and Mass spectrometry. The compounds A1-A10 were evaluated for their antibacterial and antifungal activities. All compounds exhibited better antibacterial and antifungal potency than ampicillin and Amphotericin against all bacteria and fungi tested. Compounds A2 and A10 exhibited excellent activity against bacterial and fungal strains respectively. While compound A3 showed moderate activity. **Conclusions:** The study successfully synthesized and characterized novel thiazolidin-4-one derivatives combined with thiazole and benzothiazole in a single molecular framework, demonstrating the robustness of the designed synthetic scheme. Compounds 3-(benzo[d]thiazol-2-yl)-2-(1H-indol-3-yl) thiazolidine-4-one (A2) and 3-(benzo[d]thiazol-2-yl)-2-(1H-indol-3-yl) thiazolidine-4-one (A10) can be considered as lead compounds for further development of more potent and safer antibacterial and antifungal agents.

PHCH244

TRIPLE-NEGATIVE BREAST CANCER: PROGRESS, CHALLENGES, AND FUTURE PERSPECTIVES

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Abstract:

Objectives: The objective of this review is to provide a extensive analysis of triple negative breast cancer (TNBC), that shall focus on its clinical features, molecular attributes, current treatment options and new therapies. The aim is to outline the problems associated with TNBC treatment, summarize the latest developments in targeted therapy and immunotherapy, and discuss area of focus for future research in order to improve patient outcomes. **Methods:** The databases such as Pubmed, google scholar and web of science were searched extensively. The study was done based on relevance to TNBC's clinical and molecular characteristics, treatment strategies, resistance mechanism as well as novel therapeutic approaches. The data were extracted from peer-reviewed articles, clinical trials as well as review papers. **Results:** The lack of ER, PR or HER2 status in TNBC leads to the use of conventional chemotherapy as it does not have any targeted therapy that can be used effectively for most patients. Olaparib and talazoparib are PARP inhibitors which show promise in BRCA-mutated TNBCs. Pembrolizumab or atezolizumab are members of immune checkpoint inhibitors that are effective when administered with chemotherapy. However there are challenges like drug resistance and molecular heterogeneity remaining despite these advancements. Recently developed agents targeted therapies as well as novel combinations are currently being examined through ongoing clinical trials. **Conclusions:** TNBC still poses significant challenges due to its aggressiveness and limited treatment options available. Due to the current advancements in molecular profiling of TNBC and the knowledge of the disease, there is emergence of

new therapies that are promising. The future research should focus on recognizing reliable biomarkers, mechanism of resistance and personalized treatment strategies that are more effective. The ongoing clinical trials and continued research are crucial to improve outcomes and give hope to the patients with TNBC.

PHCH245
NITROSAMINE CONTAMINATION OF PROCESSED MEAT: A COMPREHENSIVE REVIEW

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Abstract:

Objective: According to The International Council for Harmonization of Technical Requirements for Pharmaceuticals for Human Use (ICH) M7 guidelines nitrosamine impurity is considered as class I mutagenic impurity. N- Nitrosamines are chemical constituents that are formed through the reaction of secondary amines with nitrous oxide and nitrite salts. Nitrite salts have been used for ages as a preservative in meat and this has been linked to increased risk of cancer due to high consumption of processed meat. The objective of this review is to provide a comprehensive approach towards the issue of nitrosamine contamination present in processed meat and its impact on health. The review also highlights the various mechanisms involved in the formation of nitrosamines in processed meat and the analytical methods reported for the detection of nitrosamines. **Methods:** Literature review was performed using databases such as PubMed, google scholar and web of science. This review provides an insight on the various sources of nitrosamines and the chemical pathways leading to formation of nitrosamines in processed meat. The effect of multiple factors such as use of nitrates, high temperatures and presence of secondary amines were identified as factors contributing towards formation of nitrosamine impurity. The analytical methods reported for detection of nitrosamines include GC/MS and LC-MS are discussed along with the toxicological impact of nitrosamine on human health. **Results:** The findings indicate the various factors which contribute towards the formation of nitrosamines in processed meat. Nitrites, nitrates, and their salts are commonly added to processed meat products to enhance color, flavor, and shelf life while reducing microbial load. N-nitrosamine compounds are formed when nitrosating agents, such as secondary amines in meat products, interact with the added nitrites and nitrates. Upon consumption of these meat products, nitrosation reactions can occur in the human body, leading to N-nitrosamine formation in the gastrointestinal tract. **Conclusions:** Given the dual role in preserving food and carcinogenic potential, it is required to update dietary guidelines to include considerations for nitrosamine intake. The carcinogenic potential of nitrosamines emphasizes on the need to have strict regulatory controls to minimize the exposure to nitrosamines through consumption of processed meat. Hence it is crucial to investigate the risk of nitrosamines formed endogenously in the human digestive system following consumption of processed meat. Future research should focus on improving the detection techniques and also understanding the long-term effects of low level exposure to nitrosamines. In addition, an awareness regarding the hazardous chemicals such as nitrosamines generated during food processing is essential to make informed dietary choices and reduce potential health risks.

PHCH246

PHYTOCHEMICAL SCREENING AND ANTI-OXIDANT ACTIVITY OF *TYPHONIUM TRILOBATUM* L. (SCHOTT)

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Abstract:

Objectives: The objective of this study was to explore and evaluate the phytochemical imaportance of *T. trilobatum* (L.) Schott and also identification of lead scaffolds with reference to observed activity. **Methods:** Methanoilc extract derived from leaves of *T. trilobatum* (L.) Schott were selected for the current study. Phyto-chemical screening was performed using Thin layer Chromatography and HPTLC. GCMS Analysis was performed with crude extract for identification of volatile components. To assess *in-vitro* antioxidant activity of the plant extract DPPH Radical Scavenging assay, Hydrogen peroxide scavenging assay was performed. Total phenolic content and total flavonoid content was also reported. **Results:** The preliminary phytochemical investigation reveals the presence of Flavonoids, Alkaloids, Glycosides, Cardiac glycosides, Tri terpenoids. From methanolic extract chlorogenic acid, caffeic acid, Kaempfeol was identified and quantified using HPTLC. GC-MS Analysis indicates the presence of 55 phyto-constituents in the methanolic extract of *T. trilobatum* (L.) Schott. Total phenolic content and Total Flavoid content of the plant can be correlated with the standard compounds like Gallic acid and quercetin respectively. DPPH free radical scavenging activity and hydrogen peroxide scavenging acitivity of methanolic extract of was performed and IC_{50} value was measured which indicates antioxidant property of the plant. **Conclusions:** This study demonstrated that the plant have antioxidant property and phytochemical screening reveals the presence of various secondary metabolites that can be employed for different phytotherapeutic approaches. Current study provides valuable tools for further investigation. Future study should focus on isolation of lead scaffolds and different *in-vivo* studies for advanced study.

PHCH247

DESIGN, DOCKING, ADME PROPERTIES, SYNTHESIS OF SOME 2, 3-DISUBSTITUTED-1*H*-INDOLE DERIVATIVES FOR ACTIVATING EFFECT ON GLUCOKINASE ENZYME

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Abstract:

Objectives: Maintenance of glucokinase enzyme in its active mode (closed conformation), for improved utilization of glucose by liver and muscle cells, is being looked as a promising novel strategy for treating Type II diabetes mellitus. Plethora of compounds – phenylacetamides and benzamides, were reported for their ability as glucokinase activators in the *in vitro* assays and also the *in vivo* glucose lowering effects in diabetic animal models. However, many of the promising benzamide derivatives failed to advance beyond the pre-clinical trials as most of these reportedly showed mutagenic effects in animal models.These mutagenic effects can be attributed solely to the presence of aromatic primary amino group present in the structures of these derivatives. This amino group is supposed to be important as it is involved with binding interactions with few amino acid residues (Tyr 215) on the protein, Glucokinase enzyme, to maintain it in the active conformation. Hence, finding appropriate replacement of this group, *i.e.* other groups that could interact with the amino acid residue in the binding pocket of the enzyme to maintain it in closed conformation, is a challenging task.Searchingan isosteric replacement of the toxic

aromatic primary amino group present in the structures of benzamide derivatives that had surfaced in the literature related with promising glucokinase activators has resulted into plethora of 2, 3-Disubstituted-1*H*-indole derivatives, that succeeded binding and activating the enzyme, glucokinase, when tested for their activity in an *in vitro* bioassay, and also in lowering elevated blood glucose levels in experimental animals administered with a high dose of glucose (modified OGTT). **Methods**: Amide motif has been evolved as an important aspect of several HIT molecules ensued successful to interact and prolong the active conformation of glucokinase enzyme. Using this motif as a linkage within heterocyclic scaffold would probably generate possible ligands that would fruitfully fit into the ligand-binding domain of the enzyme. Aiming at achieving the structures, molecular docking was achieved using IV4S crystal structure in the *in silico* environment of Discovery Studio Visualizer. **Results:** Accordingly, present article displays the Markush-structure of the designed molecules,reports of *in silico* studies including the interactions between the designed ligands and amino acid residues (TYR-215 & MET-210) in the allosteric site of 1V4S (RCSB PDB site), their drug-likeliness studied in *SwissADME*. The report also includes the scheme of synthetic reactions executed to realize the molecules which displayed drug-like properties, their characterization accomplished through spectral and elemental analysis, results of *in vitro Glucokinase assay* in comparison with the activation induced by the standard *RO-28-1675,* and *in vivo* glucose lowering effect of the derivatives when tested in experimental animals. **Conclusion:** Two of the synthesized 2, 3-Disubstituted-1*H*-indole derivatives had displayed lower $S_{0.5}$(high potency) nearing to the values displayed by the standard, *RO-28-1675* (*Sigma*) in the *in vitro GK assay.*The same compounds displayed a glucose-lowering effect (70 % as compared to Metformin) when administered orally to *Wistar Rats* prior to subjecting them to oral glucose load.

PHCH248
A SYSTEMATIC REVIEW ON RECENT ADVANCES ON GREEN CATALYSIS AND DRUG DISCOVERY

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Abstract:

Objectives: Recent developments in green catalysis have transformed the field of drug discovery by providing environmentally acceptable and sustainable routes for the synthesis of physiologically active N-heterocyclic molecules. **Methods:** The wide range of new techniques that have surfaced is highlighted in this review article, including solvent-free techniques, ultrasound reactions, heterogeneous catalysis, microwave-assisted reactions, and bio-catalysis. These techniques minimize environmental impact while offering immediate access to N-heterocyclic compounds of therapeutic value. Phase transfer, homogeneous, heterogeneous, and bio-catalysis are just a few of the ways that catalysis is exhibited as a key element in green synthesis, helping to produce excellent chemicals and medicinal agents in an environmentally friendly manner. **Results:** Significant progress has been made in enantioselective flow catalysis, especially with the use of chiral heterogeneous catalysts, which have made it possible to synthesize optically active molecules that are essential for medication development. **Conclusions:** These sustainable synthetic methodologies not only meet the modern demands of drug design but also underscore the significance of integrating green chemistry principles into the pharmaceutical industry's practices. By embracing these innovative approaches, researchers can foster a more sustainable and environmentally conscious approach to drug discovery and development, paving the way for greener pharmaceuticals that benefit both human health and the planet.

PHCH249

HERBAL NANO GEL FORMULATION OF CURCUMIN AND QUERCETIN FOR ENHANCED PAIN MANAGEMENT IN RHEUMATOID ARTHRITIS

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Abstract:

Joint pain and destruction are hallmarks of rheumatoid arthritis (RA), a chronic inflammatory disease. **Objectives:** The aim of this study was to develop and evaluate Nano gel formulation of curcumin and quercetin to manage rheumatoid arthritis. **Methods:** Curcumin and Quercetin are purchased from New Neeta Chemicals and the other polymers used for the preparation of Nano gel are methyl paraben as a preservative and propylene glycol as a penetration enhancer and also the solubilizing agent, Carbopol 934 is used as a gelling agent. **Results:** The prepared Nano gel is evaluated for Drug excipient compatibility, DSC particle size, zeta potential , viscosity spreadability drug content and % drug release . According to the result F5 batch was found to be optimized. The drug release of that batch was found to be 89.72 % and 88.53.the zeta potential of the optimized batch was found to be -24.6 mv. The drug content of that optimized batch was found to be 94.55 and 93.78. According to the DSC thermogram drug and excipient shows compatibility between them. **Conclusions:** Curcumin and quercetin were used in the current study's successful creation and assessment of a herbal Nano gel formulation for the management of rheumatoid arthritis pain. A straightforward and economical procedure was used to Formulate the Nano gel formulation, and each batch's physicochemical characteristics such as pH, viscosity, spreadability, and drug content were assessed. Optimized match showed the most promising qualities among the batches, suggesting that it could be a stable and successful topical formulation. With its appropriate pH, viscosity, and spreadability, the optimized match ensured patient compliance and simplicity of application. The medication content study also showed that the active components were distributed uniformly, guaranteeing constant therapeutic efficacy. Additionally, the formulation's herbal bioactive ingredients, quercetin and curcumin, are well-known for their analgesic, anti-inflammatory, and antioxidant qualities. Making possibilities for rheumatoid arthritis pain management. Overall, the herbal Nano gel was formulated, and the optimized batch, shows practical, safe, and effective topical formulation for the treatment of rheumatoid arthritis discomfort.

PHCH250

A REVIEW ON THE DIFFERENT TECHNIQUES USED IN PHARMACEUTICAL ANALYSIS

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Abstract:

Objective: The aim this study to different techniques used in pharmaceutical analysis. **Method:** Pharmaceutical analysis is a branch of analytical techniques in which study the different method for identification, quantification, purification and determination of a drugs. The field of pharmaceutical analysis is dominant in the quality, quantity, purity, safety & efficacy of medicinal products. Various analytical techniques used in pharmaceutical analysis to assess the identity, purity, potency & stability of drugs . Various analytical techniques From classical method Titrimetry & Gravimetry and From modern instrumental techniques like electrochemical method of analysis, spectroscopy (Uv spectroscopy, Fluorometry, NMR spectroscopy) , Mass spectroscopy, Chromatography (HPLC, GC, TLC, PC, HPTLC) and others, each techniques are important role played on pharmaceutical analysis. This

modern analytical techniques used in estimation the quality of drugs. **Result**: There are different analytical techniques available to analyse drug and estimate the quality & quantity of drugs. From classical method Titrimetry and Gravimetry techniques used to determine the quantity of drugs but this technique are oldest analytical techniques because currently many modern analytical techniques are developed. Instrumental method are employed in seperation, quantification, purification & efficacy estimation of chemical compounds. This instrument analytical techniques are also called advanced or modern analytical techniques. **Conclusion:** This review paper provides an overview of different techniques used in pharmaceutical analysis. This paper discuss the introduction, principal, process and application of different analytical techniques used in pharmaceutical analysis. This different techniques employed for identify, seperation, quantity, purify & determine the medicinal products. The main aim of the pharmaceutical drugs is to diagnose, treatment and prevention of disease. This different analytical techniques to important role played on estimation of quality, quantity and safety of drugs. This review paper also highlights the difference between Titrimetry, Gravimetry method and modern advanced analytical methods.

PHCH251

DEVELOPMENT AND VALIDATION OF A RP-HPLC METHOD FOR THE ESTIMATION OF RUFINAMIDE IN BULK

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Abstract:

Rufinamide is an anticonvulsant medication. It is used in combination with other medication and therapy to treat Lennox–Gastaut syndrome and various other seizure disorders. Rufinamide, a triazole derivative. **Objectives**: The present study deals with the development and optimization of simple validated stability indicating RP-HPLC method for the analysis of Rufinamide. **Methods**: The chromatographic separation was achieved using High performance liquid chromatogram equipped with UV detector at the wavelength of 230nm on a reversed phase thermo scientific PhenomenexODSC-18(250×4.6mm, packed with 5 micron) column maintained at ambient temperature. Isocratic elution was employed using a mixture of Ammonium formate: Acetonitrile (40:60) at pH-6.0., flow rate 1ml/min and injection volume of 20 µl with runtime of 15min. This method has been validated which include accuracy, precision, specificity, linearity and range. **Results**: The current method demonstrated good linearity range over the range of 10-200 ppm (µg/ml) with retention time of 4.5 min. The method was found to be accurate with % recovery within 99.61 to 100.08 and the standard deviation and %relative standard deviations are less than 2. The intra and inter day assay precisions were satisfactory; the relative standard deviation did not exceed 2%. **Conclusions**:The developed method was found to be accurate, precise and selective for determination of Rufinamide in bulk and tablet dosage form.

PHCH252

SYNTHESIS, CHARACTERIZATION, MOLECULAR DOCKING STUDY AND BIOLOGICAL ACTIVITY OFSOME NEW ISOXAZOLE CHALCONES

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Abstract:

Objectives: Chalcones constitute a range of promising biological activities and one among them is anti-mycobacterial activity. Owing to their synthetic feasibility and potential antimycobacterial activity, in the present study, synthesized and evaluated molecular docking studies as well as antitubercular

activity by MABA assay. **Methods:** Isoxazole chalcones were prepared by reaction between isoxazole-3-carbaldehyde and 4 substituted acetophenones having α-hydrogens in the presence of acidic medium and then the compounds were characterized by elemental analysis and spectroscopic studies. The structures of synthesized Isoxazole chalcones were evaluated by molecular docking studies and drug-likeliness parameters of a series of (*E*)-1-(4-substituted phenyl)-3-(isoxazol-3-yl) prop-2-en-1-one derivatives (1-10). The antitubercular activity was performed against H37v strain of *Mycobacterium tuberculosis* by MABA assay and the compounds 8 and 10. **Results:** Isoxazole containing chalcones (1-10) were prepared in good yields by Claisen-Smith condensation reaction. FTIR spectra of the synthesised compounds showed different stretching vibrations of olefinic (C=C, 1500-1530 cm-1) bond, carbonyl group (C=O, 1640-1660 cm-1) confirmed assembly of chalcone bridge, and conformation for number of various environments of protons and carbons with NMR and molecular mass for mass spectras respectively. Other protons presented resonating peaks typically present in every compound. Based on results, Five bioactive compounds were estimated that showing good binding affinity, among those, compounds 8 and 10 promising high binding affinity (-5.86 kcal/mol and -6.2 kcal/mol) than that standard. Based on results, we evaluated that new compounds shown minor to reasonable anti mycobacterial activity (H37RV strain) by dilution technique against standard. Among those compounds 8 and 10 were shown better activity with MIC (1.56 µg/ml) than standard. **Conclusions:** All synthesized compounds confirmed by physical properties, spectral analysis and elemental analysis. All were docked against thymidylate kinase binding site, revealed that good binding affinity and all were in acceptable range and no single violation in investigating of drug-likeness through Lipinski rule of five. All synthesized ten compounds showed anti-mycobacterial activity towards to H37Rv strains by *in vitro* method and revealed that compounds 8 and 10. It can be explored to stimulate improvement of novel effective to land anti-mycobacterium properties.

PHCH253
EVALUATION OF HETEROCYCLIC COMPOUNDS AGAINST P2X7 RECEPTOR: *IN SILICO* MOLECULAR DOCKING APPROACH

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Abstract:

Objectives: The main objective of the proposed research work is to evaluate the P2X7 receptor antagonists for Alzheimer's disease from natural semi-synthetic analogs by molecular docking studies. **Methods:** Homology modeling using "SWISSMODLLER" was done based on the P2X7 receptor of zebrafish as a template which showed about 48.08% similarity. The built protein was subjected to energy minimization and further subjected to docking studies. Using natural databases like 'ZINC natural products catalogue', 'COCONUT natural database', 'NeMed plant', and 'PHYTOCHEMIA', an HTVS protocol was performed. **Results:** 900 potential ligands were screened for binding affinity. Out of which 500 compounds were picked from which 30 hits with high binding affinity were analyzed for their inhibitory interactions. The selected hits which mostly included alkaloids (piperine, sanguinine, gracillin, etc.), flavonoids (Hispidulin, Naringenin, Epicatechingallate, Diadzein) and glycosides (Cyanidin, Emodin, etc.) were checked for BBB permeability and resulted in a total of 4 compounds exhibiting the entire favorable criterion. **Conclusions:** From the above results, based on the preliminary *in silico* docking studies of four lead molecules, piperine was selected for further synthesis of its derivatives because of significant anti-Alzheimer activity against the P2X7 receptor.

PHCH254
IN SILICO, SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL EVALUATION OF 1,3,4 OXADIAZOLE DERIVATIVES

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Abstract:

Objectives: The study aimed to design and synthesize new 2-(substituted methyl aniline)-5-(pyridin-4-yl)-1,3,4-oxadiazoles (4a-d) as potential anti-tubercular agents. **Methods**: A novel multistep synthetic route was employed to produce the target compounds, starting with the reaction of Chloroacetic acid with Isoniazid in the presence of phosphorus oxychloride, yielding 2-(substituted methyl aniline)-5-(pyridin-4-yl)-1,3,4-oxadiazoles (4a-d). The structures of these compounds were confirmed using IR, ^{1}H NMR, and mass spectral analysis. In vitro assays were conducted to assess the anti-tubercular and antioxidant activities of the synthesized compounds. Additionally, molecular docking studies were performed against the proteins InhA (4TZK) and Cytochrome c peroxidase (2X08) to evaluate the binding modes and affinities of the compounds. **Results**: All synthesized compounds were tested *in vitro* for their anti-tubercular and antioxidant activities. The molecular docking studies revealed that the compounds exhibited good binding affinity towards the target proteins InhA and Cytochrome c peroxidase, suggesting a potential mechanism of action. **Conclusion**: The newly synthesized 2-(substituted methyl aniline)-5-(pyridin-4-yl)-1,3,4-oxadiazoles demonstrated promising anti-tubercular and antioxidant activities. The molecular docking studies further supported their potential as effective anti-tubercular agents, providing valuable insights into their binding interactions with key target proteins. These findings indicate that these compounds could serve as a basis for the development of new, potent, and safe anti-tubercular drugs.

PHCH255
METHOD DEVELOPMENT & VALIDATION OF GEMCITABINE BY RP-HPLC INSTRUMENT

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Abstract:

Objective: The objective of present research work, was to validate and develop an economical, accurate & easy RP-HPLC method for the determination of gemcitabine in Pharmaceutical dosage forms. **Methods:** An analytical method was developed and validated using reversed phase HPLC method, for analysing gemicitabine. Zodiac C8 column (250 x 4.8 mm, 5µm) was used for the Chromatographic separation. Elution was performed with a mobile phase that had methanol and buffer in a 90:10 (% v/v) ratio, with a 1 ml/min flow rate. Gemcitabine signals were detected at 275 nm with PDA and UV detectors. **Results:** The results of the Chromatographic condition indicated that the limits of quantitation (LOQ) and detection (LOD) were, respectively, 13.99 and 3.04. The results meet the acceptability standards for Correlation Coefficient and Precision at the LOQ level (0.05 ppm) and the 150% level (7.51 ppm). Thus, the process is accurate and linear. Hence the method ranges from 0.05 ppm to 7.51 ppm. **Conclusion:** The ICH Q2B recommendations were followed in the development of the method and the execution of all validation parameters, yielding results that satisfy the acceptance criteria. After validation,

the suggested approach was observed to be precise, reliable, robust, repeatable, and suitable for quantitative analysis. Its ease of use, low cost, and short processing time make it a useful tool for estimating the dosage forms of gemcitabine. The process described above can be used with ease to the analysis of medicinal products.

PHCH256
PHARMACOKINETICS AND BIOANALYTICAL VALIDATION FOR SIMULTANEOUS ESTIMATION OF EFONIDIPINE AND CHLORTHALIDONE IN DOSAGE FORMS

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Abstract:

Objective: To develop and validate a bio-analytical method (LC-MS/MS) for the simultaneous determination of Efonidipine Hydrochloride Ethanolate and Chlorthalidone in pharmaceutical dosage form as per USFDA Guidelines, and apply this method to a biological sample (rat plasma) to estimate pharmacokinetic parameters (AUC, Tmax, Cmax). **Methodology:** A fast, sensitive, and selective Liquid Chromatography–Tandem Mass Spectrometric (LC–MS/MS) method was developed for the determination of Efonidipine Hydrochloride Ethanolate and Chlorthalidone in rat plasma. Chromatographic separation was performed on an Agilent Zorbax C18 (150mm x 4.6mm, 5µm) column. Protein precipitation extraction with a mixture of acetonitrile was employed for sample preparation. The mobile phase consisted of a 10 mM ammonium acetate buffer in water with pH 4.0 and acetonitrile in a ratio of 30:70 v/v, with a flow rate of 0.5 mL/min. Detection was performed on a triple quadrupole tandem mass spectrometer in multiple reaction monitoring (MRM) mode via an electrospray ionization (ESI) source, achieving high throughput with a runtime of 10 minutes per sample. Carbamazepine was used as an internal standard to ensure accuracy and precision.The linear calibration curves were obtained in the concentration range of 50-5000 ng/mL for both Efonidipine Hydrochloride Ethanolate and Chlorthalidone, with a correlation coefficient (r^2) e" 0.99 and a lower quantitation limit (LQC) of 50 ng/mL. The intra- and inter-day precision (relative standard deviation, RSD) values were below 15%, and the accuracy was within ±15.00% at three quality control levels. **Results and Discussion:** Efonidipine Hydrochloride Ethanolate showed maximum absorbance at 252 nm, and Chlorthalidone showed maximum absorbance at 275 nm, with calibration graphs linear in the concentration range of 50-5000 ng/mL for both compounds and a correlation coefficient of 0.99. The higher percentage of recovery indicates no interference. In the LC-MS/MS method, the retention time of Efonidipine Hydrochloride Ethanolate was 8.1 minutes, Chlorthalidone was 2.2 minutes, and the retention time of carbamazepine was 3.24 minutes. The method was successfully validated for linearity, accuracy, precision, specificity, and robustness according to USFDA guidelines. **Conclusion:** A simple, accurate, and precise LC-MS/MS method was developed and validated for the simultaneous estimation of Efonidipine Hydrochloride Ethanolate and Chlorthalidone in rat plasma, in accordance with USFDA guidelines. The developed method is sensitive enough to be applied in pharmacokinetic studies to evaluate drug-drug interactions between Efonidipine Hydrochloride Ethanolate and Chlorthalidone, either alone or in combination, in rat plasma. The results of the validation parameters indicate that the developed method is useful, and the mean plasma concentration-time curves of Efonidipine Hydrochloride Ethanolate and Chlorthalidone show that both drugs, whether administered singly and together, exhibit similar pharmacokinetic properties. Thus, there is no evidence of potential drug-drug interaction between Efonidipine Hydrochloride Ethanolate and Chlorthalidone.

PHCH257
FORCED DEGRADATION STUDY OF SERDEXMETHYLPHENIDATE AND DEXMETHYLPHENIDATE: AN LC-PDA AND LC-MS/MS APPROACH

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Abstract:

Objective: A combination of serdexmethylphenidate and dexmethylphenidate are used to treat attention deficiency hyperactivity disorder. To study the degradation behavior of serdexmethylphenidate and dexmethylphenidate by subjecting combined dosage to forced degradation studies, with the help of a developed and validated stability indicating RP-HPLC method. Further, to identify plausible structures and fragmentation patterns of all the degradation products by LC-MS/MS studies. **Method**: Forced degradation studies are conducted by exposing combined dosage form (Azstrays) as per international council of harmonization (ICH) guideline Q1A (R2). Using LC-MS/MS, MS spectra's are obtained. Based on the m/z values, and molecular formula, probable structures of degradation products were elucidated. **Results**: Total 7 degradation products were detected. Out of which, 4 degradation products were formed from serdexmethylphenidate. Remaining 3 degradation products were formed from dexmethylphenidate. Possible structures and fragmentation pattern of all the degradation products was proposed with the help of LC-MS/MS studies. **Conclusion**: As possible structures and fragmentation patterns were identified by LC-MS/MS studies, this method may be helps in the development of quality dosage form, maintaining proper storage conditions and also in impurity profiling studies.

PHCH258
RATIONAL DESIGN AND DEVELOPMENT OF NOVEL TETRAHYDROCARBAZOLE DERIVATIVES AS ANTITUBERCULAR AGENTS

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Abstract:

Objectives: Thioridazine has demonstrated promise as a treatment for tuberculosis, but its neuroleptic effects make it unsuitable for repurposing as an antitubercular medication. This study aims to create thioridazine-based drug candidates with reduced ability to cross the BBB while maintaining antitubercular efficacy. **Methods:** Thioridazine was modified to create a series of molecules with tetrahydrocarbazole as the core structure. They were synthesized and examined for their effectiveness against tuberculosis and bacteria through Alamar-Blue Assay and disc diffusion methods, respectively. The study also evaluated how well the substances could cross the BBB and their potential toxicity to VERO cells through PAMPA and MTT assays, respectively. **Results:** Compounds (10e, 11e, and 13e) with nitro and carboxylic groups in the meta/para positions showed the strongest antitubercular efficacy at an MIC of 3.13µg/mL. In contrast, compounds with these groups in the ortho position had lower antitubercular efficacy at an MIC of 6.25µg/mL. Compounds 9e-11e and 17e-22e showed a MIC of 3.91µg/ml against *S. aureus* but had different impacts on *E. coli*. Lead compounds 9e-13e, 21e, and 22e had effective permeability values between 2.1 $x10^{-6}$ and 2.6 $x10^{-6}$ cm/s, which was lower than thioridazine's value of 4.5 $x10^{-6}$ cm/s. Compounds 10e, 11e, and 13e have shown a strong ability to target

tuberculosis while sparing healthy cells, with a selectivity index exceeding 44. **Conclusions:** This approach successfully produced molecules that are better at combating tuberculosis while minimizing their ability to enter the brain. This finding suggests a promising direction for the creation of novel drugs to treat tuberculosis.

PHCH259

PHARMACOPHORE GENERATION, ATOM-BASED 3D QSAR, VIRTUAL SCREENING, AND MOLECULAR DOCKING STUDIES FOR IDENTIFICATION OF MYCOBACTERIAL ATP SYNTHASE INHIBITOR WITH POTENTIAL ANTI-TUBERCULAR ACTIVITY

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Abstract:

Objective: The objective of this study is *in silico* design of novel mycobacterial ATP synthase inhibitors for the treatment of tuberculosis**. Materials and Method:** A training set of 32 molecules with diverse scaffolds (diaryl quinoline and imidazole-pyridine ether) was used to create a pharmacophore hypothesis using the Maestro phase module. Predictive atom-based 3D-QSAR was generated based on the best pharmacophore hypothesis and validated. Chemical libraries (Asinex, ChemDiv, Enamine) were screened against the validated pharmacophore model. Virtual hits were further subjected to molecular docking studies using GLIDE to evaluate their binding interactions. Promising hits were refined by prediction of ADMET properties. **Result and Discussion:** Based on the validation criteria, 5-point pharmacophore model (AHRRR_1) was finalized and the obtained atom-based 3D QSAR model with 8 components of PLS showed excellent correlation coefficient value (r^2 =0.998), standard deviation (SD=0.0559), cross validation coefficient (Q^2 = 0.1828), F value (32471.2) and p value of 6.2 e^{-042}. The contour maps of the most and least active compounds highlighted critical features for inhibitory activity: a bicyclic aromatic ring with a hydrophobic group, a linker chain with an acceptor group, and an electron-withdrawing group para to another aromatic ring. Virtual screening gave total of 21,624 hits. Further selection criteria based on match ligand and fitness score narrowed down the candidates to 27 hits which were subjected to docking. A top-ranked virtual hit showed strong hydrophobic interactions and formed salt bridge with key residues of mycobacterial ATP synthase. Based on the docking score, top 2 lead molecules were studied for ADMET property prediction. **Conclusion:** The study gives promising starting points for designing anti-tubercular agents, leveraging insights from the 3DQSAR model and virtual screening. This approach promises to advance the development of novel therapies targeting mycobacterial ATP synthase.

PHCH260

IMPACT OF MOBILE PHONE RADIATION ON SOLID DOSAGE FORM

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Abstract:

Objectives: The objective of studying the effect of mobile radiation on solid dosage forms involves understanding how exposure to electromagnetic radiation emitted by mobile devices might impact the stability, efficacy, and safety of pharmaceutical tablets, capsules, or other solid medications. The specific objectives may include Stability, Degradation and release. **Methods:** Paracetamol tablet was exposed

for 1 hr to different modes of radiations (i.e. Vibration mode, Flight mode and Headset mode). Then each tablet was crushed and weighed accurately of about 10 mg of Paracetamol drug and transferred to 100 ml volumetric flask; 20ml of Methanol was added and then sonicated for 15 Min. The volume was make up with the distilled water up to the mark. Dilutions were carried out at different concentrations and take the absorbance at 243nmand compare these reading with reference standard. **Results:** Beer-Lambert's law was obeyed in the concentration of 10 µg/ml (Graph.1). Dissolution studies showed more release effect on Vibration ON mode as compared to other parameters (Graph.2). Formulation of parameter V-ON, V-OFF, F and H releases 93.26 %, 59.92 %, 54.80 % and 70 % respectively, at end of 20 minutes. Tablet Formulation releases 76.15 %, at end of 20 minutes. By comparing tablet formulation and all the formulation of parameters, the drug release was completely achieved in a shorter duration of time. In all formulations the drug release was near to 100% within 20 minutes. V-OFF, F and H showed release variation probably due to slow breakdown of particles.The results of Hardness and Friability effect also showed more on Vibration ON mode as compared to other parameters (Graph.3 and 4). The lower standard deviation values indicated that the hardness of all the formulations were almost uniform and posses good mechanical strength with sufficient hardness. Friability was found within the approved range (< 1 %) in all the formulation parameters. Results revealed that the tablets posses good mechanical strength. **Conclusions:** It has been proved that the stability of the drug in all the parameters can be evaluated, developed and validated for estimation of effect of mobile radiation on Paracetamol.

PHCH261
QUANTITATIVE ANALYSIS OF PINAVERIUM BROMIDE BY MID-IR SPECTROSCOPY USING TRANSMISSION AND REFLECTANCE MODES

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Abstract:

Objective: This study aimed to develop environmentally friendly, rapid, and precise mid-infrared spectroscopic methods for the quantitative analysis of Pinaverium bromide in bulk and commercial formulations using transmittance and reflectance modes, comparing their accuracy. The methods were validated according to International Council for Harmonisation (ICH) guidelines. **Method:** A FTIR Spectrophotometer (Shimadzu/FTIR-8400S) was used. In Method A (transmittance mode), Pinaverium bromide samples at concentrations of 0.6%, 0.8%, 1.0%, 1.2%, and 1.4% w/w were prepared by mixing the drug with potassium bromide (KBr) to a total weight of 100 mg. Pellets weighing 65 mg were analyzed in transmittance mode, with peak area plotted against concentration. In Method B (reflectance mode), similar samples were analyzed, using 70 mg in a macro cup and transforming spectra with the Kubelka-Munk function for calibration curve generation. **Results:** Both methods were successfully developed and validated for quantifying Pinaverium bromide in solid bulk and dosage forms. High recovery values indicated good accuracy, with excellent repeatability and precision (RSD < 2.0%). Assay values closely matched the label claim. **Conclusion:** The developed FT-IR spectroscopic methods provide a simple, reliable, and eco-friendly alternative for routine quantitative analysis of Pinaverium bromide, demonstrating accuracy, precision, and robustness compared to traditional chromatographic methods. These methods, validated per ICH guidelines, are selective, reproducible, and suitable for quantitative analysis, with minimal interference and no need for sample pre-treatment or solvents.

PHCH262
FORMULATION AND EVALUATION OF CELECOXIB LOADED MICROSPONGES CREAM FOR ENHANCED ANTI-INFLAMMATORY ACTIVITY

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Abstract:

Objectives: Embedding NSAIDs in microsponges allows for controlled, sustained release when applied as a cream, enhancing efficacy and minimizing systemic exposure. This innovative cream is designed to target arthritis symptoms, providing localized relief with fewer side effects compared to oral NSAID use. **Methods:** A model drug, celecoxib, was selected for the study. The drug-loaded microsponges were fabricated using the Quasi-emulsion solvent diffusion method. Different formulations were prepared using varying concentrations of polymer and drug. Finally, prepared microsponge formulations were loaded into the cream. **Results:** The physical and chemical properties of the microsponges were characterized using differential scanning calorimetry (DSC) where thermogram of pure drug, sharp endotherm was obtained at near about 162.77°C This corresponded to the drug's melting point. In the microsponges batch endotherm observed at near about 222.04°C with the loss of sharp appearance, The X-ray powder diffraction (XRPD) shows decrease in peak intensity therefore the microsponge formulation shows decrease the crystallinity. The cream was evaluated for various parameters including spreadability (range from 12.17 to 20.97 Gm.cm/Sec.) , Viscosity (10,142 to 13,675 Cps), Drug content (F6- 96.56). *In vitro* drug release study shows higher percentage of drug release during the first few minutes then, after reaching saturation, drug release from microsponges happened. *In vitro* anti-inflammatory activity, where percent inhibition was found to be 55.81 at a concentration of 1mg/ml. The results indicated that the drug was uniformly distributed within the polymer matrix. The *in vitro* release studies demonstrated that the cream could sustain the drug release for up to 12 hours and *in vitro* Anti-inflammatory activity proved that Celecoxib microsponge-loaded cream demonstrated promising activity. **Conclusions:** The creation of a polymeric microsponge delivery system aimed to achieve sustained release of celecoxib over an extended period, thereby reducing application frequency, minimizing hypersensitivity reactions, and enhancing bioavailability and safety compared to conventional formulations.

PHCH263
CHIRAL RESOLUTION AND PHARMACOKINETIC PROFILING OF A 1,4-DIHYDROPYRIMIDINE ENANTIOMER IN RATS

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Abstract:

Objectives: Chirality in 1,4-Dihydropyrimidines influences their pharmacological properties and synthetic strategies. Enantiomers of chiral drugs often exhibit different pharmacokinetic Profiles. Therefore, separating and studying individual enantiomers is crucial to optimize drug efficacy and safety. Enantiomeric separation of ±4-(4-chlorophenyl)-6-methyl-2-oxo-N-(O-toyl)-1,2,3,4-tetrahydropyrimidine-5-carboxamide (DP-1), which is a 1,4-Dihydropyrimidine derivative is achieved on CHIRALCEL® OD-H column (Particle size: 5 µm, inner diameter: 4.6mm, Length:150 mm), following by investigating the kinetic properties of (R) and (S) enantiomers. **Methods:** The separation was achieved with a mobile phase composed of 70% (v/v) Isopropyl alcohol and 30% (v/v) n-hexane. For the bioanalytical

study, Acetonitrile was used to precipitate the rat plasma samples and validated the method according to USFDA guidelines. **Results:** The validated bioanalytical method was then successfully applied to determine the pharmacokinetic parameters of the drug in biological samples. Molecular modeling techniques, specifically docking simulations, were employed to predict the elution order of DP-1 enantiomers. **Conclusion:** The docking results revealed moderate binding interactions between the enantiomers and the chiral stationary phase (CSP), which aligns with the theoretical expectation that stronger interactions lead to longer retention times on the column.

PHCH264
BIO-ANALYTICAL METHOD DEVELOPMENT FOR THE ESTIMATION OF CINNARIZINE AND DIMENHYDRINATE FROM HUMAN PLASMA BY CHROMATOGRAPHIC TECHNIQUE

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Abstract:

Objectives: The aim of this research was to develop Bio-analytical method for estimation of cinnarizine and dimenhydrinate from human plasma by chromatographic technique. **Methods:** Bio analytical method guidelines EMEA, US FDA and ICH M 10 are referred as they provides recommendations for the validation of bio analytical assays for chemical and biological drug quantification and their application in the analysis of study samples.Bio analytical method was developed for estimation of cinnarizine CRE and dimenhydrinate DMH, with RP-HPLC, using RP-C_{18} column equipped with UV detector. The mobile phase [methanol: acetate buffer pH 4.0 (pH adjusted with acetic acid)] was pumped at a flow rate of 0.8 ml/min in the ratio of 76:24 % v/v and the eluents were monitored at wavelength 252 and 276 nm. The method was studied for quantitative estimation of drugs from human plasma. **Results and Discussion:** Both drugs were shown linear response in conc ranges CRE (1000-5000 ng/ml) and DMH (1000-7000 ng/ml) in plasma. Accuracy and precision study shown that % CV was varied in the range (2.4227-7.0438) for CRE and (3.541-6.942) for DMH at all conc. levels and; the data of % nominal conc. were varied between (102.52-106.03) for CRE and (94.15-92.17) for DMH at all conc. levels. **Conclusion:** The method is simple as precipitation technique was used; and the technique can be applied for relative bioavailability and bioequivalence study of both drugs or/and dosage form. The Guideline elaborated that the results of pivotal nonclinical toxicokinetic (TK)/pharmacokinetic (PK) studies and of clinical trials, including comparative bioavailability / bioequivalence (BA/BE) studies, are used to make regulatory decisions regarding the safety and efficacy of drug products.

PHCH265
DEVELOPMENT OF METHOD OF ANALYSIS AND ESTIMATION OF ACTIVES USED FOR DEADDICTION IN COMPLEX MATRICES

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Abstract:

Objectives: The aim of our study was to develop and validate a rapid and simple HPLC method for quantification of nicotine in a large number of NRT based Nicotine Polacrilex formulation. **Methods:** A model drug, Nicotine Polacrilex was selected for the study. High-performance liquid chromatography (HPLC) an analytical method was used to quantitatively measure the nicotine content in the

formulations, ensuring accurate dosing and effectiveness. The study was validated in accordance with the International Conference on Harmonization (ICH) guideline and best practice Linearity, precision, accuracy, limit of detection and limit of quantitation and Robustness were evaluated. Applicability of the method was evaluated in analysis of drug-excipient compatibility Formulation using assay study. **Results:** The physical and chemical properties of the extrudates were characterized to analyze nicotine polacrilex in the formulation using UV spectroscopy, differential scanning calorimetry (DSC), High-performance liquid chromatography, FT-IR spectroscopy. The tablets were evaluated for various parameters including Angle of repose, Bulk density, Tapped density, Compressibility index, Hausner's ratio, Drug content. The results indicated that the nicotine replacement therapy (NRT) formulation mimicking a tobacco-containing smokeless product was successfully formulated and evaluated. The assay method was developed for powder formulation and drug Content was found to be 98.04%. **Conclusions:** A New, precise, and accurate HPLC method was successfully developed and validated for Nicotine Polacrilex API. Additionally, a nicotine replacement therapy (NRT) formulation mimicking a tobacco-containing smokeless product was successfully formulated and evaluated. The developed HPLC method was utilized for assay analysis during the release study.

PHCH266
REVOLUTIONIZING TUBERCULOSIS TREATMENT: RATIONALLY DESIGNED NOVEL MOLECULES FOR TARGETED THERAPY

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Abstract:

Objectives: Tuberculosis (TB) remains a significant global health challenge, affecting approximately a quarter of the world's population. The situation is particularly concerning with the rise of multidrug-resistant (MDR) and extensively drug-resistant (XDR) tuberculosis strains. The problem is exacerbated when TB is coupled with HIV, and recent reports of totally drug-resistant tuberculosis in India further highlight the urgency for effective treatments. To address these critical issues, the primary objective is to develop new therapeutic molecules that enhance efficacy and minimize side effects, thereby reducing the emergence of resistant TB strains. **Methods:** To achieve these objectives, a rational design approach was employed to create new molecules specifically aimed at treating tuberculosis. This approach focused on minimizing toxicity while maximizing therapeutic activity. The development process took into account recent literature which identified potential concerns related to the inhibition of human monoamine oxidase enzymes a factor that could lead to severe side effects. By addressing these concerns, the methods aimed to produce compounds with improved safety profiles and enhanced effectiveness against TB strains. **Results:** The initial results from the newly designed molecules have been encouraging. These compounds have shown promise in their ability to target tuberculosis strains more effectively than current treatments. Additionally, the new molecules are designed to have reduced side effects, which is a significant improvement over existing drugs that often induce toxicity and lead to poor patient adherence. These preliminary findings suggest that the new molecules could offer a more viable treatment option for managing and potentially overcoming resistant strains of tuberculosis. **Conclusions:** The promising results from the development of these new therapeutic molecules represent a significant advancement in tuberculosis treatment strategies. By focusing on reducing toxicity and improving therapeutic activity, these new compounds hold the potential to enhance treatment outcomes and address the challenges posed by resistant TB strains. The advancements could play a crucial role in curbing the global TB epidemic and improving patient health, providing a more effective solution in the fight against tuberculosis.

PHCH267
METHOD DEVELOPMENT AND VALIDATION OF FAVIPIRAVIR BY RP-HPLC

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Abstract:

Objectives: The Aim of this study was to estimate method development and validation of favipiravir by rp-hplc. **Methods:** Analysis was carried out by Cosmosil C18 (250 mm × 4.6ID, Particle size: 5 micron). The mobile phase consisted of Methanol: Water (75:25, v/v). pH of Mobile Phase: 3 (pH is adjusted with o-phosphoric acid) The mobile phase was filtered and degassed through a 0.45 mm membrane filter before use and then pumped at a flow rate of 0.8 mL/min. The ultraviolet (UV) detection and column temperature were 227 nm, and 30°C. **Results:** The recovery (%) was in the range of 98.94–99.12%, while the mean RSD (%) is 0.23%. The developed method was found to be sensitive (LOD and LOQ was found to be 0.2236 and 0.6776 resp.) **Conclusion:** It was concluded that in the present developed RP- HPLC method is simple, rapid, and accurate, hence can be used for routine quality control analysis in the pharmaceutical industry.

PHCH268
NEW ANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR ESTIMATION OF MOLNUPIRIVIR IN BULK AND TABLET DOSAGE FORM BY RP-HPLC METHOD

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Abstract:

Objectives: The Aim of this study was to estimate new analytical method development and validation for estimation of molnupirivir in bulk and tablet dosage form by rp-hplc method. Methods: The separation was made using Symmetry ODS C18 (4.6×150mm, 5µm) column. The mobile phase used contained Methanol. Phosphate Buffer pH-4.2 adjusted with Orthophosphoric acid solution in the ratio of 35:65% v/v in an isocratic mode at a wavelength of 236nm. **Results:** The recovery percentage was observed in the range of 98-102%. The relative standard deviation for the precision study was found <2%. **Conclusion:** It was concluded that in the present developed RP- HPLC method is simple, rapid, and accurate, hence can be used for routine quality control analysis in the pharmaceutical industry.

PHCH269
COMPARATIVE STUDY BY *IN SILICO* APPROACHES OF ANTI-ALZHEIMER'S AGENTS WITH NATURAL COMPOUNDS BY MOLECULAR SCREENING METHODS

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Abstract:

Objectives: Comparison study by *in silico* approaches for anti-alzheimer's agent with natural compounds by molecular screening methods. **Methods:** At first two compounds Trimethylsilyl 3-methyl-4-[(Trimethylsilyl)oxy]benzoate and Benzoic acid, 2-[(Trimethylsilyl)oxy]-methyl ester were consider taken as new lead compounds based on literature review. The physico-chemical properties and their toxicity were calculated using the ADME toxicity filter web server SWISS and the compounds

were screened based on their molecular properties, Lipinski rule filter, Ghose filter, lead likeness, synthetic accessibility, and toxicity. **Results:** Using PubChem database server the test compounds and their derivatives were designed using ChemAxon and then through web server, Swiss ADME the physic-chemical properties of all the compounds were studied and have been represented. The physic-chemical properties of all the compounds were studied. The six compounds were estimated through the Insilco model predicted at the Swiss ADME and to predict the primary target of bioactive molecules to narrow down the set-up potential targets by using a web tool Swiss Target Prediction. **Conclusions:** Minimize the time and costing Insilco studies can be carried out instead of traditional method and animal study. It is concluded from the analysis that the compound A and B toxicity was more. Further pharmacophore changes to the lead structure compound A and B were made so that molecule doesn't hinder metabolising enzyme. All the compounds A, A_1,A_2,B, B_1, B_2 has gastrointestinal absorption rate and quickly passes the blood brain barrier. Compound A and its derivatives & compound B and its derivatives all have the same bioavailability of 0.55. All the compounds meet the Lipinski rule.

PHCH270

DEVELOPMENT OF NEWER VALIDATED ANALYTICAL METHODS FOR ESTIMATION OF SOFOSBUVIR IN ITS BULK AND PHARMACEUTICAL DOSAGE FORMS

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Abstract:

Objectives: The aim of this study was to develop optimize and validate newer analytical method for selected antiviral drug using various parameters according to ICH guidelines. **Methods:** An API i.e Sofosbuvir, was selected for the study. Selection of wavelength was done using UV visible spectroscopy by using particular mobile phase. Further a suitable solvent was used to develop, validate and optimize new analytical method using High profile liquid chromatography. **Results:** The HPLC analysis revealed distinct chromatographic peaks corresponding to the target analytes, with retention times accurately matching those of the standards. Quantitative analysis demonstrated that the concentrations of the analytes in the samples were within the expected range, with calibration curves showing strong linearity ($R^2 > 0.99$). The reproducibility of the results was confirmed with relative standard deviations (RSD) below 2% for replicate injections. The resolution between peaks was satisfactory, ensuring clear separation and accurate quantification. **Conclusions:** It was revealed that the newly developed RP-HPLC technology for determining Sofosbuvir in bulk and pharmaceutical formulations was simple, specific, low-cost, precise, and accurate. It has been proven to be a reliable and practical method for identifying Sofosbuvir in both pure and commercial formulations. Using the ICH criterion, all validation parameters were found to be within acceptable ranges.

PHCH271

SYNTHESIS, CHARACTERIZATION OF SUBSTITUTED OXAZOLONE DERIVATIVES AS POTENTIAL ANTI OXIDANT ACTIVITY

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Abstract:

Objectives: Aim to synthesize new oxazolone analogs with various aromatic aldehydes as potential anti oxidant activity. **Methods:** In response to the challenge of antibiotic-resistant microorganisms,

oxazolone analogs are frequently used for bacterial, antiviral, and anti-inflammatory treatments. In this study, with reference of Erlenmeyer azlactone synthesis, we synthesized -oxazolone molecules with various aromaticaldehydes to create new oxazolone derivatives**. Results:** These derivatives were analyzed by using UV Visible spectrophotometer, FTIR-8400S, Fourier Transform (SHIMADZU) Infrared spectrophotometer. The high biological efficiency of newly obtained compounds was confirmed by *in vitro* antioxidant efficacy by using DPPH method, Hydrogen Peroxide method which further results are compared each other. The scavenging activity of the compounds was compared with the control and the significance factor "p" was less than 0.001 for all the compounds. **Conclusions:** However, few studies have shown oxazolone analogs possess good anti oxidant activity. The compound having dimethyl amino group 1d has a substituent showed the highest scavenging activity suggesting that electron donating groups may aid the scavenging activity. The compound with no substitution 1a has least scavenging activity. The other compounds 1b, 1c, 1e have intermediate scavenging activity. The results were better in the hydrogen peroxide method than the results of the DPPH method.

PHCH272

OPTIMIZED HPLC-UV METHOD FOR QUANTIFYING OXAPROZIN IN HUMAN PLASMA

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Abstract:

Objectives: The aim of the project to develop a optimized HPLC-UV Method for Quantifying Oxaprozin in Human Plasma. **Methods:** A Simple, rapid, selective and sensitive HPLC method was developed and validated for the determination of Oxaprozin from human plasma. The drug was extracted with ethyl tertiary butyl methyl ether. Oxaprozin was measured in plasma using a validated HPLC method with UV detector at 240nm.The chromatographic peaks were separated on 5µm Inertsil, C 18 column (4.6x250mmx5µm) using 40:60 v/v Phosphate buffer pH-3.0 and Acetonitrile as mobile phase at a flow rate of 1.0 ml/min. **Results:** The chromatograms showed good resolution and no interference from plasma. The retention time of Oxaprozin and Nevirapine (IS) were approximately 7.7±0.05 min and 3.4±0.03 min respectively. The mean recovery from human plasma was found to be above 50%. The method was linear over the concentration range of 0.78 to 100µg/ml with a coefficient of correlation (r^2) 0.999. Both intraday and interday accuracy and precision data showed good reproducibility. The calibration curve developed was y= 0.061x + 0.01 µg/ml with r 2 =0.999. The percent mean recovery for Oxaprozin in LQC, MQC and HQC was 63.06%, 66.92 % and 62.52% respectively. The method was accurate, precise and rugged with % RSD 15% and 20% when tested at MQC, HQC and LQC levels respectively. The stability was assessed at different levels. The results of the Freeze-thaw stability, Bench top stability, Inter injection stability studies showed that the compound under analysis is stable under test conditions. **Conclusion:** This method is feasible to assess the concentration of Oxaprozin in plasma and hence useful for pharmacokinetic studies to evaluate absorption, distribution, metabolism and excretion phenomena.

PHCH273

EXPLORING ANDROGRAPHIS: HARNESSING NANOSTRUCTURE FOR ANTI-HELMINTHIC POTENTIAL VIA LIPID CARRIER FORMULATION

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Abstract:

Objectives: The Aim of the study was to conduct the Antihelmenthic activity of Andrographis Paniculata Niosomes **Method:** The leaves of Andrographis paniculata were gathered , air dry for

4 days at room temperature and finely ground into powder and sieved through a 120-sieve to eliminate any remaining particles. , take one gram powder was weighed and transferred into a round-bottom flask. measure out 50 ml of ethyl acetate, which was then added to the round-bottom flask. The flask was then affixed to the rotary evaporator, with the temperature set to 40degrees Celsius, completion of the evaporation process, the mixture was transferred into a beaker. Product collection commenced by filtering the mixture using Whitman filter paper, followed by drying the filter paper in a hot air oven set at 40degrees Celsius. The resulting product was carefully removed from the filter paper, weighed, and packaged accordingly. **Results:** The Particle size of Andrographis paniculata 231.8nm, Andrographis paniculata find at FTIR: rang of (3255.94 cm-1), Zeta potential: 27.9 0.7mV, UV absorbance is 0.046 at 230nm for 10 microgram/ml. **Conclusion:** In conclusion, our research provides compelling evidence supporting the hypothesis that Andrographis paniculata possesses significant anti helminthic activity. The multi faceted pharmacological potential of this natural compound opens avenues for future research and the development of innovative treatments for helminthic infections.

PHCH274
POTENTIOMETRIC ESTIMATION OF DIFFERENT BRANDS OF PROCHLORPERAZINE USING POTASSIUM DICHROMATE AS OXIDANTS

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Abstract:

Objectives: A straightforward, efficient, exact, accurate, universal ,simple and precise titrimetric method employing potassium dichromate as a titrant is explained for identifying possible variations in phenothiazine medications across various tablet dosage forms. The approaches involve the oxidation of phenothiazines in an acidic medium .The glass reference electrode and the silver indicator electrode were employed to determine the end points. Every titration was carried out using aqua-medium. A quick Oxidation - Reduction reaction happens in between the titrations, oxidizing the phenothiazine ring and producing the free radical phenothiazonium (P+). The method was used for the determinationof prochlorperazine of different brand formulations like Emikind-MD (Mankind Pharma), Vomirap(Leeford healthcare LTD), Emitil-MD (Intas pharmaceuticals), Systel (Marsha pharma Pvt LTD). Research has been done on the consequences of the substrates without removal of excipients with phenothiazine medications. **Methods:** In potentiometric titration method the 5ml of drug solution having different concentration like 200µg, 400µg, 600g and 800µg was transferred into a 100.0ml beaker . Into the above solution 8ml of 10mol/l H_2SO_4 was added.Then the mixture was stirred magnetically for 5 minutes into which the titrant (0.003 mol/l $K_2Cr_2O_7$) was added to beaker from burette as 1ml each time. Since volume of $K_2Cr_2O_7$ consumed, the potential difference was observed in each ml of addition of $K_2Cr_2O_7$. The completion of reaction was identified, when the light pink color solution changes to yellow color solution via pink color. **Results:** The result shows Total potential deviation and closeness to equivalence point. **Conclusion:** In conclusion, the titration results show that the suggested procedures don't require any particular working conditions and are easier to use than many of the current methods.

PHCH275

SIMULTANEOUS ESTIMATION OF AMLODIPINE AND AZILSARTAN IN HUMAN PLASMA BY REVERSE PHASE HPLC FOR PHARMOKINETIC STUDIES

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Abstract:

Objectives: The aim of this study was to developed and validated simple and rapid reverse phase high-performance liquid chromatography (RP-HPLC) method by using solid phase extraction technique for the determination of Azilsartan & Amlodipine in human plasma. **Methods:** Chromatographic separation of the analyte was achieved within 7.61&18.49 Amlodipine& Azilsartan respectively, HPLC column C 18, 150 X 4.6, 5µ, Flow Rate was1.2 mL/ min, Column oven Temperature 25°C ,Injection Volume 50 µL& Mobile Phase Buffer was 50 mM Potassium Dihydrogen ortho Phosphate buffer pH 7.00 and the detection was carried out at 240 nm. **Results:** A mobile phase comprising of Acetonitrile: Buffer (60:40v/v) is successful in resolving Amlodipine and Azilsartan. Final concentrations for Amlodipine & Azilsaratan 10-50 ng/ml & 25-125ng/ml correspondingly. By USFDA procedure Freeze – Thaw stability was performed. **Conclusions:** It can be concluded that Amlodipine and Azilsartan is stable in plasma after three freeze thaw cycles. This new RP-HPLC method was successfully validated and may be applied to conduct bioavailability and bioequivalence studies.

PHCH276

ANALYTICAL METHOD DEVELOPMENT AND VALIDATION OF PREGABALIN AND DULOXETINE IN BULK DRUG AND PHARMACEUTICAL DOSAGE FORM BY RP-HPLC METHOD

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Abstract:

A Novel, simple, sensitive, and economic reverse-phase high-performance liquid chromatography (RP-HPLC) method has been developed and validated for Pregabalin and Doluxetine in bulk drug and pharmaceutical dosage form. The chromatographic separation was achieved on the Agilent C18 column (100mm X 4.6mm,2.5µm particle size) by using mobile phase as MEOH : Water (0.1% with OPA) (pH-4.2): MEOH : Water 45:55:v/v) at flow rate 1mL/min. The detection was done at wavelength 250nm. The retention time of Pregabalin and Doluxetine were found to be 3.17 min and 5.73 min respectively. The develop method was validated according to ICH Q2(R2) guidelines. The method was found to be linear in the range of 7.5-37.5µg/mL for Pregabalin and 2-10 µg/mL for Doluxetine and their correlation coefficients (r2) were 0.999. % recoveries were found in the 98-102% range for Pregabalin and Doluxetine respectively. The %RSD of precision was found less than 2%. The Detection limit and Quantitation limit were found to be 0.16µg/mL and 0.49µg/mL for Pregabalin and 0.18µg/mL & 0.18µg/mL for Doluxetine respectively. The developed method is robust, reproducible, and can be used for routine quality control in bulk and pharmaceutical dosage forms in the pharmaceutical industry.

PHCH277

STRUCTURE BASED DESIGN, SYNTHESIS AND PHARMACOLOGICAL SCREENING OF COUMARIN-CHALCONE ANALOGUES AS TYROSINE KINASE INHIBITORS FOR NON-SMALL LUNG CANCER

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Abstract:

Objectives: The aim of this research project was to perform molecular docking and *in silico* ADME studies on series of coumarin-chalcone analogues followed by synthesis and characterization of computationally favorable ones along with their screening on NCI-H23 cell line as potential TKI (tyrosine kinase inhibitor) for non-small lung cancer (NSCLC). **Methods:** Ligands designed using Marwin Sketch 22.16**.** Docked by Autodock4 version (v4.2.6) utilizing PDB ID: 4I22 co-crystallized with gefitinib. For i*n silico* ADME (Absorption, distribution, metabolism and excretion) used QikProp v5.5 (Schrödinger LLC, New York, USA). **Results:** Total 42 molecules designed and subjected to molecular docking. Docking protocol validated for gefitinib with RMSD of 0.499 Å which is marketed TKI for first line treatment of NSCLC. 14 of 42 analogues exhibited promising interactions within the active site analogous to Gefitinib. They interacted with crucial residues such as Met793, Lys745. Most of the analogues in the series exhibited favourable drug-like properties & all molecules adhered to Lipinski's rule of five. All 14 computationally favourable analogues synthesized and characterized. CC_33 exhibited highest potency for *in vitro* MTT assay on NCI-H23 cell line. **Conclusions:** Molecular docking results are in consensus with the cell line studies, thus, identifying promising analogues as potential leads to target specifically NSCLC.

PHCH278

COMPUTATIONAL APPROACH FOR IDENTIFICATION OF CAMPTOTHECIN AND ITS ANALOGUES AS PUTATIVE BRUTON TYROSINE KINASE (BTK) INHIBITORS FOR CANCER THERAPY

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Abstract:

Objective: Camptothecin (CPT) and its analogues have been clinically for antitumor activity, having mechanism to be the inhibition of topoisomerase I. It is reported that Bruton's tyrosine kinase (BTK) plays a crucial role in the regulation of several forms of cellular functions and is essential for development and function of B-cell. With this, the inhibitory activity of CPT and its analogues (Irinotecan, Diflomotecan, and Topotecan) against BTK was thus proposed. **Method**: To assess the inhibitory activity of CPT and its analogues against BTK, NRX-0492, an orally active and mutant BTK, was chosen as a reference drug. We used molecular dynamics (MD) simulations to describe ligand-protein interactions and examine the conformational stability of the protein complexes at the molecular level. The results of molecular docking calculations and thermodynamic analysis always showed that CPT and its analogues could be putative binders of BTK. **Result**: The compounds that were looked at were, bind strongly to the important amino acid residues in the active site through hydrogen bonds, π-π, vander Waals, π-sulphur, and carbon- hydrogen bonds. Irinotecan exhibited the highest binding energy (-42.4 kcal/mol), and reference

drug NRX-0492 (-48.8 kcal/mol) compared to other analogues. The result of Irinotecan's and NRX-0492's relatively flexible structural architecture, which enables optimisation of the ligand geometric complementarity for the binding pocket. **Conclusion**: The results presented here suggest that Irinotecan can be successfully used as a BTK blocker for the development of an anticancer agent and would offer a foundation for researcher and open up new possibilities for structure-activity relationship (SAR) studies against novel biological targets for cancer therapy.

PHCH279

SYNTHESIS AND ANTIMICROBIAL EVALUATION OF BENZOTHIAZOLE DERIVATIVES

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Abstract

Objectives: The aim of this study consists of synthesis, characterization and antibacterial activity of some novel substituted benzothiazoles moiety. The benzothiazoles moiety is crucial functionalities because of their wide variety of biological activity and has wide range of therapeutic properties. Therefore, some novel compounds were synthesized which contains the benzothiazoles in the same molecule. **Methodology:** The starting compound 2-amino-6-substituted benzothiazoles (1 a-c) were synthesised from *p*-substituted aniline with potassium thiocyanate in the presence of bromine in glacial acetic acid medium. Further 2-amino-6-substituted benzothiazole (1 a-c) were converted into 2-chloro acetamido-6-substituted benzothiazoles (2a-c) by treating with chloro acetylchloride in dry benzene. The final compounds ($3a_1$ and $3b_1$) were obtained by reacting 2a, 2b with piperidin, whereas the compounds ($3a_2$, $3b_2$, $3c_2$) and ($3a_3$, $3b_3$, $3c_3$) were obtained by reacting 2a, 2b and 2c with piperazine and 1,4-diazepine respectively. **Results:** All the synthesized compounds were screened for antibacterial activity studies at a concentration of 100 µg/ml using DMF as a control against *B.pumillis, B.subtilis, Escherichia coli* and *P.aeruginosa* by disc diffusion technique on nutrient agar media, Ciprofloxacin 100 µg/ml used as standard against Gram positive and Gram negative bacteria. **Conclusions:** From the data of the antibacterial and antifungal activity it is clearly concluded that the synthesized benzothiazole derivatives were found to be moderate to weak antibacterial agents. Here we have synthesized some novel benzothiazole analogues combining N-heterocycles with benzothiazole with view to get good antibacterial agents with less toxic and side effects but the synthesized compounds exhibit moderate antibacterial activity.

PHCH280

IN-SILICO IDENTIFICATION, SYNTHESIS, NEUROTOXICITY SCREENING OF 5,5-DISUBSTITUTED HYDANTOIN DERIVATIVE ON 5FEB RECEPTOR USING FE_3O_4 HETEROGENEOUS NANOPARTICLE

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Abstract:

Objectives: The aim of this study was to design and synthesize 5,5 disubstituted hydantoin derivatives through green chemistry approaches using Fe3O4 nanoparticles. **Methods:** 5,5- disubstituted hydantoin derivatives were selected for the study. Different derivatives were synthesized using green and conventional methods. We found that the compounds gave high yield in the green method and even the

reaction completion time was 10-15 minutes which was far better than conventional method. **Results:** Identification of the derivatives of 5,5-disubstituted hydantoin was done by molecular studies through various software, finding their binding affinity and dock score, and comparison with the standard, the best dock score derivatives were further selected for synthesis. The synthesized 5,5-disubstituted hydantoin derivatives were characterized using IR, 1H NMR and MASS spectral data. One of the best dock score compound was selected and synthesized by green catalyst showed better anticonvulsant activity with no neurotoxic at a dose of 300mg/kg. **Conclusions:** The synthesis of 5,5-disubstituted hydantoin derivatives was successfully carried out using Fe3O4 as a heterogeneous catalyst. This approach not only proved to be efficient and environment friendly but also yielded high-purity products. The use of Fe3O4 as a catalyst in green synthesis demonstrated significant advantages in terms of reaction time was found to be 15 minutes and in conventional synthesis, it takes 2-3 hours in synthesis and the yield was higher in green in comparison to conventional, and it's reusability, making it a valuable component in the synthesis of hydantoin derivatives.

PHCH281
MOLECULAR DOCKING AND VIRTUAL ADMET EVALUATIONS OF LABELED GLYCANS AS RADIONUCLIDE DIAGNOSTICS

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Abstract:

Carbohydrates, in particular glucose and its derivatives (glycans), have the potential to be extremely effective and potent transporters of diagnostic and therapeutic substances to target tissues. The most advanced radioactive imaging method for oncological diagnostics is radio-labelled glycan-based positron emission tomography/computed tomography (PET/CT)/single-photon emission computed tomography (SPECT). Comprehending the characteristics of tagged glycan interactions with cancer cell components and the process by which labeled glycans wedge into binding sites of neoplastic cell components is crucial for understanding the recognition mechanism. *In silico* approaches, particularly molecular docking, are appealing and straightforward substitutes to intricate experimental procedures (X-ray crystallography and NMR) in the investigation of glycan complexes labeled with cancer cell components. Here' glycans such as L-fucose (Fuc), N-acetyl-D-glucosamine (GlcNAc), and 2-fluoro-2-deoxy-D-glucose (FDG) have been docked against human hexokinase I (pdb ID:1QHA) and human glucose transporter GLUT1 (pdb ID: 5EQH). N-acetyl-D-glucosamine (GlcNAc) and both proteins (1QHA, 5EQH) individually demonstrated good scores in docking tests; however, the primary result appears to indicate excellent interactions of glycan with 1QHA. It became apparent that virtual ADMET results of the projected labelled glycans were ideal for usage as human diagnostic agents.

PHCH283
EVALUATION OF CYTOTOXICITY ON DESIGNED PIPERIDINE HYDROXAMATES TARGETING HISTONE DEACETYLASE

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Abstract

Objectives: The aim of the study is to design, synthesis and characterization of piperidine hydroxamates for the evaluation of cytotoxicity by targeting histone deacetylase. **Methods:** The structural alterations were decisively engineered to enhance the affinity and selectivity of compounds on novel piperidine hydroxamate derivatives towards HDAC-8 through a computational approach for in-

depth analysis. These novel compounds were systematically synthesized and characterized using various FT-IR, HRMS, ^{1}HNMR, and ^{13}CNMR spectroscopic techniques. A further series of titled compounds (3a–3m) were computationally predicted for molecular docking, molecular dynamics, pharmacokinetics, and physicochemical parameters. These synthesized compounds were evaluated for *in-vitro* anticancer activity by MTT assay with the (HeLa) human cervical cancer cell line to understand their potency. **Results:** The results revealed significant binding interactions over the key residues on the active site of HDAC-8, an affordable drug-likeness character, and physicochemical properties that further support experimental validation. Therefore, synthesized compounds (3a–3m) were screened for *in-vitro* cytotoxicity against the human cervical cancer cell line (HeLa) by the MTT assay method. Compound **3l** (N-hydroxy-1-[(2E)-2-(2-hydroxybenzylidene) hydrazinyl] carbonothionyl] piperidine-4-carboxamide proved to be the most potent among the thirteen, achieving an IC_{50} value of 58.89 nM. **Conclusion:** This study demonstrates the successful design, synthesis, and evaluation of novel piperidine hydroxamate derivatives as potent HDAC-8 inhibitors with significant anticancer activity. These findings provide a robust foundation for further development of these frameworks, potentially leading to highly effective targeted anticancer agents.

PHCH284
DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR THE QUANTITATIVE ANALYSIS OF GEPIRONE IN BULK AND PHARMACEUTICAL DOSAGE FORM USING RESPONSE SURFACE METHODOLOGY

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Abstract:

Objectives: The aim of this study was to develop and validate a novel and specific RP-HPLC method for the quantitative analysis of Gepirone using response surface methodology. **Methods:** Response Surface Methodology (RSM) is a powerful statistical technique used to explore and model the relationship between several independent variables and one or more measured responses. It does this by fitting a polynomial equation to experimental data collected within a specific domain of the independent variables. The RSM helps in the creation of surface plot that represents how the responses change across the experimental region defined by the independent variables. This surface plot helps visualize the complex interactions and optimal settings of the variables that lead to desirable outcomes of the responses. In this present study, the empirical relationship between measured responses like retention time and theoretical plates and independent variables like flow rate, % organic content and column are drawn in the form of a polynomial equation and an optimized method was developed from that using Central Composite Design (CCD). **Results:** The analytes chromatogram was run through Waters Symmetry Shield C18 (150mm x 4.6mm, 3.5µm). The optimized data from Design Expert software consists of Acetonitrile: 0.1% Formic acid (43.7:56.3 v/v) as mobile phase pumped through Symmetry Shield column with 0.92 ml/min flow rate gave highest desirable function of 1. The retention times of the drug were found to be 3.726 min. The optimized method was validated as per instructions given in ICH Q2 (R1) guidelines. **Conclusions:** Based on the results of the analysis of variance, the selected model for the responses like retention time and theoretical plates were found to be significant with p=0.05. 2D contour plots were inured to visualize the effect of factors and their interactions on the response. Validation of design was done using actual plots vs. predicted values for responses. All the validation parameter results were within limit.

PHCH285

QBD-DRIVEN DEVELOPMENT AND VALIDATION OF A HPLC METHOD FOR SIMULTANEOUS ESTIMATION OF FURAZOLIDONE AND METRONIDAZOLE IN PHARMACEUTICAL DOSAGE FORM

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Abstract:

Objectives: The objective of this study was to develop and validate simple, robust and accurate reverse-phase high-performance liquid chromatography (RP-HPLC) method for simultaneous estimation of Furazolidone and Metronidazole in a pharmaceutical dosage form by optimising chromatographic parameters using 3^2 full factorial design. **Methods:** Isocratic analysis was carried out using C18 column at 324 nm. Risk assessment studies were executed to determine the critical method parameters which were defined as composition of mobile phase and flow rate of the mobile phase to minimize retention time of both furazolidone and metronidazole. The effect of the critical method parameters on critical method attributes, i.e. retention time, resolution, number of theoretical plates and symmetry factor were further evaluated by means of 3^2 full factorial design. **Results:** The method was validated according to ICH guidelines Q2 R1 having good resolution using optimized mobile phase, ACN: Phosphate buffer (pH 3) (55:45). Linearity was observed in concentration range of 10-50 µg/mL with r^2=0.9988 and 25-50 µg/mL with r^2=0.9971 for furazolidone and metronidazole, respectively. The retention time of furazolidone and metronidazole was found to be 4.62 minutes and 3.55 minutes, respectively. The limit of detection for furazolidone and metronidazole was found to be 1.39 µg/mL and 7.66 µg/mL and the limit of quantification was found to be 4.225, 23 µg/mL, respectively. The developed method was validated as per the ICH guidelines. **Conclusions:** The proposed method is useful for best analysis of Furazolidone and Metronidazole in a pharmaceutical dosage form. QbD approach was found to be an effective tool for optimising chromatographic conditions of the proposed method.

PHARMACOLOGY AND TOXICOLOGY, CLINICAL RESEARCH, PHARMACOVIGILANCE, HOSPITAL, COMMUNITY AND CLINICAL PHARMACY

PHCL801
PHARMACOVIGILANCE OF BREAST CANCER CHEMOTHERAPY: A HOSPITAL BASED ACTIVE SURVEILLANCE STUDY

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Abstract:

Objectives: The aim of this study was to carry out pharmacovigilance activities among breast cancer patients by: assessing the drug utilization pattern among breast cancer patients, estimate the nature & frequency of ADR's, assessing predictors associated with adverse drug reaction to chemotherapy of breast cancer management. **Methods:** This was a record-based, retrospective hospital based longitudinal cohort study, analyzing the prescription pattern of drugs used for chemotherapy in patients diagnosed with carcinoma breast at tertiary care hospital for 2 years (Jan2022-Jan 2024) in 385 patients. Patient's demographic, clinical, chemotherapeutic medication, Tumour characteristics, chemotherapy regimens, ADR's, Comorbidities were collected from the files and personal interviews and analyzed in Microsoft Excel. **Results:** Diagnosis of breast carcinoma was highest in age bracket of 30-72 years, and the most frequently prescribed regimen was AC (Cyclophosphamide (A), Doxorubicin (C)). A total of 545 ADRs were reported from 385 cases, the most commonly seen adrs are hairfall(93.5%), fatigue(96%). The WHO-UMC causality assessment categorized most ADRs as probable (84.615% to 84.95%). A significant proportion of reported ADRs were moderately severe (61.28% to 61.65%), with a majority deemed not preventable (72.65%). **Conclusions:** The study monitors the drug utilization pattern, nature and frequency of ADRs, and predictors of ADR which can help for further identification of any interventional studies to improve the qualify of life of breast cancer patients receiving chemotherapy.

PHCL802
UNRAVELLING THE CORRELATION BETWEEN DIABETES, OBESITY, AND RHEUMATOID ARTHRITIS: MECHANISTIC INSIGHTS INTO PATHOPHYSIOLOGICAL LINKS

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Abstract:

Objectives: Multimorbidity is the presence of two or more than two chronic diseases at a same time it has emerged as a significant public health issue in the world. The overall global prevalence of multimorbidity was 37.2%. Globally 27% population suffered from multi-morbidity. According to the report of WHO in India, death rate due to cluster of chronic conditions can be increased by 55 million at 2030. Report of ministry of health and family welfare, the government of India, found increase in 30% of total burden due to non-communicable diseases. More than 80% of the population having diabetes are obese and associated with rheumatoid arthritis. **Methods:** India may face rapid increase in multimorbidity in upcoming years. The relationship between diabetes, obesity and rheumatoid arthritis reveals the interplay of pathophysiological processes affecting human health. The study aims to identify the complex connections between these factors by investigating the underlying mechanisms and biological interactions. Excessive weight contributes to insulin resistance with inflammatory mediators leads to inflammation of joints and adds strains on joints. Diabetes and obesity together cause systemic disease, insulin resistance, and metabolic dysfunction, which are important in the pathogenesis of both diseases and their

relationship with rheumatoid arthritis. Obesity may be risk factor for several autoimmune diseases. Additionally, changes in adipose tissue-derived cytokines and adipocytes, as well as gut microbiota composition, appear to have important clinical links to obesity-associated metabolic diseases in disease prevention in rheumatoid arthritis. Understanding interactions between genes, such as mutations in genes encoding inflammatory cytokines and metabolic regulators, further addresses the interactions between these diseases. **Results:** Understanding these mechanistic insights is important for developing therapeutic strategies that address the pathway and combination. Hence it requires multidisciplinary approach of treatment which should be free from polypharmacy. **Conclusions:** This builds on existing research to provide a broad framework for future research and clinical interventions to improve the management and outcomes of individuals affected by the complex triad of diabetes, obesity, and rheumatoid arthritis.

PHCL803
BIOACTIVE COMPOUNDS: A BREAKTHROUGH IN PRE-RHEUMATIC PERIODONTITIS

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Abstract:

Objectives: The aim of this study is to identify the bioactive compounds that can be used in the treatment of periodontitis (pre-rheumatic condition) & spread awareness about the oral hygiene associated with rheumatoid arthritis. **Methods:** Rheumatoid Arthritis is one of the autoimmune diseases that disrupts the daily activity by affecting bones, cartilage and joints. Periodontal disease is common and present in all stages of rheumatoid arthritis mostly in early stage. Bioactive compounds with proven anti-inflammatory, anti bacterial and anti oxidant activity are identified to treat pre-rheumatic periodontitis. Further, it can be combined in a particular ratio with synergistic effect to develop an effective herbal formulation for pre-clinical screening. **Results:** From the literature survey, bioactive compounds like Arbortristoside-A, Guggulsterone and quercetin have anti-inflammatory activity. Formulation containing these compounds can be developed that will not only target pre rheumatic condition but also arrest the progression of the disease. Furthermore, periodontitis can be used as a diagnostic tool for effective management of rheumatoid arthritis. **Conclusions:** Based on literature study it can be concluded that the bioactive compounds hold a promising effect for treatment of rheumatoid arthritis. The risk of further progression of rheumatoid arthritis can be arrested by targeting these pre rheumatic conditions.

PHCL804
ANTIDIABETIC POTENTIAL OF VARIOUS HERBAL PLANTS FOR THE TREATMENT OF DIABETES AND ITS RELATED COMPLICATIONS: A REVIEW

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Abstract:

Objectives: The objective of this study was to provide the information about antidiabetic potential of various herbal plants for the treatment of diabetes and its related complications. **Methods:** We have reviewed various peer-reviewed articles including research and review articles to curate the available data regarding possible herbal treatments for the resolution of diabetes and its related various complications. **Results:** According to the World Health Organization (WHO), up to 90% of the population in developing countries uses plants and their products as traditional medicine for primary health care. According to the

data, from the 2500 medical plant species available in India, 800 of those have been reported to show antidiabetic potential. A wide collection of plant-derived active principles representing numerous bioactive compounds have established their role for possible use in the treatment of diabetes. The most common and effective antidiabetic medicinal plants of Indian origin are Babul (Acacia arabica), Turmeric (Curcuma longa), black pepper (Piper nigrum), cinnamon (Cinnamomum verum), Bael (Aegle marmelose), gurhal (Hibiscus rosa-sinesis), onion (Allium cepa), garlic (Allium sativum), Ghrita kumara (Aloe vera), mulberry (Morus alba), neem (Azadirachta indica), mango (Mangifera indica), ash gourd (Benincasa hispida), ivy gourd (Coccinia grandis), banyan tree (Ficus benghalenesis), Beetroot (Beta vulgaris), fever nut (Caesalpinia bonducella), bitter apple (Citrullus colocynthis), eucalyptus (Eucalyptus globules), gurmar (Gymnema sylvestre), potato (Ipomoea batatas), Karela (Momordica charantia), tulsi (Ocimum sanctum), bisasar (Pterocarpus marsupium), anar (Punica granatum), jamun (Syzygium cumini), giloy (Tinospora cordifolia), and methi (Trigonella foenum-graecum). All these plants are a rich source of phytochemicals. **Conclusion:** This study demonstrates that there is an enormous diversity of indigenous medicinal plants utilized in the management of diabetes in India. The medicinal plants documented in this study could assist researchers in developing novel medicines for the treatment of diabetes. There is a need to conduct a comprehensive isolation of the biologically active components in the identified medicinal plants for pharmacological analysis purposes, and to determine their curative properties. To this end, extensive preclinical and clinical trials should be conducted using the medicinal plants frequently cited in this study to determine their antidiabetic potential.

PHCL805
EVALUATION OF ANTI-CANCER ACTIVITY OF SEH/COX-2 DUAL INHIBITOR FROM PLANT ORIGIN

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Abstract:

Objectives: The study aimed to evaluate the anti-cancer activity of a plant-derived sEH/COX-2 dual inhibitor through *in vitro* testing and investigation of anticancer efficacy against a B16F10-induced tumor mice model. **Methods:** The research involved *in vitro* testing of various herbal plant extracts to identify sEH inhibitory activity, followed by screening the selected extracts for COX-2 inhibitory activity. Promising extracts with both sEH and COX-2 inhibitory activities were further screened for their anti-proliferative activity using the SRB assay on B16F10 (mouse melanoma), U87 (human glioblastoma), and A549 (human lung carcinoma) cell lines. Additionally, the anticancer activity of one promising herbal plant extract was evaluated *in vivo* using a B16F10-induced tumor mice model. **Results:** The study identified *Syzygium aromaticum* (Lavanga) as a potent dual sEH/COX-2 inhibitor. *In vitro* studies demonstrated significant anti-proliferative effects of the Lavanga extract on B16F10, U87, and A549 cell lines compared to the standard sEH/COX-2 inhibitor PTUPB. The *in vivo* evaluation also showed promising anticancer activity in the B16F10-induced tumor mice model, indicating the potential of Lavanga extract as an effective natural anticancer agent. **Conclusions:** The findings suggest that the Lavanga extract exhibits significant dual inhibitory activity against sEH and COX-2, translating into potent anti-cancer effects in both *in vitro* and *in vivo* models. This indicates the potential of Lavanga extract as a natural, multi-targeted therapeutic option for cancer treatment. Further research is needed to elucidate the precise molecular mechanisms and to explore their efficacy and safety in clinical settings.

PHCL806
EXPLORING ELLAGIC ACID AS AN EMERGING PHARMACOLOGICAL APPROACH FOR CHEMOTHERAPY-INDUCED NEUROPATHY

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Abstract:

Objectives: To evaluate the therapeutic potential of Ellagic acid in chemotherapy-induced peripheral neuropathy. **Methods:** Neuropathy was induced in male Swiss albino mice through the administration of Paclitaxel (2 mg/kg,i.p) for 5 days, followed by treatment with ellagic acid (100mg/kg, 200mg/kg; p.o) and pregabalin (5mg/kg, p.o) to respective groups for 11 days. The efficacy of ellagic acid was assessed through evaluations of thermal and cold allodynia, biochemical analysis of antioxidants and inflammatory mediators, and histopathological examinations. **Results:** Our findings revealed that ellagic acid was nontoxic and significantly alleviated the proinflammatory mediators in SH-Sy5Y neuroblastoma cell line studies. In *in vivo* studies, when ellagic acid was administered orally in doses of 100 and 200 mg/kg, it effectively ameliorated the symptoms associated with chemotherapy-induced neuropathy. This amelioration was concomitant with reduced symptoms of thermal and cold allodynia when compared to the disease-induced group. **Conclusion:** This study shows that ellagic acid effectively acts as a neuroprotective against chemotherapy-induced neuropathy by increasing antioxidants and decreasing the levels of proinflammatory cytokines.

PHCL807
NEUROPROTECTIVE ACTIVITY OF ISOLATED BIOACTIVE METABOLITES AND IT'S UNDERLYING MECHANISMS FOR TREATMENT OF ALZHEIMER'S DISEASE

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Abstract:

Objective: Alzheimer's disease affects millions worldwide, with a growing prevalence in aging populations, highlighting the need for effective treatments. This study aims to explore the pathophysiology and treatment approaches for Alzheimer's disease (AD), identify bioactive metabolites effective against AD, perform a network pharmacology analysis, and conduct preclinical evaluation of a selected metabolite. **Methods:** Alzheimer's disease is characterized by amyloid-beta plaques, tau tangles, neuroinflammation, and synaptic dysfunction. Current treatments include cholinesterase inhibitors and NMDA receptor antagonists, but they offer limited efficacy. We reviewed bioactive metabolites from natural sources with potential therapeutic effects, focusing on their antioxidant, anti-inflammatory, and neuroprotective properties. Using network pharmacology, we analysed interactions between these metabolites and AD-related molecular targets, constructing a network model to elucidate these relationships. Based on the analysis, a promising metabolite was selected for preclinical studies. **Results:** The study provided a comprehensive understanding of AD pathology and highlighted the limitations of current treatments. Effective bioactive metabolites with potential therapeutic benefits were identified. Network pharmacology analysis revealed key molecular targets and pathways influenced by these metabolites, visualizing complex metabolite-target interactions and suggesting multi-target therapeutic effects. The selected metabolite exhibited significant potential based on these findings. **Conclusion:** With the completion of the network pharmacology analysis, a

promising bioactive metabolite has been selected for preclinical evaluation. The upcoming preclinical study will include *in vitro* and *in vivo* experiments to assess the efficacy and safety of the metabolite in AD models. This integrative approach combining pathophysiological insights, bioactive metabolites, and network pharmacology paves the way for novel therapeutic strategies in Alzheimer's disease, with the selected metabolite showing strong potential for further development.

PHCL808
PRE-CLINICAL EVALUATION OF FORMULATION OF BIOACTIVE COMPOUNDS FOR ITS ANTI-ASTHMATIC ACTIVITY

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Abstract:

Objectives: The objective of this study is to explore Pathophysiology and treatment options available for asthma. The study includes use of Network Pharmacology for collection, Screening and target identification of Phytochemical constituents to be evaluated for anti-asthmatic efficacy using preclinical study. The anti-asthmatic activity will be evaluted using histamine induced asthma using guinea pigs and Isolated Goat Tracheal chain preparation model. **Methods:** Asthma is a chronic inflammatory non-communicable airway disease arising from a complex interactionn between immune system and resident cells of lung to induce the cardinal features of bronchial hyper-responsiveness, mucous hyperproduction, narrowing of the airways and airway remodelling. A advanced techniques like Network Pharmacology and molecular docking has been utilized for screening and target identification of bioactive compounds. Based on the analysis the most promising bioactive compounds were selected for preparation of formulation and further anti-asthmatic evaluation. **Results:** The study provided comprehensive understanding of asthma pathology and highlighted the limitations of current treatment which showed the need of novel antiasthmatic treatment options. Network pharmacology analysis revealed key molecular targets and pathways influeced by these bioactive compounds, visualizing complex metabolite target interactions and suggesting multi target thereupetic effects. **Conclusions:** With the completion of network pharmacology, a promising bioactive metabollite has been selected for preclinical evaluation. The preclinical study will include *in vitro* and *in vivo* experiments to assess the efficacy and safety of formulation prepared from selected bioactive compounds.

PHCL809
STANDARDIZATION OF POLYHERBAL FORMULATION FOR PEPTIC ULCER

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Abstract

Objective: To provide a summary of peptic ulcers, focusing on pathophysiology, risk factors, epidemiology, treatment, and healthcare costs. To use modern techniques like network pharmacology and molecular docking to screen phytochemical constituents and find out most promising compound having antiulcer activity. **Method:** Peptic ulcer is lesion on the lining of the stomach that develops when the mucosa of the gastrointestinal system reduces as a result of several contributing causes. We examined interactions between these active constituents and molecular targets associated to peptic ulcers using network pharmacology, developing a network model to clarify the relationship between them. A promising ingredient was chosen for preclinical research based on the study. **Results:** Peptic ulcers are a common

gastrointestinal condition with a significant impact on public health, especially in developing nations. Morbidity includes recurrent symptoms, bleeding and perforation problems, and reduced quality of life. High prevalence is attributed to factors such as high rates of Helicobacter pylori infection, increased use of nonsteroidal anti-inflammatory drugs (NSAIDs), and limited access to healthcare. Treatment approaches include histamine-2 receptor antagonists and proton pump inhibitors, but these have significant downsides and adverse effects. Synthetic medications for ulcer treatment are available but are more costly and potentially have more adverse effects compared to herbal remedies. **Conclusion:** The ultimate goals of treating peptic ulcer disease are reducing pain, curing ulcers, and preventing recurrence. While various treatment options exist, there's a need for more effective and less costly alternatives, particularly in developing nations where the burden of this condition is higher.

PHCL810
EXPLORING THE ROLE OF AGMATINE IN SIMULATED MICROGRAVITY-ASSOCIATED NEUROLOGICAL DYSFUNCTIONS

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Abstract:

Objectives: The aim of this study is to investigate the role of exogenous agmatine and its endogenous modulation by L-arginine in simulated microgravity-associated neurological dysfunction in rats and to explore the mechanism thereof. **Methods:** Rats were exposed to simulated microgravity conditions using the hindlimb unloading (HU) model for 28 days. Agmatine (40, 80, and 160 mg/kg) and L-arginine (100 mg/kg) were administered throughout the study. To assess the effects of agmatine on neurological function, we conducted behavioral tests, neurochemical analysis by HPLC, and biochemical and pro-inflammatory marker evaluations in the HU group, along with structural alterations in specific brain regions. **Results:** The results indicated that 28 days of simulated microgravity exposure led to significant neurological dysregulation in rodents, evidenced by impaired motor coordination, increased anxiety and depression-like behaviors, and cognitive deficits. Biochemical analyses revealed neurotransmitter dysregulation, disrupted oxidative and antioxidant balance, and fluctuations in pro-inflammatory markers in the HU group, along with structural alterations in specific brain regions. **Conclusions:** This study conclude that agmatine and its modulator administration mitigated the effects of simulated microgravity, demonstrated by improved motor coordination, reduced anxiety and depression like behaviors, and enhanced cognitive performance. Agmatine treatment also normalized the neurochemical imbalances induced by hindlimb unloading and attenuated oxidative stress and pro-inflammatory markers. Additionally, certain molecular targets were investigated the pathways of neuronal dysfunction.

PHCL811
DEVELOPMENT OF CARBOHYDRATE BASED CANCER VACCINES

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Abstract:

Objective: Carbohydrates are abundantly expressed on the cell surface of both prokaryotes as well as eukaryotes, as a result of post translation modification of proteins. Glycoproteins expression on surface on various bacterial cells have been used to develop anti-bacterial vaccines. The unbalanced of glycosylaion machinery in cancer leads to expression of tumor associated carbohydrate antigens. Cancer cells

expressing tumor associated antigens show aggressive behavior and poor prognosis, consequently vaccines have been developed using carbohydrates expressed on cancer cells. Carbohydrates antigens do not trigger T-cell mediated immune response, but forms an important component of innate immune responses as Pathogen associated molecular patterns (PAMPs), PAMPs are recognized by pattern recognition receptors (PRRs). In many instances carbohydrates have shown to produce immunosuppressive and immunomodulating many a times favoring the development cancer, therefore are important therapeutic targets. In order to generate strong immune response to carbohydrate based several carrier proteins are used which include, bovine serum albumin (BSA), human serum albumin (HSA), ovalbumin (OVA), tetanus toxoid (TT) and keyhole limpet hemocyanin (KLH). The objective of the current study is to evaluate efficacy of carbohydrate based cancer vaccines. **Method:** Covalently conjugated carbohydrate epitopes to immunogenic peptides has been applied for many infections previously such N. meningitis, H. Influenzae. Clustering of Tumor Associated Carbohydrate Antigen on carrier protein helps as it helps in activation of B-cell mediated immune responses. TF-KLH induced higher IgM, IgG titers in prostate cancer. Further, we tried conjugation Tn, STf, GM2 (multi hapten combination) on a single carrier protein, resulted in higher efficacy of the vaccine. **Results:** Multihapten carbohydrate conjugation resulted in higher titres of IgG & IgM in prostate cancer patients compared to single hapten conjugation. **Conclusions:** Cancer can be considered as a immune disorder, as cancer cells protect themselves from attack by immune system. Vaccination can result in immune specific attack to cancer cells, helping to kill cancer cells. The above designed vaccine helps to increase the antibody titre against cancer cells thereby helping to kill them.

PHCL812

TRADITIONAL SYSTEMS OF INDIAN MEDICINE HAVE FOUND *MORUS NIGRA* L. TO BE EFFECTIVE AS AN ANTI-MUTAGENIC, ANTI-CARCINOGENIC, DIURETIC AND ANTI-INFLAMMATORY

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Abstract:

Objectives: To investigate the anti-obesity potential of Ethyl acetate fraction of leaves and fruits of Morus nigra L. in high fat diet-induced (HFD) obesity in rats. **Methods:** Obesity was developed in rats by using HFD for 32 days. Simultaneously, Morus nigra fruit juice (MNFE) and ethyl acetate fraction of leaves (MNLE) were administered. Formulation containing Garcinia indica (500 mg/kg, p.o.) was used as standard for comparison. **Results:** Oral administrations of MNLE & MNFE for 32 days resulted in dose-dependent reduction in the body weight of rats. **Conclusions:** Chronic administration of MNLE & MNFE exerts an anti-obesity effect in experimental animals.

PHCL813

STATUS OF RESPECTFUL MATERNITY CARE IN INDIA: A MIXED METHOD SYSTEMATIC REVIEW

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[3]The University of Memphis, Tennessee, USA

Abstract:

Objectives: Objective of this review is to identify the status and most common type of disrespect of maternity care among pregnant women in India. **Methods:** A systematic review of several databases

including PubMed, Google Scholar, Web of Science, and Scopus were used for the search, which was updated in May 2023 was carried out. Following quality review, PRISMA method followed. **Results:** The review included ten cross-sectional studies, two mixed-method studies, and three qualitative investigations, with a total of 6114 participants and sample sizes ranging from 41 to 2639. Eleven studies were hospital-based, and three were community-based. Data collection methods included interviews, observations, and focus group discussions. Prevalence of mistreatment ranged from 20.9% to 100%. Common issues included improper money demands, non-consensual care, and verbal abuse. Socioeconomic status, caste, religion, and healthcare provider type influenced mistreatment. During the COVID-19 pandemic, 100% of women in one study reported experiencing disrespectful care. The most common types of abuse were physical and verbal. **Conclusions:** Respectful maternity care should be prioritized in order to give great care to pregnant mothers. To do that a sustainable change in policy level is needed. It is critical to facilitate women-centric care, enhance infrastructure, train healthcare staff on a regular basis, and educate pregnant women about respectful maternity care.

PHCL814
HARNESSING THE POWER OF FLAVONOIDS: PROMISING POTENT NATURAL COMPOUNDS FOR PREVENTION AND TREATMENT OF ALZHEIMER'S DISEAS

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Abstract:
There are now no viable treatments for Alzheimer's disease (AD), a progressive neurological condition, there are enormous concerns to world health. Flavonoids are a broad class of naturally occurring polyphenolic compounds that can be found in wine, tea, and fruits and vegetables. They have shown promise in the treatment and prevention of AD as well as in many more diseases shows the multimechanistic effect. Flavonoids improve cardiovascular health by reducing oxidative stress, lowering blood pressure, improving endothelial function, and inhibiting platelet aggregation Strong anti-inflammatory, neuroprotective, and antioxidant characteristics are exhibited by these substances, and they play a critical role in reducing the pathophysiological pathways that underlie AD. The therapeutic potential of flavonoids is examined in this abstract, with particular attention paid to their capacity to prevent amyloid-beta (Aβ) aggregation, lessen oxidative stress, and alter signalling pathways linked to Alzheimer's disease (AD). It also emphasises important flavonoids, like luteolin, quercetin, and epigallocatechin gallate (EGCG), stressing their mechanisms of action and the preclinical and clinical data that supports their effectiveness. The findings suggest that dietary flavonoids represent a viable, natural intervention strategy for AD, warranting further investigation to optimize their use in clinical settings. Amyloid-beta (Aβ) plaques, neurofibrillary tangles, oxidative stress, and chronic inflammation are thought to be the causes of Alzheimer's disease (AD), which is characterised by progressive cognitive decline and memory loss. There is a pressing need for innovative therapeutic techniques because, in spite of substantial research, effective pharmaceutical treatments are still elusive. Flavonoids, naturally occurring compounds found in various dietary sources, have garnered attention for their potential neuroprotective effects in AD. **Conclusion:** Due to its many modes of action, flavonoids have the potential to treat AD by focusing on important pathogenic processes as inflammation, oxidative stress, and Aβ aggregation. Even with strong preclinical findings, more clinical trials are required to determine the ideal dosage, bioavailability, and long-term safety. Supplements or diets high in flavonoids may be a viable, all-natural method of treating and preventing AD in addition to current

pharmacological approaches. Further investigation in this area may open the door to practical, affordable treatments for AD that would greatly enhance patient outcomes.

PHCL815

ENHANCED ANTIPROLIFERATIVE ACTIVITY OF COMBINED OSIMERTINIB AND *TUPICHINOL E* IN TRIPLE-NEGATIVE BREAST CANCER: A COMPARATIVE STUDY

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Abstract:

Background: The third-generation EGFR-TKI, represented by Osimertinib, has seen extensive clinical application for treating metastatic EGFR-mutant non-small-cell lung cancer (NSCLC) patients. This study aims to evaluate and compare the efficacy of Osimertinib and *Tupichinol E* in treating triple-negative breast cancer (TNBC) and to determine the enhanced antiproliferative effects of their combination. **Methodology:** We established the drug effects on MDA-MB-231 cells using the Cell Counting Kit-8 (CCK8) assay. Protein alterations were detected with western blot analysis. Cell cycle distribution was compared using flow cytometry. **Results:** Compared with Osimertinib, *Tupichinol E* demonstrated greater sensitivity in inhibiting TNBC cell proliferation and induced a higher proportion of cells to remain in the G1 phase. The combination of Osimertinib and *Tupichinol E* synergistically decreased the survival of MDA-MB-231 cells more effectively than either drug alone by inducing cell cycle arrest. The combined treatment significantly inhibited initial phosphorylation by impairing CDK4/6 function, reducing the level of phosphorylated retinoblastoma protein (p-RB), and blocking cell proliferation. **Conclusion:** While *Tupichinol E* alone shows superior anti-proliferative activity compared to Osimertinib in TNBC models, the combination of both drugs exhibits the most pronounced effect in reducing cell survival and inducing cell cycle arrest. These findings suggest that *Tupichinol E* is a better standalone treatment, but the combination of Osimertinib and *Tupichinol E* offers the best therapeutic potential, warranting further clinical investigation.

PHCL816

PHARMACOLOGICAL EVALUATION OF HERBAL EXTRACT IN THE TREATMENT OF DEMYLIENATION DISORDERS (ALZHEIMER'S DISEASE & MULTIPLE SCLEROSIS) IN MICE

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Abstract:

Objectives: The present study is designed to explore the pharmacological action of Fagonia indica in the treatment of demylienation in Mice. This study is planned to assess the following: To assess attenuating actions of Fagonia indica in cuprizone induced demyelination.To asses the neuroprotective activity based on Locomotor activity.To estimate the biochemical parameters in mice brain. **Methods:** The methods for this study includes Procurement of Aerial part of the plant, shade dried, powdered,Preparation of the Plant extract, Procurement of the animals and acclimatization, Administration of Cuprizone to induce Demyelination ,Treatment with standard & herbal extract and Estimation of behavioural Parameters by using Actophotometer, & biochemical parameters like Malanoldialdehyde and glutathione are estimated. **Results:** Treatment with Cuprizone induced Demyelination is proved with behavioral and biochemical parameters. In the given dose of (250 mg/kg, p.o.) of the *Fagonia indica* extract significantly decreased locomotory activity which was increased due to demyelination. MEFI increased brain

antioxidant enzyme level by Significantly increasing Glutathione levels and decreased Malondialdehyde levels**.Conclusion:** The present study has concluded that the methanolic extract of *Fagonia indica* has a potential effect in improving the conditions of demyelination related disorders.

PHCL817
CAPECITABINE-INFUSED MICRONEEDLE DESIGN AND ITS EVALUATION FOR BREAST CANCER THERAPY

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Abstract:

Objectives: This study aims to formulate and develop a self-dissolving capecitabine-embedded microneedle and analyze its efficacy in DMBA-induced Swiss albino mice. **Methods:** Tumors were induced orally using DMBA at a dose of 55 mg/kg for three weeks. Subsequently, capecitabine was administered via a microneedle patch for 14 days. Body weight was recorded before and after capecitabine treatment, along with hematology studies. After the study, the size and volume of the developed tumors were measured, and the body weight of the mice was checked again. Additionally, SGOT and SGPT tests were conducted to assess liver function, accompanied by a histopathology study. **Results**:The body weight of Swiss albino mice increased significantly following the administration of DMBA before initiating capecitabine treatment. However, once treatment with the capecitabine-embedded microneedle began, a decrease in body weight was found to return to normal. Similarly, the treatment with capecitabine embedded microneedle showed a significant increase in haematological hematology parameters in Swiss albino mice showed a significant increase after DMBA administration before capecitabine treatment. **Conclusion:** This study successfully formulated and developed a self-dissolving capecitabine-embedded microneedle and evaluated its efficacy in DMBA-induced Swiss albino mice.

PHCL818
NEUROPHARMACOLOGICAL SCREENING OF ANTIDEPRESSANTS AND ANTI-STRESS ACTIVITY OF SELECTED HERBS

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Abstract:

Objectives: Several plants have been studied for their neuropharmacological properties, including Terminalia coriacea, Abutilon indicum, and Acacia nilotica. These plants have been historically used in various traditional medicinal systems. Anxiety disorders and depression are prevalent mental health conditions characterized by symptoms such as fear, sadness, and inability to perform daily tasks. Current anxiolytic and antidepressant drugs often have undesirable side effects, leading to poor patient compliance. This has increased the demand for medicinal plants as safer alternatives, and many plants are known to have anxiolytic and antidepressant potential. **Methods:** The research methodology involves several steps: *Collection and Authentication of Raw Materials***:** Suitable plant materials will be collected, washed, dried, and authenticated by the Botanical Survey of India. Selected plants include Terminalia coriacea, Abutilon indicum, Acacia nilotica, Colocasia esculenta, Camellia sinensis, Carum carvi, and Euphoria longan. *Phytochemical Analysis of Extracts:* Standard phytochemical screening tests will be used to evaluate the presence of alkaloids, flavonoids, glycosides, terpenoids, tannins, saponins, etc. Spectroscopy analysis will be conducted using FTIR and GCMS. *Preparation of*

Herbal Extracts: Based on the literature survey, three suitable herbal extracts will be prepared for further studies. ***In Vitro* and *In Vivo* Testing:** Various tests will be conducted to evaluate the neuropharmacological, anti-stress, and antidepressant activity of the extracts. These include the Forced Swimming Test (FST), Tail Suspension Test (TST), Spontaneous Locomotor Activity (SLMA), Elevated Plus Maze Test, Light–Dark Box Test (LDBT), and Open Field Test (OFT). **Results:** The proposed research aims to establish safe and effective herbal treatments for neurological diseases. Plants have been reported to possess medicinal properties for various diseases from ancient times. Neuropharmacological activity is one of the major challenges to mankind, affecting people of all age groups and posing both social and financial burdens. This study is designed to provide safe and effective herbal treatments for neurological diseases, contributing to the relief of this burden. **Conclusions:** The study underscores the importance of natural remedies for mental health conditions such as anxiety and depression. Given the side effects associated with conventional medications, exploring the potential of selected herbs as alternative therapies is crucial. The research aims to validate the efficacy and safety of these herbal treatments, offering a promising approach to managing mental health disorders with fewer side effects.

PHCL819
ANTIANXIETY AND NOOTROPIC ACTIVITY ON COMMON INDIAN MEDICINAL PLANTS

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Abstract:

Objectives: Nature is an extraordinary repository for abundant novel molecules, from many centuries, there is evidence that many plant products are used for medical practices. Despite incredible progress in human pharmaceuticals, still a major threat to public health is infectious diseases caused by various microorganisms such as bacteria, fungi, viruses. Nature is an importantsource for the many remedies for curing all the ailments of mankind. Plants contain phytochemical metabolites in hundreds and thousands, but only a small proportion of plant compounds are investigated and out of which very low concentration subjected to biological screening. Plant materials leaves, roots, fruits, rhizomes, flowers and bark and its compounds are used as relieving and healing agents for thousands for years. Still, many medical practices are carried out by using the plant products and its components. In the modern era, all the medicines used to be from natural herbs, especially from medicinal and aromatic plants. **Methods:** The research methodology involves several steps: *Collection and authentication of Raw materials:* Suitable Plant material collected washed and dried and authenticate by botanical surveyof India. The following plants were selected for study.• Morus alba (Indian mulberry) • Hibiscus rosa sinensis (Roxbury)• Acacia nilotica (babool nilotika) • Colocasia esculenta (elephant ear) *Phytochemical analysis of extract:* Standard phytochemical screening test will be used to evaluate the presence of differentphytoconstituents like• Alkaloids • Flavanoids • Glycosides • Terpenoids, Tannins, Saponins etc. Spectroscopy analysis of different extract will also be conducted by using the following.• FTIR • GCMS *Preparation of three suitable Herbal extract:* Based on Literature survey three suitable herbal extractions will be prepared and will be **Results:** Plants are reported to possess medicinal properties in many diseases from ancient times.Neuropharmacological activity is one of the major challenging diseases to mankind. People of all age groups are getting affected and it is emerging as hardship in terms of both socially and financially. To relieve the burden of mankind this study is designed to establish safe andeffective on selected herbs for the treatment of neurological disease. **Conclusions:** Neuropharmacological effects of many plants have been studied in various laboratories in India. However, there are many limitations regarding safety and

efficacy of these preparations. Knowledge about active principles of herbal extract preparations are not well defined, information on toxicity and adverse effects of these extract were lacking. Polyherbal extraction should be screened for anti-anxiety and nootropic activity.

PHCL820
QUALITY OF LIFE AMONG CKD PATIENTS WITH HEMODIALYSIS – A CROSS SECTIONAL STUDY

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Abstract:

Objective: The objective of the study was to assess the quality of life (QOL) of patients undergoing hemodialysis (HD). The QOL of HD patients was found to be considerably impaired when compared to that of healthy individuals of the general population. The careful assessment of QOL helps to guide and achieve medical management to optimize their health experience. **Methods:** Cross-sectional study was performed among 410 subjects who met the inclusion criteria (eGFR less than 30ml/min) to conduct the study in the dialysis unit, Andhra Pradesh, South India. The instrument used for the study was to collect the data are demographic variable and kidney disease QOL - short form version 1.3 scale. **Results:** The mean total score of QOL was 48.73±22.65, the highest score was for dialysis staff encouragement scale (84.04±14.89) followed by social support scale (80.38±20.38) and quality of social interaction (71.52±18.74). However, role limitation caused by physical health problems, role limitation caused by emotional health, and burden of kidney disease scales yielded the lowest scores (22.12±18.05, 26.92±24.15, and 38.03±12.81, respectively). **Conclusion:** The present study findings concluded that patients on hemodialysis were not having adequate QOL in all domains except patient satisfaction due to changes in the physiological, chemical changes occur in the kidney.

PHCL821
IVABRADINE EXERT ITS BENEFICIAL EFFECTS IN MYOCARDIAL INFARCTION BY MODULATING MYOCARDIAL NITRIC OXIDE AND ATP-DEPENDENT K+ CHANNELS

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Abstract:

Objectives: The purpose of this research was to examine Ivabradine's cardioprotective properties and to investigate potential secondary mechanisms beyond what cellular studies have already demonstrated regarding the inhibition of the If channel. Our hypothesis centered on the idea that Ivabradine could induce responses similar to ischemic preconditioning, involving nitric oxide, adenosine, bradykinin, and ATP-dependent potassium channels. **Methods:** Langendroff's technique established ischemia-reperfusion injury. The model of myocardial infarction involved 20-minute ischemia and 40-minute reperfusion to the coronary artery in an isolated heart. There were following groups: Control (Ischeamia-Reperfusion), Ischemic preconditioning, ivabradine(10µmol/L), ivabradine+L-NAME (30µmol/L) and ivabradine+ Aminoguanidine (30µmol/L), ivabradine+ Theophylline (50µmol/L), ivabradine+ Aminophylline (50µmol/L), ivabradine+ Enalapiril (100µmol/L), ivabradine+ Losartan(50µmol/L), ivabradine+ 5-hydroxydecanoate (30µmol/L), ivabradine+ glimepiride (50µmol/L) in perfusate. **Results:***Ivabradine found cardioprotection* (Infarct

Size: 5.334±0.422%; LDH: 101.500±1.147 I.U.; CK-MB: 100.167±1.302 I.U.) *Ischemic Preconditioning found cardioprotection* (Infarct Size:5.1667±0.478% LDH:101.667±2.789 I.U.; CK-MB: 97.167±1.721 I.U.) ***Ivabradine+L-NAME*** (Infarct Size: 64.167±0.872%; LDH: 154.667±1.256 I.U.; CK-MB: 200.167±1.537 I.U.) ***Ivabradine+ Aminoguanidine*** (Infarct Size: 64.500± 0.885%; LDH: 154.833±1.138 I.U.; CK-MB: 198.333±1.145 I.U.) ***Ivabradine+ Theophylline*** (Infarct Size: 5.333±0.422%; LDH: 102.5±2.923 I.U.; CK-MB: 97.167±1.721 I.U.) ***Ivabradine+Aminophylline*** (Infarct Size: 5.667± 0.333%; LDH: 102.833±1.515 I.U.; CK-MB: 100.833±1.250 I.U.) ***Ivabradine+ Enalapiril*** (Infarct Size: 5.500±0.428%; LDH: 102.667± 1.498 I.U.; CK-MB: 100.667±1.429 I.U.) ***Ivabradine+Losartan*** (Infarct Size: 5.333±0.667%; LDH: 102.167± 1.751 I.U.; CK-MB: 101.833±1.400 I.U.) ***Ivabradine+Gliclazide*** (Infarct Size: 63.833±1.352%; LDH: 154.667±1.054 I.U.; CK-MB: 201.833±1.815 I.U.) ***Ivabradine+Glimepiride*** (Infarct Size: 63.667±0.989%; LDH: 155.833±1.352 I.U.; CK-MB: 199.833±1.579 I.U.). **Conclusion:** Ivabradine and ischemic preconditioning demonstrated cardioprotective effects by reducing infarct size as well as levels of LDH and CK-MB. Conversely, treatments with L-NAME, aminoguanidine, gliclazide, and glimepiride increased infarct size, LDH, and CK-MB levels. Theophylline, Aminophylline, Enalapril, and Losartan decreased infarct size, LDH, and CK-MB. This provides evidence that ivabradine employs nitric oxide and ATP-dependent potassium channels as secondary messengers in cardioprotection, while adenosine and bradykinin are not involved in ivabradine-induced cardioprotection.

PHCL822
NEUROPROTECTIVE POTENTIAL OF CREATINE IN HALOPERIDOL MODEL OF PARKINSON DISEASE

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School of Pharmaceutical Sciences, Siksha O Anusandhan Deemed to be University, Bhubaneswar, Odisha

Abstract:

Objectives: Parkinsonism is a neurodegenerative disease characterized by an unevenness in dopamine and acetylcholine neurotransmitters in the midbrain, appears as extrapyramidal dysfunctions such as akinesia, trembling, stiffness, and catalepsy. Creatine, a natural amino acid derivative, has modest antioxidant and ROS-generating properties. The present study aimed to evaluate newly synthesized creatine for antioxidant and neuroprotective properties and to assess the impact of creatine on Haloperidol-induced PD in rats. **Method**: In the investigation of haloperidol's anti-parkinsonian action, 24 Wistar rodents of both sexes were randomly allocated to one of 4 groups, with 1st Group received normal saline as a control and 2nd Group received haloperidol (1 mg/kg, i.p). 3rd Groups and 4th were given L.Dopa (100 mg/kg, p.o) and Creatine (1.3g/kg, p.o) one hour prior receiving haloperidol. All doses were given once a day for a period of 21 days. Memory function was assessed using elevated plus maze, Y-maze, radial arm maze, catalepsy, along with Rotarod tests. Following antioxidant status, SOD, MDA levels, neurotransmitter levels (MAO-B enzyme, α-Synuclein), and histopathology of the brain's hippocampal area were assessed. **Result:** L.Dopa and Creatine mitigated Haloperidol-induced cognitive impairment by enhancing spontaneous alternation, correct response rate, and transfer latency. They also boost the antioxidant status, decreasing MDA levels and MAO-B enzyme, increased levels of SOD and α-Syn level. Reverse the histopathological alterations generated by Haloperidol in the hippocampus area. By improving antioxidant defense and depletion of α-Synuclein. **Conclusion:** This study validates Creatine's anti-PD action, perhaps making it a relevant therapy option in the future.

PHCL823

PHARMACOLOGICAL, PHYTOCHEMICAL EFFECTIVENESS TO DEVELOP AND CHARACTERIZATION OF CURRENT THERAPEUTIC PERSPECTIVES OF *CENTIPEDA MINIMA* HERBAL EXTRACTS

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[2]Rungta College of Pharmaceutical Sciences and Research, Bhilai, , Maharashtra

Abstract:

Objectives: The aim of this study was to develop and characterization of anti-cancer drug loaded novel drug delivery system for pulmonary targeting. **Methods:** A model herbal drug, *centipeda minima*, was selected for the study. Different formulations were prepared using varying concentrations of chemicals such as gold chloride, trisodium silicate and sodium chloride. The formulations were prepared by turkevich methods at optimized processing parameters. **Results:** The physical and chemical properties of the formulation were characterized using scanning electron microscopy (SEM) differential scanning calorimetry (DSC) and X-ray powder diffraction (XRPD). The novel formulations were evaluated for various parameters including drug content and *in-vitro* drug release *in-vitro* anti-cancer activities, *in-vivo* studies. The results indicated that the drug was uniformly distributed within the novel formulations. The *in-vitro* release studies demonstrated that the novel drug formulation could sustain the drug release for up to 10 hours, following a near zero-order release kinetics. The *in-vivo* studies indicated that the novel anticancer formulations were inhibited to tumor growth.

Conclusions: The study concluded that develop novel anti-cancer formulation effectively inhibited to tumor growth on pulmonary area. The optimized formulation showed excellent physicochemical properties and sustained drug release, it has pave for the society and making it a potential for commercial application.

PHCL824

PHYTOCHEMICAL SCREENING AND ANTIDIABETIC POTENTIAL OF HYDRO-ALCOHOLIC EXTRACT OF *POLYGONUM PLEBEIUM* ON DIABETIC RAT MODELS

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[2]Gayatri College of Pharmacy, Sambalpur, Odisha

Abstract:

Objective: The objective of this study was to investigate the antidiabetic effect of hydroalcoholic extract of *P. plebeium* whole plant in alloxan-induced diabetic Wistar rats. Phytochemical screening was also conducted. Wistar rats weighing between 100 and 150 g were used for the study and diabetes was induced using adrenaline (0.8mg/kg) and alloxan monohydrate (150 mg/kg) intraperitoneally. The animals were treated with aqueous ethanolic extract of P. plebeium for 2 weeks. Blood glucose levels and body weight were then monitored. **Methods:** The antidiabetic potential was evaluated using alloxan-induced diabetic Wistar rat model (*in vivo*) by hydro-alcoholic extract. Phytochemical analysis of the hydro-alcoholic extract was done. Rats were distributed in to 4 groups. First: the normal control group; A, second: the diabetic control group(alloxan); B and (Adrenaline); C, third: the diabetic group which received hydroalcoholic extract of *P. plebeium*; D. **Results:** The phytochemical analysis revealed the presence of alkaloids, tannins, saponins, phenols, proteins, carbohydrates, gums, mucilages as secondary metabolites. **Conclusion:** This study suggests that the aqueous ethanolic extract of *P. plebeium* whole plant possesses a potent antidiabetic effect and may potentially be used to treat diabetes and associated complications.

PHCL825
HOMOLOGY MODELLING DEVELOPMENT AND VALIDATION OF VIPER VENOM ENZYMATIC COMPONENTS

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Abstract:

Objectives: The aim of this study was homology modelling development and validation of viper venom enzymatic components. **Methods:** The homology modelling by Swiss-Model server enables the creation of accurate structural predictions based on template modelling, which is essential when experimental structures are not available. The phytochemicals were chosen based on the available literature data for its snake venom neutralization potential. Homology modelling is done with Swiss-model using uniport id. Serine proteinase (D3YLG9) Metalloproteinase (Q90495) and hyaluronidase (A3QVN6). Using Schrödinger's software, docking was done with these phytochemicals against the protein model against various enzymatic components of snake venom, including metalloproteinase, serine proteinase and hyaluronidase. **Results:** Protein model was developed by Swiss model with uniport id and molecular docking of chosen phytochemicals was carried out against metalloproteinase, serine proteinase and hyaluronidase to assess its inhibitory potential. Based on the docking result, rosmarinic acid for serine proteinase and hyaluronidase and gallocatechin for metalloproteinase for neutralization of Saw-scale viper venom are the top hit compounds. **Conclusions:** The venom of the Saw-scale viper venom may be neutralized by that mixture of phytochemicals having the capacity to inhibit venom toxins. It is vital to employ natural substances as auxiliary treatment with antivenoms in order to complement and/or enhance antivenoms effect. This will improve to minimize the local tissue damage and systemic toxicity that results from envenoming.

PHCL826
DEVELOPMENT AND EVALUATION OF *MUCUNA PRURIENS*SEED EXTRACT FOR ALZHEIMER'S DISEASE

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Abstract:

Objective: The present study's objectives involve enhancing the bioavailability of *Mucuna pruriens* extract for neurodegenerative diseases.*M. pruriens*extract contains phytoconstituents like phosphatidylcholine. The formulated phytosomes will show enhancement in solubility towards lipophilicity and will help to cross the blood-brain barrier so that it will increase the bioavailability of extract and finally show better results for the treatment of neurodegenerative diseases. **Materials and Methods**: *M. pruriens* plant was selected for the study. Different extraction and pre-formulation study and HSPCwas prepared, and DSC and NMR spectroscopy were done. *In vitro*, anti-oxidant study, and *in vivo* studies were conducted. Behavioral parameters were assessed such as T-maze, elevatedplus maze, and actophotometer followed by histopathological studies was also done. **Result:** The histopathological results showed the significant neuroprotective activities of *M. pruriens* seed extracts against alzheimer's disease. In addition, the effects of L-dopa and *M. pruriens* seed extract on *in vitro* acetylcholinesterase activities were studied. *M. pruriens* seed extract demonstrated acetyl cholinesterase inhibitory activity, while synthetic L-dopa enhanced the activity of the enzyme. **Conclusion:** It can be concluded that the administration of *M. pruriens* seed might be effective in protecting the brain against neurodegenerative disorders such as Parkinson's and Alzheimer's diseases. The seed extract containing L-dopa has shown less acetylcholinesterase activity stimulation compared with L-dopa, suggesting that the extract might have a superior benefit for use in the treatment of Alzheimer's disease.

PHCL827
ANTIBIOTICS USE IN PEDIATRIC POPULATION

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Abstract:

Objectives: Theobjective of this study was to find out the prevalence of antibiotics use and the methods currently follow edin the prescription of antibiotics to new born sand children admitted to the pediatric hospital and out patient department. When administered improperly, how it may lead to the development of antimicrobial resistance and treatment cost and time and mortality. Study aim edtoassess the pattern of antibiotics their predictors inpediatricpatients. **Methods:** Across-section alstudy was conducted to assess the prevalence of antibiotic use and the current antibiotic prescribing practices across pediatric hospital . Data was collected from pediatric wards during the study. Data were collected by health care professionals including physicians, clinical/hospital pharmacists.And nurses working in pediatric wards.The data selection for carrying out this study has been made by studying the combination of combined review articles and research papers from various databases, including ReserchGate, PubMed, MDPI, Elsevier, Science Direct, and Med Crave, from from the year1970to2024, byusingkeywordslike antibiotics use in pediatrics; antibiotics; Children; antimicrobial resistance; antibiotics prescription; inappropriateuseofantibiotics;pediatrics. **Result:** The study included children and neonates who received antibiotic prescriptions. The results obtained include the most frequently prescribed antibiotic class; the majority of patients were prescribed one antibiotic, and the intravenous route was the primary routefor administration; the majority of patients were prescribed antibiotics empirically; community-acquiredinfectionswere the most common type of infection for antibiotic prescription; similarly, sepsis was the most common indication for antibiotics; and the majority of prescribed antibiotics belonged to the 'Watch' category asper the WHO AWa Reclassification.Theprevalenceofantibioticuseamong pediatric patients was for patients suffering from gastroenteritis and for those affected by pneumonia and malaria. Most antibiotics were for parenteral use. Many of the prescriptions had errors, primarily in the duration of treatment or dosage. Analysis revealed that patientsprescribed three or more antibiotics or hospitalized for a short time were more likely to experience inappropriateuseof antibiotics. **Conclusion:** The study revealed a significant prescription error rate in addition to a high incidence of antibiotic use, particularly among patients who were hospitalized for a brief period of time or who were administered three or more antibiotics. These findings are alarming because the development of antibiotic-resistant bacteria is mostly caused by the misuse and overuse of antibiotics. Policies are therefore required to limit the inappropriate and excessive use of antibiotics. Our research showed that newborns and young children were overusing antibiotics; as a result, quality improvement initiatives, such as antimicrobial stewardship initiatives, are desperately needed to address persistent problems

PHCL828
PHARMACOVIGILANCE OF PSYCHOTROPICS AMONG PATIENTS IN A MENTAL HEALTH INSTITUTION OF EASTERN INDIA

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Abstract:

Objectives: The primary objective of this study is to check the safety and side effects of psychotropic drugs in patients at a mental health institution in Eastern India. Our secondary objective is to find patterns and

causes of adverse drug reactions to improve how these medications are managed to enhance patient care. **Methods:**The Department of Psychiatry, Mental Health Institute (MHI), Srirama Chandra Bhanja Medical College & Hospital (SCBMCH), Cuttack, Odisha, India, undertook this eight-month study. Institutional Ethical Committee consent was obtained before starting the study (IEC No 154/2020 dated 07.02.2020, 36th meeting). The research maintained patient confidentiality and anonymity throughout. Participants were selected based on a stratified randomized observational sampling method and categorised based on their admission, gender, age, number of medications and past psychiatric illness. This pharmacovigilance study reported 377 ADRs in 180 psychiatric patients (aged 10-80) on psychotropic drugs over eight months. ADRs were assessed using WHO UMC causality, Schumock and Thornton preventability, and Modified Hartwig Severity Scale and analysed statistically by chi-square test. **Results:** ADRs were mainly detected through active surveillance (64.4%) in male patients (60%) aged 19-29 (32.6%) with schizophrenia and related disorders (37.7%). Most reactions were augmented (68.2%) due to the pharmacological properties of psychotropics on neurotransmitters. The nervous system was primarily affected (63.9%). Antipsychotics caused the most ADRs (59.7%), with tremors in 54.6% of patients. Most ADRs were classified as 'possible' (53%) and 'predictable' (89%). Severity was generally low, with 38% of patients experiencing level 2 severity. **Conclusions:** ADRs limit therapeutic success. Early discovery and inhibition of ADRs may improve therapy and results and diminish pointless healthcare expenses. Hospitals receiving computerized physician order entries and electronic health records under the Health Information Technology for Economic and Clinical Health Act have reduced pharmaceutical errors and ADR-related patient complaints by 50%. Our study found that prescribing fewer drugs lessens polypharmacy-related ADRs. Adjuvant medicines can decrease predictable and preventable ADRs. However, drug-drug and drug-food interactions, ethical problems in causality assessment, and unknown recovery in some cases necessitated follow-up for further investigation.

PHCL829
EXPLORING THE ESSENTIAL ROLE OF NRF2 SIGNALING PATHWAY AND WNT/B-CATENIN PATHWAY IN THE FUNCTIONALITY, DEGENERATION, AND POTENTIAL THERAPEUTICS OF PACEMAKER CELLS

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Abstract:

Objectives: The study aims to elucidate the crucial roles of the Nrf2 signaling pathway and Wnt/β-catenin pathway in the preservation, degeneration, and therapeutic potential concerning pacemaker cells. These cells are imperative for maintaining cardiac rhythm, and understanding the regulating pathways could provide new insights for therapeutic approaches to combat arrhythmias and other related disorders. **Methods:** This research utilized both *in vitro* and *in vivo* models to observe the behavior and response of pacemaker cells under various conditions. Genetic modifications and pharmacological interventions were employed to modulate the Nrf2 and Wnt/β-catenin pathways. Techniques such as RNA sequencing, immunofluorescence, and electrophysiological recordings were applied to analyze gene expression profiles, protein localizations, and cellular functionalities, respectively. **Results:** Activation of the Nrf2 signaling pathway was found to significantly enhance the antioxidative capacity and viability of pacemaker cells, protecting them from oxidative stress-induced damage. Conversely, impairment of this pathway led to accelerated cellular degeneration. The Wnt/β-catenin pathway was critical in maintaining cellular structure and function, where its dysregulation resulted in morphological abnormalities and functional

decline of pacemaker cells. Remarkably, targeted activation of these pathways through specific agonists ameliorated degeneration and restored functional properties in compromised pacemaker cells, underscoring their therapeutic potential. **Conclusions:** The findings demonstrate that the Nrf2 and Wnt/β-catenin pathways are indispensable for the functionality and survival of pacemaker cells. The modulation of these pathways holds promising therapeutic avenues for the prevention and treatment of pacemaker cell degeneration. This study provides foundational insights and paves the way for the development of novel treatments aimed at enhancing cardiac health and mitigating rhythm disorders.

PHCL830
PHYTOCHEMICAL AND PHARMACOLOGICAL SCREENING OF ETHANOLIC EXTRACT OF *ZIZIPHUS OENOPLIA*(L.) MILLER LEAVES ON WISTAR ALBINO RATS

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Abstract:

Objectives: The study aimed to evaluate the ethanolic extract of *Ziziphus oenoplia*(EEZO)leaves for its phytochemical composition and pharmacological effects using animal models. **Methods:** Leaves were dried and powdered. The ethanolic extract was prepared by maceration and extract was subjected to qualitative and quantitative phytochemical analysis. For assessing anti-anxiety and spontaneous behavior, the animal models used were Elevated Plus Maze, Light and Dark model, Mirror Chamber Apparatus and Opto-Varimex Auto-Track system. Two doses of the extract (EEZO), 250mg/Kg and 500mg/Kg were administered orally to rats for 14 days. Diazepam (2mg/Kg) was used as the standard drug. Readings were recorded on Day-1, Day-7, Day-14, Day-21 and Day-28. The results were statistically analyzed using two-way ANOVA followed by Dunnett's test. **Results:** Preliminary phytochemical screening showed the presence of alkaloids, carbohydrates, proteins, steroids, amino acids, flavonoids and tannins. Anti-anxiety model demonstrated a significant increase in the percent open arm entries (%OAE) and time spent in open arms (%TSOA) in EPM for the test groups. Similar effects were observed in the Light and Dark Model (NEL and TSL) and Mirror Chamber Apparatus (NEM and TSM). Additionally, EEZO exhibited mild CNS depressant effects, with significant decreases in distance travelled (DT) and increase in resting time (RT). **Conclusion:** Ethanolic extract of *Ziziphus oenoplia* at a doses 250mg/Kg and 500mg/Kg demonstrated significant anxiolytic and mild CNS depressant effects compared to control. These findings support the therapeutic use of *Ziziphus oenoplia* for managing anxiety and related CNS conditions, highlighting the plant's value in traditional and modern medicine.

PHCL831
CRISPR/CAS9 GENE EDITING: A NEW HOPE FOR ALZHEIMER'S DISEASE (AD): A COMPREHENSIVE META ANALYSIS

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Abstract:

Objectives: This meta-analysis aims to evaluate the potential efficacy and safety of CRISPR/Cas9 gene editing technologies in the treatment of Alzheimer's Disease (AD). By systematically reviewing recent studies, our objective is to determine whether CRISPR/Cas9 can be considered a credible therapeutic approach for modulating or correcting genetic factors associated with AD pathology. **Methods:** A comprehensive literature search was conducted using databases such as PubMed, Scopus,

and Web of Science, focusing on studies published from January 2010 to December 2023. Selection criteria included preclinical and clinical studies that utilized CRISPR/Cas9 for gene editing in models of AD. The quality of evidence was assessed using the Cochrane Risk of Bias Tool and the GRADE approach. Data extraction focused on experimental design, target genes, delivery methods, observed phenotypic outcomes, and reported off-target effects. Meta-analytic techniques used included fixed and random-effects models to estimate pooled effect sizes and heterogeneity measures. **Results:** Our analysis included 42 studies encompassing various animal models and *in vitro* systems. Key genes targeted by CRISPR/Cas9 included APP, PSEN1, PSEN2, and APOE. Pooled data revealed a significant reduction in amyloid-beta and tau pathology ($p < 0.001$) in CRISPR-treated groups compared to controls. Additionally, behavioural assessments showed marked improvements in cognitive functions across multiple studies (standardized mean difference = 1.45; 95% CI: 1.20-1.70). Off-target effects were minimal and generally non-disruptive to overall cellular functions. However, variability in delivery methods and gene targets indicates a moderate level of heterogeneity (I^2 = 52%). **Conclusions:** This comprehensive meta-analysis supports the potential of CRISPR/Cas9 gene editing as a promising therapeutic strategy for Alzheimer's Disease. The consistent reduction in hallmark AD pathologies and improvements in cognitive outcomes suggest a paradigm shift in the treatment of neurodegenerative diseases. However, further research is warranted to optimize delivery systems, minimize off-target effects, and confirm long-term benefits in clinical settings. Our findings underscore the importance of continued exploration and refinement of gene editing technologies in the quest to alleviate the global burden of AD.

PHCL832

PHARMACOLOGICAL EVALUATION OF HEPATOPROTECTIVE AND ANTIOXIDANT ACTIVITIES OF *CAPSICUM CHINENSE* LEAVES EXTRACT ON CARBON TETRA-CHLORIDE INDUCED HEPATOTOXICITY IN MICE

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Abstract:

Objectives: The aim of this study was to develop and evaluate the pharmacological evaluation of hepatoprotective and antioxidant activities of Capsicum Chinense leaves extract in CCl_4 induced hepatotoxicity in Swiss albino mice. **Methods:** For hepatotoxicity studies, reduced dose of Capsicum Chinense (50mg/kg), (100mg/kg) was administered daily for 21days. Glutathione (GSH), Lipid peroxidation (LPO) were estimated in serum. CCl_4 dose (2ml/kg i.p) with olive oil in the ratio of 1:1 v/v twice in a week is given to mice for induced hepatotoxicity during 21 days studies. **Results:** Induction of CCl_4 dose (2ml/kg i.p) with olive oil in the ratio of 1:1 v/v, increased the biochemical marker of LPO and GSH were decreased in disease control group. **Conclusion:** The improving effect of Capsicum Chinense in hepatotoxicity is investigated in this study. This study suggests that a reduced dose of Capsicum Chinense can act as hepatoprotective agents in CCl_4 induced hepatotoxicity in mice.

PHCL833

A SURVEY ON SELF MEDICATION IN SELECTED AREAS OF KALABURAGI CITY

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[2]MTRIPS (RGUHS), Kalaburagi, Karnataka

Abstract:

Objectives: The main aim of this study is to investigate the types of drugs most commonly used as self-medication among different demographic groups. **Methods:** A prospective observational study

was conducted on 202 people consuming self-medication. The study was carried out in Kalaburagi city over a period of 5 months. The houses were selected within the selected areas and marked according. The study was initiated after obtaining clearance from ethical committee. The people were enrolled in the study by considering the study criteria after taking their written consent to participate in the study the instruments or the tools used for the purpose are specially questionnaires. The baseline study was carried out and the data is collected. The collected study data is filled in M S Word and Excel sheet the data was evaluated. **Results:** The present study enrolled total of 202 people, of which 99 were male and 103 were female, in which 143 people took self-medication, people with age group between 31- 50 years consumed more self-medication. Among which educated people practiced more self-medication. Middle class people practiced higher self-medication (44%). Analgesics (34%) and antibiotics (24.45%) drugs were frequently used drugs. Among total subjects' people with no alcohol and tobacco habits were found to prefer self-medication in higher number. **Conclusions:** Self-medication is a prevalent practice in India influenced by factors such as a desire for self-care, empathy for family, limited healthcare access, financial constraints, misinformation, and extensive advertising. The alarming misuse of antibiotics through self-medication contributes to drug resistance and adverse drug reactions (ADRs). To mitigate the risks associated with self-medication, stringent regulations are necessary. This includes mandatory reporting of ADRs for self-medication drugs, stricter FDA guidelines for over-the-counter antibiotics, and controlled advertising. Comprehensive public awareness campaigns are crucial to modify attitudes towards self-medication and promote responsible healthcare practices. Ultimately, these measures aim to improve individual health outcomes and overall quality of life.

PHCL834
REVIEWING CHICORY *(CICHORIUM INTYBUS L.)*: ASSESSING ITS ANTI-DIABETIC PROPERTIES

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Abstract:

Objectives: The objective of this review was to evaluate the potential of chicory plant especially the root as an Anti-diabetic agent, focusing on their key component, particularly insulin, and their effects on Type 2 diabetes mellitus. This review seeks to provide insights into chicory's effectiveness in diabetes management and its benefits as a natural dietary supplement.**Methods:** Phytochemical Analysis of Chicory plant was done and biological Activity Assessment was done on Sprague Dawley rats and Wister rats.**Results:** Animal Studies includes significant reductions in blood glucose and lipid levels in diabetic rats administered with chicory extracts.Mechanistic Insights shows that Chicory reduces intestinal glucose absorption and hepatic glucose production, improving insulin sensitivity.Clinical Implications shows that Chicory demonstrates promise as a natural dietary supplement for diabetes management, with potential to slow disease progression. **Conclusions:** Chicory, particularly its inulin-rich root, exhibits significant potential as a natural anti-diabetic agent. It offers a dual role in managing blood glucose and lipid levels, making it a promising candidate for future clinical studies on diabetes management.

PHCL835

POLYPHARMACY, OPTIMIZING MEDICATION MANAGEMENT AND DEPRESCRIBING IN TYPE 2 DIABETES WITH COMORBIDITIES: A CLINICAL PHARMACIST-LED INITIATIVE IN A PRIVATE HEALTHCARE SETTING

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[2]Department of General Medicine, Government Medical College and Hospital, Ooty, Tamil Nadu

Abstract:

Objectives: The primary objective is to assess patients' and caregivers' perception on polypharmacy and deprescribing using a revised Patients' Attitudes Towards Deprescribing (rPATD) questionnaire. The Secondary objectives included examining prevalent comorbidities in diabetic patients, identifying commonly prescribed medications, investigating medication errors, and emphasizing the role of clinical pharmacists in minimizing these errors. **Methods:** A prospective cross-sectional study involving 106 type 2 diabetes patients with comorbidities was conducted over three months in a private healthcare setting. The study identified common comorbidities and reviewed medical records to detect, address, and avert medication-related issues. Appropriate interventions were implemented subsequently. The rPATD questionnaire was used to understand patients' and caregivers' attitudes toward their medications and their thoughts on discontinuing them. **Results:** The study included 106 inpatients, with 63 patients and 43 caretakers. Hypertension (66%), chronic kidney disease (57%), cardiovascular diseases (50%), retinopathy (24%), diabetic ketoacidosis (16%), and dyslipidemia (10%) were the most common comorbidities. Among the 106 inpatients, 48 (45%) medication errors were identified, including 69% prescription errors, 17% administration errors, 12% documentation errors. It was also found that patients and caregivers of individuals over the age of 60 experienced significant financial and medication burdens. **Conclusion:** The involvement of clinical pharmacists was crucial in improving drug documentation, reducing prescription duplications, and minimizing dosing errors, potentially enhancing patients' quality of life. This study highlights the essential role of clinical pharmacists in addressing gaps in the Indian healthcare system.

PHCL836

COMPARATIVE STUDY OF ANTIDIABETIC EFFICACY OF MULBERRY FRUIT AND LEAF EXTRACTS ON ALLOXON INDUCED DIABETIC ALBINO RATS

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Abstract:

Objectives: Mulberry is a tree that belongs to the family Moraceae. Mulberry fruits are used in traditional medicine for several years and are known for their ability to improve human health. The present review aims to understand anti-diabetic effects of ethanolic/ methanolic and aquous extracts of different parts of mulberry. Different parts of mulberry like leaves, fruits, branches have been extensively studied for antidiabetic activity. **Methods:** Wide range of extraction methods were employed for extraction of active constituents of mulberry. Soxhlet extraction, cold and hot percolation followed by rotary evaporation and freeze drying were among extraction methods. Usually six groups of albino rats, containing 24-48 rats were studied. Negative and positive control groups and treatment groups were formed. Treatment groups were given increasing dose of mulberry extract orally. Alloxon (ip) was used as diabetes inducing

agents. Metformin was the standard drug. Blood glucose level was estimated by glucometer at different time intervals. **Results:** Morus alba extract at the given doses significantly reduced blood glucose levels as compared to control group, but as compared to standard drugs (metformin) its statistically insignificant. **Conclusions:** The present study concludes that mulberry fruits and leaves have excellent hypoglycaemic activity in type 2 diabetic mellitus.

PHCL837
ASSESSMENT OF ANTIULCER ACTIVITY OF *PTEROSPERMUM LANCEIIFOLIEUM* IN EXPERIMENTAL ANIMAL MODELS

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Abstract:

Objectives: The aim of this study was to evaluate the antiulcer activity of *Pterospermum lanceiifolieum* in different experimental animal models. **Methods:** Male Albino rats were divided in to six groups of six animals per group and animals were fasted for 24 hrs prior to the experiment in perforated steel cages to avoid coprophagy. In ethanol induced gastric ulcer model after one hour after the drug treatment the animals were treated with absolute ethanol [5ml/kg] to induce ulcers. The animals were sacrificed after 1hr and stomach was opened and percentage inhibition of ulcer was determined. Stress ulcers were induced by forced swimming in the glass cylinder (height 45cm, diameter 25cm) containing water to the height of 35cm maintained at 25ºC for 3 hours. After the drug treatment animals were allowed to swim in water for 3 hours. Then the animals were sacrificed and stomach was opened. The ulcer index and percentage inhibition of ulcer was determined. **Results:** As per OECD-423 guidelines (Acute toxic class method) No mortality or acute toxicity was observed (3 days) up to 2000mg/kg of body weight. In ethanol induced gastric ulcer model the extracts exhibited an inhibition percentage of 65.77, 72.54 and 86.59 at doses of 100, 200 and 400mg/kg doses respectively. The ulcer protective action of extracts at 400mg/kg was equal to that of standard drug sucralfate, which exhibited an inhibition percentage of 92.42. In water immersion stress induced ulcers the ethanolic extract of *Pterospermum Lanceiifolieum* exhibited a dose dependent inhibition percentage of 52.20, 71.16 and 87.79 at doses of 100, 200 and 400mg/kg dose respectively. The standard drug omeprazole showed an inhibition percentage of 92.75. **Conclusions:** The study concluded that *Pterospermum Lanceiifolieum* showed a dose dependent curative ratio compared to ulcer control groups.

PHCL838
EVALUATION OF ANTICANCER ACTIVITY OF ISOQUINOLINE DERIVATIVES AS CDK4/6 INHIBITORS IN BREAST CANCER

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Abstract:

Objectives: The aim of this study was to evaluate of angiogenesis activity of isoquinoline derivatives using egg CAM assay. **Methods:** On day 2 Fertilized eggs received from Karyome Pvt Ltd, Eggs were incubated for 38.3 ± 0.2 % for 10 days, divided into three groups.1% DMSO was used as a vehicle for test and positive control. On day 7 eggs were observed for angiogenesis activity and marked with the help of a Fiberoptic light source. On day 10 window was cut and the eggshell was removed carefully, with the help of sharply pointed forceps and a small spatula, CAM was exposed to test and positive solution at (5,10,15,20,30 µL/ml concentration) through micropipette and negative control was treated with

0.9% NaoH. **Results**: Results of CDK 4/6 inhibition assay showed that test compound 5b shown dose dependent inhibition of enzyme when compared to control but decreased inhibition when compared with standard group. **Conclusion:** CAM assay findings highlighted that it also contains antiangiogenic activity. These results attenuate that compound 5b is promising and possesses anti-angiogenesis activity.The CDK overexpression in breast cancer has been validated as a cancer target and their inhibition has been emphasized as a promising approach for anticancer drug development.

PHCL839

ROLE OF AGMATINE IN ALCOHOL CRAVINGS AND WITHDRAWAL SYMPTOMS IN RATS

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Abstract:

Objectives: The aim of this study was to evaluate role of Agmatine in Alcohol cravings and Withdrawal symptoms in Rats. We assessed the possibility of using agmatine for the treatment of these symptoms in a rat model of alcoholism. **Methods:** We induced alcoholism in rats using a free-choice drinking model for 60 days. From day 61, the free choice was continued until day 82 for the craving model, whereas only water was offered in the withdrawal model. Meanwhile, the treated groups for both models received agmatine (20, 40 & 80mg/kg/day) intraperitoneally from day 61 to 82, followed by a behavioral, and biochemical assessment. **Results:** Agmatine treatment caused a significant decrease in alcohol consumption with a positive effect on anxiety-like behavior in the open field test, memory in the elevated plus maze, and immobility in the forced swim test. Moreover, agmatine inhibits NMDA receptors and modulates oxidative stress levels in the brain. Furthermore, agmatine normalized the neurotransmitter levels of GABA and glutamate which were disrupted by alcohol consumption. **Conclusions:** Based on these findings, agmatine reversed alcohol cravings and withdrawal symptoms associated with alcohol dependence by modulating the hyperactivation of NMDA receptors and normalizing the level of oxidative markers and neurotransmitters in the brain.

PHCL840

AGMATINE ATTENUATES ATTENTION DEFICIT HYPERACTIVITY DISORDER USING EXPOSURE OF 6-OHDA IN MICE

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Abstract:

Objectives: The objective of this research study is to investigate the effects of agmatine on ADHD-like behavior in a mouse model of attention deficit hyperactivity disorder (ADHD). Specifically, the study will examine how agmatine, a neuromodulator, influences behavioral outcomes and neurochemical alterations induced by 6-hydroxydopamine (6-OHDA) in mice, which replicates key features of ADHD, including inattention, hyperactivity, and impulsivity. **Methods:** Animals received 6-OHDA hydrobromide on PND 5, displaying major ADHD-like symptoms: hyperactivity, attention deficits, and impulsivity. Coexisting symptoms included memory deficits in plus maze, anxiety like behaviour in marble burying test, depressive-like behaviour in sucrose preference test, and anti-social behaviour in three chamber Social Interaction task. Agmatine (20, 40, and 80 mg/kg, i.p.), L-Arginine (60 mg/kg, i.p.), Aminoguanidine (50 mg/kg, i.p.) significantly mitigated 6-OHDA-induced ADHD-like behaviour. Monitoring encompassed oxidative stress markers, neurotransmitter levels (nitrite, lipid peroxidation, glutathione, superoxide dismutase, Dopamine, GABA), associated with ADHD alterations. **Results:** Agmatine and its neuroprotective modulators effectively mitigated behavioural hyperactivity by

reducing ambulation and impulsive behaviour, while enhancing sucrose consumption, indicating antidepressant potential, also ameliorated impulsivity, attention deficits, increased social interaction, and reduced anxiety in 6-OHDA lesioned mice. These agents elevated dopamine, decreased lipid peroxidation and nitrite levels, and increased SOD and GSH levels, reducing oxidative stress. **Conclusion:** Agmatine significantly attenuated ADHD symptoms and mitigated oxidative stress in mice, as well as the drugs known to elevate its endogenous levels, such as L-arginine and aminoguanidine. These findings imply agmatine potential therapeutic agent for ADHD treatment and suggest preventive role in ADHD through agmatinergic modulators.

PHCL841

A REVIEW OF THE CURRENT ADVANCEMENT IN THE TREATMENT AND SUBSTANTIAL CARE OF BURN WOUNDS

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Abstract:

Objectives: The objectives of this study aimed to develop and enhance the state of the burn wound care methods that can reduce infection rates, minimize scarring, and hasten recovery. Investigating the new materials for the use of wound dressings, utilizing cutting-edge technologies like stem cell treatments, and acellular fish skin graft treatment. The major goals are to improve the patient's healing process and raise the overall quality of life for burn survivors. **Methods:** The academic literature was explored to acquire scientific data on a variety of features of current advancement in the treatment and substantial care of burn wounds. The elements included the effective treatment for Burn wounds, safety profile in burn wound patients, and clinical efficacy. To obtain relevant information, several web databases were used, including PubMed, ScienceDirect, Wiley, and ResearchGate. To ensure a thorough examination of all relevant studies and investigations, other search engines were used. "Burn wounds", "Hydrogel", "Honey-based dressing", and "*Lucilia sericata* Larvae" were some of the keywords utilized to find the relevant information. **Results:** The study showed some surgical methods to remove necrotic tissue from the wound or conservative approaches using some specialized dressings like Hydrogels, hydrocolloids, or enzymatic cleansing techniques. Even though skin grafts have advantages, research is currently being done to create customized artificial skin substitutes for burn wound closure that are made of biological, synthetic, and biosynthetic materials. Certain dressing treatments, such as active hydrogels, honey-based dressing, chitin-based dressing, the use of *Lucilia sericata* Larvae, or the application of fish skin, can also be utilized to improve the healing process. **Conclusions:** This study demonstrated the use of Hydrogels with therapeutic properties, dressings made of honey or chitin, and the use of *Lucilia sericata* larvae were all shown to hasten the recovery of burn victims in the current study. There is evidence that using fish skin may speed up the healing process as well. A more thorough knowledge regarding the manner in which burn wounds heal along multiple ways to provide adequate care for people with burn wounds requires further investigation.

PHCL842

MOLECULAR DOCKING APPROACH OF MEDICINAL PLANT'S ACTIVE COMPOUNDS IN SYSTEMIC LUPUS ERYTHEMATOSUS THERAPY BY TARGETING PTEN PROTEIN

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Abstract:

Objectives: This study aims to evaluate the usefulness of active constituents of medicinal plants against Systemic Lupus Erythematosus through the inhibition of PTEN protein by *in silico* approach. **Methods:** A comprehensive literature review was done to identify the best plants traditionally used in SLE having

efficacious bioactive compounds. After meticulously screening various literature, 5 plants were found to be traditionally used in the treatment of Systemic Lupus Erythematosus. The crystal structure of PTEN was retrieved from the Protein Data Bank. A total of 82 phytochemicals of the plants were identified from the IMPPAT database. From the total of 82 phytochemicals, 20 phytochemicals were selected from further screening for their absorption, distribution, metabolism, excretion, and toxicity (ADMET) properties using the SwissADME database. *In silico* molecular docking was performed using PyRx software and several phytochemicals were found to have fine binding affinities. **Results:** The molecular docking revealed that out of 20 active compounds, α-Amyrenyl has shown to have the best binding affinity against PTEN protein with a docking score of -10.2. **Conclusions:** Conclusively, this *in silico* study suggests that these investigated active compounds may serve as important therapy for the treatment of systemic lupus erythematosus.

PHCL843

EVALUATION OF ANTI-INFLAMMATORY ACTIVITY OF THE PLANT *HOMALOMENA AROMATICA* SCHOTT

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[2]School of Pharmaceutical Sciences, University of Science and Technology Meghalaya, Meghalaya

Abstract:

Objectives: This study aimed to perform preliminary phytochemical screening and evaluate the anti-inflammatory activity of the plant *Homalomena aromatica* Schott. by performing *in silico* molecular docking against TNF-α. **Methods:** The methanolic and aqueous extracts of the plant *Homalomena aromatica* Schott. were prepared for qualitative phytochemical screening in order to identify different groups of active phytochemicals**.** A total of 71 active compounds of the plant *Homalomena aromatica* Schott. were identified from the IMPPAT database and various literature. After screening their absorption, distribution, metabolism, excretion, and toxicity (ADMET) properties using the SwissADME database, a total of 20 active compounds from the rhizome, leaf, and root parts of the plant were selected for further *in silico* study. The crystal structure of TNF-α was retrieved from the Protein Data Bank. By using PyRx software, molecular docking of the 20 active compounds against TNF-α was performed. **Results:** The preliminary phytochemical analysis of the methanolic and aqueous extracts of the plant *Homalomena aromatica* Schott. revealed the presence of various phytoconstituents like alkaloids, tannins, saponins, cardiac glycosides, sterols, flavonoids, phenolic compounds, quinones, proteins, fixed oils, starch, and terpenoids. The *in silico* molecular docking study revealed that out of 20 active compounds, 8 compounds showed the best binding affinity against TNF-α. **Conclusions:** From this study it has been found that the plant *Homalomena aromatica* Schott. have many phytochemically active compounds which may be used as anti-inflammatory agents. Further *in vitro* and *in vivo* studies have been planned to validate its anti-inflammatory and other therapeutic activities.

PHCL844

IN SILICO SCREENING OF PLANT-DERIVED BIOMOLECULES FOR THE MANAGEMENT OF SYSTEMIC LUPUS ERYTHEMATOSUS

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Abstract:

Objective: The aim of this study is to identify a list of plant-derived isolated compounds that may have potential therapeutic effect in Systemic lupus erythematosus (SLE) through *in silico* molecular

docking studies and ADMET analysis. **Method:** A comprehensive literature search was conducted in PubMed, Web of Science, Scopus, the National Library of Medicine (NLM) catalog, and Google Scholar to identify medicinal plants effective in treating SLE, from which all their active compounds were identified using IMPPAT Database. Also, a target protein was identified by knowing the pathogenesis of the disease and it's structure was extracted from Protein Data Bank(PDB). Thus, molecular docking was performed for all the identified isolated compounds to check their binding affinity. The compound with the highest binding affinity was further visualized and it's ADME properties were predicted via SwissADME and Pharmacokinetic Modelling. **Results:** SLE also known as lupus, is a complex autoimmune disease characterized by a continuous history of remission and relapses, in which the immune system becomes overactive, producing antibodies that attack various tissue and organs, including the skin, joints, kidneys, heart, and brain. Through literature review, 10 herbs and their active compounds were identified which has a therapeutic potential against the identified target protein i.e. CD3E. Total 13 biomolecules were identified and obtained from PubChem database and docking were performed using PyRx Software. Results reviewed Celastrol as the compound that is obtained *from Tripterygium wilfordii* belonging to the family of Celastraceae has the highest binding affinity of -9.0, suggesting it's potential as a therapeutic agent for SLE. Next, Visualization of Celastrol against the target protein includes representation of hydrogen bonding, 2D poses and 3D poses, elucidating the MOA and structural insights. **Conclusion:** Based on the findings, it can be concluded that Celastrol adheres to the criteria defined in Lipinski's Rule of Five and possess a favourable binding and ADME properties. Consequently, this suggest that Celastrol may hold a significant potential as a therapeutic target for SLE management.

PHCL845
NATTOKINASE ALLEVIATES 3-NITROPROPIONIC ACID-INDUCED HUNTINGTON'S DISEASE LIKE SYMPTOMS IN RATS

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Abstract:

Objectives: To evaluate whether Nattokinase administration can mitigate the neurodegenerative effects induced by 3-nitropropionic acid in a rat model exhibiting Huntington's disease-like symptoms. **Methods:** The study induced Huntington-like symptoms in rats using 3-Nitro-propionic acid in a dose of 10 mg/kg over 14 days, Nattokinase treatment on day 7, using doses of 9 mg, 18 mg, and 36 mg, and behavioural tests like Grip Strength, Narrow Beam Walk, Open Field, and Footprint Analysis. The rats were divided into five groups receiving 3-NP with the specified doses of Nattokinase. On the 15th day, biochemical analyses for MDA, Nitrite, Catalase, Acetylcholinesterase, BDNF, and inflammatory cytokines were performed, followed by histopathological examination of the striatum**.** **Results:** OFT indicated increased locomotor activity, the narrow beam walk test showed enhanced motor coordination and balance, footprint analysis showed improved gait abnormalities, and the grip strength test revealed improved muscle strength in NK-treated rats compared to those only treated with 3-NP. Effects of these treatments on body weight, as well as biochemical levels showed that the Nattokinase in a dose of (9mg, 18mg, and 36mg) significantly restored body weight. MDA levels, were significantly lower in NK-treated rats, while antioxidant enzyme CAT was elevated. Histopathological examination showed a reduction in neuronal damage and striatal degeneration in NK-treated rats. **Conclusion:** The

study findings suggested that Nattokinase has neuroprotective effects, making it a promising candidate for further research in Huntington's disease and other neurodegenerative disorders.

PHCL846
DRUG UTILIZATION PATTERNS IN CARDIOLOGY DEPARTMENT AT A TERTIARY CARE HOSPITAL IN NORTHEAST INDIA

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Abstract:

Objectives: The objective of this study is to determine the prevalence of cardiovascular diseases (CVD's) and to analyse the categories of drugs prescribed for their treatment in the population of Northeast India. **Methods:** This retrospective observational study was conducted in the cardiology department of Ayursundra Tertiary Care Hospital in Guwahati, Assam. It analysed gender distribution, types of CVD's, associated conditions, and medications used, based on patient medication profiles, medical records, and nursing charts. The study included patients aged 18 and above who visited the cardiology department, excluding those from other departments and pregnant or nursing women. **Results:** The study included 100 nos of cardiovascular patients with a mean age of 51-60 years, 69% of whom were male. Drug prescription rates were highest for Pantoprazole (66.66%), followed by Aspirin and Torsemide, each at 4.45%. The study revealed a high prevalence of hypertension (51%) and coronary artery disease (24%). Among the prescribed drugs, Lipid Lowering Agents accounted for 16 %, and Anti-Diabetic Drugs made up 7.85%. The most frequently used drugs in their respective categories were Insulin Glargine (18.60% for anti-diabetics), Amlodipine (36.36% for calcium channel blockers), and Nitro-glycerine Controlled Release (77.27% for anti-anginal drugs). Combination therapies were common, with Pantoprazole used to manage the side effects of antiplatelet drugs, while beta-blockers, diuretics, and calcium channel blockers were used to treat hypertension. The study highlights the importance of ongoing research to improve drug use and enhance patient quality of life. **Conclusion**: The study found that hypertension and coronary artery disease were the most prevalent conditions among the CVD's patients, with a higher incidence in males aged 51-60 years. Type 2 diabetes mellitus and valvular heart diseases were common comorbidities. Lipid-lowering agents and anti-diabetic drugs were the most prescribed, emphasizing the importance of antiplatelets and anticoagulants in CVD management.

PHCL847
EVALUATION ROLE OF 2 - FUCOSYLLACTOSE ON SLEEP APNEA-INDUCED COGNITIVE AND BIOCHEMICAL ALTERATIONS IN A MOUSE MODEL

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Abstract:

Objectives: To evaluate the role of 2'- Fucosyllactose on Sleep Apnea-Induced Cognitive and biochemical alterations in a mouse model. **Methods:** C57/BL6 mice (N=8) were subjected to Intermittent Hypoxia (IH) in a hypoxia chamber where the oxygen level was gradually reduced from 21% to 5% over a 20-minute period, twice daily for 21 days. The negative control group and positive control group (IHSA group) received vehicle, whereas low dose group, high dose group and drug control group received 2'-Fucosyllactose 50mg/kg and 250mg/kg respectively. The animals were assessed for cognition and learning by subjecting them to Morris Water Maze from day 16 to 21. N=2 from each group were subjected to live animal imaging to determine the BBB integrity

and restoration effect of treatment on BBB integrity. Post necropsy biochemical analysis of SOD and GSH was carried out to determine anti-oxidant effect of 2'- Fucosyllactose. cAMP levels in brain homogenates were determined using ELISA kit method. **Results:** The study revealed that IHSA led to significant cognitive deficits, with impaired memory and learning in the Morris water maze test. Biochemical analysis showed reduced levels of antioxidants (SOD, GSH) and cAMP in the IHSA group. Treatment with high-dose 2-Fucosyllactose (250 mg/kg) significantly ($p<0.001$) improved cognitive performance, restored antioxidant levels, and normalized cAMP levels. Statistical analysis confirmed these findings, suggesting that 2-Fucosyllactose could be a therapeutic option for mitigating cognitive impairments associated with sleep apnea. The imaging confirmed that the IHSA group had damaged BBB integrity as the sodium 2'-Fluorescein dye penetrated and fluorescence was detected in Brain. However, the intensity of fluorescence was significantly($p<0.05$) lesser in high dose and drug control group in comparison to IHSA group. **Conclusions:** The study assessed Fucosyllactose's potential in improving cognitive impairments in a mouse model of intermittent hypoxia-induced sleep apnea (IHSA). High-dose 2'-FL treatment enhanced behavioural and biochemical markers, notably antioxidants and cAMP, leading to better memory retention. The findings suggest Fucosyllactose's promise in mitigating cognitive dysfunction in IHSA, with further molecular studies recommended.

PHCL848
INVOLVEMENT OF AGMATINERGIC SYSTEM IN CONDITIONED FEAR RESPONSE IN RAT MODEL OF POST-TRAUMATIC STRESS DISORDER

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Abstract:

Objectives: Agmatine is an endogenous neuromodulator of stress; however, its effect on PTSD remains to be investigated. This study explored role of agmatine in Conditioned Fear Response (CFR) in PTSD and highlighted how imidazoline receptors contribute to effect of agmatine. **Methods:** Intra-cerebroventricular (icv) surgery was done in order to facilitate drug administration. Animals were subjected to SPS. Agmatine and the involvement of Imidazoline receptors (I_1 and I_2) were assessed for their effect in fear conditioning apparatus. **Results:**During weeks 1, 2, and 3, in CFR, agmatine (40µg/rat, icv) showed significantly decreased freezing time as compared to other doses of agmatine (10 and 20µg/rat, icv). Imidazoline (I_1 and I_2) receptor agonists Moxonidine (25µg/rat, icv) and 2-BFI, (10µg/rat, icv) respectively, at their sub-effective doses, with a submaximal dose of agmatine (20µg/rat, icv) significantly decreased the altered freezing time during weeks 1, 2 and 3 compared to SPS animals. Moreover, the effective dose of agmatine (40µg/rat, icv) with imidazoline (I_1 and I_2) receptor antagonists Efaroxan (10µg/rat, icv) and Idazoxan (4µg/rat, icv) respectively does not show a significant effect on freezing. **Conclusions:** Agmatine and its combination with I_1 and I_2 agonists, normalized the altered freezing behavior due to SPS during CFR projecting its strong therapeutic implication for CFR in SPS induced-PTSD.

PHCL849
PHARMACOLOGICAL INVESTIGATION ON AGMATINE IN TYPE 2 DIABETES MELLITUS WITH CO-MORBID ALCOHOLISM

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Abstract:

Objectives: To establish and assess animal model for diabetic with co-morbid alcoholism and study the pharmacological effect of agmatine in T2DM with co-morbidalcoholism through biochemical evaluation.

Methods: The alcohol-induced type two diabetes mellitus (T2DM) group rats were fed with Liquid Modified Diet (LMD) + ethanol (EtOH) over 3 weeks with HFD with a low dose of streptozotocin (35 mg/kg) on day 14. Other groups are fed with respective HFD or LMD or normal diet. All the groups were then evaluated for blood glucose, glucose tolerance, insulin tolerance, lipid profile, amylase, SGOT, SGPT and alkaline phosphatase. Histopathologically liver and pancreatic morphology comparison was also performed.**Results:**Antidiabetic action of agmatine (40, 80 mg/kg, i.p.) was indicated by lowering in elevated blood glucose, cholesterol and triglyceride level in diabetic rats and also in alcohol induced diabetic rat. Also shows the beneficial effect on the liver enzyme profile and normalized SGOT, SGPT, ALP, amylase level. **Conclusion:** This study thus establishes the animal model of T2DM with co-existing alcoholism and also highlights evidentially the potential of agmatine in the management of diabetes in alcoholic subjects.

PHCL850
NATTOKINASE : A PROMISING THERAPEUTIC AGENT FOR STRESS-RELATED DEPRESSION

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Abstract:

Objectives: To investigate the therapeutic potential of nattokinase in alleviating depression-like symptoms induced by chronic unpredictable mild stress (CUMS) in mice. **Methods:** Nattokinase was administered orally at doses of 75mg/kg, 150mg/kg, and 300mg/kg to mice subjected to CUMS. Behavioral tests (tail suspension test, forced swim test, sucrose preference test, and open field test) were conducted to assess depression-like symptoms. Mean platelet volume, serum corticosterone levels, TNF-alpha levels, Aβ-42 accumulation, and brain-derived neurotrophic factor (BDNF) levels were also measured. **Results:** Nattokinase significantly reduced immobility time in the tail suspension test and forced swim test indicating its antidepressant-like effects, Nattokinase increased sucrose preference and improved exploratory behavior in the open field test, suggesting its ability to improve anhedonia and motivation, Nattokinase normalized mean platelet volume and reduced serum corticosterone levels, Nattokinase suggesting its anti-inflammatory effects.The highest dose (300mg/kg) reduced Aβ-42 accumulation and increased BDNF levels, indicating its potential neuroprotective effects, These results indicated that nattokinase may alleviate depression-like symptoms and highlight its therapeutic potential in managing stress-related depressive disorders. **Conclusions:** Nattokinase showed significant antidepressant-like effects in a mouse model of CUMS-induced depression, improve behaviour and physiology, and offered a new approach to managing depression.

PHCL851
EVALUATION OF ANTICLASTOGENIC ACTIVITY OF *DESMOSTACHYA BIPINNATA* FROM MOBILE RADIATION ON MICE

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Abstract:

Objectives: The aim of the study was to carryout anticlastogenic activity of *Desmostachya bipinnata* using comet assay and micronucleus assay in mobile radiation-induced mice model. **Methods:** *Desmostachya bipinnata* was shade-dried 10 days and aqueous extract was made in distilled water. A wireless two XYZ mobile phone of GSM-900MHz frequency range was served as induction model for study and positioned 10 cm above the animal and were receiving radiation at specific intervals. Swiss

Albino Mice are used and were grouped as Normal (G1)**,** Control (G2), Pre- treatment low dose (G3), Pre- treatment high dose (G4), Post- treatment low dose (G5), Post- treatment hight dose (G6).**Results:** The G2 % olive moment 98.37 ± 13.14 & tail moment was 110.16 ± 10.09 of the GSM-RFR exposed animals were significantly increased with the G2 group when compared with G1 and decreased when treated with *DB*. The treatment group G4 has shown to have protective action against GSM-RFR by % olive moment 5.76 ± 11.48 and tail moment 12.80 ± 0.02. the group G4 has shown lowest % of MN frequency 1.38±0.41 and other treated groups (G3, G5, G6) results lie on the same range. **Conclusions:** WHO classified mobile phone radiation in IARC scale as Group 2B – 'possibly carcinogenic causing increased risk of Glioma. In GSM-Telecommunications radio frequency of 880-1800MHz is most widely used and has genotoxic risk such as aging, cognitive, behavioral impairments in children, and pose cellular dysfunction and these mobile radiations are considered as clastogens..To our cognizance, this study is the incipient to report the anticlastogenic activity of the *Desmostachya bipinnata* against the RFR modulations of the irradiated mice models.

PHCL852

GASTROPROTECTIVE ASSESSMENT OF *BLUMEA LANCEOLARIA* IN THE MANAGEMENT OF PEPTIC ULCER: AN *IN VITRO, IN VIVO* AND *IN SILICO* EVALUATION

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Abstract:

Objectives: The aim of this research is to investigate the gastroprotective potential of *Blumea lanceolaria* (Roxb.) Druce extracts through a multi-faceted approach that includes phytochemical screening, *in silico, in vitro, in vivo* assessments. **Method:** This research investigates the chemical profile, pharmacological potential, and therapeutic applications of *Blumea lanceolaria* (Roxb.) Druce. Physicochemical analysis highlights significant mineral content, while water and ethanol extractions effectively yield bioactive compounds. Phytochemical screening reveals the presence of flavonoids, proteins, and glycosides with therapeutic relevance. HR-LC-MS identifies key compounds, including irinotecan and saxitoxin, indicating potential medicinal and environmental implications. FTIR spectroscopy confirms functional groups characteristic of phenolic compounds, supporting antioxidant properties. **Results:** Molecular docking studies show significant ligand binding interactions with the gastric proton pump H^+K^+ATPase, notably Solanocapsine with a binding affinity of 9.4 and Glycinoeclepin C, despite bioavailability challenges. Irinotecan demonstrates high gastrointestinal absorption, supporting oral use. Pharmacological evaluation of the ethanolic extract of *Blumea lanceolaria* (EEBL) reveals strong acid-neutralizing capacity and inhibitory effects on H^+K^+ATPase, with an IC50 of 70 µg/mL, comparable to omeprazole. EEBL also exhibits potent gastroprotective properties *in vivo*. **Conclusion:** The findings collectively underscore *Blumea lanceolaria* as a potent source of pharmacologically active compounds with significant therapeutic potential for managing acid-related gastrointestinal conditions and oxidative stress, Future research should focus on elucidating the underlying mechanisms of action and optimizing dosage regimens for clinical applications.

PHCL853
EFFECT OF AGMATINE ON RELEASE OF HYPOTHALAMUS-PITUITARY-ADRENAL (HPA) AXIS HORMONES

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Abstract:

Objectives: The objective of study was designed to assess the involvement and effect of paraventricular agmatine in the physiology of the HPA axis in eustress, acute stress, chronic stress and lipopolysaccharide (LPS) induced oxidative stress conditions in rats. **Methods:** Adult healthy male Sprague Dawley (SD) rats weighing 200-225 g, aged - 8 to 10 weeks were used for the study, rats were anaesthetized and perform intra-paraventricular nuclei (i-pvn) surgery, after cannulation animals were housed individually for a recovery period of 7 days then Agmatine sulphate and L-arginine were injected via i-pvn route, Lipopolysaccharides (LPS) were administered by intraperitoneal (IP) route, in another set of experiments the animals were evaluated for stress employing acute immobilization stress (AIS), chronic unpredictable stress (CUS) and LPS induced stress after the completion of treatment serum analysed for assaying levels of ACTH and CORT and also perform the behavioural assessment like open field test(OFT) and sucrose preference test(SPT). **Results:** The result of this experimental groups shows dose-dependent effects of agmatine and L-arginine on ACTH and CORT levels, with higher doses significantly reducing elevated levels induced by stress. additionally, higher doses of these substances improved ambulation, rearing behaviour, and depression-like behaviour in stressed rats the study's findings suggest potential by modulating hormone levels and behavioural responses. therapeutic applications of agmatine and L-arginine in managing stress-related disorders. **Conclusions:** The study indicates that intra-paraventricular administration of agmatine and L-arginine can modulate the stress response in rats, affecting ACTH and CORT levels under different stress conditions and the results suggest the potential therapeutic applications of agmatine and L-arginine in managing stress-related disorders and the overall, the study contributes to understanding the role of agmatine and L-arginine in stress response and their impact on hormone regulation in the HPA axis.

PHCL854
DEMENTIA MITIGATING EFFECTS OF LAVENDER ESSENTIAL OIL INHALATION IN THE MICE MODEL OFALZHEIMER'S DISEASE

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Abstract:

Objectives: The primary focus of our study was to demonstrate the effects of lavender and coriander essential oil inhalation on mitigating dementia symptoms in the mice model of Alzheimer's disease. **Methods:** Intracerebroventricular injection of amyloid beta peptide ($A\beta_{1-42}$) was used as the AD model to determine cognitive and olfactory dysfunction. Animals were made to inhale lavender oil in two different dilutions of 1% and 3% for 14 days using a nebulizer after 7 days of Aβ administration. Behavioural parameters were measured for olfactory and cognitive domains. Neurochemical parameters along with the extent of neurodegeneration were measured. **Results and discussion:** Lavender oil inhalation improved the impaired olfactory and cognitive functions and elevated the hippocampus GABA and serotonin levels in the bulbar and hippocampus tissues in $A\beta_{1-42}$ injected mice. Also, lavender oil inhalation lowered the ROS levels and decreased Ache levels in olfactory bulb and

hippocampus. APP and p-tau were measured in the bulbar and hippocampal tissues while olfactory marker protein (OMP), an indicator of proper olfactory function was measured only in the bulbar tissues. Aβ injection was found to significantly increase the bulbar and hippocampal p-tau expression while decreasing the OMP expression compared to the normal. Phosphorylated tau levels in both tissues were found to be significantly decreased in the combination group treated with lavender oil and donepezil lavender oil. A significant decrease in the APP expression in both tissues was found to significantly decreased. **Conclusion:** Inhalation of lavender oil was found to significantly ameliorate dementia in the AD model almost completely normalising the neurodegeneration. However, it is important to initiate further studies to optimize the safety and efficacy of essential oils in AD which remains as a promising area of research.

PHCL855
NATTOKINASE: A PROMISING IN PREVENTION AND TREATMENT OF PARKINSON'S DISEASE

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Abstract:

Objectives: To investigate the therapeutic potential of Nattokinase in LPS-induced Parkinson's disease in rats. **Methods:** Parkinson's disease was induced by the administration of LPS in substantia nigra in SD rats,Rat place into the stereotactic frame with nose and ear bar (after IP administration of ketamine and xylazine (75mg/ml and 100mgml),LPS injected through drill hole that 7.2mm ventral 2mm laterally 5.3 mm posterior bregma (Hamilton syringe), nattokinase administration at doses of 180 FU, 360 FU and 720 FU through oral route. **Results:** Natto kinase attenuated locomotor asymmetry in LPS-induced Parkinson-like symptoms in rats.Its attenuated motor symptoms, akinesia, motor coordination, Enhanced gripping time, Natto kinase normalized attenuated dopamine level, mitigated glutamate level, Natto kinase attenuates elevated nitrite level and Reduced glutathione level in rats, The study revealed that nattokinase administration at doses of 360 FU and 720 FU resulted in a significant improvement in Parkinson 's-like symptoms. **Conclusions:** Nattokinase showed anti-inflammatory and antioxidant action which contributed to the attenuation of symptoms of PD, i.e. it shows significant action in a model of LPS-induced Parkinson's, it ameliorates the neurotransmitter level and offers a new approach to overcoming Parkinson-like symptoms.

PHCL856
AGMATINE MITIGATES GUT-BRAIN-AXIS DYSREGULATION CAUSED BY ALCOHOL

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Abstract:

Objectives: Aim of the study was to evaluate the relationship between ethanol administration and GBA dysregulation in rat by oral ethanol paradigm and the role of agmatine and probiotics in ethanol-induced dysbiosis. **Methods:** We administered alcohol for consecutive 28 days and observed the parameters of anxiety and depression, along with ethanol intake, food intake, body weight, locomotor behaviors, etc. Also, we estimate the fecal microbes in saline, agmatine and probiotics treated groups. Agmatine (20–80 mg/kg, oral) and probiotics (Lactobacillus) (0.5-2.0 ml/rat, oral) treatment significantly decreased ethanol intake in the current study's oral ethanol paradigm and restored the normal gut microbial flora. **Results:** Agmatine and probiotics at these doses attenuated all the changes made by alcohol consumption in FST and EPM including food intake, body weight loss, etc. Similar results were found in

administration of sub-effective combination of agmatine and probiotics. **Conclusions:** Result of the present study revealed that ethanol administration disrupts the GBA and agmatine and probiotics are potential therapeutic targets that could revert ethanol-induced dysbiosis and related CNS complications.

PHCL857
DESIGN AND DEVELOPMENT OF NANOCARRIER FOR NOSE TO BRAIN DELIVERY OF CNS ACTING DRUG

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Abstract:

Objectives: This investigation aims to design and develop a nanocarrier system for the efficient nose-to-brain delivery of zolmitriptan, enhancing its therapeutic potential for the treatment of migraines. The study will involve the formulation and characterization of nanocarriers, evaluation of their drug-loading capacity, stability, and release profile, as well as *in vitro* and *in vivo* assessments of their efficacy and safety. **Methods:** NLCs were fabricated using a combination of hot melt emulsification (Patil, H et al.,2014), high-speed stirring, and ultra-sonication methods. Solid lipid and liquid lipid were mixed and heated under moderate stirring at 85 °C to form a uniform transparent oil phase). Double distilled water (10 mL) containing SAA (1% w/v) as a stabilizer and the drug ZMP (5 mg) was used as the aqueous phase. Heated separately for 10 min at the same temperature. the aqueous phase was poured dropwise to the lipid phase and mixed for 10 min at 20,000 rpm with a high-speed magnetic stirrer. The obtained pre-emulsion was then treated by a probe sonicator for 15 min. The final formula's total volume was adjusted to 10 ml. The obtained dispersions were stored at 4 °C for further investigations. **Results:** To develop an effective and safe nose-to-brain drug delivery system for antimigraine drugs, to improve therapeutic outcomes in migraine treatment. This method allows for direct delivery of the medication to the central nervous system (CNS) and can potentially enhance drug efficacy while minimizing systemic side effects. Nose-to-brain drug delivery is considered an available option to deliver various therapeutic agents with low cerebral bioavailability bypassing the blood-brain barrier (BBB). **Conclusions:** In the present study, Zolmitriptan nanoparticles were formulated successfully for nasal administration employing the combination of hot melt emulsification and high-speed stirring and ultra-sonication method. The formulation was characterized by entrapment efficiency, particle size, zeta potential, drug content, DSC, XRD, FT-IR, and *in vitro* drug diffusion profile. Physicochemical investigations demonstrated that the Zolmitriptan nanoparticles showed suitable particle size for nasal administration.

PHCL858
EVALUATION OF ANTI-ULCER ACTIVITY OF HERBOMINERAL FORMULATION IN RODENT MODEL

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Abstract:

Objectives: To carryout Acute Oral Toxicity studies to find out LD50 value of the Herbomineral formulation (HMF) (OECD 425 guideline) and Evaluation of activity of Herbomineral formulation (HMF) in Indomethacin induced Gastric Ulcer in rodent models. **Methods:** The LD50 for the animals

was determined using the acute oral toxicity method, as directed by OECD – 425, and the test item was subsequently categorized in accordance with the GSH categorization scheme. In order to assess the effectiveness of HMF in treating stomach ulcers, the indomethacin model was employed on Wistar albino rats. To evaluate the efficacy of HMF formulation versus esomeprazole in the treatment of stomach ulcers, a number of related factors were examined. **Results:** Treatment of Wistar Albino rats by administering a 2000 mg/kg dose according to the OECD 425 guideline exhibited no deaths or deficits hence the HMF was determined to have LD50 > 2000 mg/kg. Following the conversion of the human dose to the animal equivalent dose, the low dose and the high dose were determined. As a result, the doses for Treatments 1, 2, and 3 were set at 25 mg/kg, 50 mg/kg, and 100 mg/kg, respectively. Regarding gastric acid volume and pH, ulcer index, mucin concentration, and total acidity in the induction model, the low dose demonstrated little to no significance when compared to the control group's findings, while the high dose of HMF demonstrated significance when compared to the animals in the control group. Following HMF therapy, antioxidant parameters such as SOD and GSH levels were restored. When compared to the control group, biochemical markers such as SGOT and SGPT shown a strong correlation in the deduction of calcium. **Conclusions:** The Indomethacin-induced ulcer model demonstrated a noteworthy gastroprotective effect when exposed to mid and high-dose HMF. HMF has a gastroprotective effect that may be explained by its possible antioxidant activities, which also reduce inflammation, enhance mucin formation, and suppress ROS in rat stomach tissues.

PHCL859

AGMATINE-NPY INTERPLAY IN PARAVENTRICULAR NUCLEI REGULATES PUBERTAL ENDOCRINE PHYSIOLOGY

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Abstract:

Objectives: To study the effect of agmatine on puberty and evaluation of neuropeptide Y involvement in it and associated conditions. **Methods:** On PND 29 to 35 & PND 45-52 daily administration of agmatine (4, 8 µg i-pvn) & l-Arginine (5,10 µg i-pvn) in pre- & post-puberty male/female rats was done. Onset of puberty was examined through body weight, age of vaginal opening, oestrus cycle, testis development & plasma hormone levels. Estimation of LH, FSH, ACTH, TSH, oestrogen, progesterone, testosterone, T3 & T4 level in plasma by ELISA. The involvement of NPY was done by implying NPY (peptide) agonist and antagonist - BIBP3226 (1 µg i-pvn). **Results:** Testes development, vaginal cytology and oestrus microscopy verified normal pubertal onset in all the experimental groups. Intra-pvn administration of agmatine have significant influenced the hormonal levels in HPG axis in pre- & post-puberty male/female rats. NPY receptor antagonist BIBP2336 have shown significant reduction in the effect of agmatine and l-arginine on release and inhibition of hormones in HPG axis. **Conclusions:** These data suggest the influence of agmatine within paraventricular nucleus on release and regulation of hormones from HPG axis. Furthermore, our study also highlights the implication of NPY within PVN in the regulatory effect of agmatine in pre- and post pubertal animal. Thus, this interplay can be novel therapeutic target for management of pubertal disorders.

PHCL860
EVALUATION OF SPC-22 A POLYPHENOL ENRICHED FORMULATION ON EXPERIMENTAL MODELS OF DYSMENORRHEA AND POLYCYSTIC OVARY SYNDROME

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Abstract:

Objectives: To evaluate the role of SPC-22 a polyphenol enriched formulation on experimental models of dysmenorrhea and polycystic ovary syndrome. **Methods: Model 1:** 27 BALB/c mice weighing 20-25g mice were divided into 4 groups, and dysmenorrhea was induced by administering diethylstilboestrol through intraperitoneal route(0.8mg/kg). The treatment low dose and high dose received 100mg/kg and 300mg/kg of Polyphenol spc-22 respectively. treatment was administered for 13 days and on the 14th day oxytocin was administered and writhing was observed and scored. **Model 2:** 38 wistar rats were divided into 5 groups control, letrozole (1 mg/kg), low dose(100mg/kg), high dose(300mg/kg), standard groups/ Shatavari group (250mg/kg). Irregularities in cycle and treatment is done for 0-17 days and repeated the vaginal smears from 11th day to 18th day and evaluated microscopically using Giemsa stain to confirm regularities in cycles. The hormonal levels of LH, FSH, and estradiol was estimated by ELISA technique. SOD and GSH levels were determined in uterine tissue. **Results:** Model 1: Positive control group showed significant decrease($p<0.001$) compared to vehicle control group. Administration of high dose of polyphenols spc-22 showed significant decrease ($p<0.001$) in number of writhing's compared to the positive. **Model 2:** Positive control group showed significant decrease ($p<0.001$) in the FSH, LH and estradiol levels compared to vehicle control group. Administration of high dose of polyphenols spc-22 and Shatavari group produced significant increase ($p<0.001$) in the FSH, LH and estradiol compared to the positive control group. The same response was observed in both SOD and GSH as the high dose treatment restored the antioxidant levels. **Conclusions:** The results of the Dysmenorrhea study provide evidence that Polyphenol enriched formulation will be effective for treating PD. In the PCOS study, Polyphenols enriched formulation produced a significant increase in the FSH levels, estrogen levels and decreased LH levels in letrozole induced PCOS rat model. Hence the polyphenol enriched formulation could alleviate Dysmenorrhea and PCOS, which further needs mechanistic studies to confirm the same.

PHCL861
TO EVALUATE THE NOVEL GLITAZONES FOR PARKINSON'S DISEASE TARGETING PGC1A; *IN VITRO* AND *IN VIVO* STUDIES

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Abstract:

Objectives: To evaluate the neuroprotective effects of selected novel Glitazone compounds in a 6-OHDA-induced rat model of Parkinson's disease. **Methods:** The animals were fasted overnight before dosing, with test chemicals dissolved in sodium carboxymethyl cellulose. Based on the literature, a 300mg/kg dose was used. The test compound Uj10 was initially administered to one subject; upon no observed mortality, two additional animals were given the same dose. Following OECD 423, a higher 2000mg/kg dose was tested. Animals were observed for toxicity at various intervals and monitored for 14 days. They were assigned to seven groups based on weight, with behavioral activity assessed during the induction and

treatment phases. The trial lasted 42 days, with brain and liver samples collected post-euthanasia. **Results:** Compounds Uj10 and Uj11 showed the highest receptor activation in docking studies. Uj10 demonstrated better bioavailability and was tested in a 6-OHDA-induced Parkinson's model. Behavioral and biochemical assessments were conducted over 42 days. Body weight decreased post-surgery but increased significantly from days 14 to 42. **Conclusion:** The investigation suggests new glitazone Uj10 may prevent Parkinson's disease by improving grip strength, locomotor activity, and antioxidant levels, with no hepatotoxicity observed. Further studies are needed to elucidate its specific neuroprotective mechanism.

PHCL862
INVESTIGATION OF *OCIMUM SANCTUM* PROTECTIVE EFFECT AGAINST DIABETIC NEUROPATHY INDUCED BY STZ AND HFD IN MOUSE MODEL

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Abstract:

Objectives: To investigate the protective effects of Ocimum sanctum extract on cognitive impairment in a hyperglycemic mouse model induced by a high-fat diet (HFD) and streptozotocin (STZ). **Methods:** The animals were fed a high-fat diet for four weeks, after which streptozotocin was used to induce diabetes, resulting in neuropathy. Tulsi extract was administered from day 57 to day 70. Cognitive function, pain response, and gut permeability were assessed, and tissue samples were collected for biochemical and histopathological analysis. **Results:** The Morris Water Maze (MWM) test and acetylcholinesterase (AChE) activity analysis have shown that the groups treated with Tulsi and levetiracetam exhibited significant nootropic effects in mice. Blood glucose levels, lipid profiles, and antioxidant system measurements indicated improved results in both the Tulsi and metformin-treated groups. Behavioral and biochemical assessments confirmed that Tulsi functions as an effective cognitive enhancer, hypoglycemic agent, analgesic, and hypolipidemic agent. Comparisons with levetiracetam, which is used to alleviate neuropathic pain, and metformin, a blood glucose-lowering agent, support the conclusion that Tulsi has comparable potential to treat diabetic neuropathy, along with associated cognitive decline and gut dysbiosis. **Conclusions:** Tulsi, known for its anti-diabetic, analgesic, anti-inflammatory, antioxidant, and cognitive-enhancing effects, shows potential in treating diabetic neuropathy and slowing disease progression. Ongoing research is exploring the link between neuropathy, cognitive decline, and gut dysbiosis, though more cellular and molecular studies are required to gain deeper insights.

PHCL863
EVALUATION OF ANTIDEPRESSANT ACTIVITY OF COMBINATORIAL LEAF EXTRACT OF *AZADIRACHTA INDICA* (NEEM), *CITRUS LIMON* (LEMON), AND *MANILKARA ZAPOTA* (SAPOTA) IN EXPERIMENTAL ANIMAL MODEL

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Abstract:

Objective: The objective of the study is to evaluate the antidepressant activity of a polyherbal extract composed of Neem, Sapota, and Lemon, selected for their historical use and documented antioxidant properties. Neem is known for its tension-relieving and neuropharmacological effects, Sapota's polyphenols reduce oxidative stress, and Lemon's phenolic compounds provide antioxidant benefits. The

study aims to demonstrate that the antidepressant effects of the polyherbal formulation are attributed to its combined antioxidant activity and synergistic effects. **Methods:** Antidepressant activity was assessed using the tail suspension and forced swim tests (FST), with imipramine (25mg/kg) as the standard drug. In the FST, immobility was defined as the absence of movement except for necessary adjustments to keep the head above water. In the tail suspension test (TST), immobility time was measured when the mice ceased all movement. **Results:** Preliminary phytochemical screening confirmed the presence of flavonoids, saponins, tannins, phenolic compounds, and terpenes in the polyherbal extracts. Acute toxicity studies revealed no adverse effects up to 2000 mg/kg. The polyherbal formulation significantly reduced immobility time in both the Forced Swim Test (FST) and Tail Suspension Test (TST), with the 400 mg/kg dose showing the most pronounced antidepressant-like activity compared to the control and imipramine. **Conclusion:** The polyherbal formulation significantly reduced immobility time in both the tail suspension test (TST) and forced swim test (FST), as revealed by ANOVA analysis. This suggests antidepressant-like activity, likely due to its active constituents. Further research is needed to elucidate the exact mechanism of action.

PHCL864
INVESTIGATION ON THE ROLE OF AGMATINE IN AUTISM SPECTRUM DISORDER IN RATS

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Abstract:

Objectives: This study aimed to explore the effect of agmatine and its modulators, like L-arginine and aminoguanidine, on behavioural dysregulations and neurochemical alterations associated with propionic acid (PPA) induced autism in Sprague Dawley rats. **Methods:** Rat pups were administered propionic acid (PPA) orally at a dose of 250 mg/kg from postnatal days (PND) 21 to 23. This was followed by intraperitoneal injections of agmatine (20,40, and 80 mg/kg) and its modulators, L-arginine (60 mg/kg) and aminoguanidine (50 mg/kg), from PND 22 to 48. Behavioural assessments were conducted between PND 42 and 48. After the treatment and behavioural evaluations were completed, the rats' brains were collected on PND 49 for biochemical and neurochemical analyses, which were subsequently subjected to statistical analysis. **Results:** The study findings revealed that chronic agmatine treatment, particularly at doses of 40 and 80 mg/kg, enhanced sociability, alleviated anxiety and depression-like behaviours, and improved locomotor and exploratory activities that were disrupted by PPA administration. Additionally, agmatine significantly normalized GABA, glutamate, nitrite levels and biochemical disturbances caused by PPA. Apart from this, L-arginine, and aminoguanidinealso demonstrated similar effects exhibiting their importance in the treatment of phenotypes like-ASD. **Conclusions:** The study concludes that a dysregulated agmatinergic system may play a role in the etiopathogenesis of ASD. It also highlights agmatine and its modulators as promising therapeutic agents for ASD, demonstrating that agmatine, especially at doses of 40 and 80 mg/kg, mitigates ASD-like symptoms and restores neurochemical and biochemical changes by modulating the excitatory-inhibitory pathway.

PHCL865

INNOVATIVE APPROACHES IN PSORIASIS TREATMENT: EXPLORING ANTI-PSORIATIC THERAPIES AND EXPERIMENTAL MODELS

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Abstract:

Objectives: The objective of this study is to explore innovative systemic and topical treatments for psoriasis, focusing on advanced drug delivery systems and herbal therapies. It also evaluates experimental models for replicating psoriasis pathogenesis and testing novel therapeutic interventions. **Methodology:** A comprehensive review of current anti-psoriatic therapies was conducted, with a focus on advanced drug delivery mechanisms, including nanotechnology-based formulations, liposomes, and microneedles. Herbal compounds targeting keratinocyte hyperproliferation and immune modulation were also explored. The imiquimod-induced murine model of psoriasis was employed to evaluate histopathological changes and cytokine dysregulation relevant to the disease. **Results:** The experimental models demonstrated characteristic features of psoriasis, such as epidermal hyperplasia, immune infiltration, and cytokine imbalance. Nanogel-based drug delivery systems, in particular, showed enhanced drug stability, penetration, and retention in psoriatic skin. Herbal therapies also demonstrated potential for reducing inflammation and keratinocyte proliferation. **Conclusions:** This research underscores the potential of nanotechnology-based drug delivery systems and the utility of experimental models in advancing psoriasis treatment. Herbal therapies present promising complementary approaches for mitigating inflammation and hyperproliferation. Further research into these avenues may yield significant improvements in clinical outcomes for psoriasis patients.

PHCL866

BERBERINE'S THERAPEUTIC PROSPECTS IN PARKINSON'S DISEASE: A SPOTLIGHT ON CHOLESTEROL REGULATION FOR COGNITIVE IMPROVEMENT

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Abstract:

Objective: The current study aimed to elucidate the therapeutic potential of berberine in mitigating cognitive impairment in Parkinson's disease by conferring protection to hippocampal pyramidal neurons through regulating cholesterol homeostasis. **Material and methods:** Parkinson's disease was induced in male Sprague Dawley rats through the administration of rotenone (intraperitoneal, 2.5 mg/kg) for 42 days, followed by treatment with berberine (oral administration, 10 mg/kg and 40 mg/kg) for 21 days. The efficacy of berberine was assessed through evaluations encompassing cognitive function, motor coordination, locomotor activity, biochemical analyses, and histopathological examinations. **Results:** Our findings revealed that berberine, administered intraperitoneally at a dose of 40 mg/kg, effectively ameliorated the symptoms associated with Parkinson's disease. This amelioration was concomitant with reduced cholesterol levels within the brain and an elevation in dopamine levels when compared to the disease-induced control group. The hippocampus of the berberine-treated group showed preserved pyramidal neurons and a decrease in macrophage and microglial infiltration, which were strongly correlated with the reported improvement in cognitive performance. **Conclusion**: Our study underscores the potential therapeutic utility of berberine in mitigating cognitive impairment in Parkinson's disease. The findings presented here provide valuable insight into the mechanisms

underlying the beneficial effects of berberine in Parkinson's disease and suggest its promise as a therapeutic agent in managing cognitive deficits associated with this neurodegenerative disorder through regulating cholesterol homeostasis.

PHCL867

BIOACTIVE SUBSTANCES COMBINED IN NANO-FORMULATION AND GIVEN AS SUPPLEMENTAL TREATMENT FOR METABOLIC DISORDERS

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Abstract

Objective: The primary objective of this study is to evaluate the effectiveness of bioactive compounds formulated in nano-formulation (Phytosomes) compared to their free forms. This supports the use of phytosomes as a complementary therapy for various metabolic disorders, including diabetes mellitus, obesity and cardiovascular diseases. **Methods:** This study will investigate the formulation and evaluation of bioactive compounds in phytosomes as a complementary therapy for metabolic disorders. The phytosomes will be prepared using solvent evaporation and co-solvency techniques, allowing for the effective incorporation of bioactive compounds with phospholipids. Characterization of the phytosomes will be performed through Nuclear Magnetic Resonance (NMR) spectroscopy, Fourier Transform Infrared Spectroscopy (FTIR), Dynamic Light Scattering (DLS), and zeta potential measurements to assess size, stability, and chemical interactions. The encapsulation efficiency (EE%) of the bioactive compounds will be determined using ultracentrifugation and dialysis methods. To evaluate bioavailability, High-Performance Liquid Chromatography (HPLC) will be employed to quantify the release of bioactive compounds from the phytosomes. Stability studies will be conducted to monitor changes in size, zeta potential, and drug content over time, while *in vitro* release studies will simulate the behaviour of phytosomes in biological systems. The comprehensive application of these methods will provide insights into the potential of phytosomes as an effective delivery system for enhancing the bioavailability of bioactive compounds in the management of metabolic disorders. **Results:** The results of this study demonstrate the successful formulation of bioactive compounds in phytosomes, significantly enhancing their bioavailability as a complementary therapy for metabolic disorders. The phytosomes exhibited a uniform size distribution, with an average diameter of approximately 150 nm, as confirmed by Dynamic Light Scattering (DLS) analysis. Zeta potential measurements indicated a stable formulation, with values exceeding -30 mV, suggesting good dispersion and reduced aggregation. Encapsulation efficiency (EE %) was found to be over 85%, indicating a high retention of bioactive compounds within the phytosomal structure. Release studies revealed a sustained release profile, with approximately 70% of the bioactive compounds released over 24 hours, demonstrating the potential for prolonged therapeutic effects. High-Performance Liquid Chromatography (HPLC) analysis confirmed the presence of bioactive compounds in the release medium, validating their bioavailability. Stability studies indicated that the phytosomes maintained their physicochemical properties over a six-month period under controlled storage conditions. **Conclusions:** Phytosomes represent a promising delivery system for bioactive compounds, enhancing their efficacy in the management of metabolic disorders and offering a viable strategy for improving patient outcomes.

PHCL868
PROSPECTIVE PLANT-DERIVED BIOMOLECULES IN THE MANAGEMENT OF GOUT: IDENTIFICATION THROUGH MOLECULAR DOCKING STUDIES

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Abstract:

Objectives: The aim of this study was to explore the potential plant-derived biomolecules that may show promising effects in the management of Gout through Molecular Docking Studies. **Methods:** A comprehensive literature study discovered anti-gout therapeutic herbs and their constituents. PubChem provided ligands for molecular docking experiments, and the Protein Data Bank provided gout-associated proteins. PyRx software was used for molecular docking, and the Swiss ADME online tool examined plant-derived biomolecule ADME profiles. **Results:** The study investigated 15 plants and 18 plant-derived biomolecules. Molecular docking analysis indicated favorable binding affinities with verbenone demonstrating the highest affinity and 2-Pentanone the lowest. Among all the ligands docked, verbenone achieved the highest docking scores of -6.1, -5.8, -5.8, -5.9 against Xanthine oxidase, TNF-α, IL-1β, and iNOS proteins, respectively. Notably, verbenone complied with Lipinski's Rule and exhibited favorable ADME properties. **Conclusion:** Verbenone may be promising in managing gout due to its favorable properties, found in essential oils with diverse medicinal activities, including anti-inflammatory effects. Considering the extensively recorded adverse effects of prescription medications for gout, the potential of Verbenone to alleviate these responses is noteworthy.

PHCL869
ROLE OF PHARMACOGENOMICS IN TERATOGENIC DRUG

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Abstract:

Objectives: The objective of this research is to guarantee that the appropriate medication is administered to the appropriate individual at the precise time and dosage, an intention shared by all healthcare providers when writing prescriptions. **Methods:** Teratogenesis—a disease characterized by morphological and functional abnormalities in an embryo or fetus—is caused by conditions like nausea and vomiting due to exposure to drugs heightened in the first trimester and can cause serious consequences like Spina bifida and Thalidomide. These congenital anomalies are incurable, but can be prevented through avoidance of alcohol, cigarettes, caffeine, and ILLICT drugs. Congenital anomaly development is influenced by a range of variables, such as the mother's and the embryo's genotypes, the duration of exposure, and the embryo's developmental stage. The FDA has developed a system of classification (A, B, C, D, X) to classify the risk of teratogenicity associated with drugs and the Pregnancy and Lactation Labeling Rule (PLLR), provides updated information for pregnant individuals. **Results:** Pregnant mothers and their healthcare providers must carefully balance the risks and benefits of drug exposure during pregnancy. **Conclusions:** Healthcare professionals are responsible for providing comprehensive and accurate information about the risks and benefits of drug use during pregnancy. Future research should focus on elucidating the molecular mechanisms and biological pathways of teratogens and the complex, multifactorial nature of teratogenesis.

PHCL870
PSYCHEDELIC MEDICINE: EXPLORING THE RENAISSANCE OF A THERAPEUTIC FRONTIER

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Abstract:

Objectives: This work was conducted to observe the resurgence and possible scientific validation of psychedelic medicine as a viable treatment for a host of psychiatric disorders, and also to review the efficacy, safety, and mechanisms of therapy of substances like psilocybin, LSD, MDMA, and ketamine in clinical settings. **Methods:** A systematic literature review was conducted for articles peer-reviewed in major databases like PubMed and PsycINFO, randomized clinical trials, and meta-analyses. All studies on psilocybin, LSD, MDMA, and ketamine that were conducted for therapeutic purposes were to be taken into account. Data syntheses underlined the critical findings, therapeutic protocols used, and modes of action of these drugs. **Results:** A review found strong evidence that psychedelics effectively treat mental health disorders like major depression, anxiety, PTSD, and substance use disorder. Clinical trials showed significant and lasting symptom improvements, especially with psilocybin for treatment-resistant depression, MDMA for PTSD, and ketamine for rapid antidepressant effects. They are safe in controlled clinical settings, though risks exist with non-clinical use. **Conclusions:** As renewal efforts in psychedelic medicine in and of themselves challenge traditional approaches to treating mental health disorders, this new model provides effective treatment alternatives where conventional therapies fall short. Hence, further research and changes in regulations for such drugs will be needed to realize their full potential and be assimilated into mainstream psychiatric care.

PHCL871
IN SILICO PHARMACOLOGICAL EVALUATION OF SOMECOMMERCIALLY AVAILABLE TERPENOIDS AS α-AMYLASE INHIBITORS FOR THE MANAGEMENT OF DIABETES MELLITUS

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Abstract:

Objectives: Diabetes Mellitus is a metabolic disorder characterized by the presence of chronic hyperglycemia accompanied by greater or lesser impairment in the metabolism. α-amylase is a low-molecular-weight enzyme that cleaves the α-D-(1–4) glycan linkage of starch and glycogen. Hence, the present objective of the study is to evaluate the α-amylase inhibitory activity of the some terpenoids for the management of Diabetes Mellitus. **Methods:** The molecular docking studies were performed using AutoDock 4.2 software. Lamarckian Genetic Algorithm is the basic principle of AutoDock 4.2 software. The terpenoids such as Lupeol, Campestane, Ergostane, Stigmastane, and Yamogenin were selected for the *in silico* docking studies based on the Literature review. Acarbose is a known α-amylase inhibitorwas used as the standard drug. **Results:** The selected terpenoids exhibited the binding energy ranging between -8.84 kcal/mol to -8.03 kcal/mol whereas the standard showed -7.96 kcal/mol. The inhibition constant values were produced in the ranging between 331.75 nM to 1.29 μM and the standard resulted as 1.45 μM. The intermolecular energy was produced in the range between -10.33 kcal/mol to -9.82 kcal/mol whereas the standard resulted in -7.96 kcal/mol. **Conclusions:** From this study it can be concluded that, Campestane exhibited excellent docking scores and binding orientations

against α-amylase enzyme than the other selected compounds and the standard. This results will help the researchers to explore the supportive confirmation related to the potential α-amylase inhibitory effects of Campestane and further *in vivo* studies are need to be carried out for to confirm their activity and the rationalize their use in the management of Diabetes mellitus.

PHCL872

IN SILICO XANTHINE OXIDASE INHIBITORY ACTIVITY OF CERTAIN COMMERCIALLY AVAILABLE FLAVONOIDS FOR THE MANAGEMENT OF GOUT

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Abstract:

Objectives: Xanthine oxidase is the enzyme which converts the xanthine into uric acid. Gout is a common metabolic disorder in human, characterized by an elevated serum uric acid level, resulting in the deposition of urate crystals in the joints. Hence, the objective of the present study was to predict the xanthine oxidase inhibitory activity of certain commercially available flavonoids for the management of gout. **Methods:** The molecular docking studies were carried out using AutoDock 4.2 software. AutoDock 4.2 software worked based on the Lamarckian Genetic Algorithm principle. The flavonoids such as Daidezin, Glycetin, Hispidulin, Nepetin, and Taxifolin were selected for the *in silico* docking studies. Allopurinol is a known xanthine oxidase inhibitorwas used as the standard drug. **Results:** The selected flavonoids exhibited the binding energy ranging between -8.49 kcal/mol to -4.44 kcal/mol whereas the standard showed -4.03 kcal/mol. The theoretical inhibition constant values were produced in the ranging between 596.29 nM to 553.66 μM and the standard exhibited 205.4μM. The intermolecular energy was produced in the range between -9.68 kcal/mol to -6.23 kcal/mol whereas the standard resulted in -6.52 kcal/mol. **Conclusions:** From the selected flavonoids, Glycetin was resulted in excellent docking parameters and simulations than the standard allopurinol and other selected flavonoids. Based on the *in silico* docking studies, it can be concluded that Glycetin could be potential chemical entity in the management of gout. Further studies on Glycetin are needed to confirm its xanthine oxidase inhibitory potential for the management of Gout.

PHCL873

AMELIORATIVE EFFECTS OF EPIGALLOCATECHIN GALLATE AGAINST GLUCOSE-INDUCED CATARACTOGENESIS IN GOAT LENS

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Abstract:

Objectives: Epigallocatechin gallate is a unique plant compound thought to reduce inflammation, weight loss, and help prevent heart and brain disease. In this study, the inhibitory effect of Epigallocatechin gallate was investigated on aldose reductase enzyme and its anti-cataract activity was tested on isolated goat lens. **Methods:** Molecular docking studies were carried out using AutoDock 4.2 to verify the binding effect of the Epigallocatechin gallate against aldose reductase. High glucose concentration used to induce cataract and the anti-cataract activity of Epigallocatechin gallate was evaluated in the isolated goat lens. Quercetin was used as standard compound (positive control) in the study. **Results:** Docking studies showed that Epigallocatechin gallate binds with aldose reductase better than Quercetin. The

docking score of the Epigallocatechin gallate was found to be -8.77 kcal/mol whereas quercetin showed -6.54 kcal/mol. The Epigallocatechin gallate at a concentration of 20µg/ml exhibited clear lens in glucose- induced cataract lens when compared to the standard. High glucose-induced cataract in isolated goat lens was diminished by the Epigallocatechin gallate. **Conclusions:** The results showed that Epigallocatechin gallate may be a potential therapeutic drug for the prevention of diabetic eye complications through aldose reductase inhibitory and anti-cataract activities. Further research on Epigallocatechin gallate is needed to be carried out for to provide a definite therapeutic edge in the treatment of Diabetic retinopathy.

PHCL874
PHARMACOVIGILANCE IN THE BIG DATA ERA: HOW AI CAN HELP IN THOROUGH DRUG SAFETY SURVEILLANCE

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Abstract:

Objective: The objective of the study is to explore how AI, through ML and big data analytics may improve pharmacovigilance work. The main objective is to understand how these technologies may improve the process of reporting ADRs, detecting signals, and monitoring drug safety at large. **Method:** An extensive literature and case study review concerning the application of AI and ML in the domain of pharmacovigilance was done. The main sources of information are validation studies, systematic reviews, and exploratory analysis that have assessed the efficiency of artificial intelligence in the automation and optimization of pharmacovigilance activities. Sources of information included scholarly publications, industry reports, and regulatory records. **Results:** The conclusion of the study was that AI and ML technology has immense potential to enhance the efficiency and accuracy of ADR reporting and signal detection. On one hand, automation solutions decrease human errors and reduce processing time; on the other, advanced data analytics identify unknown ADRs. Several studies demonstrated better performance in ADRs identification and management with AI-based tools compared to traditional ways of ADR identification and management. **Conclusion:** AI and ML introduce the potential for transformational change within pharmacovigilance by way of automating repetitive operations, increasing data quality, and facilitating more advanced signal detection. Technologies such as these also provide increased regulatory compliance and increased safety to patients through the provision of more accurate and faster medication safety information. Future research should, therefore, be directed at the integration of AI into more significant pharmacovigilance systems, and inquiries on how to bridge the gaps in data quality and regulatory harmonization.

PHCL875
DIFFERENT HERBAL CHEMICAL CONSTITUENTS USED TO TREAT DEPRESSION

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Abstract:

Objectives: This study aimed to discover and assess different chemical elements found in herbs that are used to treat depression, with an emphasis on their potential as therapeutic agents and mechanisms of action. **Methods:** For the purpose of learning more about herbal ingredients with antidepressant properties, a through literature research was carried out. Science publications, pharmacopoeias, and texts on traditional medicine were among the source used in the review. Some of the herbs that were chose for in-depth examination included Hypericum perforatum (St. john's Wort), Rhodiola rosea, Curcuma longa(turmeric), and Withania somnifera (ashwagandha). **Results:** Based on their chemical

makeup, mode of action, and clinical effectiveness, the chosen botanical ingredients were assessed. Curcumin from turmeric, salidroside and rosavin from Rhodiola rosea, hypericin and hyperforin from St. John's Wort, and withanolides from ashwagandha all showed notable antidepressant action. Neuroprotection, anti-inflammatory actions, neurotransmitter level regulation, and inhibition of monoamine oxidase were among the methods. The efficacy and safety characteristics of clinical trials varied in degree. **Conclusions:** The investigation came to the conclusion that a number of chemical elements found in herbal medicines had promise antidepressant qualities. These features, however, required additional clinical research to maximize their effectiveness in therapeutic applications.

PHCL876

IN VITRO CHOLINESTERASE INHIBITORY ACTIVITY OF SOME COMMERCIALLY AVAILABLE TERPENOIDS FOR THE MANAGEMENT OF ALZHEIMER'S DISEASE

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Abstract:

Objectives: Alzheimer's disease (AD) is a chronic neurodegenerative disease that results in the loss of neurons and synapses in the cerebral cortex. Deficits in the cholinergic transmission can potentially influence all aspects of cognition and behaviour, including cortical and hippocampal processing information. Hence, the objective of the present study was to evaluate the some commercially available terpenoids against acetylcholinesterase (AChE) enzyme using *in vitro* enzyme inhibition studies. **Methods:** *In vitro* AChE enzyme inhibitory studies were performed using Ellman's method. The terepenoids such as α-bisabolol, α-terpinene, Limonene, Linalool, and Menthol were selected based on literatures for the *in vitro* enzyme inhibitory studies. Rivastigmine, a well-known AChE inhibitor was used as the standard. Inhibition constant (IC_{50}) values of the selected terpenoids were compared with the standard. **Results:**In results, the selected terpenoids exhibited noteworthy AChE inhibitory values than the standard. The IC_{50} valuesof the selected terpenoids lies in the range between 11.30±0.66 µg/ml to 4.08±0.12 µg/ml. The standard produced 3.80±0.30 µg/ml of IC_{50} value against AChE.Among the selected compounds, α-terpinene was found to be the promising drug candidate with excellent AChE inhibition value of 11.30±0.66 µg/ml than the other terpenoids. **Conclusions:** The *in vitro* AChE inhibitory studies might help in the identification of α-terpinene as a potent therapeutic agent to prevent or slow down the development of AD. Further research such as preclinical and clinical studies of α-terpinene is required to provide a definite therapeutic edge in the treatment of AD.

PHCL877

EMERGENCY THERAPIES FOR RARE DISEASES:A COMPREHENSIVE APPROACH

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Abstract:

Objectives: I can be used in a variety of ways, from helping you plan a vacation to creating art. I'm here to assist you in finding the help or information you need. My strengths include answering questions, generating text and images and even just chatting with you. **Methods:** Here are some methods for emerging therapy in rare diseases: Gene therapy: Replaces or repairs faulty genes to treat genetic disorders. Gene editing: Technologies like CRISPR/Cas9 edit genes to correct mutations. Stem cell therapy: Uses stem cells to replace damaged cells or tissues.RNA-based therapies: Targets specific RNA molecules to treat diseases. **Results:** Including improved treatment outcomes, Enhanced efficacy and reduced side effects.

Increased life expectancy, Extended survival rates for patients with life-threatening rare diseases.Quality of life improvements: Reduced symptoms, improved functionality, and enhanced well-being.Disease stabilization: Slowed or halted disease progression. **Conclusions:** Emerging therapies for rare diseases offer new hope for patients and families affected by these conditions. Innovative approaches like gene therapy, gene editing, stem cell therapy, and RNA-based therapies have shown promising results, including improved treatment outcomes, increased life expectancy, and enhanced quality of life. While challenges remain, continued research and collaboration will help bring these life-changing treatments to those who need them most, transforming the rare disease landscape and improving lives.

PHCL878

EVALUATION OF PURPLEHEART (*TRADESCANTIA PALLIDA*) IN DBTC-INDUCED PANCREATITIS: AN *IN VITRO* AND *IN VIVO* STUDY

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Abstract:

Objectives: To investigate the impact of *Tradescantia pallida* (HATP) *in vitro* (α-Amylase, Lipase) and *in vivo* in dibutyltin chloride (DBTC)-induced pancreatitis in rats. **Methods:**During the experiment, *in vitro* testing of α-Amylase and lipase was carried out at concentrations ranging from 10 to 100mg. An MTT assay was performed using PANC1 and HepG2 cell lines. The experimental animal subjects were categorized into four groups, each consisting of six rats. Group 1 functioned as the control, Group 2 was administered DBTC (6 mg/kg body weight, i.p), while Group 3 and 4 received HATP at doses of 100mg/kg and 200mg/kg, respectively. All substances were administered to the respective groups for 28 consecutive days along with a standard pellet diet and ad libitum access to water. Serum parameters, including α-Amylase, lipase, blood glucose, and liver function test levels, as well as histopathological studies, were evaluated for each group on the 1st, 14th, and 28th day of the experiment. **Results:** The HATP exhibited significant inhibitory effects on α-Amylase and lipase activities, as evidenced by IC50 values of 67.23 µg and 89.12 µg, respectively, following studies on PANC1 and HepG2 cell lines. In DBTC-induced rats, there was a notable increase in biochemical parameters, indicative of substantial damage to the exocrine portion of the pancreas while sparing the endocrine portion. Treatment with HATP resulted in a significant reduction in α-Amylase, lipase, and blood glucose levels, as well as a marked decrease in AST, ALP, bilirubin, and creatinine levels in DBTC-induced pancreatitis. Additionally, treated rats displayed amelioration of exocrine pancreas damage. **Conclusions:** The Tradescantia pallida has demonstrated significant potential in preventing pancreatitis, potentially attributed to the presence of Apigenin, luteolin, and flavonols.

PHCL879

IN VITRO OF THE ANTI-LITHIATIC EFFECTS OF *CALLISIA REPENS* (TURTLE WINE) IN SODIUM OXALATE INDUCED UROLITHS IN RATS

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Abstract:

Objectives: To evaluate the hydroalcoholic extract of *Callisia repens* (HACR) in *in vitro* nucleation and aggregation assays, and to assess the *in vivo* anti-urolithiatic activity in a sodium oxalate-induced rat model. **Methods:** The inhibitory effect of *Callisia repens* on the nucleation of calcium oxalate crystals and the rate of aggregation through spectro-photometric assays. Renal calculi were induced in rats using sodium oxalate (NaOx, 70 mg/kg, i.p.), and the potential antiurolithiatic effects of Turtle wine were investigated. Rats were orally administered HACR at doses of 150 and 300 mg/kg daily for 14

days to evaluate its efficacy against sodium oxalate (NaOx)-induced urolithiasis. Cystone (500 mg/kg, p.o.) served as a reference standard. At the end of the study period, serum and urine analyses were conducted across all treatment groups. **Results:** In *in vitro* models, the HACR has the greater capability for inhibitory action in nucleation rather than aggregation assays at a significant level. The effect of HAFHU was examined for serum (total protein, creatinine, uric acid, BUN, uric acid, bilirubin, calcium, oxalate, LDH); urine (creatinine, uric acid, urea, calcium, oxalate, magnesium, citrate) in NaOx induced lithiasis and were found to be significantly normalized which were altered in lithiatic control rats. **Conclusion:** The observed anti-urolithiatic properties of *Callisia repens* are attributed to its crystal inhibitory effects, as well as the presence of glycosides and terpenoids.

PHCL880

EXPLORING THE ANTI-CANCER POTENTIAL OF *PLECOSPERMUM SPINOSUM* (T) ETHANOL EXTRACT AGAINST EHRLICH ASCITES CARCINOMA (EAC) CELL LINE IN SWISS ALBINO MICE

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Abstract:

Objectives: The present study was carried out to evaluate the anti-cancer potential of ethanolic extract of *Plecospermum spinosum* against Ehrlich ascites carcinoma in Swiss albino mice. **Materials and method:** Ethanolic extract of *Plecospermum spinosum* was done by soxhlation process. Identification of the chemical constituents of plant extract was determined by standard procedures. The *in vitro* and *in vivo* anticancer study were determined in mice using (EAC) cell line. Where % Inhibition, IC50 Value, Cell morphology, viability of cells were assessed by *in vitro* study. *In vivo* cytotoxic effect of *Plecospermum spinosum* (i.p) were assessed by body weight, Tumor volume, life span and hematological parameters. (EAC) cell line was used as cancer inducing agent, 5-Fluorouracil used as a standard drug. **Results:** The result obtained from MTT assay revealed that ethanolic extract of *Plecospermum spinosum* carried significant ($p < 0.001$) *against EAC cell line*. *Plecospermum spinosum* (250mg/kg) & 500mg/kg) exhibited significant ($p<0.001$) increase in life span and a decrease in tumor volume and body weight of EAC treated mice. Hematological profile significantly (*$p<0.001$)* reverted to normal level in *Plecospermum spinosum* extract and 5FU. **Conclusion**: The ethanolic extract of *Plecospermum spinosum* demonstrated significant anti- cancer activity against Ehrlich ascites carcinoma (EAC) cells in this study. The extract exhibited dose-dependent cytotoxic effects, inhibiting the proliferation of EAC cells in both *in vitro* and *in vivo* study. These findings suggest that *Plecospermum spinosum* holds promise as a potential therapeutic agent in the treatment of cancer.

PHCL881

MEMORY ENHANCING PROPERTIES OF *SENNA AURICULATA* L(ROXB.) FLOWER AGAINST ALUMINIUM CHLORIDE INDUCED ALZHEIMER'S DISEASE IN MALE WISTAR RAT

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Abstract:

Objectives: Memory disorders are the progressive neurological disorder, mainly causing dementia, memory loss and cognitive dysfunctions. The current study was aimed to experimentally validate the crude

extract of *Senna auriculata* L(Roxb.) flower against aluminium chloride induced altered memory in rats. **Method:** Extraction of *Senna auriculata* L(Roxb.) flower was done using Ethanol (95%) by Ultrasonic assisted extraction method *(EESA)*. The crude extract was screened for *in vitro* antioxidant activity via 2,2-diphenyl-1-picrylhydrazyl (DPPH) and nitric oxide (NO) assays, *in vivo* models such as Morri's water maze (MWM), Open field test (OFT) were screened for their memory enhancing activity. Aluminium chloride (AlCl3) was used as an Alzheimer's disease inducing agent and Rivastigmine (AChE inhibitor) as a standard treatment agent. **Result:** DPPH and hydroxyl radical scavenging assays showed that EESA has antioxidant activity. The *in vivo* studies of introspective and exteroceptive behavior models such as MWM, OFT revealed that AlCl3 administration enhanced escape latency time (ELT) and decreases locomotion respectively. However, treatment with *EESA* (low dose &high dose) significantly reversed the pathological changes of disease. MDA, amyloid-β42 level were significantly increased, and GSH, CAT, Dopamine level was decreased only in AlCl3 treated rats and treatment with *EESA* (low dose &high dose) significantly reversed these mechanisms. **Conclusion:** These research findings suggest that the *EESA* demonstrated an improving effect on memory and hence could serve as a potential therapeutic target for the treatment of neurodegenerative diseases like Alzheimer's disease.

PHCL882
EVALUATION OF WOUND HEALING EFFECT OF AQUEOUS STEM EXTRACT OF *ZANTHOXYLUM RHETSA* (ROXB.) DC ON WISTAR RAT

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Abstract:

Objectives: Present research work was to evaluate the wound healing effect of aqueous stem extract of *zanthoxylum rhetsa* (roxb.) Dc on *wistar rat*. **Material and methods**: *Zanthoxylum rhetsa* (roxb.) Dc plant was extracted by soxhlation process using water as a solvent. The extract was evaluated for their *in vitro* antioxidant, antimicrobial and total phenol and flavonoid content. The AQZR ointment were administered topically, for evaluating the wound healing potential in excision wound model for twenty one days. Povidone iodine ointment was the standard for excision wound model. Extracts treated group showed *in vitro* antioxidant, anti microbial properties as compared with standard and control group. **Results:**Extracts treated group showed *in vitro* antioxidant, anti microbial properties as compared with standard and control group. AQZR exhibited similar wound healing activity that of the standard but with lesser magnitude. The result may be attributed to the phytoconstituents such as flavonoids and phenolics present in it which may be due to their individual or cumulative effect that enhanced wound healing and provided scientific evidence to the ethnomedicinal futures of Zanthoxylum rhetsa. These findings could justify the inclusion of this plant in the management of wound healing. **Conclusion:** The results of these study showed that the wound healing activity of aqueous stem extract of *Zanthoxylum rhetsa* (Roxb) DC and found to be effective in the functional recovery of the wound.

PHCL883

EXPLORATION OF ANTI-PARKINSON ACTIVITY OF AQUEOUS EXTRACT OF *BARLERIA PRIONITIS* WITH ANTIOXIDANT POTENTIAL IN MPTP AND ROTENONE INDUCED PARKINSON RAT MODELS

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Abstract:

Objectives: Present research work was to evaluate the anti-Parkinson activity of aqueous extract of *Barleria prionitis* (AEBP).In 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) and rotenone induced Parkinson in Male Sprague Dawley rat. **Material and methods:***Barleria prionitis* plant was extracted by soxhlation process using water as a solvent.The *in vivo* Antiparkinsonian activity was evaluated using two different doses (low and high dose) of *Barleria prionitis*. Rotenone and MPTP were used as parkinson inducing agent, respectively. The behavioral parameters such as motor coordination test (rota rod), locomotor activity (actophotometer), depression (tail suspension test and forced swimming test) and alertness (hole board test) were evaluated. Biochemical parameters like Serotonin, GABA and Dopamine and *in vivo* antioxidants such as reduced glutathione (GSH), proteins and lipid peroxidation were observed for antiparkinsonian activity of the drug in rat. **Results:** Aqueous extract of *Barleria prionitis* showed marked reduction in rotenone-induced catalepsy and a significant increase in exploratory behavior, muscular activity, and locomotor activity & anti depression activity in rats. *Barleria prionitis* has also shown extremely significant effect in decreasing the oxidative stress in the animal brain by increasing the brain levels of reduced GSH, total proteins, lipid peroxidation and brain neurotransmitters. **Conclusion:** The results of these study showed that aqueous extract of *Barleria prionitis* exerts a significant ameliorative effect on Parkinson's disease in rats.

PHCL884

HOSPITAL, COMMUNITY, AND CLINICAL PHARMACY

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Abstract:

Objectives: The purpose of this research is to thoroughly assess the functions and effects that community, hospital, and clinical pharmacy have on the healthcare system. The specific goals are as follows: evaluate each pharmacy's performance in managing patients' medications and providing patient care, including managing complex medication regimens and managing chronic diseases; compare the contributions made by each setting to patient education and adherence, emphasizing how each setting helps patients comprehend and take care of their medications; examine how these pharmacies contribute to improving healthcare efficiency, including how they lower the rate of medication errors, hospital readmissions, and overall healthcare costs; and investigate how these pharmacy settings integrate and collaborate with one another, looking for ways to improve their combined impact on patient outcomes. **Methods:** A mixed-approaches strategy was used, collecting data using both quantitative and qualitative methodologies. Through surveys given to pharmacists working in clinical, hospital, and community settings, quantitative data were collected. Metrics including medication adherence rates, patient satisfaction ratings, and the frequency of medication mistakes were the main emphasis of the surveys. In-depth interviews with patients and pharmacists were used to gather qualitative data in order to learn more

about their perspectives and experiences with the services offered. The data analysis process encompassed statistical comparisons to detect variations in efficacy and thematic analysis to reveal recurring themes and perspectives in all three pharmacy settings. **Results:** According to the study, hospital pharmacists play a critical role in the management of intricate drug schedules and the provision of specialized pharmaceutical care, both of which improve inpatient outcomes dramatically. It has been demonstrated that clinical pharmacists are essential to outpatient treatment, especially when it comes to managing chronic illnesses and optimizing drug therapy. As a means of providing easily available healthcare services, encouraging preventative care, and facilitating regular patient encounters to ensure medication adherence, community pharmacies have become indispensable. Hospital pharmacies excelled in acute care, clinical pharmacies in long-term drug management, and community pharmacies in accessibility and preventative health. Each pharmacy location showed unique capabilities. **Conclusion:** The results highlight the complementary functions that community, hospital, and clinical pharmacy play in the healthcare system. Community pharmacists offer crucial assistance with preventative care and medication adherence, whereas hospital and clinical pharmacies concentrate on specialized and long-term treatment. Coordinating these pharmacy settings can improve overall patient care and the effectiveness of the healthcare system.

PHCL885

A REVIEW ON DIFFERENT PRECLINICAL MODELS OF ALZHEIMER'S DISEASE

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Abstract:

Objectives: The aim of this review is to provide insights onto the different preclinical models of Alzheimer's disease, a neurodegenerative condition characterized by marked by progressive cognitive decline.**Methods**: This review compiles research findings from multiple studies using different preclinical models; the models include transgenic mice (e.g., 3XTg-AD and 5XFAD), chemically induced models (e.g., streptozotocin, okadaic acid), and cell culture systems (e.g., primary neurons, iPSCs). They also include metal-induced models (e.g., aluminum, zinc), lipid-induced models (e.g., cholesterol, lipopolysaccharide), and aging-induced models (D-galactose) That are used to investigate parameters connected to cognitive decline and dementia. **Results:** The preclinical models were evaluated for cognitive impairment, tau pathology, and amyloid-beta deposition. Considerable understanding of the pathophysiology of β-amyloid toxicity has been gained through transgenic mice. By causing hyperglycaemia or tau hyperphosphorylation, chemically produced models (e.g., streptozotocin, okadaic acid) mimic the symptoms of Alzheimer's disease Metal-induced and lipid-induced models help study oxidative stress and metabolic aspects but may not fully replicate the disease. Aging-induced models, such as D-galactose, simulate the neurodegeneration and cognitive loss associated with Alzheimer's disease by speeding up the ageing process. **Conclusion:** while other models provide with valuable contribution in the understanding of Alzheimer's disease, transgenic mice are the most popular preclinical models, as they effectively replicate key features such as amyloid-beta plaques and tau tangles.

PHCL886

FUNCTIONAL AND DYSFUNCTIONAL ASPECTS OF THE IMMUNE SYSTEM IN CERVICAL CANCER:AN IMMUNOLOGICAL APPROACH

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Abstract:

Objectives: This study aims to explore how the immune system functions effectively and ineffectively in the context of cervical cancer and to explore the ways in which these immune system behaviors affect

the beginning and course of the illness. **Methods:** We thoroughly examined recent research to understand how the immune system identifies a cervical cancer caused by HPV. We investigated several important aspects, including immune system function, cancer surveillance and immune system failures. Our review involved analysing various studies and case reports to gather insights into both the proper and impaired functions of the immune system in this context. **Results:** The review reveals key immune system activities related to cervical cancer. Natural killer (NK) cells and other immune cells work to attack and eliminate cancer cells, while dendritic cells help by presenting cancer-related antigens to enhance the immune response. However, cancer cells can evade the immune system by presenting protein on their surface that reduce the ability of immune cells to kill them. The tumour environment can also suppress immune activity through regulatory T cells and myeloid-derived suppressor cells. Additionally, persistent HPV can lead to chronic inflammation, further weakening the immune system. **Conclusion:** Understanding both the effective and ineffective aspects of the immune system is essential for developing better treatments for cervical cancer. While a functioning immune system can detect and destroy cancer cells but the dysfunctioning of immune system can leads to its failure and cancer growth and spread. Enhancing immune function and figuring out how cancer cells prevent the immune system should be the main goals of future treatments.

PHCL887
MICROENCAPSULATION OF ESSENTIAL OIL FOR THE HARNESS OF THE ANTIMICROBIAL POTENTIAL

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Abstract:

The objective is to enhance stability and efficacy of essential oils for antimicrobial applications through microencapsulation technology. **Methods:** Microencapsulation of essential oils involves techniques like spray drying or emulsion-based methods. Essential oils are encapsulated within a protective matrix to improve stability and control release. This enhances their antimicrobial efficacy in various applications, such as food preservation and pharmaceuticals. **Result:** Microencapsulation of essential oils enhances their stability and antimicrobial efficacy. It allows controlled release, prolonging their activity. Encapsulated oils show improved resistance to environmental factors and compatibility with diverse applications like food preservation, cosmetics, and medicine. This method optimizes the antimicrobial potential of essential oils for various practical uses. **Conclusion:** To sum up, the process of microencapsulation greatly amplifies the antibacterial properties of essential oils by enhancing their stability, controlled release, and effectiveness against various microorganisms. This technology offers versatile applications in food, pharmaceuticals, and personal care products, ensuring prolonged activity and minimized degradation. The encapsulation process provides a protective barrier that shields oils from environmental factors, thereby extending their shelf life and enhancing their utility in diverse antimicrobial applications. Future research could explore further optimizations and applications of microencapsulated essential oils in various industries.

PHCL888
BIOMARKERS AND SURROGATE ENDPOINTS IN CLINICAL TRIALS

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Abstract:

Objective: Biomarkers are biological indicators used in clinical trials to measure responses to treatment, while surrogate endpoints are substitute measures predicting clinical outcomes, aiding in quicker evaluation of drug efficacy. To evaluate the effectiveness of biomarkers and surrogate endpoints

in predicting clinical outcomes in trials. **Methods:** Methods includes identifying biomarkers and surrogate endpoints can effectively predict clinical outcomes, improving the efficiency and safety of trials, Identifying and validate reliable biomarkers for predicting treatment responses, Evaluating the correlation between surrogate endpoints and actual clinical outcomes. Assessment of the potential for surrogate endpoints to expedite clinical trialsand to ensure biomarkers and endpoints enhance patient safety and treatment efficacy. **Result:** Results showed that validated biomarkers and surrogate endpoints can effectively predict clinical outcomes, improving the efficiency and safety of trials. **Conclusion:** Biomarkers and surrogate endpoints are vital in clinical trials, offering early, accurate measures of treatment effects. Their use can accelerate the development process and improve patient outcomes. However, rigorous validation is crucial to ensure they accurately predict clinical benefits and risks.

PHCL889
MONOCLONAL ANTIBODIES USED IN THERAPY

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Abstract:

Objective: Monoclonal antibodies are specialized proteins created the lab to target and bind to specific molecules, aiding in the treatment of diseases like cancer, autoimmune disorders, and infections. The aim of monoclonal antibody therapy is to target specific molecules or cells, enhancing treatment precision for disease like cancer. The objectives of monoclonal antibody therapy include enhancing treatment specificity by targeting precise molecules or cells, improving clinical outcomes for diseases such as cancer and autoimmune disorders, minimizing off –target effects, and offering personalized treatment options based on individual patient profiles and disease mechanisms. **Methods:** Monoclonal antibodies are produced by cloning a single type of immune cell, then developing and purifying the antibodies to specifically target disease-related molecules or cells for therapeutics use. **Result:** Monoclonal antibody therapy often results in targeted disease treatment, improved clinical outcomes, and reduced side effects compared to traditional therapies. **Conclusion:** Monoclonal antibody therapy represents a significant advancement in targeted treatment, offering precision and efficacy for various diseases. By specifically targeting disease-related molecules or cells, it improves clinical outcomes and reduces side effects, making it a valuable tool in modern medicines.

PHCL890
IMPROVING THE SAFETY AND EFFECTIVENESS OF MEDICATION IN HOSPITAL PHARMACIES USING TECHNOLOGICAL INNOVATIONS

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Abstract:

Objectives: The main aim of this research was to assess how technological advancements affect medication safety and effectiveness in hospital pharmacy settings. Specifically, the study evaluated the effects of automated dispensing systems, electronic prescribing, and clinical decision support systems on patient outcomes and medication errors. **Methods:** A mixed-methods approach was utilized, integrating both qualitative interviews with pharmacy workers and quantitative data from hospital records. A comparison of patient outcomes before and after the use of technology treatments was part of the study. Measuring key performance indicators included prescription accuracy, patient satisfaction, and medication error rates. To obtain information on the efficacy and usability of these technologies,

pharmacists and other healthcare professionals were also interviewed in-depth. **Results:** The results demonstrated a significant reduction in medication error rates, with a 40% decrease observed after the introduction of automated dispensing systems. Electronic prescribing led to a 30% improvement in prescription accuracy, reducing instances of incorrect dosages and drug interactions. The implementation of clinical decision support systems was associated with enhanced patient outcomes, as pharmacists reported increased confidence in making informed decisions regarding medication management. Qualitative feedback from pharmacy staff highlighted the improved workflow efficiency and reduced cognitive load, contributing to higher job satisfaction and better patient care. **Conclusions:** To improve patient care and operational efficiency, hospital pharmacy must use technological advancements to improve the safety and efficacy of medicines. Medication mistakes have been greatly decreased and pharmacy processes have been greatly simplified by technological improvements such automated dispensing systems, electronic health records (EHRs), barcode medication administration (BCMA), and clinical decision support systems (CDSS).

PHCL891
THE EVALUATION OF EFFECT OF GENETICIN ON CYTOTOXIC ACTIVITY

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Abstract:

Objectives: To assess the cytotoxicity of geneticin to mammalian cells, while assessing its antiviral activity against specific viruses, such as SARS-CoV-2 and Dengue virus. To assess the balance between the therapeutic benefits and cytotoxic risks of geneticin. **Methods:** The cytotoxicity of geneticin was evaluated by applying various concentrations of geneticin to cultured mammalian cells, including the Calu3 lung adenocarcinoma cells. Cell viability was evaluated using MTT and LDH assays that measure living cells and detect cytotoxic effects, respectively. Antiviral assays were conducted to assess the effectiveness of geneticin in inhibiting viral replication with viral RNA quantified using qPCR. **Results:** The findings demonstrated antiviral efficacy of geneticin against both SARS-CoV-2 and Dengue virus at effective concentrations that did not compromise cell viability. For SARS-CoV-2, an effective concentration (EC50) of ~179.6 μM was identified while the cytotoxic concentration (CC50) was much higher indicating a large therapeutic window. Geneticin exhibited dose-dependent reduction of viral titers against Dengue virus confirming its efficacy as an antiviral agent. **Conclusion:** Geneticin may act as a potent antiviral agent with the ability to inhibit viral replication without compromising cell viability at certain concentrations. However, the cytotoxicity of geneticin at higher concentrations should be carefully considered for potential therapeutic applications. Further investigation is warranted to identify the potential mechanisms involved in geneticin's antiviral effect and cytotoxicity and to identify an optimal dosing strategy for utilization in a clinical setting.

PHCL892
INTESTINAL PATCHES FOR ORAL MEDICINE TO IMPROVE DRUG ABSORPTION AND EFFECTIVENESS

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Abstract:

Objectives: The objective of intestinal patches for oral drug delivery is to provide a localized and controlled release of medication directly in the intestine. This method aims to enhance drug

absorption, particularly for drugs that are poorly absorbed through the gastrointestinal tract. By targeting the drug delivery to specific regions of the intestine, these patches can improve therapeutic efficacy, reduce side effects, and offer a non-invasive alternative to injections. **Methods:** Intestinal patches for oral drug delivery are designed to adhere to the intestinal lining and deliver medication directly to the targeted area. Typically, these patches use bioadhesive materials that ensure they remain in place while allowing controlled release of the drug. To make intestinal patches, bioadhesive polymer matrix is designed to adhere to the intestinal lining. The drug is incorporated into this matrix using techniques like solvent casting or melt extrusion. The patches are formulated with excipients for controlled release, then tested for adhesive properties and drug release before packaging. **Results:** Intestinal patches effectively adhere to the intestinal lining, providing controlled drug release and improving drug absorption with improved therapeutic outcomes, and reduce systemic side effects compared to conventional oral drug delivery methods. **Conclusions:** By delivering medication directly to the desired intestinal region, these patches represent a significant development in oral drug administration that will maximize therapeutic efficacy and minimize systemic side effects.

PHCL893
CURRENT DEVELOPMENTS AND REGULATORY ASPECTS IN CELL AND GENE THERAPIES

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Abstract:

Objectives: This review looks at the latest developments in gene and cell therapy methods, as well as the therapeutic uses and regulatory issues they raise. Treatments for a variety of disorders, such as stem cell therapies, CAR-T cell therapy, and CRISPR-Cas9, show promise. While standardization, long-term monitoring, and ethical concerns remain, regulatory authorities are striving to ensure safety while expediting approvals. To optimize the promise of these medicines, future efforts should concentrate on innovation, enhancing regulatory frameworks, and resolving ethical problems. **Methods:** The literature, which included peer-reviewed papers, clinical trial reports, and regulatory guidance from significant health organizations including the FDA and EMA, was thoroughly studied. Information was gathered about clinical results, new technology developments, and legislative initiatives. The present state of cell and gene treatments was examined using qualitative analysis to find important themes and understand trends. **Results:** The analysis showed notable advancements in stem cell-based therapies, CAR-T cell therapy, and CRISPR-Cas9 gene editing as well as other cell and gene therapy technologies. Promising treatment outcomes have resulted from these improvements in conditions including cancer, genetic disorders, and chronic illnesses. Regulatory agencies have taken the initiative to develop procedures that would speed up the approval process without compromising patient safety. Still, there are issues to be resolved, such as standardizing production procedures, maintaining long-term safety oversight, and taking ethics into account. **Conclusions:** The field of cell and gene therapies is one that is fast developing and has the potential to significantly change medical treatments. The study emphasizes how crucial it is for scientists, physicians, and regulatory agencies to keep coming up with new ideas and working together. Even if the present regulatory frameworks have changed to accept these innovative treatments, more work is still required to solve lingering issues and guarantee the secure and efficient application of gene and cell therapies in clinical settings. Subsequent investigations ought to concentrate on improving therapy methods, strengthening regulatory.

PHCL894
NANOANTIBIOTICS: APPLICATIONS AND FUTURE TRENDS

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Abstract:

Objectives: The potential of nanoantibiotics in the fight against bacterial infections is investigated in this study, with an emphasis on the drugs' uses, efficacy, and potential future developments in medicine. **Method:** We looked into a number of studies and investigations into the application of nanoparticles as antibiotics. Examining the synthesis of nanoparticles, their modes of action against bacteria, and their efficacy in comparison to conventional antibiotics were all part of this. **Results:** Antibacterial medicines can now be administered more effectively and with greater potency thanks to the development of nanoantibiotics. They can circumvent resistance mechanisms that restrict the efficacy of traditional antibiotics, lessen adverse effects, and more accurately target bacterial cells. The evaluated research showed that a variety of bacterial illnesses, including those resistant to conventional antibiotics, may be successfully treated with nanoantibiotics. **Conclusion:** In the battle against bacterial infections, nanoantibiotics provide a potential new front. They may be extremely important in treating medical conditions in the future due to their capacity to increase drug delivery, efficacy, and overcome resistance. To fully realize their promise and produce safe, efficient nanoantibiotic treatments for broad usage, more investigation and clinical studies are required.

PHCL895
HOSPITAL COMMUNITY AND CLINICAL PHARMACY

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Abstract:

Objective:A hospital pharmacy's primary objective is to control pharmaceutical use inside a hospital or medical facility. This includes ensuring that the correct drug is administered to the appropriate patient at the appropriate time and amount. Clinical pharmacists collaborate with patients and other healthcare providers to create and administer drug programs. They guarantee that patients receive pharmaceuticals that are safe, efficacious, and appropriate. **Method:** Hospital Pharmacy, 1.Medication Management and Distribution is the process of distributing pharmaceuticals from a central pharmacy or supplier to multiple locations within a healthcare facilityCommunity pharmacy,1.Prescription Dispensing Preparing and packaging a prescription medicine or equipment in a container and labeling it with information required by state and federal law. Clinical pharmacy, 1.Research and Evidence-Based Practice Evidence-based practice (EBP) is the concept that scientific evidence should be the foundation of professional activities. **Result:** Hospital pharmacists make sure that medications are prescribed, delivered, and administered safely, which is critical for inpatient care and rehabilitation.Clinical pharmacists ensure that pharmaceutical regimes are adjusted to individual patients, thereby enhancing therapeutic outcomes and minimizing side effects.Community pharmacies offer easy access to prescriptions and over-the-counter medications, making it easier for patients to receive critical treatments. **Conclusion:** The conclusion of a hospital pharmacy often emphasizes the critical role pharmacists play in the healthcare system. Hospital pharmacists play an important role in assuring safe and effective pharmaceutical usageCommunity pharmacies are frequently the most accessible healthcare resource, delivering critical services to people on a local basis.Clinical pharmacy is pivotal in optimizing medication therapy. Clinical pharmacists apply their expertise to tailor drug regimens to individual patients, ensuring that medications are used effectively and safely.

PHCL896
HOSPITAL, COMMUNITY, AND CLINICAL PHARMACY

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Abstract:

Objective: Ensure the right medicine is provided to patients at the right time through an efficient and economical system, Manage the use of medications in hospitals and other medical centers, provide unbiased drug information to doctors, Manage drug distribution systems, including dispensing to inpatients and outpatients, Provide therapeutic drug monitoring & promote medication. **Methods:** Generally, clinical pharmacy improves the quality of treatment via direct patient involvement and drug management measures. Hospital and neighbourhood pharmacies are essential components of the health care system. **Results:** Hospital pharmacies play a crucial role in healthcare systems by managing the acquisition, distribution, and safe handling of pharmaceuticals. For the general people, community pharmacies are the main supplier of drugs and frequently the initial point of contact for medical treatment. Despite recent efforts such as the Doctor of Pharmacist. program to improve their capabilities, the course material for pharmacy school has come under fire for not adequately educating pharmacists for these responsibilities. The primary goals of clinical pharmacy are improve patient outcomes by providing direct patient care and improving pharmaceutical treatment. **Conclusions:** In conclusion, community pharmacies cater to the general population, hospital pharmacies concentrate on inpatient treatment, and the clinical pharmacy profession is a specialised field of practice that seeks for maximum drug therapy. Developing a foundational concept for clinical pharmacy, standardised practice paradigms, and offering patient-oriented services are among the difficulties.

PHCL897
PHARMACOVIGILANCE FOR EVALUATING ADVERSE DRUG REACTION

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Abstract:

Objectives: To analyse the pharmacovigilance database, which may be used to identify risk variables linked with adverse drug responses as well as detect drug-related signs and symptoms. **Methods:** The Post-marketing medication safety review employs a variety of methodologies, including clinical trials, spontaneously reported case reports, and spontaneous reporting systems (SRS). The SRS facilitates the early detection of unexpected and serious adverse medication responses. Pharmaco vigilance refers to drug safety research and surveillance. **Results:** Pharmacovigilance is critical for ensuring pharmaceutical safety and undertaking post-marketing safety surveillance. Adverse drug responses are evaluated via post-marketing clinical studies and spontaneous reporting systems. These measures assist to limit the number of adverse medication responses. **Conclusions:** It is crucial to do research and develop procedures aimed at evaluating, identifying, and averting negative pharmaceutical reactions and drug-related illnesses. Drug side effects are frequent and occasionally rather serious. For the particular medication in question, it is crucial to identify and report adverse responses to the pharmacovigilance department.

PHCL898
EXPLORING THE INTERPLAY BETWEEN PHARMACOLOGY AND TOXICOLOGY

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Abstract:

Objective: The study examines the way pharmacology and toxicology interact in drug development as well as safety assessment. In what manner Toxicological insights illuminate side effects,

while pharmacological principles explain drug action. Current MOA research on pharmaceutical safety and efficacy are reviewed. **Methods:** Information Fusion of toxicological and pharmacological data to demonstrate methods, drug discovery and development, pharmacokinetics, pharmacodynamics, and clinical trials. Risk assessment, bio monitoring, toxicology exposure assessment, dose response studies. Analysis of recent scientific literature, including reviews, original research publications, and pharmacology and toxicology guidelines. **Result:** Learn how toxicological assessments identify undesirable effects and how pharmacological mechanisms affect drug safety and efficacy. Learn from Case Studies Examples of drug safety improvements from pharmacological and toxicological techniques. Control Methods Overview of how regulators evaluate drugs using pharmacological and toxicological data. **Conclusion:** Pharmacology and toxicology must be integrated in medication development and safety assessment, according to the review. Understanding how these fields interact improves prediction, evaluation, and mitigation of side effects, making treatment procedures safer and more successful. Future research should improve pharmacological-toxicological data integration and solve drug safety issues.

PHCL899
UNRAVELING ALPHA-SYNUCLEIN'S ROLE IN PARKINSON'S DISEASE

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Abstract:

One important protein connected to the aetiology of Parkinson's disease (PD) is alpha-synuclein. This study investigates the pathogenicity of alpha-synuclein, its function in the development of Parkinson's disease, and its biochemical characteristics. **Objective:** To Investigate how Parkinson's disease-related neurodegeneration is caused by alpha-synuclein aggregation. To determine possible treatment modalities that focus on Parkinson's disease-related alpha-synuclein pathology. **Methods:** An extensive literature study was carried out, with a particular emphasis on research that looked at the function of alpha-synuclein in Parkinson's disease. Information was acquired from animal models, clinical research, and *in vitro* experiments. The investigation of alpha-synuclein expression, aggregation, and its effects on cellular processes such oxidative stress, protein breakdown pathways, and mitochondrial functioning were important techniques. **Results:** According to this study, alpha-synuclein aggregation causes neuronal death by impairing autophagy, increasing oxidative stress, and disrupting mitochondrial function. Motor impairments and dopaminergic neurone loss were among the Parkinson's disease-like symptoms seen in animal models overexpressing mutant alpha-synuclein. These findings support alpha-synuclein's pivotal role in the pathophysiology of Parkinson's disease. **Conclusions:** One essential protein in the pathophysiology of Parkinson's disease is alpha-synuclein. Neurodegeneration is the outcome of a series of cellular malfunctions caused by its misfolding and aggregation. Alpha-synuclein research continues to yield important insights into the mechanisms underlying Parkinson's disease (PD) and possible treatment strategies to lessen its effects.

PHCL900
METABOLIC DIABETES: DIABETES MELLITUS

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Abstract:

Objectives: Diabetes mellitus is the disease in which the body does not produce or it does not show the response to the insulin it may cause the blood sugar level abnormally high and the sugar build up in the

bloodstream and this is because the pancreas dose not produce the enough insulin. **Method:** There are two types of Diabetes mellitusTYPE 1, TYPE 2The Type1 is the Autoimmune disease and it require the insulin The Type2 is not the Autoimmune disease and can utilize other medications instead of or in addition to insulin. **Result:** People with diabetes have a higher risk of health problems including heart attack, stroke and kidney failure. Diabetes can cause permanent vision lose by damaging blood vessels in the eyes many people with diabetes mellitus **Conclusion:** The long-term effects of diabetes mellitus include damage to large and small blood vessels, which can lead to heart attack and stroke, and problems with the kidney, eyes, feet and nerves and the risk for long term effects of diabetes can be reduced and diabetes mellitus can be treated.

PHCL901
INNOVATIVE APPROACHES TO ANTIMALARIAL THERAPY IN HIV-POSITIVE PATIENTS: A FOCUS ON DRUG COMPATIBILITY

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Abstract:

Objective: This review explores alternative antimalarial treatments for HIV-positive patients, aiming to provide effective malaria management while minimizing drug interactions and the risk of folate deficiency. **Methods:** A comprehensive review of current literature was conducted to identify antimalarial drugs that are both effective and have minimal interactions with antiretroviral therapies. Particular attention was given to drugs that do not affect folate metabolism. Case studies and clinical trial data were analyzed to evaluate the efficacy and safety of these alternative treatments. **Results:** Artemisinin-based combination therapies (ACTs), including artemether-lumefantrine and dihydroartemisinin-piperaquine, were identified as first-line treatments for uncomplicated malaria in HIV-positive patients due to their high efficacy and minimal impact on folate levels. Atovaquone-proguanil emerged as a viable option for areas with ACT resistance or in cases where folate monitoring is impractical. For severe malaria, intravenous quinine or artesunate followed by a full course of ACTs proved effective without significant folate interactions. **Conclusion:** Effective malaria management in HIV-positive patients requires careful selection of antimalarial therapies that minimize drug interactions and folate metabolism interference. Artemisinin-based combination therapies and atovaquone-proguanil provide promising alternatives, ensuring both efficacy in malaria treatment and safety for HIV-positive patients.

PHCL902
EVALUATION OF PHYTOCHEMICAL ANALYSIS AND ANTIOXIDANT AND ANTI-INFLAMMATORY ACTIVITY OF *CRASSULA OVATA* (JADE):AN *IN VITRO* STUDY

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Abstract:

Objectives: To investigate the phytochemical composition of hydroalcoholic leaf extract of *Crassula ovata* (HLCO) and conduct the pharmacological evaluation for antioxidant and anti-inflammatory properties using suitable models. **Methods:** A comprehensive phytochemical analysis encompassing alkaloids, glycosides, flavonoids, terpenoids, saponins, carbohydrates, and proteins was undertaken. Evaluation of antioxidant potential involved the assessment of hydroxyl, DPPH, hydrogen peroxide, nitric oxide radical scavenging activities, ferric reducing ability power (FRAP), HRBC assay, and albumin denaturation assay. **Results:** The Crassula ovata was identified as having carbohydrates, proteins, steroids, triterpenoids, flavonoids, and phenols. In various antioxidant studies, the Jade plant

has demonstrated significant activity against hydroxyl radicals, DPPH radicals, hydrogen peroxide, nitric oxide radical scavenging activities, and FRAP. Additionally, it has exhibited notable stabilization of the HRBC membrane and prevention of protein denaturation. **Conclusions:** The observed antioxidant and anti-inflammatory properties are likely attributed to the active phytochemical constituents and the hydrogen or electron-donating capacity of *Crassula ovata*.

PHCL903

ASSESSMENT OF NOMOPHOBIA AMONG YOUNG ADULTS IN A PHARMACY COLLEGE

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Abstract:

Objectives: This study aims to assess the prevalence of nomophobia among young adult population in a pharmacy college. **Methods:** A cross-sectional survey was conducted among students enrolled in a pharmacy college. A structured questionnaire named Nomophobia Questionnaire (NMP-Q), was used to assess nomophobia. The participants' age group ranged from 18-25 years. The survey collected demographics of students which was later used for descriptive statistics and inferential tests. Correlation between the various demographic data was made with respect to the scores from NMP-Q. **Results:** The total enrolled participants for this study were 678, with a majority of female cohort 371 (54.72%). The prevalence of nomophobia in students was observed to be 98.08% with majority of 346 (51.03%) having moderate nomophobia. In our year wise distribution, the 5th years had 100% prevalence of nomophobia. The study also concentrated on the other parameters, in which the hosteller and hospital going students had less prevalence than the day-scholar and college attending students. **Conclusion:** In this study, the prevalence of nomophobia and its associated factors were assessed among the young adult population. Findings of the study was most participants were having moderate nomophobia. It was found that the course, year of study, place of stay, place of study had an effect of nomophobia on participants. Overall, the participants are more susceptible to nomophobia as the technology and the use of the mobile phone is growing in the present times.

PHCL904

PHARMACOGENOMICS IN ENHANCING DRUG EFFICACY AND SAFETY

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Abstract:

Objectives: The objective is to explore how pharmacogenomics personalizes medication therapy by improving drug efficacy and safety, reducing adverse reactions, and optimizing treatment through tailored genetic insights. **Method:** This presentation will review current literature on pharmacogenomics, highlighting case studies that demonstrate its impact on drug efficacy and safety. it will also discuss the integration of pharmacogenomics testing in clinical practice, challenges faced, and future directions for research and implementation in personalized medicine. **Results:** Pharmacogenomics plays a crucial role in enhancing drug efficacy and safety by allowing healthcare providers to tailor medication choices based on individual genetics profiles. by identifying genetic variation that influence drug metabolism, Pharmacogenomics testing can reduce the risk of adverse drug reactions and optimize therapeutic outcomes. successful case studies, such as those involving anticoagulants and antidepressants highlight the effectiveness of personalized medicine. untimately, integrating pharmacogenomics into clinical practice offers a promising approach to improving patient care. **Conclusion:** Pharmacogenomics significantly

enhances drug efficacy and safety by personalizing treatments based on genetic profile. By understanding individual respomnses to medications, healthcare providers can optimize therapeutics strategies, reduce adverse effect, and improve patient outcome, paving the way for more effective, tailored healthcare solutions.

PHCL905

IN VITRO INVESTIGATION OF THE POTENTIAL ANTISECRETORY AND ANTIEMETIC PROPERTIES OF *CHLOROPHYTUM COMOSUM*

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Abstract:

Objectives: To evaluate the hydroalcoholic extract of *Chlorophytum comosum* (HACC) for *in vitro*antisecretory and antiemetic propertiesin suitable models. **Methods:** To assess the antisecretory activity, acid neutralizing capacity (ANC) was measured along with using the chick model of emesis. Male chicks were divided into groups that received different treatments, such as copper sulfate, HACC, and metoclopramide. The efficacy of the treatments was evaluated by observing the frequency of retching and monitoring changes in feed intake. **Results:** The results showed a concentration-dependent reduction in acid neutralizing capacity per gm of antacid was found as 98.9, 60.57, 23.36, and 9.9 respectively. Whereas, a test drug concentration of 1000 mg was found double to neutralize acid more significantly as compared to the standard. In the chick model, HACC was found to reduce copper sulfate-induced retching, displaying an impressive 84.63% inhibition rate of retching indicating their antiemetic property. **Conclusion:** The observed acid-neutralizing and antiemetic properties of *Chlorophytum comosum* (spider plant) are attributed to alkaloids, steroids, flavonoids, saponins, phenolic acids, tannins, and cardiac glycosides. These compounds are known to exert health-promoting properties.

PHCL906

THE DEVELOPMENT OF PHARMACOVIGILANCE: FROM MODERN DRUG SAFETY SYSTEMS TO THALIDOMIDE

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Abstract:

Objectives: This study primarily aims at drawing a timeline for the evolution of pharmacovigilance, Highlighting important milestones such as the thalidomide incident, and research the ways in which these events have affected today's state of drug safety. The study, therefore, aims at identifying how approaches, technology, and regulatory frameworks have changed over time to bring about improvement in pharmacovigilance procedures. **Methods:** Literature review—Extensive literature review; sourcing and reviewing of primary and secondary materials from the emergence of pharmacovigilance to date. The major steps of change at this juncture were drawn to the timeline by researching historic case studies, legal documents, technical reports, and scientific articles. The course of regulatory action and establishment of pharmacovigilance programs was reviewed in the light of significant events, such as the thalidomide disaster. **Results:** The thalidomide tragedy during the 1960s, where many babies were born with abnormalities due to inadequate safety testing of the medicine, was truly the driving factor in the development of formalized procedures in pharmacovigilance. The tragedy thus led to the establishment of the World Health Organization's Programme for International Drug Monitoring and other such organizations, It inspired them to adopt stricter drug safety laws. Reporting systems, signal detection, and data collection all have changed dramatically over the years. Early detection and

evaluation of ADRs have been made possible by incorporating the latest technologies available in relation to artificial intelligence and machine learning. **Conclusions:** The development of pharmacovigilance from the tragedy of thalidomide to the present frameworks of drug safety underlines how important and, indeed, vital it is to be continually refining regulation and monitoring procedures. Lessons learnt have been used in developing stronger frameworks and procedures in pharmacovigilance. It is still in use, and state-of-the-art technology will further advance medication safety and safeguard the people everywhere even better. It is one such historical perspective: the reminder of the vigilance, flexibility, and innovativeness that a pharmacovigilance professional must be imbued with to avert drug related catastrophes in the future.

PHCL907

PRECISION MAPPING CHARTING THE HUMAN GENOME FOR DISEASE PREDICTION AND TREATMENT: A META - ANALYSIS

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Abstract:

Objectives: This meta-analysis aims to synthesize current findings on the effectiveness of precision mapping of the human genome in predicting and treating diseases. By consolidating diverse studies, we seek to ascertain the reliability, accuracy, and clinical utility of genomic mapping techniques in tailoring personalized medical interventions. **Methods:** A comprehensive literature search was conducted across databases like PubMed, Scopus, and Web of Science for studies published between 2010 and 2023. Inclusion criteria comprised peer-reviewed articles focusing on genomic mapping in disease prediction and treatment. Data extraction was performed independently by two reviewers, followed by quality assessment using the Cochrane Risk of Bias tool. Statistical analyses included meta-regression and subgroup analyses to identify variance sources and evaluate effect sizes. **Results:** Out of 1500 initially identified articles, 72 studies met the inclusion criteria, comprising a total sample size of over 120,000 participants. Genomic mapping demonstrated significant predictive accuracy for various inherited diseases, notably cancers, cardiovascular conditions, and metabolic disorders, with pooled sensitivity and specificity values of 85% and 88%, respectively. Treatment outcomes showed marked improvement in personalized therapies, with an average of 30% better response rates in genomic-guided treatments compared to standard approaches. Variations in outcomes were observed based on disease type, genetic markers assessed, and study design. **Conclusions:** The meta-analysis underscores the robust potential of precision genomic mapping in enhancing disease prediction and optimizing treatment pathways. While the predictive power is consistently high, translational applications in clinical settings require standardized protocols for genomic analysis and interpretation. Future research should focus on longitudinal studies to validate long-term benefits and integrate multi-omics approaches for comprehensive patient profiling. The findings affirm the transformative promise of genomic precision mapping in precision medicine, advocating for its integration into routine clinical practice to facilitate personalized healthcare advancements.

PHCL908

PSYCHOLOGICAL IMPACT OF PREOPERATIVE ANXIETY ON SURGICAL OUTCOMES

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Abstract:

Objectives: To investigate the psychological impact of preoperative anxiety on surgical outcomes, focusing on the relationship between anxiety levels and postoperative recovery, complications, and

patient satisfaction. **Methods:** A prospective study covering various specialties was conducted on 200 elderly patients scheduled for elective surgery. Preoperative anxiety was assessed using the Hospital Anxiety and Depression Scale (HADS) one week before surgery. Surgical outcomes were assessed according to postoperative pain, length of hospital stay, wound healing, and complications. Patient satisfaction was measured using the Postoperative Quality of Recovery Scale (PQRS) on the first day and seven days later. **Results:** Results showed that greater preoperative stress was associated with higher rates of postoperative pain, longer hospital stays, and higher rates of complications such as infection and delays in wound healing. Patients who were more stressed were also less satisfied when they returned to work. A retrospective analysis confirmed that preoperative stress was a predictor of poor surgical outcomes, even after controlling for factors such as age, gender, and type of surgery. **Conclusions:** Preoperative stress has a negative impact on surgical outcome, resulting in increased pain, longer recovery times, and decreased patient satisfaction. These findings highlight the importance of using psychological interventions, such as counselling or relaxation, to manage stress first. By addressing this risk factor, doctors can improve surgical outcomes and improve patient's overall health.

PHCL909
PATIENT COUNSELING: THE ROLE OF THE PHARMACIST

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Abstract:

Objective: The objective of this study is to explore the pivotal role of pharmacists in patient counseling, emphasizing their impact on medication adherence, patient safety, and overall healthcare outcomes. This research aims to highlight the essential skills and knowledge required for pharmacists to effectively engage in patient counseling, thereby improving patient satisfaction and therapeutic outcomes. **Method:** A comprehensive literature review was conducted, focusing on recent studies and articles that examine the role of pharmacists in patient counseling. Key databases such as PubMed, Scopus, and Google Scholar were searched using relevant keywords including "pharmacist," "patient counseling," "medication adherence," and "healthcare outcomes." Selected studies were analyzed to identify common themes, strategies, and challenges faced by pharmacists in delivering effective patient counseling. This observational study was conducted in both community and hospital pharmacy settings over a 3-month period. A total of 150 patients were enrolled, including those with chronic conditions like diabetes, hypertension, and asthma. Pharmacists provided one-on-one counselling sessions, explaining medication use, side effects, and lifestyle modifications. Patients were also provided with educational materials. Adherence was assessed using a standard medication adherence questionnaire before and after the counselling sessions. Medication errors were tracked, and patient satisfaction surveys were conducted post-counselling. **Results:** The findings from the reviewed literature indicate that pharmacists play a crucial role in enhancing patient understanding of their medication regimen, which directly correlates with improved medication adherence and reduced adverse drug reactions. Effective patient counseling by pharmacists has been shown to increase patient trust and satisfaction, leading to better healthcare outcomes. However, the study also identifies challenges such as time constraints, lack of privacy, and insufficient training that may hinder pharmacists from providing optimal patient counseling. The results demonstrated that 78% of patients showed improved medication adherence post-counselling. Medication errors decreased by 35% following the intervention, as pharmacists addressed potential drug interactions and clarified dosage instructions. Additionally, 85% of patients expressed high levels of satisfaction with the

counselling received, stating that they felt more informed and confident in managing their health. This study underscores the essential role of pharmacists in patient education and improving healthcare outcomes. **Conclusion:** Pharmacists are essential healthcare professionals who significantly contribute to patient education and medication management through patient counseling. Despite the challenges, their role is vital in promoting safe and effective medication use, improving patient outcomes, and supporting the overall healthcare system. Continuous professional development and the integration of patient counseling into routine pharmacy practice are recommended to enhance the role of pharmacists in patient care.

PHCL910
THE ROLE OF PHARMACIST IN ANTIBIOTIC STEWARDSHIP: REDUCING ANTIBIOTIC RESISTANCE

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Abstract:

Objective: Antibiotic resistance is a significant global health challenge, driven by the overuse and misuse of antibiotics. This study aims to explore the pivotal role pharmacists play in antibiotic stewardship programs, focusing on strategies to optimize antibiotic use and reduce the emergence of resistant strains. **Method:** A comprehensive review of existing literature was conducted, analyzing studies that examine the involvement of pharmacists in antibiotic stewardship programs. The review also included evaluations of clinical outcomes, patient adherence to antibiotic regimens, and pharmacists' impact on reducing inappropriate antibiotic prescriptions. **Result:** The findings demonstrate that pharmacists are instrumental in enhancing antibiotic stewardship efforts. Their expertise in pharmacotherapy and patient education allows them to effectively collaborate with healthcare teams, promote rational antibiotic use, and monitor patient compliance. Interventions led by pharmacists were shown to significantly reduce inappropriate antibiotic prescribing, improve clinical outcomes, and contribute to the containment of antibiotic resistance. **Conclusion:** Pharmacists play a crucial role in antibiotic stewardship by ensuring the appropriate use of antibiotics, educating patients and healthcare professionals, and monitoring treatment outcomes. Their active participation in stewardship programs is essential for combating antibiotic resistance and ensuring the long-term efficacy of antimicrobial therapies.

PHCL911
STUDY OF ANTIDIABETIC ACTIVITY OF *DENDROCALAMUS STRICTUS* (SHOOTS) EXTRACT IN HIGH FAT DIET-INDUCED RATS

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[2]Maa Samalai Pharmacy College, Sambalpur, Odisha

Abstract:

Objectives: The present study has been undertaken to investigate the antidiabetic potential of methanol extract of *Dendrocalamus strictus* in high fat diet induced diabetic rats. **Methods:** 1. Preparation of extract – Collection, authentication, cleaned and dried. Extraction- Dried shoots are subjected to solvent extraction (e.g., using pet ether, chloroform, ethanol) 2. Animal Model- Rats are fed a high fat diet for several weeks (usually 6-8 weeks) to induce insulin resistance and hyperglycemia, mimicking type-2 diabetes. 3. Experimental design –Groups- Normal control(std diet),Diabetic control(high fat diet),

diabetic + low dose of extract , diabetic + high dose of extract, positive control(Glimeperide)4. Treatment- The extract is administered orally for a specified duration. Doses are determined based on preliminary studies. 5. Assessment- Blood glucose levels: Measured periodically. OGTT: Performed to assess glucose handling. Insulin levels: measured using ELISA kits. Lipid profile: Total cholesterol, triglycerides, HDL and LDL levels. **Results:Blood glucose levels:** Significant reduction in blood glucose levels in the ethanolic extract compared to the diabetic control. **OGTT:** Improved glucose tolerance in ethanolic extract. **Insulin levels:** Increased insulin sensitivity secretion. Lipid Profile: Improvement in lipid profile parameter. **Conclusion:** From the toxicity study it was observed that ethanolic extract of *Dendrocalamus strictus* was nontoxic up to the dose of 2000 mg/kg body weight. In this study, animals received continuous oral administration for a period of 15 days at the doses of 200 mg/kg and 400 mg/kg body weight. The control group was administered distilled water for the same duration. The blood glucose level was determined by GOD-POD kit method. The effect was compared with oral dose of1mg/kg Glimeperide. The results showed that the shoots extract exhibits significant antidiabetic activity in high fat diet induced diabetic rats, suggesting its potential as a natural therapeutic agent for managing diabetes. Further studies including clinical trials would be necessary to confirm its efficacy and safety in humans.

PHCL912
ANTIVIRAL TREATMENT AND PREVENTION OF AVIAN INFLUENZA A(H5N1) OUTBREAK IN THE UNITED STATES OF AMERICA IN 2024 : A REVIEW

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Abstract:
Objectives: To study the available antiviral treatments and preventive measures for avian influenza and the mechanism for the pathogenesis in humans, how it can be acquired and to understand the virology. **Method:** Various articles, research papers, were searched from online publication databases such as PubMed, Science Direct, Google Scholar and Scopus for writing this review article. 21 research paper were selected to carry out this review article. **Result:** It is a bird flu that belongs to the genus Alphainfluenza virus within the Orthomyxoviridae virus family. These infection acquired through infected animal's coughs or sneezes, and droplets containing influenza virus, which spreads through the air. It causes mild to severe illness of conjunctivitis, gastrointestinal symptoms, encephalitis and encephalopathy. Antiviral drugs can reduce the duration of viral replication like neuraminidase inhibitors (oseltamivir, zanamivir). Novel studies demonstrated that COX-2, tumor necrosis factor α and other proinflammatory cytokines are strongly induced in lung epithelial cells by secretory factors from H5N1-infected macrophages. It also induces lower levels of type-1 interferon in bronchial epithelium which is essential for innate immune defense to viral pathogens. High levels of proinflammatory cytokines in the lungs may develop pneumonia and acute respiratory distress syndrome. Selective COX-2 inhibitors can be used to suppress the hyperinduction of cytokines. It can be useful for the development of novel therapeutic treatments along with antiviral drugs. **Conclusion:** Genome sequencing of the virus didn't show new mutations to spread efficiently in humans. Though there are no licensed vaccines, studies are going on mainly based on evocation of a neutralizing antibody against the major epitope of hemagglutinin. The laboratory technical protocols are modified for the detection of influenza using molecular methods, e.g. RT-PCR.

PHCL913

PHARMACOLOGICAL INVESTIGATION OF *RHYNCHOSTYLIS RETUSA* ROOT IN ANIMAL MODEL OF DIABETIC WOUND

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Abstract:

Objectives: The aim of this study was to evaluate the wound-healing and anti-bacterial properties of *Rhynchostylis retusa* root extract (RRRE) in diabetic rats using burn wound model. **Methods:** Diabetes was induced in the Wistar rats using streptozotocin (50 mg/kg, intraperitoneal injection). A hydrogel formulation was prepared and characterized by tests like microscopic characteristics, pH, viscosity, swelling index, spreadibility, and swelling index tests. The rats were treated with a hydrogel containing RRRE for 14 days on burn wounds. Povidone iodine was used as a reference standard. Wound contraction rate was evaluated on days 0, 7, and 14 to monitor healing progress followed by cytokine estimation in serum. Acute dermal toxicity was also assessed to check the level of toxicity of formulated hydrogel having RRRE. The antimicrobial activity of RRRE using *E.Coli* strains was also assessed and compared to control treatments. **Results:** The formulated hydrogel demonstrated promising characters of an ideal hydrogel as assessed by various characteristics. Diabetic rats treated with hydrogel containing RRRE which exhibited significant wound healing over 14 days, with wound contraction measured on days 0, 7, and 14 showed results comparable to those treated with the reference standard. Results of decreasing pro-inflammatory cytokines like IL-6 and TNF-α in serum of treated animals supported the wound healing claim. No toxicity was observed in acute dermal toxicity test. The antimicrobial activity of RRRE in *E-Coli*demonstrated effective suppression compared to control treatments, indicating both strong antibacterial and wound-healing potential. **Conclusions:** The study demonstrated that RRRE, applied via hydrogel, effectively promoted wound healing in diabetic rats, showing comparable wound contraction to the standard treatment with povidone iodine. Additionally, RRRE exhibited significant antimicrobial activity compared to control treatments, highlighting its potential as a beneficial therapeutic agent for infected diabetic wounds.

PHCL914

PRECLINICAL ASSESSMENTS OF ANALGESIC ACTIVITY OF *STEVIA REBAUDIANA* LEAF EXTRACTS BY HOT PLATE ANALGESIOMETER

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Abstract:

Objectives: Stevia rebaudiana belongs to the Aster family which is indigenous to the northern regions of south America. It grown in many parts of Brazil Paraguay, central America and Thailand and China.In The present study the three dose of Ethanolic leaf extract were screened for analgesic study. **Methods:** Animal test of analgesic drugs commonly measure nociception and involved testing the reaction of an animal to a mildly painful stimulus, often mechanical of thermal. Such measures include the Paw Withdrawl against hot Perception. test (measuring the time taken for a rat to withdraw its tail when a standard radiant heat stimulus is applied) or the paw pressure test (measuring the withdrawal threshold when a normal or inflamed paw is pinched with increasing force). **Results:** A study evaluated the analgesic effects of Srida Rhizome Linn extract (SRLE) and diclofenac sodium by measuring reaction times in subjects over 240 minutes. Treatments included a control group, diclofenac sodium, and SRLE at 100, 200, and 300 mg/kg doses. The control group's reaction time remained stable (2.22–2.51 seconds), while diclofenac sodium significantly increased reaction times at 30, 60, 120, and 180 minutes (4.5–4.7 seconds),

decreasing by 240 minutes (2.91 seconds). SRLE groups showed the greatest effect at 120 minutes, with reaction times of 5.11, 5.78, and 4.15 seconds for SRLE100, SRLE200, and SRLE300, respectively. SRLE exhibited a more sustained analgesic effect compared to diclofenac sodium. **Conclusions:** The findings indicate that the major component responsible for the analgesic activity may be present in the ethanol extract, particularly at the dose of 300 mg/kg body weight.

PHCL915
THE STUDY FOCUSES ON THE PHARMACOVIGILANCE OF THE LEVOSALBUTAMOL FORMULATION AVAILABLE IN THE LOCAL MARKET

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Abstract:

Objectives: The aim of this study is to evaluate the safety and effectiveness of local formulations of levosalbutamol, observing any side effects or differences in efficacy from recommended levels. **Methods:** Information from numerous sources was collected for an initial study on asthma and the prescription drug levosalbutamol. The study area was selected, and 40 doctors, pharmacists, and patients were randomly selected. The inquiries in the survey were developed with the state of sickness and marketing in mind. Data was gathered via patients' comments and pharmacists. While secondary data was assembled from primary data, primary data was gathered from physicians, pharmacies, and patients. In order to evaluate various items and determine market conditions, market research took out. The data gathered was analyzed and given in a schematic way. **Results:** In treating symptoms, levosalbutamol inhaler formulations are favored over tablets or syrup. For issues, a majority of patients have dosages of 50 mcg and 0.63 mcg, with a maximum dosing gap of 4-6 hours. The majority of patients take combination treatment, which consists of four medications: levosalbutamol, amoxiclav, prednisolone, and Montelukast. The majority of individuals experience limb edema and discomfort in the chest, cardiac arrhythmia, hypertension, and allergic responses. cramps in the muscles, vertigo, tremor, and GI distress are some of the side symptoms. A minority of individuals experience persistent, resolved, or unexplained symptoms, whereas the majority of patients stay on levosalbutamol medication. According to other age groups, older persons have higher mortality rates. **Conclusions:** Patients with heart conditions are better off with levosalbutamol since it reduces the risk of cardiac adverse effects including primary tachycardia. It is widely used in combination therapy with Amoxiclav, Montelukast, and Prednisolone and comes in a variety of formulations. Major adverse drug response (ADR) observed by the majority of patients was hypertension; other side effects included tremor, dizziness, cramping in the muscles, and upset stomach. Compared to other groups, the death rate for senior persons was greater. Additional research is required to reach a thorough conclusion.

PHCL916
ADVANCEMENTS IN NEUROSCIENCE: A SYSTEMATIC REVIEW ON DRUG DISCOVERY AND DEVELOPMENT

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Abstract:

Objectives: Neuroscience is the scientific study of the structure and cognitive functions of the brain. CNS diseases are complex and involve dysregulation in the multiple biochemical pathways in brain. iPSC model research is the patient specific models which has the role for finding a new degenerative medicine quickly. Artificial intelligence deals with the simulation of human intelligence using machines to get a new drug.

Methods: iPSC-based differentiation systems are currently being developed to conscientiously recapitulate human tissue-level and organ-level dysfunction, incorporated into disease modelling, drug screening and the study of host–pathogen interactions. iPSC models are the tools for modelling human diseases, contributing to the identification of pathological molecular mechanisms in an *in vivo* setting. Artificial Intelligence (AI) has significant potential to transform neurology by enhancing the diagnosis and treatment of brain diseases. AI is used for diagnosis, brain mapping, and surgical planning by analyzing large data volumes, explore biomarkers finding for the neurodegenerative process of brain. **Results:** Significant progress has been made in Drug discovery and development process to obtain a new drug for neurodegenerative diseases, especially with the use of iPSC-based stem cell models and Artificial Intelligence. **Conclusions:** A great success has been done for investigating disease mechanisms and potential treatments through patient-derived iPSCs in combination with gene editing technologies, such as CRISPR-Cas9 and bio-informatic softwares. AI can recognize hit and lead compounds, and provide a quicker validation of the drug target and optimization of the drug structure design for neurodegenerative diseases.

PHCL917
PHARMACOLOGICAL MODULATION OF AGING: A FRONTIER IN THERAPEUTIC INTERVENTIONS

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Abstract:

Objectives: Aging is a complex biological process characterized by a gradual decline in physiological function, increased susceptibility to diseases, and reduced ability to maintain homeostasis. Recent advances in pharmacology aim to decelerate the aging process and extend health span by targeting key molecular and cellular mechanisms such as oxidative stress, inflammation, telomere shortening, and cellular senescence. This emerging field focuses on developing pharmacological interventions to delay aging and reduce the prevalence of age-related diseases, such as cancer, cardiovascular disease, and neurodegenerative conditions. **Results:** Preclinical and clinical studies have identified several promising compounds capable of modulating aging-related pathways. **Rapamycin**, an mTOR inhibitor, has demonstrated potential in extending lifespan by promoting autophagy and reducing cellular damage. **Metformin**, a diabetes drug, has shown anti-aging effects by modulating metabolic and inflammatory pathways. **Senolytics**, which selectively clear senescent cells, have shown efficacy in delaying tissue degeneration and improving health span in animal models. However, translating these findings into effective human therapies remains challenging due to the risk of side effects and the need for precise targeting of aging mechanisms. **Conclusion:** Pharmacological anti-aging holds significant promise in transforming healthcare by shifting the focus from treating diseases to preserving health and vitality. However, the development of safe and effective therapies requires a multidisciplinary approach combining molecular biology, pharmacology, and bioethics. The challenge lies in balancing the potential benefits of extending health span with the ethical and societal implications of life extension. With further research and innovation, pharmacological interventions could revolutionize how we approach aging and age-related diseases.

PHCL918
NOVEL UNDERSTANDINGS AND THERAPEUTIC APPLICATIONS IN CHRONOPHARMACOLOGY

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Abstract:

Objectives: Chronopharmacology explores how the efficacy and metabolism of drugs vary according to biological timing and endogenous rhythms. Given that many physiological and biochemical processes are regulated by the body's circadian clock, this field aims to understand how these temporal variations influence drug absorption, metabolism, and pharmacodynamics. This study highlights the importance of applying chronopharmacology in therapeutic contexts, with a focus on the need for a systems biology approach to predict drug behavior across different circadian phases. **Method:**A comprehensive review of current literature on circadian rhythm influence on pharmacokinetics and pharmacodynamics was conducted, drawing on key sources such as Lemmer (2009) and Zhang et al. (2020). Special emphasis was placed on how daily oscillations in protein abundance—related to drug absorption and metabolism—impact drug effectiveness (Dallmann et al., 2016). The study also examines the hierarchical organization of circadian clocks, focusing on the central "master clock" in the suprachiasmatic nuclei and the "slave" oscillators in peripheral tissues (Takahashi, 2017). A systems biology framework was proposed to address the complex interactions between these clocks and drug action, with guidance from studies like Ruben et al. (2019) and Guo et al. (2021). **Conclusion:**Understanding the circadian modulation of drug metabolism and action can improve therapeutic outcomes by allowing for the optimization of drug timing (chronotherapy). Circadian pharmacokinetics and pharmacodynamics underscore the need for personalized treatment plans that consider individual biological clocks. A systems biology approach, integrating chrono-interactions across various clock-regulated pathways, holds promise for more precise and effective pharmacological interventions. This approach could transform therapeutic strategies, particularly in conditions with pronounced circadian disruptions, such as sleep disorders, metabolic syndromes, and cancer.

PHCL919
EFFECTS OF METHANOLIC EXTRACT OF *PIPER UMBELLATUM* LEAVES ON CONTRACEPTIVE AND SEXUAL BEHAVIOUR IN RODENTS

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Abstract:

Objectives: 1.To Evaluate Contraceptive Efficacy 2.To Analyze Hormonal Changes 3.To Determine Dosage Effects 4.To Assess Safety and Toxicity 5.To Investigate Mechanisms of Action 6.To Compare with Existing Contraceptives 7.To Study Long-term Effects **Methods:** Methanol extract of the leaves is prepared via Soxhlation method and administered to rat models. We have observe the changes in fertility-related indices, such as ovulation rate, sperm count, and hormonal levels. Plant Preparation :- Here we outline the method of collection, authentication, and preparation of Piper umbellatum leaves, including methanol extraction procedures. Animal Selection :- Specify details such as species, strain, sex, and care condition for the rats. Experimental Procedure:- Here we describe the experimental design, including control and treatment groups, doses administered, and duration of exposure. Evaluation Metrics :- Details the measures for conceptive indices such as fertility rates, implantation, and litter size. **Results:** Phytochemical Screening: Phytochemical screening revealed the presences of alkaloids,cardiac glycosides,

saponins, tannins and flavonoids.Anti-conceptive Activities:- The extract protected the rats from conception from one to three gestational periods. Similar results were obtained from the mice. The effect of the extract was reversible. Though there were some significant changes in both the weight and length of the pups of both the rats and mice over three months.Estrogenic and Anti-estrogenic effect:-The extract showed a significant dose dependent increase in uterine wet weight, vaginal opening in both rats and mice. However, its vaginal cornification in rats,was not progressive. Effects on estrus cycle:- The extract caused 33.3% and 66.7% inhibitions of first and second phases of estrus cycle in the rats respectively. Similarly, higher doses of the extract also inhibited estrus cycle in a dose-dependent fashion.Effect on Ovulation:- The extract exhibited inhibitory effect on ovulation. This inhibition was in a dose-dependent manner which ranged from 66.6% to 100% respectively. **Conclusion:** Contraceptive and sexual behaviour in rodents potential role of Piper Umbellatum in reproductive health was successfully done.

PHCL920
PHARMACOGNOSTIC STUDIES, EXTRACTION & PHARMACOLOGICAL ACTION (ANTI-OXIDANT & ANTI-DIABETIC) OF *MUNTINGIA CALABURA*

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Abstract:

Objectives: The objectives of this study is pharmacognostic extraction and antioxidant activity and antihyperglycemic constituents and of *muntingia calabura*are currently preferred therapeutic means of treatment and management of diabetes because of the undesired adverse effect of synthetic drugs. **Method:** One gram of powdered leaves were weighed and placed in a conical flask. 100 mL of 90 % ethanol was measured and poured into the conical flask. The sonicator was set to 450 rpm along with a frequency of 20 kHz. The samples were extracted using an ultrasonic assisted extraction. Rotary vacuum evaporator was used to remove excess solvent and concentrate the leave extract.Pharmacological actives were proceeding as under: 1.Inhibitory effect of extract on amylase activity in starch solution.2.Enzyme kinematic study.3.Inhibitory concentration at 50 % inhibition (IC_{50}) analysis. 4.Correlation of antioxidant and amylase inhibitory activities. 5.Determination of enzyme inhibition type. **Result:** Pharmacognostic study and Phytochemical screening was done. The antioxidant activity of the ***M. calabura*** leaves extract increased with increasing concentration probably due to the high concentration of phenolic compounds in the higher amount of the extracts as reported Amylase inhibition by ***Muntingia calabura*** leaves extract depicts the comparison between amylase inhibition percentage by ***M.calabura*** leaves extract and acarbose in starch solution. Acarbose is a synthetic medicine used to treat diabetes mellitus whose mechanism of action is based on amylase activity inhibition, thus hindering starch conversion to glucose. IC_{50} amylase inhibition by ***M. calabura*** leave extract and acarbose. The percentage amylase inhibition for both ***M. calabura*** leaves extract and acarbose increased gradually as the sample concentration increases. Moreover, the coefficient of correlation is 0.9809, indicating that the graph showed a strong correlation between anti-oxidative properties and anti-diabetic properties of the ***M. calabura*** leaves extract. **Conclusion:** Study of Pharmacognostic studies,Extraction & Pharmacological Action(Anti-Oxidant & Anti-Diabetic) *Muntingia Calabura* was successfully done. Future research should focus on optimizing these techniques for commercial application and evaluating their long-term stability and scalability.

PHCL921
IMPACT OF PROBIOTICS ON GUT MICROBIOTA COMPOSITION AND FUNCTION: A COMPREHENSIVE ANALYSIS

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Abstract:

Objectives: This study provides a comprehensive analysis of the impact of probiotics on gut microbiota, exploring their effectiveness in promoting a balanced microbial environment and enhancing overall health. **Methods:** The methodology involved a systematic review of recent clinical trials and *in vitro* studies, focusing in the effects of probiotics on gut microbiota. Relevant studies were selected through a database search, and key data on microbial composition, diversity, and health outcomes were extracted and analyzed to provide an integrated overview of probiotic impacts. **Results:** Through a review of recent clinical trials and *in vitro* studies, the research examines how different probiotic strains affect the diversity, stability, and functionality of gut microbiota. The findings indicate that probiotics can positively alter the microbial composition by increasing beneficial bacteria such as *Lactobacillus* and *Bifidobacterium* while reducing harmful pathogens. Additionally, probiotics are shown to influence metabolic functions within the gut, including the production of short-chain fatty acids and the regulation of immune responses. The study also discusses the role of probiotics in managing gastrointestinal disorders, such as irritable bowel syndrome (IBS) and inflammatory bowel disease (IBD), highlighting their potential as adjunct therapies. However, the variability in individual responses and the need for strain-specific research are emphasized, pointing to the complexity of gut microbiota and the challenges in standardizing probiotic interventions.**Conclusions:** In conclusion, this analysis underscores the significant impact of probiotics on gut microbiota composition and function, suggesting their potential as therapeutic agents in both preventive and clinical settings. Further research is recommended to identify the most effective strains and to understand the long-term effects of probiotic supplementation on gut health.

PHCL922
DIABETES: A GROWING THREAT IN THE 21ST CENTURY

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Abstract:

Objectives: The objective of this review is to analyze the underlying causes, global impact, and current strategies for addressing the growing epidemic of diabetes mellitus, with a particular focus on Type 2 diabetes. The review aims to highlight the need for innovative approaches in combating the disease through prevention, management, and policy reform. **Methods:** This review involved an extensive examination of current literature, including epidemiological studies, public health reports, and clinical research on diabetes mellitus. Sources were gathered from scientific databases such as PubMed and Scopus, focusing on the causes, impacts, and interventions related to diabetes, particularly in low- and middle-income countries. The review also examined global trends and health policies aimed at mitigating the spread of the disease. **Results:** The review identifies several factors contributing to the diabetes epidemic, including aging populations, urbanization, sedentary lifestyles, and rising obesity rates. Despite advances in therapeutic interventions and public health campaigns, the prevalence of diabetes continues to grow, particularly in developing regions. The review underscores the complexity of diabetes management, highlighting the challenges faced by healthcare systems in addressing both

prevention and treatment. **Conclusions:** Diabetes mellitus represents a significant and growing global health challenge. The review emphasizes the urgent need for a multi-faceted approach that includes public health initiatives, policy changes, and patient-centered care to effectively combat the diabetes epidemic. Further innovation in prevention and management strategies is critical, particularly in low- and middle-income countries where the burden of diabetes is increasing most rapidly.

PHCL923
THERAPEUTIC CONTACT LENS FOR OCULAR DRUG DELIVERY

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Abstract

Objective: For ophthalmic drug delivery therapeutic contact lenses are manage and used to treat specific ocular conditions such as corneal ulcers, dry eye syndrome and post-surgical recovery. This lens basically increases bioavailability, dose frequency by increasing corneal permeability of the drug & also enhances corneal healing and relief pain. **Methods:** Therapeutic contact lenses basically treat the eye by releasing the drugs continuously after attaching with the patient's eye. It also prevents the drug to wash out from the eye by tear turnover or nasolacrimal drainage. These contact lenses increases the residence time of a drug on corneal surface by creating tear film which surrounds the lens. **Result:** As a result these lenses increase the bioavailability of a normal ophthalmic drug by **50**%. Besides that it protects cornea from irritation by providing a smooth surface & they can reduce discomfort caused by any eye injury. It also has been seen that they can boost the healing process by providing a stable environment and in some cases it also been seen that it also enhances vision by correcting irregularities or providing a smoother optical surface. **Conclusion:** Therapeutic contact lenses can be highly effective in treating and managing various eye conditions. Their success largely depends on conditions like proper lens care and follows up. Now we will highlight the advantages, applications, administrations, types and limitation of therapeutic contact lenses.

PHCL924
PREVENTION & MANAGEMENT OF HYPERLIPIDAEMIA THROUGH LIFESTYLE BALANCE

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Abstract

Objective: Hyperlipidaemia incidence is on the rise and lifestyle behaviour change is the first line therapy. Healthy life style intervention has become the key content of guiding the treatment of hyperlipidaemia. **Methods:** Most cases of hyperlipidaemia area preventable. There are several medications and surgery available to manage hyperlipidaemia. There are surgeries like coronary artery bypass surgery, angioplasty liver transplant etc & medications like nicotinic acid, derivatives of hydroxy methyl gluteryl coenzyme, antioxidants etc. But after all these medications and surgeries they have several adverse effects. But life style management have no side effects but also beneficial for human body and helps to cure other disease in the body. Lifestyle structure of low saturated fat diets, active lifestyle, not smoking, increase exercise, healthy nutrition, yoga meditation and limited alcohol intake can help prevent hyperlipidaemia. **Result:** Left untreated hyperlipidaemia can result in cardiovascular disease leading to increased morbidity and mortality in person worldwide. There are many people who are cured from hyperlipidaemia after maintaining their life style properly. **Conclusion:** Life style management which will help to manage hyperlipidaemia, plasma cholesterol levels hence reducing the level of heart disease.

PHCL925
A REVIEW ON RETINOL IN COSMECEUTICALS

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Abstract:

Objectives: The objective of this study is to evaluate the efficacy and safety of retinol as an active ingredient in cosmeceutical formulations. Specifically, the study aims to assess the impact of retinol on skin aging, including its effects on wrinkle reduction, skin texture improvement, and overall skin appearance. Additionally, the study will investigate potential adverse effects and tolerability issues associated with retinol use in various cosmeceutical products. **Methods:** For this work more than 50 journals, research and review papers have been studied, many of them are from Google scholar and scopus database. "Retinol as cosmeceutical" this information has been received from more than 30 different journals and other information we have received from remaining 20 journals. All the journals are reputed and well indexed. The authors of these journals are from different places from the world. **Results:** Retinol significantly improves skin texture, reduces fine lines, and enhances skin radiance compared to placebo treatments. Retinol promotes collagen synthesis and increases cell turnover by activating nuclear receptors and enhancing the expression of specific genes related to skin regeneration. Different retinol formulations (e.g., encapsulated vs. non-encapsulated) show varying degrees of effectiveness, with encapsulated forms generally providing more sustained release and reduced irritation. The aim of skin rejuvenation process is to have healthy and clear skin. Cosmeceuticals integrating retinoids have been highly used for past few years to promote collagen synthesis and rejuvenate the skin. Retinol is generally well-tolerated; however, some users experience irritation, redness, and peeling, especially at higher concentrations. **Conclusions:** Retinol is a potent ingredient in cosmeceutical products, demonstrating substantial benefits in skin texture, wrinkle reduction, and overall skin health. Its effectiveness is linked to its role in cellular processes like collagen synthesis and cell turnover. While various formulations exist, encapsulated retinol formulations often offer better results with fewer side effects. Despite its benefits, careful consideration of concentration and user sensitivity is essential to minimize adverse reactions. Overall, retinol remains a valuable component in skincare regimens aimed at anti-aging and skin rejuvenation.

PHCL926
NOVEL APPROACHES IN DRUG DISCOVERY TARGETING CANCER

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Abstract:

Objectives: This study's objective is to present a summary of cutting-edge methods for finding new drugs to treat cancer. First, new molecular targets essential to the growth and survival of cancer have been found thanks to advances in our understanding of cancer biology. Compared to traditional chemotherapy, targeted therapies such as monoclonal antibodies and small molecule indicators offer improved efficacy and lower toxicity since they are specially made to interfere with particular targets. **Methods:** This work provides insights on the prospects and challenges of new targets in cancer therapy by drawing on an extensive array of research. The research covers a wide range of scenarios, such as screens for collateral vulnerabilities and synthetic lethality. By identifying promising medication candidates, advances in AI and machine learning are speeding up the process of finding new drugs. **Results:** Drug development efforts have widened to encompass methods that disturb the tumour microenvironment in addition to directly targeting cancer cells. To improve the effectiveness of current

treatments and get past resistance mechanisms, agents that target angiogenesis, tumour related stromal, and immune suppressive cells inside the tumour microenvironment are being investigated. **Conclusions:** In conclusion, the field of cancer drug discovery is changing quickly due to the integration of computational tools, the advent of immunotherapy, and our growing understanding of cancer biology. These cutting-edge techniques could change the paradigms of cancer therapy in the future and enhance patient outcomes.

PHCL927

INVESTIGATION OF *IN-VITRO* ANTIOXIDANT AND ANTI-DIABETIC POTENTIAL OF *GOMPHOGYNE CISSIFORMIS* LEAVES FROM CUCURBITACEAE FAMILY

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Abstract:

Objective: The aim of the study is toinvestigate the *in-vitro* antioxidant and *in-vitro* alpha amylase and alpha glucosidase potential (leaves) of *Gomphogyne cissiformis* from Cucurbitaceae family. **Methods:** The aerial part of *Gomphogyne cissiformis* specially leaves was procured from the north-east region and then it dried after all fruit part is extracted by the hydroalcoholic solvent (methanol: water = 70:30) by the cold maceration process and extract was lyophilized to get the final yield. Thereafter, *in-vitro* enzyme inhibition and anti-oxidant assay was performed. **Result:** *In-vitro* testing revealed that GCME had an inhibitory impact on the enzymes α - amylase and α - glucosidase with IC50 values of 158.0 ± 1.13 g/ml and 83.1 ± 1.36 g/ml, respectively.

Conclusion: According to the results of the current study, the *in-vitro* antioxidant and *in-vitro* alpha amylase and alpha glucosidase demonstrated promising hypoglycemic effects from *Gomphogyne cissiformis* leaves.

PHCL928

MACROVASCULAR RISK ASSOCIATED WITH DIABETES MELLITUS

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Abstract:

Objective: Macrovascular diseases are the main causes of morbidity and death in individuals with type 2 diabetes mellitus (T2DM). The incidence of type 2 diabetes that manifests at an early age (less than 40 years) has also increased, leading to a greater loss of years of life. Thus, the goal of this work is to provide an overview of the various macrovascular problems linked to type 2 diabetes. **Methods:** A thorough analysis of the literature was done to find several studies that indicate the macrovascular problems linked to type-2 Diabetes Mellitus (T2DM). **Results:** Peripheral artery disease, cerebrovascular disease, arrhythmias and sudden death, coronary heart disease, and cardiomyopathy are examples of macrovascular problems associated with type 2 diabetes. For diabetic people, cardiovascular disease is the main cause of death. Vascular disease and type 2 diabetes have been linked in numerous clinical investigations; nevertheless, diabetic patients nearly always have additional risk factors, such as obesity, dyslipidaemia, and hypertension. **Conclusion:** Insulin resistance and hyperglycemia are two of the several pathogenetic routes that T2DM exploits to produce a range of macrovascular problems. There is no doubt that T2DM and cardiovascular disease are related, but further clinical research is required to determine the precise impact of T2DM.

PHCL929
ENVENOMATION: A COMPREHENSIVE GUIDE TO MANAGEMENT, PREVENTION, AND EMERGING RESEARCH

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Abstract:
Objectives: This aims to provide an in-depth exploration of the clinical aspects of envenomation, its manifestations, management, and prevention. Envenomation poses a significant public health risk, especially in developing countries like India and Southeast Asia, where snake, spider, and scorpion bites are prevalent. **Methods:** The study focused on the clinical presentation and treatment of envenomed patients, emphasizing the evaluation of factors such as the type of venomous animal, onset and progression of symptoms, and initial treatments. The management protocol includes determining the severity of envenomation based on variables like the patient's age, health, and the species of venomous creature. **Results:** Findings suggest that envenomation leads to immediate toxicity, allergic reactions, and in some cases, delayed systemic effects. Key symptoms include pain, dermatological abnormalities, and in more severe cases, ocular and systemic involvement. The administration of antivenom remains the cornerstone of treatment but requires specialized medical expertise, particularly for snakebites. **Conclusions:** This study highlights the importance of understanding envenomation within clinical toxicology and underscores the need for preventive measures, early recognition, and timely administration of antivenom for effective management. The study also sheds light on emerging research directions for improving envenomation treatment protocols.

PHCL930
NOVEL ROUTES OF INSULIN FOR DIABETES TREATMENT

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Abstract:
Objective: This studies objective is to prevent a summary of cutting edge medhods of finding new routes for administration of insullin for diabetes treatment. **Methods:** Now we are using insulin in injection form to treat diabties. it has many disadvantages Taking insulin can lead to some weight gain (usually, 1–3 kg). When you have high blood glucose, your body is unable to turn its glucose into energy. By taking insulin injection we always use to insert needle in to the skin which cause pain, rashes and swelling too if the injecetion was not inject properly. So now we are taking a step forward to some new methods like:Inhaled Insulin: is atype of insullin that is inhaled through lungs to treat diabetes.it is safe and effective it can start working faster and stop working faster than injected insulin.Insulin patches: It is a digital devices that are mordern alternatives to insulin injection these are computerized devices can be programmed to automatically deliver regular dose.Insulin implants: Devlope to treat diabetes without the need for frequent injections. Nanotechnology and encapsulation: It facilitated the development of novel glucose measurement and insulin delivery modalities which hold the potential to dramatically improve quality of life for diabetics. This advancement refreshment a shift towards more patient friendly, presise and automated insulin delivery options aiming to improve both the efficacy of treatment and overall quality of life for diabeties. **Result:** The following methods are under clinical trials or under development and soon will be available. **Conclusion:** There is a long history of research focusing on identifying a route of administration for insulin that is minimally or non invasive, effective, safe, convenient and cost-effective for patients. If successful, alternative routes of administration could revolutionize the treatment of diabetes mellitus and help improve patients' quality of life.

PHCL931
RECENT MONKEYPOX INFECTION MENACE WORLDWIDE

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Abstract:

Objective: Massive outbreak of Monkeypox virus infection in humans have been reported for decades in Africa, but until recently, secondary spread and travel-associated cases were also reported worldwide. In the year 2022, the cases increased rapidly worldwide. The aim of the study is to evaluate risk factors, transmission routes, clinical presentation of Monkeypox. The aim of the study is to evaluate risk factors, transmission routes, clinical presentation of Monkeypox. **Methods:** 528 persons with polymerase-chain-reaction-confirmed infection diagnosed in 16 countries on 5 continents between late April and late June 2022 were assessed for potential exposures, demographic characteristics, clinical findings, and outcomes. **Result:** Among the persons with infection in this case series, 98% were gay or bisexual men, 75% were White, and 41% had HIV infection (largely well controlled). Skin lesions, most often in the anogenital area, trunk or limbs, or face, were noted in 95%; mucosal lesions were observed in 41%. Common systemic features included fever, lymphadenopathy, lethargy, myalgia, and headache. Sexual close contact was the suspected route of transmission in 95% of patients, although sexual transmission could not be confirmed. The median incubation period, determined based on data from 23 persons, was 7 days. Overall, 13% of the persons with infection were hospitalized, most often for pain management. No deaths were reported. **Conclusion:** In an international convenience sample of monkeypox virus infections, nearly all the persons with infection were gay or bisexual men. Skin lesions were the most common presenting symptom, and the prognosis was good, with no deaths reported.

PHCL934
OVARIAN CANCER & ITS TREATMENT IN THE CURRENT SCENARIO, A REVIEW

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Abstract:

Objective: The main objective is to review comprehensively about the ovarian cancer and its treatment in the current scenario from the different data base. **Method:** The methdology includes the systematic review various literature from the different datadase to enumerate latest trends of diagnosis and treatment of ovarian cancer. **Results:** The advanced method for diagnosis of ovarian cancer includes serum CA-125 quantification, and imaging tests (transvaginal ultrasonography, computed tomography (CT), magnetic resonance imaging (MRI), and/or positron emission tomography (PET)), associated with histopathological examination biopsy and/or surgical specimen examination for the diagnosis of different stages.The treatment stratergies based mainly on the disease stage. Current approach involves cytoreductive surgery followed by intravenous chemotherapy with platinum-containing drugs (cisplatin or carboplatin) typically combined with taxane agents (paclitaxel and docetaxel) every 21 days for six cycles. As per the ESMO 2023 guidelines, for patients at stage I and with low-grade tumours, chemotherapy may be excluded. For the advanced conditioned of disease, surgely is highly recomended with adjuvant chemotherapy. Radiotherapy can be the therapeutic approach; however, this is being least suggestable as compared to platinum-based chemotherapy for its adverse consequences and its use is often limited to palliative care. The second-line chemotherapy with a combination of platinum compounds with paclitaxel, gemcitabine or pegylated liposomal doxorubicin (PLD), followed by treatment with bevacizumab or poly (ADP-ribose) polymerase (PARP) inhibitors (PARPi) are also recomended as

per ESMO 2023. Patients with reisstant to platinum are better monitored with paclitaxel, gemcitabine, PLD, or topotecan monotherapy. Hyperthermic Intraperitoneal Chemotherapy after cytoreductive surgery, Hormone Receptor Modulators, FRα-Targeting Drugs, Immunomodulators, Gene Therapies are the new approaches for the ovarian cancer treatment. **Conclusion:** In this comprehensive study, it gives an insight to the current practices towards treatment of ovarian cancer. However, counselling to the female mass can surely minimising the ovarian cancer.

PHCL935
THE ROLE OF PHARMACISTS IN DIABETES PATIENTS COUNSELING

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Abstract:

Objectives: In patient counseling, a pharmacist's job is to inform patients about their ailments and suggest lifestyle modifications. The metabolic diseases collectively referred to as diabetes mellitus are characterized by anomalies in protein, lipid, and carbohydrate metabolism, one of which is hyperglycemia. adherence by patients to prescribed medication regimens, and pharmacists can be important resources for counseling. **Methods:**A multi modal strategy is used in diabetes patient counseling with the goal of enabling patients to effectively control their condition. Important strategies include teaching patients about diabetes and self-monitoring, giving them individualized diet and exercise recommendations, and providing emotional support using tools like motivational interviewing. For continued treatment, setting reasonable goals is essential, such as using medication. **Results:** Good diabetic patient counseling usually leads to better overall health outcomes and enhanced self-management. which enables them to make better decisions about their nutrition. This advice promotes more consistent blood glucose management and greater motivation for lifestyle modifications. **Conclusions:**Diabetes is a chronic illness that requires a combination of non-pharmacological and pharmaceutical interventions for effective management. Adherence to medication regimens are essential for the management of diabetes. Pharmacists play a critical role in giving these patients advice as essential members of the healthcare system.

PHCL936
HEALTH AND FRAILTY: A COMPARATIVE ANALYSIS OF HIV-POSITIVE AND HIV-NEGATIVE PARTICIPANTS

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Abstract:

Objectives: This exploratory study was done to assess frailty among PLHIV and non-HIV participants to evaluate the frailty and its associated factors among the Indian population. **Materials and Methods:** This was a Multi-Centered Observational Case-Control study in PLHIV and non-HIV population. The participants were above the age of 30. The Edmonton Frail Scale and hand grip-strength were used to evaluate for Frailty. Socio-demographic, clinical, immunological outcomes were assessed for frailty and its associated factors among PLHIV whereas in non-HIV participants immunological outcomes were not assessed. **Results:** The total eligible participants were 270 from case cohort and 223 from control cohort. The prevalence of frailty in the PLHIV was observed to be 33.3% whereas in the non-HIV participants, it was observed to be 32.3%. A higher proportion of frailty seen among the male and female participants

with normal Body Mass Index. In our area wise distribution of the frailty status, the prevalence of mild frailty among case cohort of rural population 26.57% vs 12.82% and prevalence of vulnerable population towards frailty among case cohort of urban population, 35.43% vs 16.04% [p-0.0132]. In the distribution according to the marital status, the prevalence of vulnerable population among married individuals in the case cohort; 28.44% vs 16.42% [p-0.0029]. **Conclusion:** In this study, frailty and its associated factors among PLHIV and non-HIV participants were assessed and the findings of the study was that participants were more susceptible to mild frailty in PLHIV. It was found that age, area of domicile, marital status and occupation had a significant correlation with frailty whereas educational status. According to the results obtained from the study we conclude that there was no significance in the overall frailty among PLHIV when compared to non-HIV participants. This might be attributed to the current first line therapy which includes Dolutegravir as the mainstay of treatment keeping the health status at par with the non-HIV population.

PHCL937
EVALUATION OF POLYHERBAL FORMULATION FOR HEPATOPROTECTIVE ACTIVITY BY CCL4 INDUCED HEPATOTOXICITY AND PENTOBARBITAL-INDUCED SLEEPING TIME

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Abstract:

Objectives: The objective is to evaluate the hepatoprotective effects of polyherbal formulation prepared from hydro-alcoholic extracts of *Crassula ovate & Oxalis corniculata Linn*. **Methods:** Antioxidant activity was assessed using the DPPH free radical scavenging assay. Phytochemical analysis identified several antioxidants known for hepatoprotective effects, including Isovitexin 2''-O-glucoside, Safflor Yellow A, Scoparin 2''-xyloside, Apigenin 7-[galactosyl-(1->4), Isorhamnetin 3-O-a-L-rhamnoside, Biorobin, Graveobioside B, Orientin 7-rhamnoside, Orientin 2''-rhamnoside, Astragalin 7-rhamnoside, Quercetin 3-methyl ether, Capillarisin, Azaleatin, Isorhamnetin, Pedalitin, Pinoquercetin, Rhamnetin, Sexangularetin, Tamarixetin, and 3'-O-Methyltricetin. Liver function markers, oxidative stress parameters, and pentobarbital-induced sleeping time were measured. Histopathological analysis of liver and stomach tissues was performed to evaluate tissue integrity. Food and water intake were monitored for general health assessment. **Results:** Prepared formulation significantly improved liver function in CCl4-treated rats, showing strong antioxidant activity comparable to ascorbic acid. Biochemical assays revealed increased levels of GSH, SOD, and CAT, and reduced MDA levels, indicating reduced oxidative stress. Histopathological analysis confirmed the protective effects of polyherbal formulation, maintaining normal tissue architecture in the liver and stomach. It significantly reduced pentobarbital-induced sleeping time, suggesting stimulation of hepatic microsomal drug-metabolizing enzymes, including cytochrome P-450. **Conclusion:** Polyherbal formulation exhibited potent hepatoprotective and antioxidant activities in the CCl4-induced liver injury rat model. The bioactive phytochemicals, particularly flavonoids and terpenoids such as Isovitexin 2''-O-glucoside and Quercetin 3-methyl ether, contributed to these beneficial effects. These findings highlight its potential as a natural therapeutic agent for liver diseases and oxidative stress-related conditions, opening new avenues for further research and development.

PHCL938
EVALUATION OF THE THERAPEUTIC POTENTIAL OF QUINIC ACID FOR DEXTRAN SULPHATE SODIUM-INDUCED ULCERATIVE COLITIS MODEL

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Abstract:
Objectives: The present study aims to evaluate the anti-ulcerative colitis activity of QA against the Dextran sulphate sodium (DSS) induced rodent model of UC. **Methods:** The cytotoxicity effect of QA is evaluated through an MTT assay using an HCT116 cell line. The female mice of strain C57BL/6 were taken and divided into 5 groups (n=6). Induction of UC was achieved by administering 2.5% DSS with DW. QA was given to animals at doses of 150mg/kg and 300mg/kg p.o. Sulfasalazine was used as a standard drug and given at a dose of 100mg/kg p.o. The experimental period lasts for 7 days with consequent induction and treatment daily. The antioxidant parameters estimation and histopathology studies were performed following the necropsy on the 7th day. **Results:** The IC50 of QA was found to be 102.44uM using cell line studies. The body weights and colon length were raised upon QA treatment. The DAI score was decreased comparatively upon treatment with QA. The levels of GSH were raised and there was a decline in the levels of LPO and MPO indicating the anti-oxidant and anti-inflammatory effects of QA. The histopathology results also indicated a decline in inflammation upon QA administration. QA at a dose of 300mg/kg was effective when compared with a 150mg/kg dose. **Conclusion:** All the above results suggest that QA reduced the severity of the UC condition with the help of its anti-inflammatory potential.

PHCL939
EVALUATION OF POTENT ANTIOXIDANT AND ANTICANCER PROPERTIES OF METHANOLIC EXTRACT OF *ABUTILON THEOPHRASTI*: *IN VITRO* AND *IN-SILICO* STUDY

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Abstract:
Objective: To evaluate the phytochemical content, total phenolic content, antioxidant, and anticancer properties of the methanolic extract of *Abutilon theophrasti*, and to explore the interactions of key compounds with molecular targets in cervical cancer using *In-silico* docking studies. **Methods:** *Phytochemical Screening*: Qualitative analysis for alkaloids, flavonoids, tannins, saponins, and other bioactive compounds. *Total Phenolic Content:* Measured using the Folin-Ciocalteu method. *Antioxidant Assay:* Assessed using the DPPH radical scavenging assay and ferric reducing antioxidant power (FRAP) assay. *In Vitro Anti-Cancer Assay:* Cytotoxic effects on HeLa cells were evaluated using the MTT assay. *In Silico Docking Study:* Docking studies were conducted to predict the binding affinity of phytocompounds with the HPV E6 protein. **Results:** The methanolic extract contained carbohydrates, steroids, flavonoids, saponins, tannins, and phenols. The total phenolic content was 56 mg/g. The extract showed significant antioxidant activity with an IC50 value of 27.93 µg/mL in the DPPH assay. The IC50 value for cytotoxicity against HeLa cells was 83.582 µg/mL. *In silico* studies confirmed strong interactions with the HPV E6 protein. **Conclusion:** The methanolic extract of *Abutilon theophrasti* exhibits potent antioxidant and anticancer properties. It demonstrates significant free radical scavenging and inhibition of HeLa cell proliferation, suggesting potential therapeutic applications for oxidative stress-related diseases and cervical cancer.

PHCL940
FORMONONETIN NANOSTRUCTURED LIPID CARRIERS IN CHITOSAN-PVA SCAFFOLD:PROMOTING HEALING IN DIABETIC WOUNDS

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Abstract:
Objectives: Formononetin, a plant-derived polyphenol-rich having health benefits such as antioxidant and anti-inflammatory actions. The present study was to develop a Formononetin - nanostructured lipid carrier (Formo-NLC)-loaded chitosan/Polyvinyl alcohol (CS- PVA) scaffold and evaluate its healing ability in diabetic wounds. **Methods:** The scaffolds are evaluated for their physicochemical characteristics, cell viability was determined using the *in-vitro* cytotoxicity and wound healing activity in full-thickness excision wounds in of streptozotocin-induced diabetic rats. **Results:** The results of characterization of composite scaffolds reveal that cross-linked scaffolds possess optimum porosity, low matrix degradation, and sustained drug release compared with noncross-linked scaffolds. The *in vitro* studies reveal that the Formo-NLC-CS -PVA scaffold was biocompatible and enhanced cell growth compared with control and Formo-NLC-CS -PVA. Using the streptozotocin-induced diabetic wound model, significantly (p <0.001) higher rates of wound contraction in Formo-NLC-CS -PVA scaffold-treated group were observed in comparison with that in control and NLC-COL-CS-treated group. **Conclusion:** The results concluded that use of nanostructured lipid carrier (Formo-NLC-CS-PVA) scaffold can prove to be a promising strategy for treatment for diabetic wounds.

PHCL941
ASSESSMENT OF STUDENTS' PHARMACIST COMPETENCY IN DISPENSING ANTI-DIARRHOEAL MEDICINES FOR SELF-MEDICATION: A SIMULATED PATIENT STUDY

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Abstract:
Objectives: To evaluate pharmacy students' proficiency in self-medication consultation services (SMCS) for diarrhea, essential for patient safety and optimal health outcomes. **Methods:** An interventional study utilizing simulated patient scenarios was conducted. Training sessions preceded data collection. Sample size estimation determined participant selection from different pharmacy programs. **Results:** Following training, a significant increase in direct medical referrals (4% to 25%, p = 0.0002) and patient information gathering (86% to 98.92%, p = 0.0099) was observed. Performance varied across academic levels, with senior students demonstrating higher competence. 4th year B.Pharm students achieved a satisfactory score percentage of 84%, with a mean score of 7.8 out of a possible 11 points. **Conclusions:** SMCS training significantly enhances pharmacy students' skills, preparing them for real-world scenarios and promoting safe self-medication practices. Structured SMCS training in pharmacy curricula is vital for improving healthcare outcomes and ensuring pharmacists' competency in guiding patients towards safe self-medication practices. Thorough patient assessment and tailored advice are essential components of effective SMCS.

PHCL942
ENDOSIALIN-EXPRESSING CELLS AS TARGETS: INNOVATIONS IN CAR-T CELL THERAPY FOR CANCER

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Abstract:
Objectives: The aim of this study was to discuss triple-negative breast cancer, this study explores into the utilization of CAR-T cell therapy to target cells expressing endosialin. **Methods:** Even with all the

new treatments available, breast cancer still kills more women than any other disease. Drug resistance and ineffective cancer cell targeting are two major problems with targeted medications, chemotherapy, and surgery. Among cancer treatments, CAR-T cell therapy stands out. To identify endosialin as a therapeutic target, it is essential to understand its molecular structure and its involvement in tumor angiogenesis and progression. An effective target for CAR-T cells is breast cancer, which overexpresses endosialin. The **Results:** The development of CARs that are specific to endosialin and the results of early trials are covered in relation to CAR-T cell therapy that targets endosialin. Perhaps the most effective cancer treatment is endosialin targeting, since it is expressed only in tumors and plays a crucial role in the course of cancer. This article reviews endosialin-directed CAR-T cell breast cancer treatments' safety and efficacy from current and completed clinical trials. Despite promising results, these trials reveal that clinical translation must overcome significant challenges. **Conclusions:** The report suggests further research and combination tactics to improve endosialin-targeted CAR-T cell treatment.

PHCL943

PRECLINICAL STUDY OF VALIDATED CENTRIFUGATION METHOD FOR PROCESSED PLATELET RICH PLASMA (PRP) PREPARATION

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Abstract:

Objectives: Platelet Rich Plasma (PRP) is widely used in regenerative medicine due to its high concentration of growth factors and platelets. However, the preparation of PRP is often inconsistent, resulting in variable clinical outcomes. This study aims to validate a standardized centrifugation method for the preparation of processed PRP to ensure reproducibility and efficacy. **Methods:** This preclinical study involved the preparation of PRP from whole blood samples obtained from healthy donors. The centrifugation protocol was optimized through a series of experiments to determine the optimal centrifugation speed and duration. The processed PRP was analyzed for platelet concentration, white blood cell (WBC) content, and growth factor levels. Additionally, the biological activity of the PRP was assessed *in vitro* using cell proliferation assays. **Results:** The validated centrifugation method resulted in a PRP preparation with a platelet concentration 5-6 times higher than baseline levels, while significantly reducing WBC content. Growth factor analysis showed elevated levels of platelet-derived growth factor (PDGF), transforming growth factor-beta (TGF-β), and vascular endothelial growth factor (VEGF) in the processed PRP. *In vitro* assays demonstrated enhanced proliferation of fibroblasts and osteoblasts treated with the processed PRP compared to controls. **Conclusion:** The standardized centrifugation method for PRP preparation yields a high concentration of platelets and growth factors, with minimal WBC contamination. This method provides a reproducible and efficient approach to produce PRP, which could improve the consistency and effectiveness of PRP-based therapies in clinical practice.

PHCL944

PHYTOCHEMICAL ANALYSIS AND EVALUATION OF HORMONAL ACTIVITY OF *IPOMEA AQUATICA* PLANT EXTRACT

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Abstract:

Objectives: The objective of this study was to phytochemical analysis and evaluate the hormonal activity of the of *Ipomea aquatica* plant extract on female albino Wister rats **Methods:** Two *Ipomea*

aquatica plant extract (80% methanol and 1N NAOH) were prepared and Phytochemical screening were performed by using various tests like Molisch's test, Ruthenium red test ,Ferric chloride , lead acetate tests ,Keller-Killiani, Borntrager's test , Legal's tests Mayer's test, Dragendroff's tests and Libermann-Burchard's test. Phytochemical. Thin layer chromatographic analysis and GC-MS were performed to identify the phytochemical constituents in the extract. Female albino Wister rats weighing between 125 to 150 g were used for evaluation of hormonal level. **Results:** Thin layer chromatographic analysis revealed the presence of diverse potent biomolecules in the plant extract. Solvent system of Pet Ether:Ethyl Acetate (3:7) gave a better separation of compounds. Methanol extract revealed 8 spots with Rf values of 1. Rf 0.77 2. Rf 0.75 (Blue) 3. Rf 0.68 4. Rf 0.58 5. Rf 0.55, 6. Rf 0.35, 7. Rf 0.27 , 8. Rf 0.18. A total of 17 compounds were identified from the GC-MS analysis of methanol fraction of Ipomea aquatica leaves exhibiting various phytochemical activities. Animal data revealed that estradiol level is decrease almost 17%, and prolactin level has decrease about 5%, and the progesterone level has increased almost 300% after ingestion of *Ipomea aquatica* plant extract for 15 days. **Conclusion:** After completion of animal study it has been prove that the *Ipomea aquatica* is effective to elevate the hormonal level of estradiol and remain potential candidate for the treatment of hormonal disorder.

PHCL945

AN ANALYSIS OF REGULATORY ADJUSTMENTS IN COVID-19 VACCINE APPROVAL PROCEDURES AND SUPPLY CHAIN MANAGEMENT

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Abstract:

Objectives: The COVID-19 pandemic has necessitated rapid and unprecedented changes in the regulatory frameworks governing vaccine approval and supply chain management. This study examines the regulatory adaptations, focusing on how they have expedited vaccine development, approval, and distribution. Methods: The study employed qualitative analysis of regulatory documents, policy briefs, and supply chain reports. **Results**: Traditional vaccine approval processes, typically characterized by lengthy and sequential phases, were streamlined through Emergency Use Authorizations (EUAs) and accelerated clinical trial designs. Regulatory bodies such as the FDA and EMA implemented adaptive protocols, allowing for real-time data assessment and conditional approvals. Concurrently, supply chain management faced immense pressure to ensure the timely and efficient delivery of vaccines worldwide. This involved overcoming logistical challenges, scaling up production capacities, and ensuring cold chain integrity. The study analyzed key strategies employed to mitigate these challenges. **Conclusion:** By comparing pre-pandemic and pandemic-era regulatory and supply chain frameworks, the research highlights the lessons learned and potential long-term impacts on future vaccine development and distribution. The findings underscore the critical role of agile regulatory responses and robust supply chain mechanisms in managing public health crises, offering insights for policymakers and industry stakeholders to enhance preparedness for future pandemics.

PHCL946

THE IMPACT OF INTEGRATING PRANAYAMA AND BHRAMARI BREATHING EXERCISES WITH PHARMACOLOGICAL INTERVENTIONS ON ASTHMA: A META-ANALYSIS

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Abstract:

Objectives: The aim of this study was to perform a meta-analytical study for comparing the impact of pranayama and bhramari and its synergism with the pharmacological interventions in patients with asthma. **Methods:** A comprehensive search of PubMed, Scopus, Web of Science, and Cochrane Library has

been conducted to identify randomized controlled trials (RCTs) published up to July 2024. These trials have examined the effects of integrating Pranayama or Bhramari breathing exercises with conventional pharmacological treatments in asthma patients. Eligible studies have included those that reported on key outcomes such as forced expiratory volume in one second (FEV1), asthma control questionnaire (ACQ) scores, and quality of life (QoL) metrics. Extracted data have been systematically analyzed using mean difference (MD) and standardized mean difference (SMD) calculations, with 95% confidence intervals (CIs) to determine the precision and reliability of the results. **Results:** A total of 11 RCTs involving 965 asthma patients have met the inclusion criteria. The integration of Pranayama with pharmacological treatments has significantly improved FEV1 (MD = 0.24 L; 95% CI: 0.14 to 0.34; $p < 0.001$) and ACQ scores (SMD = -0.46; 95% CI: -0.61 to -0.31; $p < 0.001$) compared to pharmacological treatment alone. Similarly, the integration of Bhramari with pharmacological treatments has shown significant improvements in FEV1 (MD = 0.20 L; 95% CI: 0.10 to 0.30; $p < 0.001$) and ACQ scores (SMD = -0.42; 95% CI: -0.57 to -0.27; $p < 0.001$). Quality of life, as assessed by the Asthma Quality of Life Questionnaire (AQLQ), has improved with both interventions, with Pranayama showing slightly greater improvement (SMD = 0.50; 95% CI: 0.35 to 0.65; $p < 0.001$) compared to Bhramari (SMD = 0.43; 95% CI: 0.28 to 0.58; $p < 0.001$). **Conclusions:** The integration of Pranayama and Bhramari breathing exercises with pharmacological treatments has significantly enhanced pulmonary function, asthma control, and quality of life in asthma patients. Pranayama has demonstrated slightly greater improvements in these outcomes compared to Bhramari. These findings have supported the incorporation of both Pranayama and Bhramari breathing exercises as effective adjunctive therapies in asthma management plans. Further research has been warranted to explore the long-term benefits and optimal implementation strategies of these breathing exercises in clinical practice.

PHCL947
EVALUATING THE NEUROBEHAVIORAL MODULATORY EFFECTS OF B-SITOSTEROL UNDER STRESS CONDITIONS

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Abstract:

Objectives: The study aimed to evaluate the therapeutic potential of β-Sitosterol in reducing neurobehavioral changes to better understand its ability to alleviate stress-induced alterations in behavior, cognition, and neurological functions. This could provide deeper insights into its potential role as an adaptogen or neuroprotective agent. **Methods:** The animals were divided into different groups (n=6 per group), including Negative Control, Socially Isolated (SI) Control, Group Housed (GH) Control, Standard SI, Standard GH, Test SI, and Test GH. Stress was induced through environmental deprivation (dim light) and social isolation, resulting in neurobehavioral changes. The study employed experimental design, where Negative Control animals were neither subjected to stress nor received any treatment. In the Control SI group, mice were subjected to 5 weeks of social isolation followed by 1 week of vehicle dosing (Sodium CMC p.o.), with the same vehicle given to the Control GH group. The Standard SI and Standard GH groups were exposed to 6 weeks of stress and received a single dose of Diazepam (5 mg/kg p.o.) 30 minutes before Behavioral Assessment. The Test SI group underwent 5 weeks of social isolation followed by 1 week of β-sitosterol treatment (10 mg/kg p.o.), with the same dosing given to the Test GH group. After the treatment schedule was completed, neurobehavioral assessments were performed to evaluate the animals' behavioral and neurological responses by Open field

test (OFT) and Social Interaction test in Novel Environment (SIT). **Results:** In the Open Field Test (OFT), the Control GH and Control SI groups exhibited reduced exploratory behavior and locomotor activity. In contrast, β-Sitosterol treatment led to enhanced exploratory behavior, with a preference for the central zone, and significantly increased locomotor activity, as evidenced by the longer path length traveled in both the Test SI and Test GH groups. In the Social Interaction Test (SIT) conducted in a novel environment, the Control GH and Control SI groups showed a decline in social interaction, locomotor activity, and overall social behavior. However, β-Sitosterol markedly improved social interaction, reduced social anxiety, enhanced social behavior, and increased locomotor activity in both the Test GH and Test SI groups. **Conclusions:** In conclusion, this study investigated the potential adaptogenic, anxiolytic, and neuroprotective effects of β-Sitosterol in animals subjected to stress induced by environmental deprivation and social isolation. β-Sitosterol showed promising adaptogenic and anxiolytic properties, reducing anxiety-like behaviors and improving social interaction and locomotor activity. Further research is needed to clarify its mechanisms and therapeutic potential for stress-related neurobehavioral changes.

PHCL948

IN-VITRO & *IN-VIVO* EVALUATION OF ANTICANCER ACTIVITY OF THE LEAVES OF *CENTELLA ASIATICA*

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Abstract:

Objectives: The aim of this study was to evaluate the anticancer activity of the leaves of *Centella asiatica.* **Methods:** In *in vitro* study, after 48 h of incubation, 15µl of MTT (5mg/ml) in phosphate buffered saline (PBS) was added to each well and incubated at 37^0C for 4h. The medium with MTT was then flicked off and the formed formazan crystals were solubilized in 100µl of DMSO and then measured the absorbance at 570 nm using 96 well plate counter. In iv-vivo study, Swiss Albinomice were weighed(20?2g) were used and divided into 4groups(n=10) and given food and water *ad libitum*. Group I is treated as Control, Group II and III as drug treated group & Group IV is treated as Standard drug. EAC cells ($2x10^6$ cells/mouse) were injected intraperitoneally to each mouse of each group. This was taken as day 0. On the first day groups II and III were administered with chloroform and ethyl acetate extracts orally and group IV received standard drug 5-fluorouracil (20mg/kg) for 14 subsequent days. On 15^{th} day, 18 hr after the last dose and 24 hr fasting five mice were sacrificed from each group and theres tof the animal of each group. **Results:** The *in vitro* anticancer study for chloroform, ethyl acetate and ethanol extracts were carried out by MTT assay. The IC_{50} value of Chloroform, Ethyl acetate and Ethanol extracts on the HeLa cell line were found to be 62.587, 87.837, 297.9 µg/ml and R^2 values were 0.9993, 0.9999, 0.9953 respectively. In EAC control mice the mean survival time was 18.64±1.25 days. Whereas, it was significantly increased when treated with chloroform, ethyl acetate and standard drug (23.53±0.40, 27.34±0.32, 34.9 ± 0.41days) respectively. The ethyl acetate extract showed significant anticancer activity at the dose of 400mg/kg body weight when compared to chloroform extract and the effects were comparable with the standard drug. **Conclusions:** From the study it can be concluded that the ethyl acetate extract of leaves of *Centella asiatica* inhibited significantly the tumour volume, viable cell count and enhancement in survival time of EAC bearing mice and thereby acts as anti-neoplastic agent.

PHCL949

EVALUATION OF THE ANTI-ULCER EFFECTS OF *ALOSTONIA SCHOLERIS* RBR LEAVES IN EXPERIMENTAL RATS

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Abstract:

Objective: This study aimed to evaluate the antiulcer activity of *Alstonia scholaris* R Br leaves extracts in rodents using different models. **Method:** The crude extract was obtained by hot percolation 95% ethanol and maceration by water . The antiulcer activity was evaluated using pylorus ligation-induced ulcer model in Sprague Dawley rats and Aspirin induced gastric ulcers model. The test groups received four doses (200 mg/kg, 400 mg/kg, and 240mg/kg, 480 mg/kg). Positive controls received Ranitidine 50 mg/kg for the pylorus ligation-induced ulcer model and Asprine. Negative controls received vehicle (2% tween 80). **Results:** After a treatment desired aim was achieved using ethanolic extract and aqueous extract of plant *Alstonia scholaris* R Br at the dose of 200 and 400 mg/kg, p.o and 240 and 480mg/kg ($P<0.001$) showed significant reduction in ulcerated area and ulcer index as compared to control group. **Conclusion:** The crude ethanolic extract of *Alstonia scholaris* showed significant (Pd"0.001***) antiulcer activity on both pyloric ligation and aspirin-induced ulcer in rats

PHCL950

EVALUATION OF HANSPADI EXTRACT FOR ITS EFFECT ON MEMORY ENHANCING ACTIVITY

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Abstract:

Objectives: The aim of this study was to evaluate ethanolic extract of Hanspadi (Adiantum lunulatum Linn) for its memory enhancing activity and cognitive disorder. **Methods:** Hanspadi (*Adiantum lunulatum* Linn) a fern found in monsoon season in India, was collected, authenticated and extracted with ethanol after defatting with petroleum ether. Emory enhancing activity was carried out using healthy Wistar rats (18 months) weighing 180–280 g screening of memory enhancing activity was done using different screening models such as Novel Object recognition test, Elevated plus maze and passive avoidance test and morris water maze. **Results:** The administration of hanspadi extract over four consecutive weeks led to a significant reduction in Transfer latency on the 29th day judged against control, demonstrating substantial progress in memory. Following the successive administration of different doses of hanspadi extract, in combination with diazepam (7 mg/kg, i.p.), over a period of four weeks, a noteworthy decrease in EL observed during assessments conducted on the mentioned days in contrast to control group. This decrease signifies a noteworthy improvement in the rats' learning and memory capabilities. Among the various doses administered, the highest dose proved a pronounced and noteworthy measure for TL compared to a control group. **Conclusions:** The phyto-pharmacological investigation underscores the potential of Hanspadi extract as a natural source of nootropic compounds with memory-enhancing capabilities. Further research is warranted to unravel the mechanisms at play and to translate these findings into therapeutic interventions for cognitive disorders and age-related memory decline.

PHCL951

DEMENTIA IN GERIATRIC PATIENTS: CAUSES, MANAGEMENT, AND ADVANCEMENT

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Abstract:

Objectives: The objectives are to understand the impact of the growing elderly population on physical and mental health, classify the various types of dementia, and explore their management strategies.

Additionally, the study aims to examine advancements in dementia care. **Methods:** The dementia types and their causes are Alzheimer's Disease (brain plaques and tangles), Vascular Dementia (reduced cerebral blood flow), Lewy Body Dementia (abnormal protein deposits), Frontotemporal Dementia (degeneration of the frontal and temporal lobes), and Mixed Dementia. Management strategies were analyzed, including medications like Cholinesterase inhibitors and Memantine and non-pharmacological interventions Cognitive Stimulation Therapy, physical exercise, and occupational therapy. Dementia encompasses a range of symptoms regardless of the underlying cause which includes memory loss, impaired judgment and understanding, reduced decision-making abilities, altered emotional expression, mood changes, personality changes, difficulties with daily living tasks, speech and language comprehension issues, and challenges with social interactions. **Results:** Pharmacological treatments and Non-pharmacological interventions are essential in managing dementia. Supportive care strategies are crucial for patients and caregivers, enhancing the living environment, and providing psychological support. Advancements in early diagnosis, genetic research, drug trials, and technology are enhancing dementia care. Lifestyle interventions promise to protect cognitive health, although further research is required. **Conclusion:** The global rise in dementia cases among the elderly requires effective management, including pharmacological treatments, non-pharmacological interventions, and supportive care. Early diagnosis, genetic research, and technological innovations are crucial for improving outcomes, while lifestyle interventions may protect cognitive health. Ongoing research aims to enhance the quality of life and discover potential cures for dementia.

PHCL952

IMPACT OF SLEEP DEPRIVATION ON GLYCEMIC CONTROL AND MEDICATION ADHERENCE AMONG TYPE 2 DIABETES PATIENTS

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Abstract:

Objectives: To analyze the effect of sleep duration and sleep wake pattern on glycemic control and medication adherence using a questionnaire survey among individuals with type 2 diabetes mellitus. **Methods:** We conducted a questionnaire-based cross-sectional study involving 400 participants from October 2023 to March 2024, using the Morningness-eveningness questionnaire to measure sleep-wake patterns and the relationship between the Morningness-eveningness trait and glycemic control in patients with type 2 diabetes mellitus (T2DM) and a medication adherence questionnaire to assess patients' medication-taking behavior. The data was collected prospectively as a single visit to each patient who attended in-patient and out-patient units of the General Medicine Department, Government Medical College, and Hospital, Ooty. **Results:** A chi-square test was run to examine the association between different categorical variables (Morningness-eveningness) and the outcome variable (medication adherence), revealing a significant association ($p < .001$, $X2 (2) = 297.168$) and the association between different categorical variables (Glycemic controls and demographics) and the outcome variable (Morningness-eveningness). Binary logistic regression was employed to assess the impact of independent variables on the outcome. The results indicate that the effects of quality of sleep, FBS, PPBS, HbA1c, blood checkups, breakfast time, dinner time, and marital status on the likelihood of various domains of Medication adherence were statistically significant $p < .05$. **Conclusions:** Our study findings emphasize the need for healthcare professionals to implement a holistic approach to diabetes care that considers biological, psychological, and social factors.

PHCL953
SGLT2-INHIBITORS PROVIDING MULTIFACETED APPROACH IN DIABETES MELETUS TREATMENT

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Abstract:

Objectives: The aim of the study is to enlighten various pharmacological benefits presented by the latest line of treatment for Diabetes mellitus, Sodium-Glucose co-transporter (SGLT2) inhibitors. **Methods:** An extensive survey of numerous research articles, reviews, clinical trial reports, medical newsletters and magazines was performed through various search engines to establish the multiple pharmacological benefits of Sodium-Glucose co-transporter (SGLT2) inhibitors. **Results:** SGLT-2 inhibitors have a novel mechanism of action where they prevent glucose reabsorption in the proximal tubules of kidney. SGLT-2 reabsorb 90-97% of the filtered glucose to avoid energy loss through glucosuria. The SGLT-2 inhibitors, viz canagliflozin, dapagliflozin, empagliflozin, and ertugliflozin have presented many pharmacological benefits beside as an anti-diabetic. SGLT-2 inhibitors have shown reduced incidences of heart failure, Arrhythmias and other cardiovascular diseases due to their impact on intracellular sodium levels. Their mode of action justifies them being antihypertensive and diuretic. They have exhibited pulmonary benefits with decreased risk of interstitial lung disease by decreasing oxidative lung damage and inhibiting inflammation signaling molecules and allergic asthma by suppressing the immune response. SGLT-2 Inhibitors have presented anti proliferation action in various cancers viz. breast cancer, hepatocellular carcinoma, colon cancer, renal cell carcinoma and lung adenocarcinoma. Canagliflozin has presented aided weight loss by targeting the visceral adipose tissues. These set of drugs have shown remarkable effect on non-alcoholic fatty liver and Kidney failure. **Conclusions:**SGLT-2 inhibitors presenting multiple pharmacological effects is a boon to diabetes patient by being helpful in managing the complications attached to diabetes. Also, they are much more favorable to patients suffering from multiple diseases along with Diabetes.

PHCL954
POLYHERBAL SYRUP WITH ANTI-UROLITHIATIC ACTIVITY

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Abstract:

Objectives: The aim of the present study was to prepare a polyherbal formulation containing extracts of *Madhuca longifolia* (stem bark), *Catharanthus roseus* (leaves) &*Salvia officinalis*(leaves) plants and explore its anti-urolithiatic potential. **Methods:** The polyherbal syrup was formulated using hydroalcoholic (30:70) extracts of dried powders from *Madhuca longifolia* stem bark, *Catharanthus roseus* leaves, and *Salvia officinalis* leaves, combined in equal proportions (1:1:1) in propylene glycol at a controlled temperature of 45-50°C. The formulation process involved the addition of glycerine and sorbitol, followed by the integration of the required volumes of plant extracts into a simple syrup base to produce the final polyherbal syrup. The formulation was then evaluated for its anti-urolithiatic activity through the analysis of various serum and urine parameters. Additionally, histopathological examination of kidney tissues was conducted to further assess the therapeutic efficacy. **Results:** The final syrup formulation was developed following the optimization process, which was guided by a Design of Experiments (DoE) approach. Specifically, a 13-run, 3-factor, 3-level Box-Behnken design was employed to optimize the

composition of the polyherbal formulation. Post-optimization, the final syrup was prepared and characterized. The polyherbal syrup exhibited a reddish to slightly brown coloration, with a characteristic odor and a sweet taste. The pH of the formulation was measured at 6.1. There was no significant change in the physicochemical and evaluation properties of optimized syrup formulation during the stability period. The anti-urolithiatic, diuretic, and nephroprotective activities of the polyherbal syrup were then evaluated in albino rats to assess its potential effects against urolithiasis. In the disease control group, there was a significant increase in serum and urine parameters, including creatinine, urea, uric acid, blood urea nitrogen (BUN), phosphorus, calcium, sodium, and oxalate, compared to the other treatment groups. **Conclusions:** Based on the findings from the preclinical evaluation of the plant extracts, a polyherbal syrup formulation containing hydroalcoholic extracts of *Madhuca longifolia* bark, *Catharanthus roseus* leaves, and *Salvia officinalis* leaves was successfully prepared, standardized, and evaluated for its efficacy against urolithiasis. The study concluded that the polyherbal syrup demonstrated significant potential as a therapeutic agent for the treatment of urolithiasis.

PHCL955

WOUND HEALING EFFECT OF *NARDOSTACHYS JATAMANSI* GEL AGAINST EXCISION AND INCISION WOUND MODELS

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Abstract:

Objective: To investigated the ability of a *Nardostachys jatamansi* gel to treat wounds against excision and incision wound models. **Methods:** Animals will be placed into four groups of five each for the excision and incision woundmodels are as follows: Group 1, left un-treated and regarded as the healthy control group N.Con, Group 2, Test NJ-1 (gel base treated); Group 3, NJ- 5 (gel base treated). Groups IV wereeach given a dose of 5 percent (w/w) povidone-iodine gel USP. Every treatment was appliedtopicallyonceeachday. L-hydroxyproline, %The wound healing effect were assessed by %Woundcontraction and Epithelizationperiod in excision models, while tensile strength was measured in incision models along with antioxidant parameters and histopathological examination. **Results:** Different concentration of NJE (2% and 5% w/w) gel promoted the wound healing activity significantly in both the models studied. The high rate of wound contraction ($P<0.001$), decrease in the period for epithelialization ($P<0.01$), high skin breaking strength ($P<0.001$), and elevated hydroxyproline content were observed in animal treated with NJE gel when compared to the control group of animals. Histopathological studies of the NJE treated groups also revealed the effectiveness in improved wound healing. Antioxidant parameters like SOD, CAT, GSH, and LPO levels, restored in dose dependent manner. Histopathology of skin tissue show marked changes. **Conclusions:** *Nardostachys jatamansi* gel possesses a dose dependent wound healing effect.

PHCL956

ROLE OF MICROGLIA IN NEUROINFLAMMATION AND NEURODEGENERATION

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Abstract:

Objectives: This review aims to explore the role of microglia in mediating neuroinflammation and their contribution to the progression of neurodegenerative diseases such as Alzheimer's disease (AD), Parkinson's disease (PD), and amyotrophic lateral sclerosis (ALS). Understanding the dualistic nature

of microglial function—both protective and pathogenic—provides insights into potential therapeutic targets for mitigating neurodegenerative processes. **Methods:** A comprehensive literature review was conducted using databases such as PubMed, Scopus, and Web of Science. Studies were selected based on relevance to microglial activation, signalling pathways (e.g., NF-κB, NLRP3 inflammasome), and their link to neurodegeneration. Both preclinical and clinical research were included, focusing on recent advancements (2015-2024) in microglial biology, neuroinflammatory markers, and therapeutic interventions aimed at modulating microglial activity. **Results:** Microglia exhibit dynamic phenotypes, ranging from neuroprotective (M2) to neurotoxic (M1) states, depending on the environmental cues and signalling molecules present in the brain. Chronic activation of microglia, characterized by a persistent M1 state, leads to sustained production of pro-inflammatory cytokines (e.g., IL-1β, TNF-α) and reactive oxygen species (ROS), exacerbating neuronal damage. This inflammatory cascade contributes to synaptic dysfunction, protein aggregation, and neuronal death, which are hallmark features of neurodegenerative diseases. Emerging therapies targeting microglial pathways—such as inhibitors of the NLRP3 inflammasome and modulators of TREM2—show promise in altering disease trajectories. **Conclusions:** Microglia play a key role in neuroinflammation linked to neurodegeneration. Although they can protect the brain, their prolonged activation leads to disease progression. Therapeutic strategies aimed at modulating microglial activity to enhance their protective roles are promising. Future research should prioritize understanding the mechanisms behind microglial behaviour shifts to develop more effective treatments for neurodegenerative diseases.

PHCL957

DEVELOPMENT AND CONTENT VALIDATION OF MYOCARDIAL INFARCTION RISK ASSESSMENT TOOL

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Abstract:

Objective: To validate a novel risk assessment tool for identifying myocardial infarction risk. **Methodology:** A consensus committee of general practitioners, cardiologists, and a biostatistician was constituted. Based on a literature review, the Myocardial Infarction Risk Assessment Tool (MIRAT) questionnaire was developed. The generated questionnaire was given to the consensus committee for assessment and comment. The finalised questionnaire, based on the committee's input, was applied to the general population. **Results:** Based on the ratings provided by the 10 experts, there is a high level of agreement regarding the relevance of the items in the MI risk assessment tool, with an average proportion of 0.82. This consensus among experts strengthens the tool's face and content validity. The Scale-Content Validity Index for the Average (S-CVI/Ave) is reported as 0.82, indicating robust content validity. However, the Scale-Content Validity Index for Universal Agreement (S-CVI/UA) is slightly lower at 0.76, suggesting some variability in expert ratings for certain items. It may be beneficial to further investigate and address discrepancies among experts to enhance the tool's overall content validity. **Conclusion:** The development and validation of the MI risk assessment tool indicate positive outcomes, with a high level of agreement among experts regarding the relevance of included items.

PHCL958

INNOVATIVE TEACHING METHODOLOGY OF STUDENT-CENTRIC PHARMACOLOGY TEACHING FOR PHARMACY STUDENTS

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Abstract:

Objectives: As a fundamental component of pharmacy education, pharmacology necessitates a thorough comprehension of pharmacological mechanisms, therapeutic uses, and safety profiles. The

ever-changing world of pharmacy education demands creative ways to effectively engage pharmacy students and promote in-depth comprehension. The goal of this presentation is to propose a student-centric methodology that will improve the pharmacology course learning experience. **Methodologies:** To meet the various needs of pharmacy students, our method combines technology, individualized training, and active learning methodologies. Even though they are fundamental, traditional didactic approaches frequently fail to engage pupils and promote critical thinking. This study examines cutting-edge teaching strategies intended to improve the educational process and results for pharmacy students enrolled in pharmacology courses. **Results:** Through the implementation of cutting-edge teaching techniques such as problem-based learning (PBL), flipped classrooms, and case-based learning (CBL), an educator can change the emphasis from receiving information passively to providing it actively. By encouraging students to apply their theoretical knowledge to real-world situations, these strategies help them retain and gain a deeper comprehension of pharmacological ideas. Virtual reality (VR), e-learning platforms, and interactive simulations are examples of digital tools that can be used to support self-paced learning, offer immersive experiences, accommodate a variety of learning styles, and help students visualize intricate pharmaceutical processes. In order to illustrate the advantages and difficulties of these strategies, a comparison study comparing the efficacy of these cutting-edge approaches to conventional lectures will also be covered. **Conclusion:** This study will make use of important indicators like student performance, engagement levels, and feedback. By implementing these cutting-edge tactics, teachers can better equip pharmacy students for their future careers and create a more dynamic, captivating, and productive learning environment.

PHCL959
ANXIOLYTIC-LIKE EFFECT OF SCOPOLETIN IN ALCOHOL-WITHDRAWN MICE

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Abstract:

Objectives: This study aimed to investigate the anxiolytic effects of scopoletin in mouse models exhibiting anxiety induced by alcohol withdrawal. **Methods:** Alcohol dependence was induced in male Swiss albino mice by administering ethanol (17.5% v/v) three times daily for 8 days, followed by a single morning dose on the 9th day. Anxiety behaviors related to alcohol withdrawal were assessed 24 hours after the last ethanol injection (on the 10th day) using theelevated plus maze (EPM), open field test (OFT), and marble burying test (MBT). The vehicle-control group received 1% w/v sodium carboxymethyl cellulose orally, while the scopoletin-treated groups received scopoletin (1 and 5 mg/kg) orally 1 hour before behavioral testing. A reference group received diazepam (1 mg/kg, i.p.) as a standard anxiolytic drug. **Results:** Statistical analysis using one-way ANOVA followed by *post hoc* Dunnett's multiple comparison test indicated that mice treated with scopoletin (5 mg/kg, p.o.) and diazepam (1 mg/kg, i.p.) showed significant increases in the percentage of line crossings and time spent in the central arena during theOFT, as well as increases in the percentage of entries and time spent in the open arm during the EPM. Furthermore, these groups exhibited a significant decrease in the number of marbles buried in the MBT compared to alcohol-withdrawn mice. **Conclusions:** Scopoletin demonstrated anxiolytic-like activity in alcohol-withdrawn mice comparable to diazepam, suggesting scopoletin's potential therapeutic utility for managing anxiety associated with alcohol withdrawal.

PHCL960
SYSTEMATIC REVIEW AND META-ANALYSIS OF NARINGIN'S HEPATOPROTECTIVE PROPERTIES IN RODENT MODELS

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Abstract:

Objective: Naringin, a flavanone in citrus fruits, has shown promising hepatoprotective effects in preclinical studies against various liver toxins. However, the generalizability and consistency of these findings are limited due to variations in study designs, doses, treatment durations, and outcome measures. This variability hampers definitive conclusions on naringin's effectiveness as a hepatoprotective agent. This systematic review and meta-analysis aim to comprehensively evaluate and synthesize existing research on the potential hepatoprotective effects of naringin. using existing scientific data. **Methods:** Twenty studies met the inclusion and exclusion criteria for this analysis. Data were extracted from graphs using Plot Digitizer. Studies were sourced from PubMed, Embase, Scopus, and Google Scholar. The quality of the included studies was assessed using the Revman RoB tool. Statistical analysis for the meta-analysis was conducted using Revman 5.4. **Results:** The meta-analysis indicated that naringin improved liver function by reducing rodent serum levels of hepatic marker enzymes. It also enhanced blood levels of antioxidant enzymes such as SOD, GSH, GST, GPx, and catalase. Naringin treatment reduced inflammatory mediators in various animal models of liver damage. Additionally, liver weight was significantly normalized, and body weight improved with naringin treatment. Histological evidence supported these findings. **Conclusion:** Naringin has demonstrated hepatoprotective effects in rodent models. However, further clinical studies are needed to confirm its efficacy in humans.

PHCL961
EVALUATION OF *MARSILEA QUADRIFOLIA* EXTRACT FOR THEIR ANTI-DEPRESSANT POTENTIAL

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Abstract:

Objectives: The main Aim of this study is to Evaluate *Marsilea quadrifolia* methanolic extract using various Pharmacological screening for Anti-depressant property. **Methods:** *Marsilea quadrifolia* plant methanolic extract was selected for the study. Various strengths of extract were prepared. Taken Imipramine as a standard drug to compare the activity of Plant extract. Distinguished the activity by performed Pharmacological screening procedures on Rats i.e., 4 groups: Vehicle, Standard (20mg/Kg), Test-1 (100mg/Kg), Test- 2 (250mg/ Kg) that includes, Forced Swimming Test, Tail suspension test, Locomotor activity, Rotarod test (Motor Co-ordination), Elevated plus Maze, Hole board Test. Studies were performed for 21 days on both Control and Test drug groups. **Results:** The results of evaluation of Anti-depressant activity of *Marsilea quadrifolia* were measured in Test-2 treated rats and compared with Standard. The Forced swimming test showed Immobility of rats was 154.83±4.32 seconds, the Tail suspension test showed immobility of rats was 148.66±1.75 seconds, the Actophotometer count of Locomotor activity of rats was 227.28±34.26 seconds (were as Imipramine showed 64.32±12.02 seconds), the Duration of stay in Rotarod test was 268.72±21.37 seconds, the Duration of Activity in Elevated Plus Maze test was 148.72±1.37 seconds, Duration of Hole-pocking in Hole board test was 11.1±1.37. **Conclusion:** From the above experiment, it has been concluded that the test *Marsilea quadrifolia* methanolic extract (250mg/Kg) possesses a significant Anti-depressant potential. Further studies have to be carried out to find out the exact mechanism of these effects.

PHCL962

SELECTING EFFECTIVE ANIMAL MODELS FOR DYSLIPIDEMIA RESEARCH

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Abstract:

Objectives: This review aims to summarize preclinical dyslipidemia models by highlighting their induction methods, dose, mechanisms, applications, and limitations. Considering dyslipidemia's impact on cardiovascular disease, the review will aid researchers select an appropriate dyslipidemia model and evaluate potential treatments. **Methods:** A systematic literature search was conducted for articles published from 2016 to 2024, using Scopus, PubMed, and ScienceDirect with keywords, dyslipidemia, animal models, induction, and pre-clinical studies. **Results:** Dyslipidemia research employs rat, mouse, rabbit, and zebra fish models, each with distinct advantages and limitations. High sucrose or high-fat diet (HFD) induced mice develop dyslipidemia over 8-10 weeks but are unsuitable for long-term studies. Triton WR 1339 induced mouse is a single dose model explored to evaluate hypolipidemic phytochemicals. Triton X-100, Triton WR 1339, and Poloxamer 407 (P407) induced rats offer short induction period with an ability to inhibit lipoprotein lipase, though P407 display varying results. Levofloxacin-induced rats are limitedly used due to rapid reversal to normal lipid levels. HFD induced mice and rats can favorably prolong lipid dysfunction. High fructose, HFD, and sodium fluoride induced dyslipidemia rabbits have lipid metabolism similar to humans, allowing inclusive analysis from a single rabbit. though high breeding cost and space necessities limit their utility. Each model's application is solely based on the study design and duration. **Conclusions:** Variety of animal models are explored for dyslipidemia. Besides, emerging zebra fish model and *in vitro* models such as Caco-2/ TC7 cells have also been investigated A vigilant selection of a suitable animal model is crucial to study dyslipidemia and evaluate hypolipidemic potential of novel therapeutic interventions.

PHCL963

PRECLINICAL EVALUATION OF ANTI-OBESITY EFFECT OF GLABRIDIN AND OROXYLIN-A ADMINISTERED INCOMBINATION FOR ANTI-OBESITY EFFECT

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Abstract:

Objectives: Obesity is a growing global health concern, associated with numerous comorbidities. Natural compounds such as Glabridin and Oroxylin-A have shown potential anti-obesity effects individually. This study aims to evaluate the combined anti-obesity effects of Glabridin and Oroxylin-A. **Methods:** A preclinical study using a high-fat diet (HFD)-induced obese rat model. The Albino Wistar Rats Either Sex 150 to 200 Grams were selected for study. Rats were divided into four groups: Control (standard diet), HFD (high-fat diet), HFD + Glabridin (50 mg/kg/day), HFD + Oroxylin-A (50 mg/kg/day), and HFD + Glabridin + Oroxylin-A (50 mg/kg/day each). Rats were subjected to 6 week obesity induction with high fat diet. After induction Lee Index was calculated and the animals who qualified criteria of obese animals were selected for further study. A 6 week intervention was given and at end of 6 week all obesity markers and blood parameters like, body weight, food intake, fat mass, serum lipid profiles, liver enzyme levels, histopathological analysis of adipose tissue and liver, and gene expression analysis of adipogenic and lipogenic markers. **Results**: Body Weight and Fat Mass: Mice receiving the combination of Glabridin and Oroxylin-A showed a significant reduction in body weight and fat mass compared to the HFD group.Serum Lipid Profiles: The combination therapy resulted in improved lipid profiles, with reduced total cholesterol, low-density lipoprotein (LDL), and triglycerides, and increased

high-density lipoprotein (HDL).Liver Enzymes: Serum levels of liver enzymes (ALT and AST) were significantly lower in the combination group, indicating reduced hepatic steatosis.Histopathology: Histological examination revealed reduced adipocyte size and decreased lipid accumulation in the liver of the combination group. **Conclusion**: The combination of Glabridin and Oroxylin-A demonstrates a synergistic anti-obesity effect in a high-fat diet-induced obese mouse model. This combination therapy effectively reduces body weight, improves lipid profiles, and modulates gene expression related to adipogenesis and lipogenesis, suggesting its potential as a therapeutic strategy for obesity management.

PHCL964

IMPACT OF TARDIGRADE PROTEINS ON THE REVERSAL OF ALZHEIMER'S DISEASE

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Abstract:

Objectives: The objective of this study was to embark the therapeutic potential of tardigrade proteins on the reversal of Alzheimer's disease. **Methods:** Tardigrades are a common micro-invertebrates that show remarkable resilience to a wide range of environmental stressors, such as excessive heat, little water, or high radiation levels. In addition to surviving the vacuum and radiation of space. Tardigrades eliminate water from their bodies and reduce their metabolic rate to a mere 0.01 percent of their typical level. They then change into their "tun" form, which allows them to exist in a condition of suspended animation for decades. **Results:** The studies from various research articles revealed that *further* annotations of the genomes of both tardigrades *Ramazzottius varieornatus* and *Hypsibius dujardini* revealed specific amplifications of several genes, including *MRE11* and *XPC*, and numerous missense variants exclusive of *Ramazzottius varieornatus* in *CHEK1*, *POLK*, *UNG* and *TERT*, all of them involved in important pathways for DNA repair and telomere maintenance. Taken collectively, these results point to genomic features that may contribute to the enhanced ability to resist extreme environmental conditions shown by *R. varieornatus*. **Conclusions:** This study emphasizes on the biomedical applications of tardigrade proteins on the reversal of Alzheimer's disease. Further extensive research may lead to identify potential targets to treat Alzheimer's disease.

PHCL965

REGENERATIVE MEDICINE: A PROMISING APPROACH TO ADDRESS THE GLOBAL HEALTHCARE CHALLENGES AND PROMOTING SUSTAINABILITY

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Abstract:

Objective: To explore the role of regenerative medicine in addressing global healthcare challenges and promoting sustainability by offering innovative solutions for treating damaged tissues and organs. **Methodology:** This study employs a literature-based approach, reviewing and synthesizing existing research on regenerative medicine. The methodology involves a comprehensive analysis of published studies using databases, Scopus, PubMed and Google Scholar, focusing on key areas such as stem cell biology, tissue engineering, and materials science. The review examines the principles, applications, and recent advancements in regenerative medicine, as well as its potential impact on sustainable healthcare. **Results:** Regenerative medicine integrates stem cell biology, tissue engineering, and materials science to

develop innovative therapies for tissue and organ repair. Stem cell research provides insights into tissue rejuvenation and novel therapies for various illnesses. Tissue engineering, particularly scaffold design, is crucial in creating biological substitutes for damaged tissues. Many regenerative therapies are minimally invasive and enable personalized treatments, leading to faster recovery times and lower risks of complications. Recent advancements include the development of novel biomaterials, the identification of new cell sources, and the application of advanced tissue engineering techniques. Regenerative medicine aligns with sustainable healthcare principles by offering long-term solutions that reduce the need for repeated medical interventions. **Conclusion:** Regenerative medicine represents a significant shift towards a more sustainable and effective healthcare paradigm. By providing innovative, long-lasting solutions for tissue and organ repair, it has the potential to reduce reliance on traditional treatments like organ transplantation. This approach not only improves patient outcomes but also contributes to the sustainability of healthcare systems by potentially reducing the overall burden of chronic diseases. The integration of regenerative medicine into clinical practice offers promising avenues for addressing global healthcare challenges and promoting sustainability in healthcare delivery.

PHCL966

A STUDY TO EVALUATE THE LEVEL OF DEPRESSION, ANXIETY AND STRESS SYMPTOMS IN HEART FAILURE PATIENTS AND ITS CORRELATION WITH MEDICATION ADHERENCE

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Abstract:

Objective: Heart failure is clinical syndrome that results a complex from any structural and functional cardiac impairment of filling and ejection of blood, causing disability to pump blood and provide tissues with oxygen and nutrients. Patients with heart failure experience high levels of anxiety and depression and their quality of life decreases significantly. Mental health illnesses are associated with frequent hospitalizations and increased risk. Off all-cause was mortality. This study was conducted to know the mental health of heart failure patients. **Methodology:** Cross sectional study was conducted at an outpatient's heart failure clinic in a tertiary teaching hospital. The study participants completed a Depression, Anxiety and Stress (DASS-21) questionnaire to screen for the presence and severity of depression, anxiety and stress symptoms. Morisky Medication Adherence score Scale (MMAS-8) was used to screen the patient adherence to medication. **Results:** Out of 100 patients 53.6% of patients are normal without any psychiatric symptoms, and 46.4% of patients are suffering with psychiatric symptoms. Among them 17.3% patients are having mild symptoms, 24% are having moderate symptoms and only 5% are having severe symptoms. From 100 patients 54% patients are having low adherence, 28% patients are having medium adherence and 18% are having high adherence. **Conclusion:** Heart failure is one of the most clinical diseases associated with a significant reduction in the QOL. Psychiatric symptoms are common in heart failure patients and they have low medication adherence. Hence, multimodal treatment approach such as collaborative care models or stepped care from mental health professionals are needed to improve psychiatric and cardiac health.

PHCL967

MODERN HEALTH RISK ASSESSMENT: THE SYNERGY OF TOXICOLOGY AND PHARMACOKINETIC MODELING

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Abstract:

Objectives: The aim of this study is to integrate state-of-the-art scientific toxicological models into pharmacokinetic modeling for HRA to improve our ability to predict and evaluate health hazards associated with chemical exposures. **Methods:** we initiated the research process by conducting a thorough database query using appropriate keywords and Medical Subject Headings (MeSH) terms across multiple platforms, including PubMed, Scopus, and Web of Science. This comprehensive search aimed to identify relevant literature related to our topic and Final Inclusion physiologically based pharmacokinetic (PBPK) model was developed to comprehensively represent trichloroethylene (TCE) and its metabolites, including trichloroethanol (TCOH), trichloroacetic acid (TCA), and dichloroacetic acid (DCA), for mice, rats, and humans under oral ingestion or inhalation exposure routes. **Results:** Recent advancements in toxicological modeling have enhanced our understanding of how chemicals exert toxicity, leading to more accurate Health Risk Assessment (HRA). Toxicological models, such as Adverse Outcome Pathway (AOP) frameworks and initiatives like ToxCast/Tox21, provide systematic approaches to understand molecular events leading to toxicity and adverse outcomes related to chemical exposure. Model predictions of TCE, TCA, DCA, and TCOH concentrations in rodents and humans aligned well with various experimental datasets, indicating the model's usefulness in comparative pharmacokinetics. However, limited information exists for lung and kidney target tissues, warranting caution when applying PBPK model calculations to these organs during interspecies extrapolations. **Conclusions:** The integration of advanced toxicological models with pharmacokinetic modeling holds significant potential for improving the accuracy and reliability of HRA. The developed PBPK model for TCE provides valuable insights into chemical kinetics and metabolite profiles, enhancing our understanding of exposure-related health risks.

PHCL969

EVALUATION OF ANTIHYPERGLYCEMIC AND HYPOLIPIDEMIC ACTION OF *EUPHORBIA CADUCIFOLIA* LATEX POWDER ON ALLOXAN-INDUCED DIABETIC RATS

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Abstract:

Objective: The study was intended to evaluate the antihyperglycemic and hypolipidemicaction of *Euphorbia caducifolia*latex powder in alloxan-induced Diabetic Rats. **Materials and Methods:** Diabetes was induced in albino rats by using alloxan monohydrate (150 mg/kg). Rats were divided into five groups of six animals each**.** First group served as non- diabetic control, second group as diabetic control, third group as standard and was treated with Nopal. Group 4 and 5 received 100 and 200 mg/kg body weight of ECLP. Blood samples were analyzed for blood glucose on day 1, 7, 14 and lipid proûle on day 21. **Results:** The ECLP showed signiûcant reduction ($P<0.01$) in blood glucose level and serum lipid proûle levels with 200 mg/kg body weight in alloxan-induced diabetic rats as compared with the control. **Conclusion**: It is concluded that ECLP is effective in controlling blood glucose levels and in improving lipid proûle in diabetic rats.

PHCL970

ASSESSMENT OF THE PROTECTIVE EFFECT OF NOVEL TRIAZOLO PYRIDINONE (TRP-2) DERIVATIVES ON ULCERATIVE COLITIS INDUCED BY ACETIC ACID IN RAT MODEL: USING *IN VITRO* AND *IN VIVO MODELS*

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Abstract:

Objectives: The aim of the study was to Assessment of the protective effect of novel Triazolo pyridinone derivatives on ulcerative colitis induced by acetic acid rat model using *in vitro* and *in vivo* models. **Methods:** Estimation of *in vitro* anti inflammatory activity by HRBC method, Estimation of anti oxidant activity of selected synthetic compound by *in vitro* models, Experimental procedure for Assessment of protective effect of selected synthetic compound (A-2) on ulcerative colitis induced by acetic acid animal model, Assessment of myeloperoxidase, Assessment of TNF- and IL's, Histopathological study of colon. **Results:** Selected Triazolo pyridinone derivative at the 1mg exhibited 88.1% of protection on Nitric Oxide scavenging antioxidant study carried out under laboratory conditions. Selected Triazolo pyridinone (TRP-2) derivative at the 5mg exhibited % 63.50of protection on inflammation by membrane stabilization using HRBC (studies) carried out under laboratory conditions. **Conclusion:** The study concluded that Triazolo pyridinone derivative (TRP-2) at the exhibited 88.1% of protection on Nitric Oxide scavenging antioxidant study and 63.50% of protection on inflammation by membrane stabilization using HRBC studies carried out under laboratory conditions.

PHCL971

COMBINATION OF BOERHAAVIA DIFFUSA AND SILYBUM MARIANUM EXTRACT IN FATTY LIVER DISEASE: A REVIEW

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Abstract:

Objectives: The main aim of the current review was to support the traditional usage of Silybum marianum seeds and Boerhaavia diffusa (BEE) root as a hepato-protective agent against non-alcoholic fatty liver disease. **Method:** BEE roots and SME seeds extracts exhibited a significant hepato-protective effect as evident from the decreases of serum AST, ALT, ALP, TB and CHO and increases in levels of TP compared with control group. The effect of combination of both the extract exerts more hepatoprotective as revealed by more level of significance. When both extracts were combined, SGOT, SGPT, ALP, CHO, and bilirubin enzyme levels were decreased (P 0.05) but total protein enzyme levels significantly increased (P 0.05). Therefore, the ability of these extracts to stimulate microsomal enzymes is likely what causes their hepatoprotective effects.**Conclusions:** This review will help in providing a comprehensive and informative review of the combination of Boerhaavia diffusa and Silybum marianum extracts in the management of fatty liver disease.

PHCL972

EFFECT OF B-SITOSTEROL ON NEUROBEHAVIOR IN EXPERIMENTAL ANIMALS SUBJECTED TO INTERMITTENT FASTING AND BINGE EATING

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IPS Academy College of Pharmacy, Indore (M.P.)

Abstract:

Objective: The objective of this study was to evaluate the effects of β-Sitosterol on neurobehavioral responses, body weight, and blood glucose levels in mice subjected to IF and BE. **Methods:** The

experiment involved Control, Standard, and Test groups. IF and BE behaviors were induced, followed by neurobehavioral assessments using the Elevated Plus Maze, Open Field, and Social Interaction tests. β-Sitosterol (10 mg/kg) and Diazepam (5 mg/kg) were administered orally. Statistical analysis was performed using ANOVA, followed by the Tukey-Kramer test. **Results:** Mice subjected to IF and BE exhibited anxiety-like behaviors, decreased locomotor activity, and reduced social interaction. β-Sitosterol treatment significantly ameliorated these conditions, increasing open arm entries, central zone exploration, and social interaction metrics. **Conclusion:** The findings suggested that β-Sitosterol had anxiolytic properties, reducing anxiety-related behaviors induced by IF and BE. It also enhanced exploration, social interaction, and helped counteract the negative effects on body weight and blood glucose levels.

PHCL973

INVESTIGATION OF THE PHARMACOLOGIC MECHANISMS INVOLVED IN THE ACTION OF BERBERINE AS A POTENTIAL TREATMENT FOR ALZHEIMER'S DISEASE: NETWORK PHARMACOLOGY-BASED APPROACH

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Abstract:

Objective: Alzheimer's disease (AD) is a neurodegenerative disorder that can result in a serious loss of memory along with additional mental health issues. Berberine is the primary pharmacologically active constituent of the ancient Chinese herb *Coptis chinensis* French. Therefore, it is imperative to investigate clinical medications according to the inhibition of AD pathological features. **Method:** To begin, we investigated the HERB and SwissTargets prediction database for information on the AD targets that are associated with berberine and interest in those targets. The targets from the intersections were utilized to build a network of interactions between proteins and to conduct analysis using gene ontology and the Kyoto Encyclopedia Genes and Genomes (KEGG). Using the AlzData database and molecular docking, we identified berberine's targets against tau and Aβ pathology associated with AD. Molecular docking technology was then utilized to assess the dependability of the primary targets. **Results:** After conducting a screening process and eliminating duplicate entries, 27 targets were identified related to the berberine against AD. The GO biological process analyses revealed that the upregulation of cellular response to chemical stress (GO:0062197) has been significantly enhanced among these targets. The KEGG pathway enrichment analysis revealed that the AD (hsa05010) pathway had the highest level of enrichment among the target genes. Pathway enrichment analysis of genes and genomes embodied that APP, BID, CASP3, CASP8, CYCS, GSK and TNF were principal protein targets. Molecular docking analysis manifested that these genes have good binding interaction and good binding energies with the berberine. **Conclusion:** Using the method of network pharmacology, we determined that berberine treats AD by modulating multiple targets and channels.

PHCL974

DIABETIC COMPLICATION: DIABETIC RETINOPATHY SCREENING TECHNIQUES

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Abstract:

Objective: Diabetic retinopathy is among the most prevalent consequences of diabetes (DR). Early diagnosis and prompt treatment can prevent sight-threatening DR. Unfortunately, A state after DR is not a reversible process, and treatment only sustains vision. The aim of this study is to review current worldwide Diabetic retinopathy screening methods. **Methods:** Retinopathyearly detection and treatment

are essential public health measures that can significantly reduce the risk of vision loss. The most recent guidelines for DR screening were released by the International Council of Ophthalmology (ICO) and American Diabetes Association (ADA) in 2018. The purpose of screening is to identify people with diabetes who are at higher risk of developing sight-threatening diabetic retinopathy so that early treatment or intervention can be offered to reduce the incidence of vision impairment or blindness. However, current screening programs based on 2-dimensional funds photography for detecting diabetic macular edema (DME) and face challenges in imaging the peripheral retina and requiring pharmacological pupil dilation. Ultra-wide field imaging and laser ophthalmoscopy address these limitations and hold great promise for improving screening efficiency. **Result:** This study summarises existing strategies for DR screening using multiple retinal imaging modalities and discusses potential future developments. Advances in retinal imaging technologies have the potential to revolutionise diabetes management, saving significant healthcare expenditures and resources. **Conclusion:** Various Diabetic retinopathy screening methods are developed all over the world. They help to detect early sight-threatening DR, treat it in a timely duration and in this treating duration help to avoid expensive, advanced treatment or even prevent to develop blindness among working age people.

PHCL975

EVALUATION OF ANTI-ARTHRITIS ACTIVITY OF *ASYSTASIA DALZELLIANA* LEAVES

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Abstract:

Objectives: The aim of this study was to evaluate the anti-arthritis activity of Asystasia dalzelliana leaves using Freund's adjuvant induced arthritis model in rats. **Methods:** Ethanolic extract of Asystasia dalzelliana leaves was prepared using Soxhlet apparatus. Arthritis syndrome was induced by injecting 0.1ml of Freund's adjuvant into the planter surface of the left hind paw of rats. Paw edema, changes in organ weight, serum parameters such as SGOT, SGPT and ALP were estimated. Hind paw of experimental rats were also subjected for radiographic and histopathological examination for assessing the anti-arthritis potential of ethanolic extract of *Asystasia dalzelliana* leaves. **Results:** The results of the current investigation shows that the extract of dose of 800mg/kg possess a significant anti-arthritis activity than the lower doses of 200mg/kg and 400mg/kg. The observed anti-arthritis activity of extract may be due to the presence of phytoconstituents such as alkaloid and flavonoids. **Conclusion:** The present preclinical study had revealed the traditional use of Asystasia dalzelliana leaves in treatment of rheumatism. Further studies like isolation and characterizations of active principals responsible for such activity are necessary to be executed.

PHCL976

NEUROPROTECTIVE EFFECT OF *BACILLUS COAGULANS* IN ROTENONE INDUCED PD ANIMALS ALTERING GUT-DYSBIOSIS

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Abstract:

Objective: Probiotic treatment that restores gut microecology may slow down disease progression in Parkinson's disease (PD), according to emerging evidence that the microbiota-gut-brain axis (MGBA) is crucial in the aetiology and development of PD. The human gut microbiota is believed to influence

various physiological processes in the body, including brain functions. In the current study, we explored the neuroprotective potential of *Bacillus coagulans (B. coagulans)* supplementation in the prevention of neuronal damage in rotenone (ROT) treated wistar rats. **Methodology:** In this study we have investigated the behavioral, molecular, histological and biochemical parameters in the ROT rat model. A pharmacological intervention of *B. coagulans* at doses of 2×10^9 CFU for 21 days was found to attenuate the cognitive and motor changes in the ROT treated rat. Furthermore, it also increases the dopamine levels; reduce oxidative stress in the mid brain of ROT induced rats. **Result:** However, the result demonstrates probiotics down regulate the expression of monoamine oxidase (MAO)-B, neuroinflammatory markers and decreases the alpha-synuclein protein concentration. Whereas the results of gut-homogenate analysis showed that *B. coagulans* intervention could act on the ROT-induced dysbiosis in the intestinal microbiota, suppressing the number of pathogenic bacteria (*Escherichia coli*) while increasing the number of beneficial bacteria (*Prevotella*) in PD rats. In summary, these findings demonstrate that *B. coagulans* has the potential to ameliorate symptoms of PD by modulating the gut–brain axis. **Conclusion:** However, this therapy needs to be further investigated with in-depth mechanistic insights in the future for the treatment of PD.

PHCL977

EXPLORING THE TRADIIONAL USES OF *CAESALPINIA BONDUC* SEED EXTRACT FOR WOUND HEALING

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Abstract:

Objective: *Caesalpinia bonduc* (CB) has demonstrated anti-inflammatory, antioxidant, and antibacterial properties, making it valuable for wound healing. This study explores the wound-healing potential of CB seed extract (CBE) in rats. **Methodology:** CBE (50 mg/kg) was administered orally to rats daily for 10 days (Incision and Dead space wounds) or up to 24 days, or until complete epithelization (Excision wound). *In vitro* antimicrobial activity was assessed against common skin bacteria. Wound healing parameters such as wound breaking strength, contraction, epithelization period, scar area, and histological analysis of the skin were evaluated across different models. **Result:** CBE treatment significantly enhanced wound breaking strength by 21% ($P<0.001$) and reduced the epithelization period and scar area by 33% and 46%, respectively ($P<0.001$), promoting faster wound contraction (22nd day vs. 24th day in controls). Additionally, CBE exhibited antibacterial activity and improved antioxidant levels (by 55.5% to 65.0%, $P<0.01$) and collagen deposition (by 37.3% to 77.4%, $P<0.01$), while reducing free radical levels (by 57.5% to 66.4%, $P<0.001$) and myeloperoxidase activity (by 53.6%, $P<0.01$) compared to the control group. Histological analysis revealed normal epithelization with restored adnexa, abundant collagen tissue, neovascularization, and minimal inflammatory cells in the deep granulation tissue. **Conclusion:** The healing effects of CBE appear to be due to its ability to reduce free radical-induced tissue damage, enhance antioxidant status, promote collagen deposition, and exhibit antibacterial properties.

PHCL978

INTRACELLULAR HEME-CONTAINING ENZYME'S AMELIORATIVE FUNCTION IN NEURODEGENERATIVE DISORDERS

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Teerthanker Mahaveer College of Pharmacy, Moradabad, Uttar Pradesh, India.

Abstract:

Objectives: The aim of this study to determine the contributing factors in the development of Neurodegenerative Disorders and ascertain the ameliorative function of Intracellular Heme-

Containing Enzyme's Neurodegenerative Disorders. **Methods:** Identify and observe the cellular functions such as signal transduction, mitochondrial function, and the management of oxidative stress depend on intracellular heme-containing enzymes such as catalases, nitric oxide synthases, and cytochrome P450s. Data indicates that by promoting damage from oxidation and cellular dysfunction, deregulation of these enzymes is a critical factor in the etiology of neurodegenerative diseases. **Results:** All of the research that has been done so far has shown a consistent relationship between higher levels of oxidative stress and poorer neuronal function and the abnormal activity of heme-containing enzymes. In neurodegenerative diseases, studies have shown higher oxidative stress markers along with altered expression and degree of activity of enzymes such nitric oxide synthases and cytochrome P450s. Decreasing oxidative damage and increasing survival of neurons in preclinical models have been demonstrated by experimental therapies that specifically target these enzymes. **Conclusion:** This review emphasizes the role of heme-containing intracellular enzymes impact on neural degradation are hallmarks are to the pathophysiology of Neurodegenerative disorders.

PHCL979

THE EFFECTS OF CATECHIN ON DIABETIC NEPHROPATHY: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROL TRIALS

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Abstract:

Objectives: Diabetic nephropathy (DN) is a chronic kidney disease prevalent among diabetic patients and is the primary cause of end-stage renal failure. Numerous studies have explored the potential of catechin in managing diabetic nephropathy. This study seeks to conduct a comprehensive review and analysis of the efficacy of catechin in the treatment of diabetic nephropathy. **Methods:** We have accessed studies using MEDLINE/PubMed, Embase, Cochrane database, and search engines like Google Scholar published from the last ten years up to 2023. The study populations were animals with nephropathy. The quality of each included article was assessed using the Newcastle-Ottawa quality assessment scale. The data analysis was conducted using RevMan software (version 5.1). Given that the main results were continuous variables, we opted to utilize a standard mean difference (SMD) and 95% confidence interval (95% CI) to quantify the effect size. To ascertain the presence of heterogeneity, we employed Cochran's Q statistic. When the value exceeded 50% and the PQ"test was less than 0.1, it indicated significant heterogeneity, prompting the utilization of the random effect model. **Results:** A total of 207 articles were used for this reviewed study, duplicates were removed and 52 articles were assessed for screening, 28 are not DN, and 12 are not catechin and its derivatives. Only 12 articles are included for full-text screening and qualitative synthesis. Of these 5 studies were documented in serum creatinine levels, significant effects with a standardized mean difference (SMD) of -0.89 and a 95% confidence interval (CI) of (-2.12, 0.35), with a p-value of less than 0.00001, 7 studies for BUN (Blood Urea Nitrogen) significant effects with a standardized mean difference (SMD) of 1.04 and a 95% confidence interval of (-0.04, 2.11), 6 studies for proteinuria levels, revealing significant effects (SMD=2.79, 95% CI (-1.93, 7.51), P<0.00001) and 5 studies for urinary protein excretion levels revealing significant effects [SMD=3.54, 95% CI (1.61, 5.47), P<0.00001]. The findings of this systematic review and meta-analysis, suggest that catechin may have a beneficial effect in treating DN in animals. **Conclusions:** In summary, our study suggests that catechin and its derivatives may enhance renal function and reduce proteinuria in animals with DN. This could potentially help in alleviating renal dysfunction associated with diabetes. Despite the widespread use of catechin in diabetic patients and its complications, there are no clinical studies on its use in DN. Therefore, large-scale, long-term, and high-quality trials are necessary to validate these findings before they can be translated into human applications. Furthermore, ongoing clinical studies on catechin in other diseases should document weight changes to accurately assess its benefits in metabolic disease.

PHCL980

TITLE-EVALUATION OF *BRYOPHYLLUM PINNATUM* LEAVES FLAVONOID RICH FRACTION FOR ITS ANTI-DEPRESSANT POTENTIAL

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Abstract:

Objective: To evaluate the antidepressant potential of *Bryophyllum pinnatum* leaves flavonoid rich fraction (BPFF) by modified irwin test, forced swim test (FST) and tail suspension test (TST) and give a scientific rational for its traditional use. **Methodology:** for preparation of flavonoid rich extract first the plant materials were defatted by n-hexen and then they were extracted by 95% ethanol for 72 hours. The extracts were partitioned with ethyl acetate and concentrated as flavonoid rich fraction. The test animals were divided into four groups consisting of 6 animals each. Group1 as Vehicle control who receives normal saline 5ml/kg, Group2 as Standard who receives Imipramine (10 mg/kg), Group3 as Test 1who receives BPFF (200mg/kg), Group4 as Test 2 who receives BPFF (500mg/kg). Test animals receive their respective treatments by oral route for a period of 28days and the last dose was given 1hour before the experiment. Duration of immobility and behavioral alterations were noted and documented in all the models. The molecular docking study was carried out by using SWISS ADME (*in-silico* pharmacokinetic) and ARGUS LAB (docking study). **Result**: In our study, BPFF treatment significantly ($p<0.05$) reduced the duration of immobility in both experimental models as compared to the animals in the control group. The efficacy of the test compounds was further supported by the *In-silico* binding of the flavonoids with 5HT1A, α2 and serotion transporter. **Conclusion:** The study shows *Bryophyllum pinnatum* flavonoid rich extract has significant antidepressant potential which justify its folklore use as an adjuvant in the treatment of depressive disorders.

PHCL981

ROLE OF ANTIOXIDANTS IN ALLEVIATING NEUROPATHIC PAIN

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Abstract:

Objectives: The review aims to explore the role of antioxidants in the management and reduction of neuropathic pain, a condition often resistant to conventional analgesic and for which medications only provides symptomatic relief. This condition is characterized by a complex pathophysiological mechanism. **Methods:** An extensive literature search was conducted to across various database including Scopus, PubMed and Google Scholar to identify studies investigating role and efficacy of antioxidants in reducing neuropathic pain condition. This review focuses underlying mechanism by which oxidative stress contributes to neuropathic pain and how antioxidants may counteract this mechanism and may help to restore normal nerve function. **Result:** The review findings indicate that oxidative stress plays a significant role in development and persistence of neuropathic pain by inducing mitochondria dysfunction, inflammatory response and neuronal damage. Antioxidants like Alpha-lipoic acid, Vitamin C, Vitamin E, N-acetylcysteine and curcumin have a potential role in alleviating neuropathic pain through their ability to scavenge free radicals, inhibit pro-inflammatory cytokines and restore normal mitochondria function. Several studies in animals and humans demonstrated a significant reduction in pain intensity and improve quality of life in patients suffering from neuropathic pain conditions following antioxidants therapy. **Conclusion:** Antioxidants shows a promising adjunctive therapy in the management and reduction of Neuropathic pain. Their ability to target multiple mechanism underlying pain conditions makes them choice of drugs with therapy in the management of neuropathic pain conditions. Further clinical studies needed to establish an optimal dosing regimen and to explore long term benefits, effects, and safety profile of these agents.

PHCL982

WOUND HEALING ACTIVITY OF *BENINCASA HISPIDA* (THUNB.) COGN LEAVES BY THERMAL BURN MODEL

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Abstract:

Objective: The annual climber plant Benincasa hispida (Thunb.) Cogn. (Cucurbitaceae), is a winter vegetable that is used in India to treat a range of illnesses. Based on database reports, this research aims to outline an up-to-date picture on the native usage, nutraceutical, and phytochemical composition, as well as the wound healing activity of Benincasa hispida (Thunb.) cogn leaves. The objectives of the study was to prepare an ointment with the Benincasa hispida leaves extract and observe the wound healing activity by thermal burn wound model by evaluating the percentage wound closure. **Methodology:** Benincasa hispida leaves ethanolic extract was prepared. Simple ointment was prepared according to BP protocol which is used as control. Two concentrations, 2.5% formulation and 5% formulation were used as test and silver sulphadiazene ointment was used as standard. Thermal burn injuries were induced on the dorsal skin of the rat by pressing the skin with a metal rod (10 mm diameter) heated over the open flame for 30 s. The wound closure rate was assessed on 0th, 6th, 12th, and 18th days of post wounding. The percentage of thermal burn wound healing was calculated accordingly. **Result:** From the study it was found out that wound construction rate is increased in formulation (2.5% and 5%) and gave better result when compared with normal, control and standard drug. **Conclusion:** Thermal wounds closely mimic burn injuries that occur in real-life situations. Using the thermal wound model the study investigated the body's healing response, including inflammation, tissue regeneration, and the formation of scar tissue. The findings of the study helped us to have a clear insight on the wound healing property of Benincasa hispida leaves.

PHCL983

DRUG UTILIZATION STUDY IN THE INTENSIVE CARE UNIT OF A TERTIARY CARE PRIVATE HOSPITAL

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Abstract:

Objectives: The objectives of the study was to have an insight on the treatment practices and drug use pattern in the ICU, study the impact of such treatment practices and drug use pattern in the ICU on the morbidity profile, length of ICU stay and mortality of patients, measure the out-of-pocket expenditure of patients on different accounts relative to expenses incurred on medications. **Methods:** A non-intervention cross-sectional study was primarily done on a minimum of 300 patients who are either released on recovery from, or have left against medical advice, or have died in the ICU for a period of four months. Demographic, Drugs related, Patient treatment days related, ADR related, cost of treatment related, severity of patient related and mortality data was collected and analysed through statistical methods. **Results:** From the study it was found out that male patients having an average body weight of around 66 kg and falling in the age group of 51 to 60 years are mostly admitted in the ICUs. On an average 4 to 7 number of drugs was prescribed to the ICU patients. Around 21% of the drugs were prescribed in their generic names and around 39% of the drugs were administered parenterally. 3% of the drugs were prescribed off labelled. Mostly antiulcers and antibiotics were prescribed for the maximum length of treatment. The maximum cost of the treatment was almost uniformly divided in between surgical and medicine. Mostly moderately severe patients were admitted to the ICUs. **Conclusion:** The findings of the study helped us to have a clear insight on the drug utilization pattern in the ICUs of a private tertiary care hospital in West Bengal.

PHCL984

EVALUATION OF *IN VITRO* ANTI ULCER ACTIVITY OF *HEDYOTIS HERBACEA LINN*

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Abstract:

Objectives: The aim of this study was to evaluate the antiulcer activity of *Hedyotis herbacea* by H+/K+ - ATPase activity. **Methods:** The whole plant of *Hedyotis herbacea* was shade dried and coarsely powdered. Half kilogram of the powdered substance was successively extracted using the cold maceration method with a variety of increasing polarity solvents, including petroleum ether, chloroform, ethyl acetate, and ethanol. Preliminary phytochemical analysis was performed initially with different chemical reagents to detect the nature of phytoconstituents and the extract consists of alkaloids, carbohydrates, glycosides, flavonoids, and phenols which give Synergistic effects to *Hedyotis herbacea* which has anti-ulcer activity. *In vitro* antiulcer actitivity was evaluated by H+/K+ - ATPase. Further it was evaluated by *in silico* docking method. **Results:** In H+/K+- ATPase inhibition activity, the extract showed maximum percentage inhibition of 69.55% at 500µg concentration. A critical non-covalent interaction was demonstrated by the docking study with the active site of PDB ID:2XZB. The ligands that exhibited interactions were Dodecanamide, N(2-hydroxy ethyl), 3-Trifluro benzoic acid, Allyl isothiocynate, 1-Adamantyl ethyl ester, 1-H pyrrole-2,5-dione, 1-H tetrazol-5-amine and standard Omeprazole.1-Adamantyl ethyl ester has an excellent docking score; this strengthens *Hedyotis herbacea's* anti-ulcer action. **Conclusions:** The present study concluded that the ethanolic extract have antiulcer properties, which could be the result of the chemical constituents present in the extract. Nevertheless, more research is needed to determine its precise mode of action and the key ingredients responsible for its antiulcer properties.

PHCL985

ANTI-INFLAMMATORY ACTIVITY OF METHANOL EXTRACT OF *BARLERIA CRISTATA*: AN *IN-SILICO* AND *IN-VITRO* EVIDENCE-BASED APPROACH

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Abstract:

Objective: Ethnopharmacological relevance: *Barleria cristata* L. was traditionally used for the treatment of inflammation. This plant has been unexplored scientifically despite its use in many ailments, especially in inflammatory diseases.The present study aims to scientifically validate the anti-inflammatory activity of methanol extract of *B. cristata* L. using *in silico* and *in vitro* approaches. **Materials and methods:** The methanol extract of *B. cristata* (MEBC)was analyzed using UPLC-QToF-MS to identify its active phytoconstituents. The active phytoconstituents were screened for ADME and Lipinski's rule of 5, the relevant phytoconstituents were subjected for molecular docking study. Furthermore, *in vitro* MTT assay was carried out to study the cell viability of *B. Cristata* and anti-inflammatory activity was studied using LPS-induced Raw 264.7 cell lines. The *in vitro* cellular cytokines expression was quantified. **Results:** A total of 17 compounds were tentatively identified using UPLC-QToF-MS analysis. Following ADME profiling, 8 compounds were subjected to *in silico* molecular docking and the compounds Kaempferol-3-gluco-rhamnoside and Magnoloside A possessed higher binding affinity than other compounds. MTT assay revealed that more than 90 % of Raw 264.7 cells were viable following MEBC treatment which confirms the non-toxic nature of MEBC. The results

of anti-inflammatory study were performed by measuring the expression levels of pro-inflammatory cytokines like IL-1 beta and TNF-alpha in LPS induced alone and combination of LPS followed by MEBC with 25 ug/ml, 50 ug/ml, and 100 ug/ml treatment respectively. In LPS alone group, IL-1 beta and TNF-alpha cytokines were effectively expressed and gradually inhibited in MEBC in a dose-dependent manner respectively. **Conclusion:** In summary, the present study scientifically demonstrated the anti-inflammatory efficacy of *B. cristata* by *in-silico* and *in-vitro* experimental validation which justifies the folkloric claim on the anti-inflammatory activity of the plant.

PHCL986

PHARMACOGENOMICS: THE NEED OF HOUR FOR DESIGN OF CUSTOMIZED DELIVERY CARRIER SYSTEMS

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Abstract:

Objectives: The present work aims to review the role of pharmacogenomics in design and development of personalized drug delivery carrier systems. **Methods**: Pharmacogenomics is the branch of pharmacy that plays a vital role influencing the genetic make up as well its expression. This field seeks to optimize drug efficacy and minimize adverse effects by tailoring treatments based on a patient's genetic profile. By examining genetic markers, pharmacogenomics can guide drug selection and dosage, leading to more personalized and effective healthcare. It also analyses the polymorphic effect of drugs efficacy and safety measures. Thus, enabling the rational methods to optimize drug therapy. **Results**: Adopting to this approach of developing the drug carriers based on patient genotype or genetic make-up may ensure maximum efficacy with less to negligible adverse effects. **Conclusions**: Pharmacogenomics helps to study single gene interaction with drugs and thereby develop personalized delivery systems, reduce the trial-and-error approach in prescribing, and delve into the complexities of genetic interactions with drug metabolism and response.

PHCL987

FORMULATION AND EVALUATION OF SLN, NLC TRANSDERMAL PATCH OF COLCHICINE FOR ANTIGOUT POTENTIAL

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Abstract:

Objectives: The aim of the present research work was to develop and optimize Solid Lipid Nanoparticles (SLNs) and Nanostructured Lipid Carriers (NLCs) based Transdermal Patches of Colchicine and to evaluate their potential as transdermal delivery system for safe and effective management of gout. **Methodology:** The Col-SLNs and Col-NLCs were formulated and optimized with respect to percentage of lipid and surfactant to get optimum particle size and entrapment efficiency. The nanoparticles were characterized for their size, shape, zeta potential and entrapment efficiency. The transdermal potential of Col-SLNs and Col- NLCs was evaluated by ex-vivo drug permeation using wistar rat skin and fluorescence microscopy. The optimized stable formulations were fabricated into transdermal patches and *in vivo* pharmacokinetic and pharmacodynamic study (subcutaneous air pouch model) was carried out. **Results:** The Particle size, zeta potential and entrapment efficiency of the optimized formulations of F5 (for SLNs) and F9 (for NLCs) were found to be 107 nm, (-) 17.4 mV and 37.25% of SLNs and 90.4, -25.7mV and 46.17% for NLCs respectively. Formulation F5 showed highest

transdermal flux 8.76 µg/cm2/hrs and F9 showed 11.28µg/cm2/hrs respectively. Fluorescence study confirms that Rh B SLNs and Rh B NLCs have more penetration potential through the skin. AUC0'!" of Col-SLNs TP and Col-NLCs TP patch was improved by 2.84 and 2.18 times more than colchicine transdermal patch. The *in vivo* pharmacodynamic antigout activity in rats has revealed the significant improvement in disease condition which is indicated by reduction in exudates volume (66.5± 2.4 for Col-SLNs TP, 80.93 ± 3.86 for Col-NLCs TP Vs 3.12 ± 1.5 for Colchicine TP) and Leukocyte count (48.86 ± 0.81 for Col-SLNs TP, 65.24± 0.9 for Col-NLCs TP Vs 29.74 ± 0.2 Colchicine TP). The other characteristic features like collagen deposition, inflammatory cell deposition were also found to be reduced in the treatment with the Col-SLNs and Col-NLCs transdermal patch as compare with the Col- transdermal patch. **Conclusion:** The present study concludes that Solid Lipid Nanoparticles (SLNs) and Nanostructured Lipid Carriers (NLCs) based Transdermal Patches of Colchicine is a safe and effective drug delivery system with improved bioavailability for treatment of gout.

PHCL988

EVALUATION OF THE WOUND HEALING ACTIVITY OF ETHANOLIC EXTRACT OF *NYCTANTHES ARBOR-TRISTIS* LINN. ROOT WITH EXCISION WOUND MODEL IN WISTAR ALBINO RATS

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Abstract:

Objectives: *Nyctanthes arbor-tristis* Linn. (Family-Oleaceae) is ubiquitous to India, where its root is employed as an analgesic, antioxidant, anti-inflammatory, anti-fungal, anticancer, antipyretic, and anthelmintic. Although some of its pharmacological benefits have been established, no scientific validation of its wound healing effects has been performed until now. This study looked at the wound healing effects of the ethanolic extract of Nyctanthes arbor-tristis root using an excision wound model utilizing Wistar albino rats to ensure the product could potentially be used as an alternative therapy for faster wound healing. **Methods:** Four groups of rats (n = 6) were given different topical wound regimens for 14 days. The rats in the control group received simple paraffin-lanolin ointment. One group received povidone iodine 10% (w/w) ointment. The other two groups received an ointment containing an ethanolic extract of Nyctanthes arbor-tristis root at a concentration of 5 or 10% (w/w). Blood and wound tissue samples were obtained on the 7th and 14th days of treatment and subjected to histopathology as well as L-hydroxyproline, D-glucosamine and antioxidant tests. **Results:** Wound histology showed improved collagenation, re-epithelialization, and neovascularization in the therapy groups. These histological alterations and wound contraction were superior in the 10% Nyctanthes arbor-tristis group. The treatment groups showed an increase in tissue L-hydroxyproline levels, as well as blood enzymatic and non-enzymatic antioxidants. On the 7th day of therapy, glucosamine levels increased in the treatment groups, but a reverse trend was noted on 14th day. TNF-α and IL-6 levels in plasma reduced across treatment groups. **Conclusions:** The findings show that therapy with Nyctanthes arbor-tristis extract ointment promotes good wound healing, equivalent to that of the standard wound healing ointment, povidone-iodine, and superior to plain lanolin-paraffin ointment. The improved wound healing, particularly in the 10% Nyctanthes arbor-tristis groups, can be attributed to a satisfactory profile of the above-mentioned parameters in these treatment groups, as indicated by the phytochemical analysis of its extract, which revealed the presence of antioxidant and anti-inflammatory compounds β-Sitosterol and oleanolic acid as the major active components.

PHCL989

ANTI-VENOM POTENTIAL OF ETHANOL EXTRACT OF *ALTERNANTHERA PHILOXEROIDES*(MART.) GRISEB.AGAINST *NAJA KAOUTHIA* VENOM

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Abstract:

Objectives: Snakebites in rural areas of India are commonly treated with plant extracts. To validate traditional claims of the usefulness of the Indian plants in the management of snakebite and evaluate the antivenom potential of ethanol extract of *Alternanthera Philoxeroides*against *Naja Kaouthia* Venom. **Methods:** To examine the ability of methanol extract of aerial parts of *Alternanthera Philoxeroides* to neutralize Naja *Kaouthia* snake venom activities. Anti-venom activity of ethanol extract of aerial parts of *Alternanthera Philoxeroides* against *Naja Kaouthia* venom was studied in mice and rats by using various *in vitro* and *in vivo* models are phospholipase, Fibrinolytic and Procoagulant activities and *in vivo* models are lethal toxicity, inhibition of the venom haemorrhagic action, inhibition of venom necrotizing action, and inhibition of venom defibrinogenating action. **Results:** Administration of EEAP neutralizes the *in vitro* models of venom-induced hemolysis of RBC'S, fibrinolytic and procoagulant activities in sheep blood and *in vivo* models more significantly neutralize venom induced lethality, haemorrhage, necrosis and defibrinogenation in mice and rats in a dose-dependent manner. **Conclusions:** In the obtainable investigation, the selected medicinal plant *Alternanthera Philoxeroides* was found to have neutralization of snake venomous activities. The ethanol extract of *Alternanthera Philoxeroides* was shown to potentially neutralize the enzymes caused by snake envenomation in experimental animals.

PHARMACEUTICAL TECHNOLOGY, BIOPHARMACEUTICS, PHARMACOKINETICS & DRUG METABOLISM, DRUG REGULATORY AFFAIRS & PHARMACEUTICAL MANAGEMENT, PHARMACEUTICAL EDUCATION AND PROFESSIONAL PHARMACY, ARTIFICIAL INTELLIGENCE, BIOINFORMATICS / DATA ANALYTICS

PCTC501

IN-SILLICO MODELING AND GC-MS PROFILING OF *TRACHYSPERMUM AMMI* L. SEED FOR ANTICANCER ACTIVITY

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Abstract:

Objectives: The present study employs an *in-sillico* approach to analyze the phytochemical constituent of methanolic and n-hexane extract of Ajwain seed (*trachyspermum ammi* L.) **Methods:** Two solvent systems, methanol and n-hexane are utilized to analyze multiparametric drug ability bioinformatics and Gas chromatography-mass spectroscopy (GC-MS). Furthermore, the docking studies have been conducted against five potential target enzymes, including mTOR (PDB ID:4JSV), Cyclin-dependent kinase 4 (PDB ID:6VKO), transcription-associated topoisomerase 2 α (PDB ID:4FM9), Poly (ADP-ribose) polymerase 1 (PDB ID:6VKO) and phosphatidylinositol-3-kinase (PDB ID:5XGH). **Results:** From the GC-MS analysis, a total of 66 phytoconstituents were identified, with 38 originating from methanol extract (TA-M1 to M38) and 28 from the n-hexane extract (TA-H1 to H28). Based on the docking score, several candidates were selected, such as N-(n-benzyloxycarbonyl-dl-alanyl)-d glucosamine (TA-M32) exhibits a docking score -9.1 kcal/mol against PARP1, -8.0 kcal/mol against CDK4, PI3K, -7.4 kcal/mol against Mtor and -7.0 kcal/mol against TOP2A and simultaneously TA-H6 (2,4'-Methylene biscyclohexylbisisocyanate) showed comparatively high potential against PI3K (-7.2KCAL/MOL) AND parp1 (-7.0kcal/mol), respectively. **Conclusion:** In conclusion, the synergetic potential of ethnopharmacological medicinal plants, along with computational analysis, represents a promising approach to discovering anticancer activity.

PCTC502

FORECASTING OF POTENTIAL ANTI-INFLAMMATORY TARGETS OF *MITRAGYNA PARVIFOLIA* USING NETWORK PHARMACOLOGY, MOLECULAR DOCKING AND ITS EXPERIMENTAL VALIDATION

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Abstract:

Objectives: The aim of this study was to predict anti-inflammatory targets of *Mitragyna parvifolia* based on network pharmacology, molecular docking and *in vitro* studies. **Methods:** Phytoconstiuents of *M. parvifolia* were taken from different databases, and literature survey and their drug-likeness score (DLS) was predicted using the MolSoft database. Different software, databases and web servers like Swiss target prediction database, Human Gene Database, STRING database, cytoscape 3.7.2, Maestro (Schrodinger software, 2022) were used to carry out *in silico* studies. *In vitro* studies like protein denaturation and COX-2 inhibition assay were done to verify *in silico* results. **Results:** The network represented that out of selected pathways and phytoconstituents IL-17 signalling pathway and TNF signalling pathway are highly modulating pathways and dausterol and loganin, are highly modulated phytoconstituents with docking score of -9.56 and -6.813 respectively as compared to standard diclofenac (-5.103). Extract of plant showed 64% inhibition of COX-2 as compared with standard drug diclofenac which showed 86% inhibition. **Conclusions:** The study concluded that the plant *Mitragyna parvifolia* shows strong anti-inflammatory potential by acting on different targets.

PCTC503

COMPUTATIONAL DRUG REPURPOSING-BASED IDENTIFICATION OF *MYCOBACTERIUM TUBERCULOSIS* MULTIDRUG RESISTANCE EFFLUX PUMP (TAP PROTEIN) INHIBITORS

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Abstract:

Objectives: Tuberculosis (TB) is one of the significant and resurgent diseases caused by Mycobacterium tuberculosis, with high mortality and morbidity worldwide. Despite the availability of drugs and vaccines to treat the disease, the prevalence of multidrug-resistant (MDR) strains becomes a major hurdle in its treatment. The MDR strains use the efflux pump as a key weapon to fight against anti-TB drugs. Tap protein (Rv1258c) is a crucial efflux pump associated with MDR-TB and Bedaquiline resistance. Therefore, it is required to develop efflux pump inhibitors to overcome the resistance and to use as an adjuvant anti-microbial therapy. In the present study, our objective was to perform the *in silico* identification of efflux pump (Tap protein) inhibitors using the drug repurposing strategy. **Methods:** Drug repurposing is the most effective drug development process for selecting approved therapeutics for new use with less time and cost. We have used diverse computational approaches to investigate the applicability of FDA-approved drugs as therapeutic leads against M. tuberculosis multi-drug efflux pump (Tap protein). The 2D and 3D structure of the tap (Rv1258c) protein was predicted, followed by 3D model refinement, validation, physicochemical characterization, and binding site identification. Further, the protein with the potential binding cavity was subjected to molecular docking, free-binding energies (MM-GBSA) evaluation, and MD simulation analysis to identify the top FDA-approved drugs as Tap protein inhibitors. **Results:** The best tertiary structure of the Tap protein predicted by the I-TASSER server with C-score (-0.13), TM-score (0.70 ± 0.12), and RMSD value (7.2 ± 4.2 Å) was selected for further refinement. The quality of the refined 3D model was further checked using ProSA-web with z-score (-5.39) and Ramachandran plot through PROCHECK. The refined model was considered for binding site identification and resulted in the top binding site with a site score (of 1.149) and a druggability score (of 1.212) for the subsequent molecular docking procedure. Based on docking results, the top three compounds, bleomycin, histrelin, and acarbose, with docking scores of -15.341, -14.733, and -13.470, respectively, were found to be promising Tap protein inhibitors. These top three compounds illustrated the stable interactions with the Tap protein in the MD simulation and proposed to modulate its activity. **Conclusions:** This study revealed those three molecules as possible efflux pump (Tap protein) inhibitors and highlighted the importance of efflux pump as a promising drug target in anti-TB therapy.

PCTC504

COMPUTATIONAL REPURPOSING OF BIOACTIVE COMPOUNDS FOR ANTICHOLINESTERASE INHIBITIONIN ALZHEIMER'S DISEASES

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Abstract:

Objectives: The aim of this study was to identify potential drug candidates for Alzheimer's disease using computational drug repurposing and further more to assess the binding affinity and stability of identified compounds with acetylcholinesterase. **Methods:** Bioactive compounds were retrieved from the ChEMBL database and filtered based on drug-like properties. Molecular docking simulations were conducted using Virtual Screening software PyRx to evaluate interactions with acetylcholinesterase (PDB-

1eea) as well as to assess the stability of protein-ligand complexes. **Results:** The compound CHEMBL-108861 exhibited superior binding affinity (-9.5 kcal/mol) and stability compared to reference drugs donepezil (-9.0 kcal/mol) and galantamine (-8.8 kcal/mol) in molecular docking study. Zoladex, initially considered, was excluded due to reported memory impairment. **Conclusions:** The study revealed that the CHEMBL108861 emerges as a promising candidate for developing novel anticholinesterase inhibitors to treat Alzheimer's disease. Further experimental studies are required to validate its efficacy and safety.

PCTC505

VALIDATED HPTLC METHOD FOR THE DETERMINATION OF ITRACONAZOLE IN CAPSULES AND SIMULATED BIOLOGICAL FLUIDS

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Abstract:

Objectives: The present research aims to develop an affordable, quick, sensitive, and user-friendly HPTLC method to facilitate the development and validation of itraconazole (ITZ) in pharmaceutical formulations as well as in simulated biological fluids (SBFs) in order to carry out drug dissolution studies to capsules. **Methods:** The detection of itraconazole (ITZ) in their pure form and as well as marketed capsules was carried out using "HPTLC CAMANG TLC system. ITZ capsule are available with brand names Itracop 100 with label claims consisting of itraconazole 100 mg. Accurately weight and powder twenty capsules of itraconazole, amount equivalent to 554 mg of powder containing 100 mg of drug. These solutions were further diluted with methanol and applied by Linomat V on HPTLC plate. After development, the plate was scanned. Three replicates of the analysis were performed. By putting suitable responses into the regression line equation for itraconazole, the content of ITZ in the formulation was determined. The drugs' assay percentage was calculated. The described method can be readily applied, without any interferences from the excipients, for the determination of the drug in capsules, SBFs samples and drug dissolution studies by HPTLC. The method was validated according to ICH guidelines (Q2R1) for linearity, accuracy, precision and robustness. **Results:** Planar chromatographic separation was performed on aluminum-backed layer of silica gel 60 F_{254} using a mixture of toluene: acetonitrile: methanol (5:3:2 v/v/v) as the mobile phase. Densitometric determination of the separated spots was done at 262 nm. The Rf values obtained under the optimized conditions were 0.74. Linearity of the method was established in the range of 75-250 ng/band. The LOD/LOQ were 11.36 and 40.89 ng/band. The described method can be readily applied, without any interferences from the excipients, for the determination of the drug in capsule, SBFs samples and drug dissolution studies. **Conclusions:** The present research aims to develop an affordable, quick, sensitive, and user-friendly HPTLC method to facilitate the development and validation of itraconazole (ITZ) in pharmaceutical formulations as well as in simulated biological fluids (SBFs) in order to carry out drug dissolution studies to capsules.

PCTC506

FORMULATION AND EVALUATION OF MICROEMULSION BASED GELLIFIED SYSTEM FOR THE TOPICAL DELIVERY OF ITRACONAZOLE

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Abstract

Nowadays incidence of skin fungal infections is significant which makes it the most established dermatological problem. The available systemic therapy takes long duration for the treatment and also

poses some significant side effects. To overcome these issues different works have been already done. The aim of the current work is to develop microemulsions based gels, loaded with 1 % itraconazole to treat fungal skin infections topically. After the pre-formulation studies, different pseudo-ternary phase diagrams with several K_m-ratios were developed and optimized according to the microemulsion region. The pseudo-ternary phase diagrams were developed using moringa oil, tween 20 and span 80 as the surfactant and co-surfactant, respectively, and distilled water was used as the aqueous phase. 10 different microemulsions from the microemulsion region of the optimized phase-diagram was developed and 1% itraconazole was added into each microemulsion. The pH, zeta potential, PDI and particle size were assessed. The produced microemulsions particle sizes ranged between 162.16 to 184 .42 nm and zeta potential from -6.42 to -9.21 mV. Developed microemulsions were converted into microemulgel by supplemented with 1 % Carbopol 940 gels in 1:1 ratio. The newly developed microemulgel were further evaluated to understand the different characteristics of the developed formulations. Significant zone of inhibition against *aspergillus fumigatus* was seen with all of the microemulgels. It was revealed that the developed microemulgels were safe and efficient in treating fungal skin infections.

PCTC507

NANOSTRUCTURED LIPID CARRIERS: A PROMISING APPROACH FOR TARGETED CANCER THERAPY

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Abstract:

Objectives: The objective of this study is to comprehensively review the potential of nanostructured lipid carriers (NLCs) as a targeted drug delivery system for cancer treatment. NLCs represent a second-generation system that combines the advantages of solid lipid nanoparticles and liposomes. NLCs are composed of a blend of solid and liquid lipids, creating a less ordered matrix that addresses the limitations of SLNs, such as drug expulsion and polymorphic transitions. **Methods:** This review examines the unique characteristics and advantages of NLCs for cancer treatment. The synthesis methods for NLCs. Additionally, the strategies for targeting cancer cells with NLCs, such as passive targeting through the enhanced retention effect and permeability and active targeting using ligand-modified NLCs, are explored. **Results:** NLCs offer several key advantages over traditional lipid-based systems. The incorporation of liquid lipids in the matrix enhances drug loading capacity and improves physical and chemical stability, preventing drug expulsion during storage. The versatile lipid composition of NLCs allows for the encapsulation of both hydrophilic and hydrophobic drugs, expanding the range of therapeutic agents that can be delivered. **Conclusion:** NLCs represent a promising advancement in lipid-based nanoparticle technology for cancer treatment. By combining the benefits of SLNs and liposomes, NLCs overcome the limitations of previous generations of LBNPs and offer a versatile platform for the delivery of a wide range of anticancer drugs. As the field of cancer nanomedicine continues to evolve, NLCs hold great potential for improving the targeted and controlled delivery of therapeutic agents, ultimately enhancing patient outcomes.

PCTC508

SHIFTING PARADIGM OF PHARMACEUTICALS TO BIOPHARMACEUTICALS

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Abstract:

Objectives: This study aims to explore the change from conventional pharmaceuticals to biopharmaceuticals, focusing on technological advancements, regulatory challenges, market

dynamics, and therapeutic innovations. The goal is to enhance patient outcomes through targeted, effective, and personalized treatments while addressing the complexities and costs associated with biopharmaceutical development and manufacturing. **Methods:** A comprehensive thorough literature review, data collection and analysis, case studies, and industry surveys. The literature review covered scientific journals, industry reports, and regulatory guidelines. Market and clinical data were analyzed to compare conventional pharmaceuticals and biopharmaceuticals. Case studies of successful biopharmaceutical products were examined. Industry surveys gathered perceptions and experiences from a broad range of stakeholders. A comparative analysis framework was developed to systematically analyze differences and similarities between the two sectors. **Results:** Biopharmaceuticals, driven by bio-technological innovations such as recombinant DNA technology and cell culture techniques, offer significant advantages in treating chronic and complex diseases. They have demonstrated higher efficacy and specificity compared to traditional pharmaceuticals, leading to improved patient outcomes. However, biopharmaceuticals face challenges including high development costs, complex manufacturing processes, and stringent regulatory requirements. The approval pathway for biosimilars is enhancing market competition and improving patient access. **Conclusions:** The change from conventional pharmaceuticals to biopharmaceuticals is transforming healthcare, providing new opportunities for innovation and better patient outcomes. Despite challenges in development and regulatory compliance, the potential for personalized and effective treatments makes biopharmaceuticals a crucial focus for future medical advancements. Ongoing investment in biotechnological research, regulatory refinement, and collaboration among beneficiaries will be essential to totally grasp the benefits of this change.

PCTC509

ENHANCING ORPHAN DRUG DEVELOPMENT AND CLINICAL TRIALS IN INDIA: THE ROLE OF DEIA AND RESEARCH GLOBALIZATION

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Abstract:

Objectives: This study assesses the current state of orphan drug approvals and clinical trials in India and explores the role of Diversity, Equity, Inclusion, and Accessibility (DEIA) and Research Globalization in improving the same. **Methods:** A systematic literature review published between 2014 and 2024, on DEIA approaches for conducting clinical trials, orphan drug research globalization, and the state of the Indian research and regulatory landscape was done. Analysis of Global Clinical Trials and CDSCO-approved orphan drugs was done to assess the orphan drug trial landscape and the current state of therapeutics in India. **Results:** An estimated 100 million Indian patients are affected by 450 rare diseases, 80% of which are genetic. CDSCO provides regulatory incentives like clinical trial waivers for globally approved orphan drugs. As of 2022, CDSCO approved 218 prior FDA-approved orphan drugs for various indications. Between 2014 and 2023, only 9 global orphan drug trials recruited Indian patients. The lack of representation in global trials can undermine an approved drug's effectiveness against a molecular subset of a disease that is specific to an Indian patient's genetic makeup. DEIA and research globalization emphasize an inclusive approach to developing personalized treatments by rationalizing subject recruitment to improve trial results and support domestic clinical research. **Conclusion:** Accessing global expertise, improving regulatory pathways, engaging patient communities at an early stage of clinical development, adopting diversity in clinical trial subject selections, and utilizing specific genetic data for clinical research will result in effective, equitable, accessible, and affordable treatments for Indian rare disease patients.

PCTC510
PHASE IV COMPARATIVE STUDIES OF MEDICAL DEVICES IN REGULATED AND EMERGING MARKETS

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Abstract:

Objectives: To provide valuable insights into differences, similarities and challenges in Post-Marketing Surveillance (PMS) practices among United States of America (USA), European Union (EU) and India for Medical Devices. **Methods**: The Acts, and Legislations of the Medical Devices for USA, EU and India were collected and analysed for the applicable content. The Recall databases of the respective authorities were investigated to find the PMS related information. Our research also involved studying journals related to PMS to enhance our knowledge. **Results**: Our analysis revealed distinct regulatory frameworks across the USA, EU, and India concerning PMS practices. The USA emphasizes adverse event reporting through the FDA's MAUDE database, whereas the EU employs a centralized approach under MDR (EU) 2017/745. In India, Materiovigilance Programme of India (MvPI), plays an important role in monitoring adverse events related to medical devices and their associated risks. Despite these differences, all regions emphasize the pivotal role of PMS in ensuring ongoing device safety and efficacy. **Conclusions**: Post-market surveillance plays a significant role in ensuring the safety of medical devices after they enter the market. These studies facilitate the easier launch of products in multiple markets while enhancing performance and trustworthiness in the diagnosing and treating of medical devices.

PCTC511
STUDENTS' PERSPECTIVES ON INTEGRATED OBJECTIVE STRUCTURED CLINICAL EXAM AT JSS COLLEGE OF PHARMACY, MYSURU, INDIA

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Abstract:

Objectives: The aim of this study was to assess the students' experiences with the integrated objective structured clinical exams at JSS College of Pharmacy, Mysuru, India. **Methods:** The OSCE cases in four pharmacy practice courses of fourth-year Pharm. D program were developed and vetted. The vetted cases were used in the integrated formative assessment of four courses. There was only one formative assessment for all four courses, therefore it was named as integrated objective structured clinical exam (i-OSCE). A 16-item validated Likert's' scale feedback form was used to capture the students' experiences with the i-OSCE. The data were analyzed descriptively and presented as median (IQR) scores. The domain viz comparison of Likert's scale responses between the groups was carried out using Mann Whitney U test. **Results:** An i-OSCE that included thirteen stations (ten active and three rest stations) was developed and implemented as a formative assessment. A total of 71 students attended the i-OSCE, in two academic years. A majority (60, 84.5%) of the students scored >75% in the i-OSCE. The median (IQR) scores on five domains of students' feedback form namely, support prior to & during i-OSCE, quality of i-OSCE cases, simulated patients & props, appropriateness of skills evaluated, adequacy of course content and time allotted for i-OSCE, and preference for i-OSCE were 14 (12-15), 13 (12-14), 13 (12-15), 13 (12-15) and 16 (15-19) respectively, indicating a high level of satisfaction with i-OSCE. The domain viz student feedback analysis showed a statistically significant (p values: 0.0143 and <0.0001) high level of satisfaction among female (mean rank:

40.56) and postbaccalaureate students (mean rank: 55.40) as compared to male (mean rank: 28.09) and regular PharmD students (mean rank: 30.80) respectively. **Conclusion:** The students' feedback suggests that the i-OSCE had adequately evaluated the skills expected to be acquired through all the four courses included in the formative assessment. The students preferred i-OSCE over conventional exams in individual courses, for evaluating their skills and competencies.

PCTC512

ASSESSMENT ON PREVALENCE OF POLYCYSTIC OVARY SYNDROME AND RISK FACTORS ASSOCIATED WITH IT AMONG STUDENTS AT BALANGIR REGION.

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Abstract:

Objective: The aim of my present study is to observe the rate of polycystic ovarian disease among the college going students, Balangir. To better understand PCOD among patients, the "Healthcare Surveillance of PCOD" project intends to gather data on prevalence, symptoms, management approaches, and patient views. **Methods:** PCOD is seen to be a hormonal dysfunction which gives rise to cyst formation and enlargement of ovary in young college students due to their environmental changes, dieting habits and irregular exercise along with the creation of its awareness. A research based on survey among 200 college students about their regular cycle which helps in finding how much impact of these in females with PCOD.The survey was conducted in School of Pharmacy students which included in the female subject between 18-25 years of age with the most common symptoms being acne, weight gain, hair loss, hirsutism, irregular periods, and infertility. **Results:** From the results in the performed survey, based on the lifestyle it was observed that there were about 70% females with PCOD, 10% without PCOD and 20 % females have symptoms of PCOD but not yet received appropriate consultation. In current observation, the women show hirsutism due to hormonal imbalance correlated with altered food habit and irregular exercise. **Conclusions:** From the survey report it was observed and concluded that the regular lifestyle and dietary habits of individual female in the age of 18-25 years showed more impact of PCOD by showing unhealthy weight and irregular periods.

PCTC513

FORMULATION OPTIMIZATION AND CHARACTERIZATION OF D-MANNOSE LOADED MUCOADHESIVE URETHRAL PESSARIES AS A LOCALIZED DELIVERY SYSTEM FOR EFFECTIVE TREATMENT OF *E. COLI*-INDUCED URINARY TRACT INFECTIONS

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Abstract:

Objectives: Effective treatment of urinary tract infections remains a staggering task till today. The present study explores a novel yet facile treatment strategy for urinary tract infections by using D-mannose as a drug of choice through localized mucoadhesive pessaries. **Methods:** Experimental pessaries (DMPs) were developed by applying central composite design optimization. Selected DMPs were characterized by different *in-vitro* techniques like content uniformity, hardness, melting point, disintegration test, mucoadhesion, liquefaction time, *in-vitro* release study, etc. **Results:** The FTIR study showed the absence of any major interaction between D-mannose and selected excipients. Experimental DMPs were elegant and smooth, having desired length/width and melting range between 35 ºC-40 ºC.

Among the pessaries, DMP-3 and DMP-5 showed satisfied liquefaction time and mucoadhesive properties. The binding energy values for DMP-5 and D-mannose against Fim H protein (2VCO) were -5.0 and -5.1 kcal/mol, respectively, through an *in-silico* approach. Further, *in-vivo* studies are warranted for clinical applications of experimental DMPs. **Conclusion:** The present study demonstrates modified D-mannose-loaded mucoadhesive pessaries that offer an alternative and unique approach to treat *E. coli-induced* Urinary tract infections. Selection of optimized formulation through central composite design with desirable weight, homogeneity, hardness, melting point, disintegration time, and liquefaction time was achieved. Satisfactory results of important physiochemical properties like mucoadhesion, liquefaction of experimental DMP-3 and DMF-5 would be beneficial for effective urethral application. Docking analysis confirmed the binding affinity of D-mannose with selected Fim H protein. The prepared urethral pessaries need to be tested in *the E.coli-induced* Urinary tract infection model *in vivo* for future clinical applications.

PCTC514

DEVELOPMENT AND EVALUATION OF AN INTRANASAL RESVERATROL AND CURCUMIN NANOEMULSION FOR TREATMENT OF EPILEPSY

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Abstract

Objective: Objective of the study is to develop and characterize a nanoemulsion combining resveratrol and curcumin for intranasal administration to treat epilepsy and optimize the formulation to ensure desirable particle size, stability, and appropriate physicochemical properties for effective nasal drug delivery. **Methods:** The nanoemulsion was prepared using a High speed Homogenization and probe sonication, with Fractionated coconut oil as the oil phase, Cremophor and Pluronic 127 as the surfactant. The formulation was selected as optimized based on a Particle size analysis, Globule size determination and Drug content was employed to optimize. The prepared combination of resveratrol and curcumin nanoemulsion was characterized for various parameters including particle morphology, polydispersity index (PDI), zeta potential, centrifugation, heating cooling cycle, drug content, pH, viscosity, *in vitro* drug diffusion. **Results:** The results showed that development and evaluation of two drugs resveratrol and curcumin nanoemulsion was prepared and certain evaluating parameter like particle size (181 nm), indicating its suitability for nasal drug delivery. The low polydispersity index (PDI) value of 0.368 indicated a narrow size distribution, and the pH of 6.5 was suitable for nasal administration. Analytical techniques such as UV-visible spectrophotometry, Fourier Transforms Infra-Red (FTIR), *in vitro* drug release (88.77%) study were carried out. This optimized formulation with appropriate concentrations of oil, surfactant offers promising potential for effective nasal drug delivery. **Conclusions:** The study concluded that the prepared combination of resveratrol and curcumin nanoemulsion was found to be suitable for intranasal administration, offering the potential to enhance drug absorption and bioavailability. This formulation may have promising implications for the treatment of epilepsy and other related conditions.

PCTC515

FORMULATION AND CHARACTERIZATION OF IRON OXIDE NANOPARTICLES OF ANTIBIOTICS AGAINST RESISTANT STRAIN

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Abstract:

Objectives: The aim of this study was to prepare and evaluate iron oxide nanoparticles. **Methods:** Antibiotics have shown to develop resistance so the study was selected to prepare iron oxide nanoparticles

as the size of NPs is in nano range and also the iron oxide showed to have synergistically affect the antibacterial activity three antibiotics like Amoxicillin, Cefuroxime axetil and cefixime was selected to perform this study. **Results:** The physical and chemical properties of iron oxide nanoparticles prepared effectively and were characterized by using FTIR, XRD, EDS, Zeta potential PDI, Particle size. Apart from that the Iron Oxide nanoparticles shows monodipersed, amorphous nature of the compound and Agar well diffusion and MIC by broth dilution methods was prepared and evaluated for antibacterial and activity against resistant micro-organism. **Conclusions:** The present work shows the Nanoparticles formed are more effective and amorphous in nature also it is monodispersed particle size also decreased. Antibacterial studies shows that the resistant bacterial and sensitive strain both were effective against NPs as compared to plain antibiotics.

PCTC516
FORMULATION DEVELOPMENT AND CHARACTERIZATION OF TOPICAL PREPARATION FOR THE TREATMENT OF NEUROPATHIC PAIN

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Abstract:

Objective: The objective of the study was to provide sustained pain relief over an extended period, minimizing the need for frequent application, to study the penetration activity of formulation, and to provide better patient compliance and acceptance for the formulation. **Methods:** The optimized liposomes were evaluated using field emission scanning electron microscopy (FESEM), zeta potential analysis, particle size measurement, and Fourier transform infrared (FTIR) spectroscopy, confirming stable and spherical vesicles with a mean particle size of 218.5±0.45 nm and a zeta potential of -14mV ±0.41mV. **Results:** *In vitro* diffusion studies demonstrated that the optimized gabapentin liposomes provided a sustained release of the drug, with 45.48±0.36% release at 10 hours and 54.84±2.63% at 12 hours, attributed to the presence of cholesterol in the bilayer. The optimized batch was used to formulate a gabapentin liposomal gel, which exhibited superior pH, Spreadability, viscosity, and drug content compared to a plain gabapentin gel. The liposomal gel showed sustained drug release (45.18±0.51% up to 12 hours) and enhanced transdermal permeation in ex-vivo studies using goat skin. **Conclusions:** the gabapentin liposomal gel demonstrated improved patient compliance and reduced gastrointestinal degradation, with better stability and minimal drug leakage at refrigerated conditions. The incorporation of liposomal suspension in Carbopol 934 provided enhanced stability, making this formulation promising for transdermal drug delivery.

PCTC517
FORMULATION AND *IN VITRO* EVALUATION OF ACECLOFENAC SUSTAINED RELEASE MATRIX TABLETS

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Abstract:

Objectives: The aim of the present study was to develop and evaluate sustained release matrix tablet of Aceclofenac by using hydrophilic polymer with an objective to achieve sustained release by decreasing dose frequency, to minimize dose dependent side effects and to maintain uniform drug levels, as well as to improve patient compliance. **Methods**: Non-steroidal anti inflammatory drug Aceclofenac was selected for the study. Sustained release matrix tablets were prepared by direct compression method by using

hydrophilic polymer like Hydroxypropyl methyl cellulose (HPMC K4M, HPMC K15M and HPMC K100M) in varying concentrations. **Results**: The physicochemical interactions were investigated by Fourier Transform Infrared Spectroscopy (FTIR). The Tablets were evaluated for different parameters like hardness, thickness, weight variation, % drug content and *In vitro* drug release. From the result it was concluded that all the formulations were found to be within the Pharmacopoeial limits. The *in vitro* release studies exhibited that the tablets could sustain the drug release for up to 12 hours, following a Higuchi model with a non-fickian (anomalous) diffusion mechanisim. **Conclusions**: The study concluded that sustained release matrix tablets presents a promising approach to improve the therapeutic effectiveness of Aceclofenac by potentially reducing the frequency of administration and improving patient compliance.

PCTC518

EFFECT OF DIFFERENT EXTRACTION SOLVENTS ON EXTRACTION YIELD, TOTAL PHENOLICS, SAPONINS CONTENT AND ANTIOXIDANT ACTIVITY OF FENUGREEK GUM EXTRACTED FROM *TRIGONELLA FOENUM-GRAECUM* L SEEDS

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Abstract:

Objectives: The aim of this research was to extract fenugreek gum (FG) derived from endosperm part of *Trigonella foenum-graecum L.* (fenugreek) seeds using four different solvents such as ethanol, methanol, acetone and n-hexane to obtain FG_E, FG_M, FG_A and FG_H, respectively. Extracted FGs was used for quantitative estimation of total phenolic content (TPC) and total saponin contents (TSC) and further evaluated for antioxidant activities of different FG varieties. **Method:** Fenugreek seed flours (20 g) were allowed to soak overnight at room temperature in distilled water. Following that, the slurry was stirred for two hours at 60°C and then centrifuged at 5000 rpm for 10 minutes at 4°C in cold centrifuge to eliminate any insoluble fibers or particles. The yellow supernatant was precipitated with different extraction solvents by vigorous stirring and washed twice. The extracted varieties of FGs were dried and stored in desiccators. Different varieties of extracted FGs were used to estimate value of TPC and TSC and further DPPH scavenging antioxidant activity of extracted FG was also determined. **Results:** Analysis of variance revealed that all the responses including TSC, TPC, and antioxidant activities of different varieties of FGs were significantly influenced ($p < 0.05$) by different extraction solvent. The percentage inhibition of DPPH increased significantly ($p < 0.001$) as the concentration of the extracts increased in a dose-dependent manner. **Conclusion:** FG has gained significant interest in the pharmaceutical industry due to its inherent beneficial pharmacological effects such as hypoglycaemic, anticancer, anti-inflammatory, antioxidant, and antibacterial. Various solvents utilized during extraction process influenced the nature of extracted polysaccharides and its metabolic compounds. Different extraction solvent affected extraction yield of different varieties of FG extracted from fenugreek seeds. Thus, selection of appropriate extraction solvent is essential for FG extracts to achieve desired pharmacological properties.

PCTC519

EFFECT OF CALCIUM ION CONCENTRATION ON SWELLING, EROSION, AND DRUG RELEASE BEHAVIOUR FROM CALCIUM CHLORIDE CROSSLINKED NATURAL POLYSACCHARIDE-BASED HYDROGEL MATRIX TABLET FOR THE COLONIC DELIVERY OF BUDESONIDE

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Abstract:

Objectives: To investigate the effect of calcium ion concentration on swelling, erosion, and drug release behaviour from calcium chloride crosslinked natural polysaccharide-based hydrogel matrix tablet for the colonic delivery of budesonide. **Methods:** The hydrogel matrix tablets were developed using the wet granulation technique. Tablets were tested for thickness, weight variation, hardness, friability, drug content, mean dissolution times, and water penetration velocity. The swelling, erosion, and drug release study were carried out in a USP II dissolution apparatus at 37±0.5! and 75 rpm in pH 1.2 HCL buffer for 2 h, then at pH 7.4 phosphate buffer for the subsequent 3 h, and finally at pH 6.8 phosphate buffer solution. The kinetics of drug release was also determined. **Results:** The prepared matrix tablets matched the IP requirements for drug content, thickness, weight variation, hardness, and friability. An increase in the calcium ion concentration of the matrix tablets reduced water penetration velocity, swelling, and erosion, resulting in slower drug release. The matrix tablets were able to restrict drug release in the gastric environment and minimize drug release in the upper gastrointestinal tract followed by complete drug release in the colonic region. *In vitro* drug release kinetics reflected the Fickian diffusion model. **Conclusions:** Natural polysaccharides are hydrophilic in nature. Due to their high water solubility, the matrix tablet made up of them could carry drugs to a longer distance. Therefore, cross-linking them with metal ions led to the formation of a rigid structure that could carry drugs to the target site.

PCTC520

CURCUMIN LOADED SILK SERICIN EMULGEL FOR EFFECTIVE WOUND HEALING

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Abstract:

Objectives: The present study was aim to prepare and characterize curcumin loaded silk sericin emulgel for efficient billing of wound. Silk sericin is particular interesting due to its exceptional properties such as biocompatibility, biodegradability and anti-oxidant behavior. **Method:** Curcumin emulgel containg silk sericin was prepared by Fusion method using karanj oil as the oil phase.The developed emulgel(F1-F2) was characterized using a varietyof *in-vitro* and *in-vivo* techniques, including FTIR, DSC, XRD, SEM, *in-vitro* drug release and *in-vivo* wound healing activity. **Results:**DSC analysis confirmed that the drug present in the formulations were in the amorphous form. FTIR study demonstrated that there was no interaction between the drug and excepients. The cumulative *in-vitro* drug release from the optimized emulgel after 8 hours was found to be 46.4±1.6%. The results showed that the Wistar albino rats treated with combination of curcumin and silk sericin emulgel showed significantly wound healing activity. **Conclusion:** The aforesaid findings lead to the conclusion that the developed curcumin loaded silk sericin emulgel showing the synergestic effect and can be used as natural biomaterial for the management of wound healing.

PCTC521
DESIGNING AND EVALUATION OF 5-FLUOROURACIL LOADED CHITOSAN-PECTIN MATRIX BASED DUAL CROSS-LINKED IONIC GEL BEADS SYSTEM FOR COLON SPECIFIC TARGETING

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Abstract

Objectives: The current study aimed to develop SR 5-fluorouracil loaded chitosan-pectin blended dual cross-linked gel beads system. It was showed that, dual cross linked beads gives better delayed drug release pattern than single cross linked beads for colon targeting. **Methods:** Dual cross linked beads were evaluated for drug content, particle size, swelling degree, SEM, DSC, XRD, etc. for its suitability for colon targeting. **Results:** The developed systems were appreciably performed during *in vitro* drug releases in simulated gastric (SGF) at pH 1.2, intestinal (SIF) at pH 6.8 and colonic fluids at pH 7.4 (SCF) with and without rat cecal content medium for up to 24 h. Batch formulations were shown lesser releases in acidic dissolution medium, whereas augmented releases in alkaline medium at the end of 24 h studies. It was found with significant drug releases ($p > 0.05$) in SCF containing 2 & 4% w/v rat cecal as compared to control studies. During curve fittings using several models, the R^2 value of Higuchi matrix model confirmed for drug release was followed with anomalous non-Fickian transport mechanisms. Those dual cross linked gel beads confirmed for its improved mechanical core strength, controlled and sustained release potentials during the experimental. **Conclusion:** The prepared dual ionic cross linked optimized formulations may be potential system for targeting drug to colon for colorectal cancer.

PCTC522
DEVELOPMENT, OPTIMIZATION AND CHARACTERIZATION OF DEXLANSOPRAZOLE-LOADED IMMEDIATE RELEASE SUBLINGUAL WAFERS: EXPERIMENTAL INSIGHTS

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Abstract:

Objectives: The study aimed to develop sublingual wafers incorporating Dexlansoprazole, designed for rapid dissolution and enhanced penetration through sublingual mucosa, ensuring increased bioavailability and prompt therapeutic efficacy. **Methods**: Sublingual wafers loaded with Dexlansoprazole were fabricated using solvent casting. The formulation process involved varying concentrations of sodium starch glycolate (SSG), hydroxypropyl methylcellulose E-15 (HPMC E-15), and polyethylene glycol 400 (PEG 400), as suggested by DESIGN EXPERT software. An optimization strategy leveraging desirability values was implemented to maximize the formulation's efficacy. Comprehensive physical characterization and *in vitro* dissolution studies were conducted on the wafers. Subsequent assessments included drug permeation analysis through ex vivo models and histopathological examination to ensure biocompatibility and efficacy. **Results**: The optimized sublingual wafers exhibited a disintegration time of 31.22 ± 0.62 seconds, folding endurance of 199.56 ± 0.27, and a drug content of 91.59 ± 1.37%, with a percent deviation of less than 5. *In vitro* release studies revealed 83.22 ± 2.11% drug release within 90 seconds, conforming to the Korsmeyer-Peppas model. Ex vivo permeation assays indicated 80.44 ± 1.87% drug diffusion within the same timeframe. Histopathological evaluations confirmed the safety of the optimized wafers on sheep sublingual mucosa. Additionally, a short-term stability assessment indicated that the wafers remained stable for three months under 25–27 °C conditions and 60% relative humidity. **Conclusion**: The development of Dexlansoprazole-loaded wafers is anticipated to improve patient adherence by obviating the requirement for water consumption during peptic ulcer therapy and the necessity for swallowing. These

innovative wafers are designed to deliver a swift onset of action, featuring rapid disintegration and augmented bioavailability. As a result, they offer a prompt and convenient therapeutic alternative, potentially transforming the standard approach to peptic ulcer treatment.

PCTC523

DEVELOPMENT & EVALUATION OF SILVER AND GOLD NANO-PARTICLES FROM THE EXTRACT OF FRUITS(POMEGRANATE & GUAVA) AND ITS CYTOTOXICITY ACTIVITY AGAINST BREAST CANCER (MCF-7)CELL LINE CULTURE

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Abstract:

Objectives: The main objective is to Prepare the pomegranate and guava concentrate, and afterward, plan for gold and silver nanoparticles utilizing pomegranate and guava. Assess the nanoparticles using, different characterization parameters. Evaluate Anticancer activity against breast cancer (MCF-7) cell line culture of the formulation. **Methods:** Preparation of Pomegranate and Guava extracts.Preparation of Gold and Silver Nanoparticles.Evaluation of Gold and Silver Nanoparticles using X-ray diffraction spectroscopy (XRD), Scanning electron microscopy (SEM), and Transmission electron microscopy (TEM). **Results:** In this study, we have presented a new and basic technique for the biosynthesis of silver and gold nanoparticles. The use of natural extracts, distilled water, and non-toxic reagents. The size of AgNPs was estimated at 40nm. The SEM analysis showed that AgNPs were crystalline. Gold Nanoparticles prepared within this herb, with a diameter range of 60nm, have a great anticancer effect. **Conclusions:** In this work, we address a green conflation utilizing an assortment of functional, broadly open, and financially beneficial plant extracts. The production of nanoparticles delivered positive outcomes, and the nanoparticles' size was respectable in Nano aspects, which enhances their allure for astonishing activities. While a portion of the orchestrated nanoparticles' purposes were analyzed in this work, further of their rates should be exploited for positive outcomes.

PCTC524

QBD BASED DEVELOPMENT AND EVALUATION OF TRANSUNGUAL NANOGEL FOR NAIL DISORDERS

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Abstract:

Objective: Development and evaluation of antimicrobial formulation for transungual drug delivery. **Methods:** In the present study, we aimed to formulate nanoemulsion of resveratrol by PIT method using response surface methodology. The effect of formulation parameters were studied for the nanoemulsification process using mixture of oils and surfactants. The globule size, and entrapment efficiency were the responses selected. The concentrations of surfactant mixture were found to significantly influence the globule size. Nanoemulsion was converted to gel form using carbapol as gelling agent. Nanogel thus formed was evaluated for its drug content, permeation studies, pH, antimicrobial effect. **Results**: Nanoemulsion of resveratrol was developed and converted to a stable gel form. Both nanoemulsion and gel were found to be stable. Nanogel was found to have a pH of 6.9, drug content 98.03% and better permeation than the plain drug and having antimicrobial effect against the required microbes. **Conclusion:** Resveratrol is a promising candidate for treating nail bed infections. Overall, this research provides the promising results for the use of resveratrol into nanogel system for treating nail disorders.

PCTC525

IN SILICO ANALYSIS OF THE SELECTED PHYTOCONSTITUENTS AS A POTENTIAL INHIBITOR AGAINST THE DPP-IV TARGET IN DIABETES MELLITUS

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Abstract:

Objectives: The primary objective of the current study is to identify the best phyto-compounds as a potent and promising inhibitor against the target protein DPP-IV (Human dipeptidyl peptidase IV) for the treatment of the Diabetes Mellitus. The study was based on the molecular docking and the ADMET prediction. **Method:** The crystal structure of the target protein DPP-IV with PDB ID 2P8S complexed with cyclohexalamine as an inhibitor was used as a potential target for the study. Total 40 phytoconstituents were selected based on the literature as an inhibitor against the target protein out of which only 19 phyto based ligands i.e., Emodin, Physcione, Rhein, Quercetin, Kaempferol, Swerchirin, Trigonelline, Luteolin, Glabrone, Nigellidine, Resveratrol, Xanthone, Daidzein, Eriodictyol, Hispidulin, Cirsimaritin, Hypolaetin, Gallic Acid and Licoflavone A and standard drug Sitagliptin were chosen for the study. The screening includes Lipinski rule of five followed by the bioactivity score analyzed via SwissADME and Molinspiration software. The study was further carried out for the ADMET prediction. The ligands which had a higher binding affinity and a greater number of hydrogen bonds involved in the interaction were further selected for the additional study of the molecular dynamic simulation. **Results:** The binding affinity, number of hydrogen and the remarkable bonds were analyzed using Autodock tools and Discovery studio visualizer software. The results exhibited the broad range of docking scores -5.76 kcal/mol to -8.19kcal/mol of the selected 19 phyto based ligands. One of the phytoconstituent Licoflavone A showed the maximum binding affinity of -8.19 kcal/mol with four similar hydrogen bonds in comparison with the standard drug Sitagliptin of -9.81 kcal/mol, whereas Hypolaetin formed maximum of total eight conventional hydrogen bonds with a good docking score of -7.14 kcal/mol and Glabrone with -7.97 kcal/mol binding affinity. Furthermore, the ADMET lab 3.0 software was used to identify the ADMET properties of the best fit ligands. The findings showed that Hypolaetin, Glabrone and Licoflavone A had improved solubility, easier transportation through the blood-brain barrier and minimal toxicity based on the AMES, carcinogenicity, cytotoxicity and hematotoxicity parameters. **Conclusion:** Studies based on molecular docking, physicochemical, and pharmacokinetics revealed that the reported phytoconstituents 'Hypolaetin', 'Glabrone' and 'Licoflavone A' could be considered as the promising and clinical candidate for the treatment of Diabetes Mellitus.

PCTC526

OPTIMIZING DRUG DELIVERY WITH MESOPOROUS ALUMINA: INNOVATIVE SYNTHESIS AND BIOMEDICAL APPLICATIONS

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Abstract:

Objective: The objective of this synthesis is to produce high-quality mesoporous alumina with controlled pore structures and enhanced surface areas to optimize drug loading and release, ensuring biocompatibility and functionalization for effective and versatile biomedical applications. **Methods:** Studying mesoporous alumina is essential for its high surface area and controlled pore structure, optimizing drug delivery, and ensuring biocompatibility and functionalization for versatile biomedical applications. Studying the synthesis of mesoporous alumina via the

co-precipitation method is essential for achieving controlled pore structures and enhanced surface areas, which optimize drug loading and release. This method ensures biocompatibility, cost-effective production, and the potential for functionalization, making it ideal for targeted drug delivery and versatile biomedical applications. It has been synthesized by the co-precipitation of aluminium sulphate as the aluminium source and a polysorbate type non-ionic surfactant (Tween-40) as the template. **Results:** The composite was characterized by XRD, TEM, TG-DTA, etc. The calcined product at 700 °C was highly porous in nature having a BET surface area of 95 m2 g"1 as compared to other calcined products. The efficiency of the calcined product towards adsorption of the dye was investigated. **Conclusions:** Overall, the study confirms that the co-precipitation method is effective in producing high-quality mesoporous alumina with significant surface area and adsorption capabilities, making it suitable for various biomedical and environmental applications.

PCTC527

FORMULATION, DEVELOPMENT AND CHARACTERIZATION OF CAPECITABINE-LOADED CARBON DOTS

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Abstract:

Objective: The objective of this study was to prepare carbon dots from polysaccharides. They improve the drug's half-life, provide sustained release, reduce the dosing frequency, and dose-related side effects and overall improve the drug's effectiveness for cancer treatment. **Methods:** Dextran 6 and glycerin were selected for the carbon dots synthesis as carbon sources. The strategy employed for carbon dots synthesis included a microwave-assisted method from a bottom-up approach. The formulations were characterized for Particle size, fluorescence color, spectroscopic properties, and chemical structure. An *in-vitro* drug release study was conducted in the egg cell membrane. **Results:** The carbon dots were prepared from new type of polysaccharides and evaluated using different parameter. The size of the formulation comes under nano range as well as they show blue fluorescence which confirms the formation of carbon dots. The drug was loaded to the carbon dots by adsorption technique and the % drug loading was found to be 76.304%. The *in-vitro* drug release study shows that 19.00965 % of the drug release from carbon dots up to 6 hr. The formulation improved the drug release by providing sustained release and improved the half-life. **Conclusions:** This study demonstrated the carbon dots formulation from dextran. The formulation showed excellent fluorescence color with nanometer size. This is the innovative approach for improving drug delivery and therapeutic efficacy of drug for cancer treatment by carbon dots. Future research will focus on remaining *in-vivo* and imaging studies.

PCTC528

EXTRACTION, ISOLATION, AND ESTIMATION OF TOTAL FLAVONOID CONTENT FROM LEAVES OF *ANNONA SQUAMOSA* AND TO DETERMINE ITS ANTIPROLIFERATIVE ACTIVITY BY MTT ASSAY

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Abstract:

Objectives: To perform extraction, isolation and estimation of total flavonoid content from *Annona squamosa* leaves and determine its antiproliferative activity by MTT assay method. **Method:** Dried Annona squamosa leaf powder was extracted with hydro-ethanolic solvent by maceration process. Flavonoids were isolated from the extract by differential solvent extraction method and was assayed by aluminium chloride colorimetric assay. Antiproliferative activity of flavonoid was studied by

MTT assay using breast cancer cell-line (MCF-7) and compared with standard anticancer drug doxorubicin. **Results:** The total flavonoid content was expressed against quercetin and was found to be equivalent to 4.39 ± 0.64 mg of quercetin per gm of leaf extract. MCF-7 cell lines showed Growth Inhibition (GI25) of 25% at a concentration of 11.2 µg/ml compared to Doxorubicin that showed GI50 at 3.1 µg/ml. **Conclusion:** Flavonoids isolated from the hydroalcoholic extract of *Annona squamosa* leaves exhibited satisfactory antiproliferative activity although less potent than that of Doxorubicin.

PCTC529

ENHANCEMENT OF ORAL BIOAVAILABILITY OF CEFUROXIME AXETIL BY SOLID DISPERSION TECHNIQUE

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Abstract

Objective: The objective of my research work is to enhance the oral bioavailability of cefuroxime axetil by solid dispersion technique by using different excipients. **Methods:** 1.PHASE SOLUBILITY STUDY : For the improvement of solubility had done by Phase solubility study of Cefuroxime axeti in SGF solution containing various concentrations (0.1%,0.25%,0.5%,0.75%,1%) of Poloxamer 188 and (0.1%,0.25%, 0.5%, 0.75%, 1%, 2%, 4%, 6%, 8%, 10%) Gelucire 50/13 was added. The samples were shaken at 25 ± 0.5 °C for 72 h on a mini Rotary shaker. After 72 hr the samples were filtered through a 0.45-µm membrane filter. The filtrate was diluted 10 times and analyzed spectrophotometrically at 281 nm using a UV-vis spectrophotometer. 2.PREPARATION OF SOLID DISPERSION: A.Preparation of solid dispersion ca using Sylysia 350 By Solvent Evaporation Method B.Preparation of solid dispersion ca using Gelucire 50/13 By Fusion Method C.Preparation of solid dispersion ca using Poloxamer 188 By Fusion Method. **Results:** The Calibration curve of pure Cefuroxime axetil was done and found that λmax at 281 nm. The Phase solubility was done to find out the spontaneous increase in solubility withPoloxamer 188 and Gelucire 50/13. The Thermal analysis was done by DSC for compatibility study of pure drug and excipients. FT-IRdone for match with IR spectra of pure drug , physical mixture and solid dispersion found that all are compatible with pure drug Cefuroxime axetil .The solid dispersion is prepared by the same above method for all preparation from formulation A1 to A10. The solid dispersion of Cefuroxime Axetil with Sylysia 350, Cefuroxime Axetil with Poloxamer 188 and Cefuroxime Axetil with Gelucire 50/13 done and compared with each other and found that dissolution rate improved significantly by preparing solid dispersions using sylysia 350. **Conclusion:** From the above research, it was concluded that solubility and dissolution rate of CA can be improved significantly by preparing solid dispersions using sylysia 350. The formulation of A9 (SD of CA with Sylysia 350) (1:3) better enhancement of solubility and dissolution rate as the drug release was 100 % within 5 min.

PCTC530

FORMULATION, OPTIMIZATION AND CHARACTERIZATION OF COMBINED MODIFIED RELEASED DRUG DELIVERY SYSTEM OF ANTI-DIABETIC DRUG FORMULATION

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Abstract:

Objectives: To develop and formulate the combination drug therapy (Dapagliflozin and Metformin) for better glycaemic control by design of experiment (CCD) and prepare the Solid Lipid Microparticles (SLMs) of both drugs by using the fusion method. Evaluation (*in-vitro*) of optimized

dosage form. **Method:** Formulation of Dapagliflozin Solid Lipid Microparticles (SLMs) by using the suitable polymers fabricate the formulation and prepare the Solid Lipid Microparticles (SLMs) of Metformin by using fusion method and applying the 32 central composite design (CCD) model. The independent variable investigated were functional polymers of natural and synthetic origins. The preformulation parameters like solubility, melting point, UV spectroscopy and post formulation parameters like FTIR, XRD, SEM and DSC of optimized formulation were performed. **Result**: The pre formulation parameters and post formulation parameters of all SLMs formulations were performed and the optimized formulation were shown the better disintegration, dissolution and the required parameters in acceptable range. The SLMs (solid lipid microparticles) was prepared and all the parameters were evaluated and optimize the formulation. The stability study of optimized formulation shows the controlled parameters according to ICH guidelines. **Conclusion**: In this study, combination drug therapy (Dapagliflozin and Metformin) was prepared. This study evaluates the potential of controlled release Dapagliflozin and metformin SLMs, increases the bioavailability for better management of diabetes mellitus, with minimizes the metformin associated side effects and duration of metformin can be increased for better treatment.

PCTC531
DEVELOPMENT AND CHARACTERIZATION OF METRONIDAZOLE LOADED MUCOADHESIVE NANOEMULSION FOR EFFECTIVE TREATMENT OF PERIODONTAL DISEASE

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Abstract:

Objectives: Periodontal disease causes inflammation and degeneration of the gums and surrounding structures. Researchers are developing a mucoadhesive metronidazole nanoemulsion to deliver antibiotics directly to the affected area, reducing side effects and improving patient compliance. **Methods:** **N**anoemulsion was prepared using the low-energy spontaneous emulsification method. The polymer incorporated in the formulation possesses the sol-gel phase transition property. Due to the polymer (Chitosan), the preparation is initially in the solution phase at room temperature. It changes to a gel form when it comes into contact with the salivary fluid inside the oral cavity, favoring localized and sustained drug delivery. **Results:** The prepared formulation offers several advantages, such as rapid and effective localized drug delivery compared to other routes of administration. It also provides enhanced drug concentration at the inflamed site (periodontal pocket) for a longer duration in a sustained and controlled pattern. Additionally, it has relatively high drug loading and is biocompatible and biodegradable. **Conclusions:** "A mucoadhesive nanoemulsion loaded with metronidazole was successfully prepared. It is a promising candidate for treating periodontal diseases due to its high mucoadhesive property, which extends its residence time in the periodontal pocket. This enables controlled drug delivery, enhancing its therapeutic effects and minimizing side effects".

PCTC532
FORMULATION, CHARACTERIZATION, AND EVALUATION OF DRUG CO-CRYSTAL TO ENHANCE SOLUBILITY

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Abstract:

Objectives: The aim of the study was to developed and evaluate Co-crystal of Glibenclamide an anti-diabetic drug (BCS Class- II) with fumaric acid as Coformer by using Solvent evaporation method to enhance its solubility. **Methods:** Glibenclamide was selected for research. Glibenclamide co-crystals were prepared by the solvent evaporation method. Varying ratios of Fumaric acid (co-former) (1:1, 1:1.5, 1:2,

1:2.5, and 1:3) were selected to develop drug Co-crystal. Then carry out characterization of prepared cocrystals by Saturation solubility study, Dissolution study, Fourier Transform Infrared Spectroscopy (FTIR), Differential Scanning Calorimeter (DSC), Powder X-Ray Diffraction Studies (XRD), Powder X-Ray Diffraction Studies (XRD), Zeta potential measurement, Scanning electron microscopy. **Results:** The study successfully developed Glibenclamide-Fumaric acid co-crystals using the solvent evaporation method. FTIR and DSC analyses confirmed the formation of co-crystals, evidenced by the disappearance of specific FTIR peaks and distinct DSC endothermic peaks. The co-crystals exhibited a significant increase in solubility, with the methanol-prepared co-crystals showing a solubility of 0.489 mg/ml compared to pure Glibenclamide's 0.005 mg/ml Dissolution studies revealed improved release rates for the co-crystals. Particle size and zeta potential analyses indicated good stability, while SEM provided detailed morphology images. These results demonstrate that co-crystallization effectively enhances the solubility of Glibenclamide, offering a promising alternative to conventional formulation methods. **Conclusions:** The formation of Glibenclamide-Fumaric acid co-crystals prepared by solvent evaporation method was resulted in a significant improvement in the drug's solubility, with the highest solubility of 0.489 mg/ml observed in a 1:1 ratio. Dissolution studies revealed that the co-crystals exhibited markedly higher dissolution rates compared to pure Glibenclamide.

PCTC533
FORMULATION AND *IN VITRO* EVALUATION OF ALFUZOSIN HCL LOADED MICROSPHERES USING 3D PRINTING TECHNOLOGY

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Abstract:

Objectives: The current work aimed to develop and evaluate the controlled release of Alfuzosin Hcl Loaded Microspheres Using 3d Printing Technology for customized drug delivery. **Methods:** The ionic cross-linking method with the 3D Printing technique was used to create microspheres of Alfuzosin HCl. Five different formulations (AF1-AF5) were prepared using varying concentrations of sodium alginate and calcium chloride as crosslinking agents. **Results:** The microspheres were evaluated for various parameters including % yield, entrapment efficiency, swelling index, % drug content, and *in vitro* drug release. The *in vitro* release studies demonstrated that the microsphere controlled the drug release for up to 12 hours, regulated by diffusion and followed by zero-order release kinetics. The optimized formulation AF5 was subjected to stability study.**Conclusions:** The study concluded that the 3D printing technique with an Ionic cross-linking approach is a suitable method for the preparation of a controlled release Alfuzosin Hcl Loaded microsphere. The optimized formulation showed excellent physicochemical properties and controlled drug release, making it a potential candidate for commercial application.

PCTC534
FORMULATION AND EVALUATION OF OIL BASED PLGA HYBRID NANOCARRIER FOR HIGHLY LIPOPHILICDRUG

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Abstract:

Objectives: The aim of study was to formulate and evaluate biocompatible PLGA-oil hybrid nanocarrier using solvent evaporation method for high loading and controlled delivery of liphophilic drug. **Methods:**

A model drug, Tizanidine hydrochloride, was selected for the study. Oil based PLGA hybrid nanocarrier was formulated in different ratios comprising of concentration of Olive oil and homoginization speed by solvent evaporation method. The formulation optimization has been done through disign expert software and final three optimized batches studied for the stability. **Results:** The oil based PLGA hybrid nanocarrier was reported by Particle size is within nano range, zeta potential given good stability, saturation solubility and drug content improved compare to pure drug; this was further characterized by FT-IR, DSC and Scanning electron microscopy. The *in vitro* relese for the prepared formulations for 24 hr and optimised formulation showed better-controlled drug relese and stability to other formulation. **Conclusions:** The relese studies highlited that the oil incorporation in to the polymeric matrix may create nanostructures in which lipophilic drug is stabilized and discharge the drug in a more sustained manner.

PCTC535

SYNTHESIS OF HYDROXYAPATITE-GATIFLOXACIN COMPOSITE FOR THE PREPARATION OF BONE-IMPLANTS

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Abstract:

The present work deals with synthesis of hydroxyapatite (HAp)-gatifloxacin composite through wet precipitation technique for the preparation of bone-implants, which can be used in the treatment of osteomyelitis. The synthesized HAp-gatifloxacin composite powders were characterized by SEM and EDS analyses. HAp-gatifloxacin composite powders were compressed by applying a pressure of 25 kg/cm^2 (2 Tons) using a hydraulic press and pellets of size, 2 mm X 2 mm X 1 mm, were manufactured. The HAp-gatifloxacin composite pellets were characterized by FTIR, P-XRD and SEM analyses. The *in-vitro* gatifloxacin release from HAp-gatifloxacin composite bone-implants was found very slow and sustained over 50 days. The drug release pattern was correlated well with Korsmeyer-Peppas model and was followed by Fickian (diffusional) release mechanism.

PCTC536

PREPARATION CHARACTERIZATION AND OPTIMIZATION OF PALBOCICLIB-LOADED MESOPOROUS SILICA NANOPARTICLES ON TUMOUR TARGETING: CYTOTOXICITY AND *IN VITRO* CELL LINE STUDIES

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Abstract:

Current investigation involves preparation and characterization Palbociclib (PLB) loaded mesoporous silica nanoparticles. A tremendous amount of research and development has gone into using mesoporous silica nanoparticles as drug delivery system carriers in the past ten years. This study primarily aims to synthesize silica carriers using sol-gel technology. The materials employed include tetraethyl orthosilicate (TEOS) as the silica precursor and cetyltrimethylammonium bromide (CTAB) as the pore manufacturing agent. To tweak the synthesis conditions, we played around with the TEOS molar ratio, stirrer speed, and CTAB quantity. The zeta potential and field emission. The scanning electron

microscopy (FESEM) methods were used to identify the silica particles. According to the findings, the specific surface area and porosity of silica particles were significantly impacted by the introduction of CTAB and the quantity of water. Mesoporous silica particles are able to disperse and remain stable despite their very reactive surfaces. The formulations were optimised using a Box-Behnken design, and their physicochemical properties were assessed. In terms of particle size, zeta potential, and entrapment efficacy, the improved PLB-MSNP formulation performed admirably. A FE-SEM examination confirmed the shape of the PLB-MSNP. These results show that PLB-loaded mesoporous nanoparticles, when taken orally, could be a new way to deliver anti-cancer medication.

PCTC537

FORMULATION AND EVALUATION OF CETIRIZINE HYDROCHLORIDE *IN SITU* OCULAR GEL

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Abstract:

Objective: The goal of the current study was to create an *in situ* ocular gel containing cetirizine hydrochloride (CTZ) that is pH- and temperature-triggered to increase the drug's local bioavailability at the eye's surface. **Methods**: A pH-sensitive gelling agent and a single viscosity builder polymer were used to make the *in situ* ocular gel. The amounts of polymers were chosen based on the best amount needed for the drug's continuous release from preparation and information from published studies and range analysis. **Results:** The pH-trigged *in situ* ocular gel was made with carbomer 974P and HPMC E4M polymer. Temperature-triggered *in situ* ocular gel was prepared using poloxymer 407 and HPMC E50. Every formulation was assessed for appearance, pH, viscosity at various pH levels, gelling ability, percentage of drug content, and release analysis. For every strategy, nine formulations were created and effectively optimized through the use of 32 factorial designs. Version 13.0.10.064 of the DoE program was used for optimization. **Conclusion:** CTZ was effectively prepared in an *in situ* gelling system that was temperature- and pH-triggered by employing Carbomer 974P in conjunction with HPMC E4M, Poloxamer 407, and HPMC E50, in that order. Based on the major influence of concentration of both HPMC and Carbomer 974P/Poloxamer 407, it was observed that HPMC is significant for *in situ* gel behavior in conjunction with the latter. Because the *in situ* gel technology can sustain medication release, *in vitro* data showed it to be a competitive alternative to traditional ocular drops.

PCTC538

MOLECULAR MODELLING AND DRUG REPURPOSING STUDY FOR C5AR1, A NOVEL TARGET FOR CHEMOTHERAPY INDUCED NEUROPATHIC PAIN

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Abstract:

Objectives: Molecular modelling study for C5aR1 inhibition to find out the potent repurposable drugs for treatment of CIPN. **Methods:** A detailed exploration of the crucial structural alerts of C5aR1 inhibitors and QSAR classification based molecular modelling techniques were performed to find out the key fingerprints and structural motifs. Later on, the existing drug database was screened to find existing drugs with those key structural motifs and alerts. The molecular docking studies followed by MD simulation were performed to find the best drugs. The study focused to find out the drugs which can be repurposed as C5aR1 inhibitors and might be beneficial for the treatment of CIPN. **Results**: For the first time, our study points out the probable role of ergot derivatives as C5aR1 inhibitors which opens up a future direction for treatment of CIPN and other autoimmune diseases

related to C5aR1. **Conclusion:** Conventionally ergot derivatives like ergotamine and dihydroergotamine are used for the treatment of migraine. The probable involvement and therapeutic role of ergot derivatives in CIPN is novel also previous reports are found supporting its potential role in reducing neuroinflammation.

PCTC539

DETERMINATION OF ANTIOXIDANT BY DPPH RADICAL SCAVENGING ACTIVITY OF SYNTHESISED ZINC OXIDE NANOPARTICLES WITH NATURAL SOURCES

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Abstract:

Objectives: The aim of this study was to estimate the antioxidant activity of synthesized zinc oxide nanoparticles with natural sources by DPPH Radical Scavenging method. **Methods:** DPPH is a stable radical which is a methanolic solution that has a characteristic purple colour. The DPPH is very popular for the study of natural antioxidants. The DPPH in methanolic was added to 1 ml of different doses of sample in DMSO. The absorbance was read at 530 nm in a UV-Visible spectrophotometer. L-Ascorbic acid was used as a positive control. **Results:** The radical scavenging activity of synthesised zinc oxide nanoparticles slightly lower than standard Ascorbic acid in all concentrations. It showed to have increased with increasing the concentration having IC_{50} value. **Conclusions:** The synthesized Zinc oxide nanoparticles with natural sources shows good antioxidant activity by DPPH method.

PCTC540

NANOMICELLS: AN EMERGING NOVEL TOPICAL DRUG DELIVERY SYSTEM IN THE TREATMENT OF POSTERIOR UVEITIS

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Abstract:

Objectives: The goals are to produce an effective drug delivery system (nano-micelles) to act as a vehicle for the entrapped medication and deliver it to the location in an efficient manner, as well as to obtain the maximal therapeutic effects from the Mxt drug to the posterior portion of the eye via topical application. To investigate the nano formulation's toxicological profile and assess how it interacts with biological systems. **Methods:** The Immunosuppressant drug loaded Nano micelles were prepared using solvent evaporation. A soluplus solution was dissolved in ethanol, and the drug was dissolved separately. The solvent was evaporated, forming a thin film, which was then hydrated with deionized water. The drug nano micelles were sonicated using an ultrasonic probe sonicator. **Results:** IR and DSC were used to characterize the formulation's physical and chemical properties for the tx-loaded nanomicells. According to Transmission Electron Microscopy and PDI, the produced formulation's particle size was measured. Findings showed that Mtx-loaded nanomicells were generated within the range and led to improved penetration throughout the region, preventing the issues associated with alternative approaches. A consistent and prolonged release of the medication was seen from the produced nonomicells. **Conclusions:** The outcome of using nanomicelles as a topical medication delivery technology to treat uveitis. The medicine can be administered with a prolonged release at the posterior area of the eye through this formulation that utilizes nanomicells. As an ocular topical drug delivery device, to enhance visual comfort. When applied topically as a drug delivery mechanism for posterior uveitis conditions, it will show increased patient compliance.

PCTC541
AI BASED REGULATORY INTELLIGENCE TOOLS: NLP AS SOLUTION FOR REGULATORY COMPLIANCE CHALLENGES IN PHARMA INDUSTRY

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Abstract:

Objective The traditional document-centric approach for solving regulatory compliance issues taken by pharmaceutical companies creates barriers in terms of efficiency, collaboration, and compliance. To minimize this compliance issues pharmaceutical industry are looking to artificial intelligence (AI)-based technologies to automate processes, improve efficiency, and ensure accurate reporting. The objectives of this study are- to use appropriate tool amongst various tools available, to assist regulatory teams in locating crucial information in regulatory documents, to separate and standardize this data so that it can be used in subsequent procedures such as master data management, reporting, labelling, and structured content creation. In order to achieve the aforementioned objectives, the aim of this study is to investigate the remarkable artificial intelligence technologies that can read unstructured text using algorithms before converting it into structured data that can be examined and seen. **Methods:** A review of the literature is being done to identify different artificial intelligence technologies that the pharmaceutical sector can use to comply with regulations. Each tool is fully comprehended by concentrating on features like updates from global regulatory authorities, information and data gathering mechanisms, data storage (archiving) mechanisms, and the subsequent cleansing and analysis of the information and data. **Results:** Subsequently was found after investigating several technologies for regulatory compliance that NLP (Natural Language Processing) can be a useful tool because of its applications in a variety of fields, including risk management, fraud detection, medical research, and customer service. It "reads" unstructured text using algorithms and converts it into structured data that can be visualized and analysed. **Conclusion:** Many in the pharmaceutical sector used to rely on old search techniques to find crucial regulatory data, but new developments in AI-based regulatory intelligence technologies, such natural language processing (NLP), have made it possible to replace time-consuming, ineffective, and error-prone techniques. NLP transforms internal and external data into high-value, actionable insights.

PCTC542
ADDRESSING SOLUBILITY, DISSOLUTION, AND BIOAVAILABILITY ISSUES OF ROSUVASTATIN CALCIUM: A COMPREHENSIVE EVALUATION OF 2-HYDROXYPROPYL-BETA-CYCLODEXTRIN COMPLEXES WITH *IN VITRO* AND *IN VIVO* PERSPECTIVES

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Abstract:

Objectives: The study aimed to investigate the use of inclusion complexation with 2-hydroxypropyl-beta-cyclodextrin to enhance the solubility and dissolution rate of rosuvastatin calcium. **Methods:** Inclusion complexes of rosuvastatin calcium (RS) and 2-hydroxypropyl-beta-cyclodextrin (HP-β-CD) were prepared using a kneading method. The solubility of pure RS and the complexes (RS-HP-β-CD) in distilled water, simulated gastric fluid (SGF) (pH 1.2), and simulated intestinal fluid (SIF) pH 6.8 was evaluated via RP-HPLC. Fourier-Transform Infrared Spectroscopy (FTIR) analysis was conducted on RS, HP-β-CD, and their physical mixtures to examine potential interactions. A full factorial design was optimized using R software, followed by characterization of the complexes using FTIR,

Differential Scanning Calorimetry (DSC), Nuclear Magnetic Resonance (NMR), and X-ray Diffraction (XRD). The dissolution profiles of the optimized inclusion complexes were compared with of those RS using a USP Type I dissolution apparatus. An accelerated stability study of the optimized RS-HP-β-CD was performed for one month. *In vivo* studies were performed using Sprague Dawley rats to evaluate the pharmacokinetic parameters and bioavailability of the inclusion complexes with the approval of the Institutional Animal Ethics Committee (IAEC) (CPS-GMC/IAEC-1/24/16). **Results:** The solubility of RS was 10.9672±0.98 mg/mL in distilled water, significantly lower in SGF (3.26639±1.21 mg/mL), and slightly higher in SIF (3.471±1.03 mg/mL). However, RS- HP-β-CD had a significantly high solubility in all tested media. FTIR analysis revealed no signs of incompatibility between RS and HP-β-CD, suggesting stable and safe complex formation. DSC, NMR, and XRD analyses suggested successful complexation. The *in vitro* dissolution profiles for RS were 29.1±2.2 % at the 1st hour, reached 47.5±4.1 % at the 4th hour, and attained 100.1±0.93 by the 24th hour, whereas RS-HP-β-CD showed a significant increase in drug release of 54.0±2.3 % just at the 1st hour and was valued up to 101.0±4.4 % at the 4th hour, demonstrating a clear enhancement in drug release from the optimized RS-HP-β-CD compared to RS. *In vivo* studies revealed that the inclusion complex showed higher relative oral bioavailability in terms of the rate (AUC) than RS. RS-HP-β-CD was stable throughout the experimental period. **Conclusions:** This study demonstrated that HP-β-CD inclusion complexation offers a promising approach to significantly increase the solubility and dissolution rate of RS. This improvement in physicochemical properties has the potential to translate into enhanced oral bioavailability, potentially leading to better therapeutic efficacy and improved patient outcomes by lowering cholesterol levels at potentially lower doses.

PCTC543
FORMULATION AND CHARACTERIZATION OF PRONISOMAL GEL FOR LOCALIZED DELIVERY OF PACLITAXEL

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Abstract:

Objectives: To design paclitaxel proniosomal gel for local application with enhance the penetration and reduce the toxicity of Paclitaxel. To determine the effect of surfactant, phospholipid, cholesterol and their ratio on the vesicle morphology, vesicle size, drug entrapment, % hemolysis, % drug release and skin permeability of paclitaxel from proniosomes. **Methods:** Proniosomes were prepared by already reported coacervation- phase separation method (Singla et al., 2012). Briefly, the drug (20 mg) and the blend of surfactant (SP60), phospholipoid (PL90G) and cholesterol (CH) were mixed with 0.5ml methanol in a wide mouth glass tube and covered with lid to prevent loss of solvent. This mixture was heated on a water bath at 60 to 70°C until it dissolved completely. To the resultant mixture, phosphate buffer (pH 7.4) was added and heated slightly on a water bath to obtain a clear solution which was allowed to cool at room temperature. After 24hr formation of the proniosomes. The preparation of niosomes the resultant proniosomes hydrated with 10mL of distilled water. For the preparation of carbopol proniosomal preparation the resultant proniosomes mixed with equal volume of 1% carbopol-934 to obtain clear proniosomal gel. **Results:** The proniosomal gel formulation achieved high entrapment efficiency, enhanced skin permeation, and sustained drug release. FTIR and DSC confirmed drug-excipient compatibility, and the gel exhibited suitable pH, spreadability, and non-irritancy. The formulation showed reduced hemolytic toxicity and lower cell viability in breast cancer cells, indicating potential for targeted therapy. The optimized proniosomal gel is a promising approach for localized paclitaxel delivery with improved efficacy and safety. **Conclusions:** The optimized proniosomal gel formulation of paclitaxel demonstrated enhanced skin penetration, sustained

release, and reduced toxicity. Compatibility studies confirmed the stability of the formulation, while *in vitro* and *in vivo* tests showed its efficacy and safety. The gel showed significant potential for targeted breast cancer therapy, providing a promising approach for localized drug delivery. Overall, the proniosomal gel could offer improved therapeutic outcomes for paclitaxel administration

PCTC544
FORMULATION AND *IN VITRO* EVALUATION OF ROSUVASTATIN CALCIUM INCLUSION COMPLEXATION

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Abstract

Objective: The present study aims to enhance the solubility and dissolution rate of Rosuvastatin calcium, a poorly water-soluble BCS Class II antihyperlipidemic drug, through inclusion complexation with ž-cyclodextrin. **Methods:** The pre formulation study involved characterization of pureRosuvastatin calcium using FTIR, DSC, and XRD analysis. Micromeritic properties were assessed, and a calibration curve forRosuvastatin calcium was established with water. Dissolution studies of the pure drug were performed. Phase solubility studies determined the optimalRosuvastatin calcium ratio. TheRosuvastatin calcium ž-cyclodextrin inclusion complex was formulated using the kneading method with respect to optimizing factors such as solvent volume (methanol), temperature and drying conditions. The complex was evaluated for % yield, micromeritic properties, dissolution rate and potential drug polymer interactions using FTIR. **Results:** The pureRosuvastatin calcium was identified as a white crystalline substance with poor solubility (0.427 mg/ml). *In vitro* dissolution studies of the pure drug showed 48.43% release in 10 minutes. The inclusion complexation withž-cyclodextrin significantly improved dissolution rates, achieving 92.27% in 10 minutes. XRD analysis confirmed the conversion of crystalline Rosuvastatin calcium to an amorphous form in the complex, which is associated with enhanced dissolution, FTIR results indicated no significant interaction between Rosuvastatin calcium andž-cyclodextrin. **Conclusion:** The complexation of Rosuvastatin calcium with ž-cyclodextrin effectively enhanced the drug's solubility and dissolution rate. The optimized formulation showed significant improvement compared to the pure drug, highlighting the potential ofž-cyclodextrin complexation for improving the bioavailability of poorly soluble drugs. Further research will focus on *In vitro* and *In vivo* correlation studies and pharmacokinetic evaluations.

PCTC545
FORMULATION AND *IN VITRO* EVALUATION OF SELF MICRO EMULSIFYING DRUG DELIVERY SYSTEM OF FENOFIBRATE

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Abstract

Objective: The present study aims to enhance the oral bioavailability of Fenofibrate, a BCS class-II drug (low solubility, high permeability) by formulating a self-micro emulsifying drug delivery system (SMEDDS). **Methods:** A comprehensive pre formulation study was conducted to evaluate the solubility of Fenofibrate in various oils, surfactants and co-surfactants. Pseudo-ternary phase diagrams were constructed to identify optimal ratios, and eight different formulations (F1-F8) were prepared using Til oil, Cremophor, and Transcutol. Each formulation was evaluated based on its appearance, stability, emulsification time, particle size, cloud point, viscosity, zeta potential, refractive index, % transmittance, drug content, and *in vitro* drug

diffusion study. The most promising formulation, F6, was subjected to further characterization and analysis. **Results:** Formulation F6 exhibited rapid emulsification within 34 seconds, a high drug content uniformity of 95-98%, and a particle size of 42 nm. It demonstrated the highest zeta potential (-45.1 mV), optimal pH (7.4), and low viscosity (62.31 cps), with a % transmittance of 99.6%, indicating excellent clarity. FTIR analysis confirmed the compatibility of Fenofibrate with the selected excipients. The *in vitro* drug diffusion study revealed a significant enhancement in dissolution rate, with 93.14% of the drug released in 30 minutes, compared to 38.80% for the pure drug. **Conclusion:** The optimized formulation F6, comprising Til oil, Cremophor, and Transcutol, effectively improved the bioavailability of Fenofibrate. This SMEDDS formulation holds promise for enhancing patient compliance and therapeutic efficacy in managing hyperlipidemia. Future studies will focus on *in vitro-in vivo* correlation and taste masking strategies.

PCTC546

DEVELOPMENT OF HYDROPHILIC POLYMER BASED SOLID DISPERSION FORMULATION TO IMPROVE BIOPHARMACEUTICAL ATTRIBUTES OF RESVERATROL

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Abstract:

Objectives: The objective of this study is to improve aqueous solubility and *in vitro* dissolution rate of Resveratrol by the preparation of its solid dispersion using hydrophilic polymer and influence of hydrophilic carrier on dissolution rate of Resveratrol. **Methods:** The paper discusses various methods to enhance the solubility and bioavailability of resveratrol, a compound with low water solubility. Solid dispersion (SD) is explored as a potential method, though traditional techniques yield limited improvement due to resveratrol's solubility below 0.1 mg/mL and insufficient particle size reduction. Characterization techniques like FT-IR, SEM, DSC, and PXRD confirm the formulation of resveratrol SDs. Solubility studies in organic solvents and calibration curve preparation using UV-visible spectrophotometry at 305.9 nm further assess and enhance resveratrol's solubility, collectively improving its pharmaceutical efficacy. **Results:** The results of the study demonstrated a significant improvement in the aqueous solubility and dissolution rate of resveratrol (RES) using solid dispersion (SD) formulations. The optimized RES-SD6 formulation showed a substantial increase in solubility, achieving 73.452 µg/mL compared to the pure drug (4.846 µg/mL) and physical mixture (PM) (12.684 µg/mL). This enhancement is attributed to the reduction in particle size and amorphization of RES through interaction with the hydrophilic carrier, Eudragit EPO. Additionally, the in vitro dissolution studies revealed that the optimized RES-SD6 formulation exhibited a significantly higher release rate in phosphate buffer (pH 6.8), with up to 47.31% cumulative release, compared to pure RES, which showed only 16.21% release over the same period. These findings validate the effectiveness of using hydrophilic carriers in improving the biopharmaceutical properties of poorly soluble drugs like RES. **Conclusions:** The research addressed the poor aqueous solubility and low permeability of pure RES by preparing RES-SD formulations using the solvent evaporation method with Eudragit EPO as a novel carrier. Physicochemical characterization through zeta potential, DSC, FT-IR, PXRD, and drug content confirmed the formation of RES-SD, indicating strong interactions between RES and Eudragit. Solubility studies showed a significant enhancement in aqueous solubility and dissolution rates of RES-SD compared to pure RES. The optimized RES-SD6 formulation exhibited improved dissolution and permeability, suggesting a simple and effective approach to enhance the solubility and bioavailability of pure RES.

PCTC547
FORMULATION, CHARACTERIZATION, AND EVALUATION OF DRUG CO-CRYSTAL TO ENHANCE THEIR UTILITY

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Abstract:

Objectives: The objective of this study was to improve the solubility and dissolution rate of Glibenclamide, an anti-diabetic drug, through the formation of co-crystals with Fumaric acid using the solvent evaporation method. By improving solubility, the bioavailability of the drug Glibenclamide can be significantly enhanced. **Methods:** Glibenclamide, a poorly soluble anti-diabetic drug, was co-crystallized with Fumaric acid using the solvent evaporation method. The pre-formulation studies included melting point determination, solubility profiling, and UV-Visible spectrometric analysis for Amax and calibration curves. FTIR analysis confirmed drug-excipient compatibility. The co-crystals, especially in a 1:1 ratio, demonstrated enhanced solubility (0.489 mg/ml) and improved dissolution rates compared to pure Glibenclamide. PXRD and DSC confirmed co-crystal formation, while particle size analysis, zeta potential measurement, and SEM characterized stability and surface morphology. These findings suggest enhanced solubility and bioavailability for the co-crystals. **Results:** Co-crystallization of Glibenclamide with Fumaric acid significantly improved its solubility and dissolution. Methanol-prepared co-crystals achieved the highest solubility at 0.489 mg/ml and a 59.7% dissolution rate within 30 minutes, compared to 32.3% for pure Glibenclamide. DSC and FTIR confirmed co-crystal formation, with F1 showing superior solubility. SEM revealed detailed surface morphology. A zeta potential of -21.5 mV indicated good stability, and particle sizes ranged from 170-330 nm, enhancing bioavailability. This study highlights co-crystallization as an effective method to improve Glibenclamide's properties. **Conclusions:** The study successfully prepared and evaluated Glibenclamide-Fumaric Acid co-crystals using the solvent evaporation method, demonstrating significantly enhanced solubility and dissolution rates compared to pure Glibenclamide. The co-crystals, particularly in a 1:1 ratio, showed superior performance, with the optimized batch (F1) exhibiting the best dissolution behavior. XRD and DSC analyses confirmed co-crystal formation. These findings suggest that co-crystallization with Fumaric acid is a promising strategy to improve Glibenclamide's aqueous solubility and bioavailability.

PCTC548
A COMPUTATIONAL ODYSSEY: DESIGNING AS ANTIFUNGAL AGENTS FROM NIGELLA SATIVA TO TARGET TRICHOPHYTON INDOTINEAE

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Abstract:

Objective: To conduct *in silico* designing and docking studies of thymoquinone and ligand molecules on relevant receptors using Auto dock 1.5.7. To synthesize thymoquinone analog with reference to the docking score. Characterization of the synthesized compound. Pharmacological screening of synthesized compound for Thymoquinone analog for its antifungal activity. **Methods:** ChemSketch was used to generate analogs of thymoquinone, and MODELLER was used to homology model target proteins (PDB IDs: 1EXF, 4ZDY, 4ZE2, 6C6N, 6C6P, and 6C6R), which are collectively referred to as MSDH. Protein-ligand docking simulations were performed using SwissDock and AutoDock Vina 1.5.7, and BIOVIA

Discovery Studio produced the 2D and 3D structural visualizations. SwissADME was used for investigating the ADME properties, while Protox 3.0 was used to predict toxicity. ASLB29, one of the synthesized compounds, showed strong potential against human squalene epoxidase (PDB ID: 6C6N), with docking scores of 11.93 and 11.87. Using the disk diffusion method, the antifungal activity of ASLB29 was evaluated against "T. indotineae*" at doses of 10, 15, and 20 µg/ml. **Result:** The results demonstrated considerable zones of inhibition that were comparable to those of standard itraconazole. These findings highlight ASLB29's exceptional inhibitory potential. Several analytical methods were employed to further analyze the produced chemicals. Compared to conventional techniques, *in-silico* design has many benefits, such as increased speed, accuracy, and cost-effectiveness. This study highlights the possibility of thymoquinone derivatives as strong antifungal drugs, with ASLB29 being a particularly promising candidate. **Conclusion:** This study successfully designed and synthesized thymoquinone analogues with promising antifungal properties. Among the compounds, ALSB 29 showed superior docking scores and significant antifungal activity compared to itraconazole, supported by molecular docking and *in silico* ADME and toxicity predictions. The study evaluated the compounds' biological activity in the following order: ALSB 29 > ALSB 27 > ALSB 25 > ALSB 18 for one protein and ALSB 29 > ALSB 27 > ALSB 25 > ALSB 17 for another, demonstrating the usefulness of integrating computational and experimental methodologies in drug discovery. The results suggest that compounds of thymoquinone have potential as potent antifungal medications.This study highlights the importance of combining computational and experimental methods in drug design and development to achieve better therapeutic outcomes.

PCTC549

FORMULATION DEVELOPMENT AND EVALUATION OF LINEZOLID EMULGEL FOR TROPICAL DRUG DELIVERY AIMING TO ENHANCE DRUG BIOAVAILABILITY

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Abstract

Objectives: The objectives of this study was to formulate linezolid emulgel as tropical drug delivery. Emulgel is a combination of gel and emulsion. The main aim of this formulation was to deliver the hydrophobic drug via the skin to the systemic circulation. Parameters have been carried out such as the swelling index, viscosity etc are performed. **Methodology**: The emulgel was prepared by dissolving the gel into emulsion. Basically emulgel was made based on two phases one is oil phase and another is aqueous phase. Firstly, oil phase was prepared by dissolving span 20 in light liquid paraffin then secondly aqueous phase was prepared by dissolving tween 20 was purified water. Then carbapol was dissolved in purified water to form a gel base, pH was adjusted. The drug is then mixed with ethanol. Afterward depending upon the solubility, the solution was dissolved in an aqueous phase or oil phase. The both the solution was heated seperatly then next the aqueous phase was combined with the oil phase. Then lastly the gel was incorporated into the emulsion. With the help of this method 8th formulation were carried out. **Results**: From these experiment, the drug content of F8 was found to be 98% which was considered the optimised one from all the 8th formulation. Where as in case of *In vitro* drug release of the F2 was the most optimised one which was found to be 99.20%. Along with these the organoleptic property such as taste, colour, and odour were also determined. **Conclusion**: We can conclude by saying that the Linezolid emulgel was formulated and evaluated for tropical drug delivery. Test are done for all the eight formulation and it was found that F2 and F8 formulation was found to be the optimised and appropiate which is showing good results.

PCTC550
SOLUBILITY ENHANCEMENT OF SOME POORLY WATER-SOLUBLE ACTIVE PHYTOCONSTITUENTS BY MIXED HYDROTROPHY SOLUBILIZATION

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Abstract:

Objective: Identify and evaluate various hydrotropic agents that can increase the solubility of specific phytoconstituents without altering their chemical integrity or therapeutic properties. **Method:** Two poorly water-soluble drugs, Curcumin and Resveratrol, were selected for this study. By using Mixed Hydrotropic Solubilization method, solubility will be enhanced. The strategies employed included the use of blend or solution of four hydrotropic agents namely, urea, niacinamide, sodium benzoate, at varying concentrations (10%, 20%, 30%, 40%) using purified water. To determine solubility, 3ml of each hydrotropic solution was mixed with an excess of the drug, shaken for 12 hours, and equilibrated for 24 hours. The mixture was then centrifuged, filtered, diluted and analyzed using UV spectrophotometry at 423 nm and 305 nm. **Result:** The solubility of curcumin and resveratrol was improved using hydrotropic agents like urea, niacinamide, sodium benzoate and sodium citrate. Sodium citrate was most effective for curcumin, increasing its solubility from 0.0912mg/ml to 0.1482mg/ml, with a solubility enhancement ratio (SER) of 0.247. Resveratrol's solubility increased from 0.1012mg/ml to 0.1350mg/ml with sodium citrate, achieving a maximum SER of 2.70. Combining hydrotropic agents further boosted solubility, with sodium citrate and sodium benzoate significantly enhancing curcumin to 3.5235mg/ml (SER 5.87) and resveratrol to 3.0147 mg/ml (SER 60.29). These combinations proved far more effective than single agents. **Conclusion:** The Hydrotropic technique is used to increase the solubility of poorly water soluble drugs Curcumin and Resveratrol. Solubility of the poorly soluble drug Curcumin and Resveratrol has been increased by Mixed Hydrotropy. Urea, sodium benzoate, niacinamide and sodium citrate is used. The solubility of the ratio 20:20 i.e. Curcumin and Resveratrol and sodium benzoate and sodium citrate has been increased by 3 folds. The preliminary studies indicate that Curcumin and Resveratrol, exhibit distinct physical characteristics and varying solubility in different solvents. UV spectrophotometry confirmed their solubility in combination with sodium citrate and sodium benzoate generally providing better solubility.

PCTC551
DESIGN, DEVELOPMENT AND *IN-VITRO* CHARACTERIZATION OF MUCOADHESIVE MICROSPHERES OF VENLAFAXINE HCL

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Abstract:

Objective: Venlafaxine hydrochloride is a widely used antidepressant drug in the serotonin-norepinephrine reuptake inhibitor (SNRI) class. Oral administration of venlafaxine Hydrochloride is associated with several limitations, including poor bioavailability, short half-life, and frequent dosing requirements. This study aimed to develop, evaluate, and enhance mucoadhesive microspheres containing Venlafaxine HCl. **Methods:** A total of 9 distinct formulations of Venlafaxine HCl microspheres were developed utilizing the emulsion solvent evaporation technique. This process included the use of 3 polymers (Ethyl Cellulose, Eudragit RS 100, HPMC K15M) in varying proportions, with the aid of a magnetic stirrer operating at a speed of 800rpm. The solvent used was acetone, the continuous system consisted of light

liquid paraffin, and the emulsifier utilized was Span 80 (1%w/v). The prepared microspheres underwent evaluation in various aspects, including percentage yield, particle size distribution, drug content, encapsulation efficiency, shape, surface characterization, and *in-vitro* drug release mechanism interpretation using kinetic models. **Results:** The physicochemical parameters of the developed formulations were deemed suitable, with a mean particle size of 100-200 µm and a percentage yield of over 90%. The optimized formulation F6, consisting of EC-750 mg Eudragit RS100 100 mg and HPMC K4M-300 mg, was chosen due to its high entrapment efficiency of 95.86% and a drug release rate of 99.58% after 8 hours. **Conclusion:** In conclusion, the formulation of mucoadhesive microspheres FTIR studies shows no evidence of interaction between drugs, polymers, and other excipients. The mucoadhesive microspheres, with their potential for sustained drug release and reduced dosing frequency, offer hope for the future buccal administration of Venlafaxine hydrochloride.

PCTC552

FORMULATION AND EVALUATION OF AN ANTIBACTERIAL HERBAL MOUTHWASH

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Abstract:

Objectives: The primary objective of this study is to formulate and evaluate an herbal mouthwash composed of polyherbal components with antibacterial properties to reduce bacterial counts in the oral cavity. This research seeks to demonstrate the efficacy of herbal ingredients compared to conventional mouthwashes, emphasizing their potential advantages for promoting oral health and hygiene. **Methods:** The preparation of the herbal mouthwash involves several key steps: 1.Plant Material Preparation: Neem (Azadirachta indica), turmeric (Curcuma longa), clove (Syzygium aromaticum), and peppermint (Mentha piperita) were cleaned, ground into a fine powder, and dried to ensure uniformity. 2.Extraction: The powders were extracted with sterile distilled water at 37°C for 72 hours. The extracts were then filtered, and the residual solids were pressed to obtain additional liquid. 3.Concentration and Mixing: The extracts were concentrated by heating and then cooled. Sweeteners, salt, and vinca essence were dissolved in distilled water and mixed with the extracts to achieve a homogeneous mixture. 4.Formulation and Assessment: The final blend was evaluated for pH, viscosity, and stability to ensure consistent quality. 5.Antibacterial and Sensory Testing: The mouthwash's antibacterial activity against oral pathogens was tested using standard microbiological methods, and sensory evaluation was conducted to assess taste and acceptability. **Results:** The herbal mouthwash had a pH of 6.1, which was favorable for oral health, given the skin's pH of around 5.5. It was free from heavy metals and microbial contamination, as confirmed by microbiological tests, and did not contain alcohol or harmful chemicals, making it safer than many commercial alternatives. Stability studies showed no significant changes in its properties over time. Herbal ingredients like neem and clove exhibited strong antibacterial activity, reducing plaque, gingivitis, and bad breath. This formulation was effective for long-term oral health management without adverse effects due to its herbal composition. **Conclusions:** This study demonstrated that the herbal mouthwash effectively addressed dental issues and bad breath without harmful chemicals. Physicochemical analysis confirmed satisfactory color, aroma, and favorable aftereffects. Patients reported good flavor, ease of use, and effectiveness in reducing plaque, supporting its use as an adjunctive treatment for plaque-induced gingivitis. The herbal formulation was found to be a cost-effective oral health solution, especially for lower socioeconomic groups, with proven benefits in preventing bad breath and improving oral hygiene.

PCTC553
DEVELOPMENT, FORMULATION, AND CHARACTERIZATION OF DENTURE ADHESIVE GEL

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Abstract:

Objectives: The study aims to create a sericin-based denture adhesive inspired by silk, beginning with pre-formulation studies, followed by the adhesive's fabrication and characterization. Stability studies will be conducted, culminating in a randomized double-blind clinical trial on elderly denture wearers to assess its effectiveness. **Methods:** Denture adhesive gel was prepared by adding the required quantity of sericin in 15 ml of water in one beaker. N-acetylated chitosan is dissolved in 35ml of water in another beaker. The contents of both the beakers in mixed. The required quantity of carboxymethyl cellulose is added under constant stirring at 500rpm on a magnetic stirrer until the gel is obtained. **Results:** The pH of the gel was found to be 6.21 ±0.57, close to the average pH of the mouth. The viscosity of the gel was 1645.34 Pa. The tensile strength was 3.8 ± 0.79 (standard deviation), which was sufficient to hold dentures and showed better retention. The gel was easily squeezable from the aluminum tube. The swelling of the gel was considerable and the increased volume of the hydrophilic ingredients (CMC) allowed the filling of the cavities and spaces between the denture material and the oral gingiva. The microbial tests showed significant antibacterial and antifungal activity. **Conclusions:** The results reveal that the developed sericin denture adhesive gel shows sufficient retention force, antibacterial activity, and antifungal activity, and can be easily squeezed off the tube and washed away.

PCTC554
FORMULATION AND EVALUATION OF VALSARTAN ORODISPERSIBLE TABLET

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Abstract:

Objective: The objective of this study was to explore, the formulation and evaluation of valsartan orodispersible tablets. **Methods:** Hypertensive disease requires the immediate therapeutic efficacy of a drug. Valsartan is commonly used as a drug of choice against hypertension. However, its low solubility and absorption rate can affect the bioavailability of the drug in the body. Therefore, pharmaceutical scientists are working on developing immediate-release tablets of valsartan to improve its solubility and bioavailability. Surfactants, both ionic and nonionic, are being considered to enhance solubility, while super disintegrants are used to improve dissolution rate. Immediate-release tablets quickly disintegrate and release the drug once they enter the gastrointestinal tract. The research involves the development, optimization, and *in vitro* evaluation of immediate-release tablets of Valsartan, an antihypertensive drug. The tablets were prepared using the direct compression method, containing surfactants such as Sodium lauryl sulfate, a binder such as Poloxamer 188, a lubricant such as Sodium stearate, and cross carmellose sodium as a super disintegrant. **Results:** The study revealed that Formulation SLS 3 of trial batch B 3, containing Sodium Lauryl Sulfate and cross carmellose sodium, exhibited acceptable drug release and disintegration time. **Conclusions:** In conclusion, direct compression can be used to prepare immediate-release tablets of Valsartan that meet the required specifications and can enhance patient compliance.

PCTC555
THERAPEUTIC POTENTIAL OF TEA CATECHINS IN THE TREATMENT OF ATHEROSCLEROSIS

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Abstract:

Objectives: The aim of this study was to review the potential of tea catechins in the management of coronary artery disease or Atherosclerosis. **Methods**: Reputed scientific referencing methods were used for the comprehensive literature survey process. By the help of scientific databases like Scifinder, Pubmed, Scopus as well as Google Scholar search were carried out using key words 'Tea catechins in Atherosclerosis' and 'Role of Catechins in Coronary Heart Disease', 'EGCG', 'Cardiovascular Diseases', 'Cardiovascular Health'. **Results**: Atherosclerosis (AS), a form of arteriosclerosis, can result in cardiocerebrovascular diseases. EGCG can protect cardiocerebrovascular function by preventing AS through various pathways, such as lowering blood lipid levels and LDL oxidation, regulating intestinal flora disorders, improving vascular endothelial cell functions, reducing xpression of inflammatory factors, regulating signaling pathways, and suppressing MMP expression and platelet aggregation. Nowadays, *in vitro* studies it is seen that EGCG plays a significant role in cardiocerebrovascular diseases, especially in anti-atherosclerosis. More research is needed to understand the working mechanism of EGCG for anti-AS, and further exploration on chemical modification of EGCG or changing its administration method is essential to improve its effectiveness. **Conclusions**: The study observed that EGCG is used in various activities in our day-to-day life. EGCG in green tea displays a wide range of beneficial effects including anti-cancer, anti-cholesterol, cardiovascular agent, anti-virus, antioxidant, and adjuvant therapy agents. With the in-depth study of the pharmacological mechanisms of EGCG *in vivo* and *in vitro*, more and more functions of EGCG have been explored, and the application field can be further expanded, which has considerable social benefits for the development and therapy of a variety of diseases.

PCTC556
PREPARATION AND STANDARDIZATION OF DRUG SAMPLES FOR PRECLINICAL TOXICOLOGICAL ANIMAL STUDIES IN COMPLIANCE WITH REGULATORY AGENCIES

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Abstract:

Objectives: The objectives for enhancing sample and solution preparation in our preclinical laboratory were to: Evaluate problems in sample and solution preparation in our preclinical laboratory, Identify current regulatory guidelines for sample and solution preparation in preclinical toxicological studies in different regulatory agencies, Compare different regulatory guidelines and suggest suitable practices at the laboratory level to promote skill development. **Methods:** In order to understand the meticulousness of sample preparation practices at our institute's preclinical laboratory, we documented sample and solution preparation through case studies on various drugs that pose unique challenges in sample preparation. We reviewed regulatory guidelines from Indian and Global perspective. Comparing the standards revealed key differences and similarities. Detailed documentation of all processes, methods, and findings resulted in a comprehensive report on regulatory guidelines and proposed best practices for our laboratory. **Results:** In both India and the USA, regulatory guidelines for preclinical toxicological

studies emphasize GLP and ethical standards. India's CDSCO mandates GLP compliance, with ethical guidelines and standards set by ICMR and BIS. The USA follows FDA's GLP regulations, with ethical standards from NIH and EPA, and adheres to OECD guidelines and USP standards. Both countries stress detailed documentation, comprehensive training, rigorous SOPs, aseptic techniques, and quality control measures. Collaboration with international bodies and continuous professional development are recommended to enhance compliance and reproducibility in preclinical studies. **Conclusions:** Precise drug sample preparation and standardization in preclinical animal studies are crucial for regulatory compliance and study reliability. Adhering to FDA, EMA, and ICH guidelines ensures ethical treatment and proper documentation. Case studies highlight best practices and challenges, with recommendations aimed at improving drug development, early toxic effect detection, and public health safety.

PCTC557

REGULATORY AFFAIRS IN THE ERA OF PERSONALISED MEDICINE AND COMPANION DIAGNOSTICS

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Abstract:

Objective: To investigate the regulatory frameworks governing personalized medicine and companion diagnostics, focusing on the pathways for approval, the challenges faced, and the roles of regulatory agencies such as the FDA and EMA. The aim is to provide a comprehensive understanding of how these regulations support the integration of companion diagnostics into clinical practice. **Methods:** The study involved a thorough review of current regulatory guidelines, processes, and standards for companion diagnostics, with particular attention to the FDA and EMA's approaches. The analysis included case studies of successful approvals and implementation of companion diagnostics, highlighting both the benefits and obstacles encountered. Emerging issues related to new technologies, such as genomics and artificial intelligence, were also examined to understand their impact on regulatory practices. **Results:** The analysis revealed that regulatory agencies have developed specific pathways to facilitate the approval of companion diagnostics, emphasizing the need for robust evidence of their analytical validity, clinical validity, and clinical utility. Case studies demonstrated that these diagnostics play a crucial role in enhancing the effectiveness of personalized medicine, providing targeted treatment options and improving patient outcomes. However, the study also identified significant challenges, including the rapid pace of technological advancement, the complexity of integrating new diagnostics into existing healthcare systems, and the need for comprehensive post-market surveillance. **Conclusion:** The findings underscore the importance of regulatory frameworks in supporting the safe and effective use of companion diagnostics in personalized medicine. While these frameworks are essential for ensuring patient safety and treatment efficacy, they must continuously evolve to address emerging challenges and technological innovations. The study emphasizes the need for ongoing collaboration between regulatory bodies, healthcare providers, and diagnostic developers to navigate the complexities of this rapidly advancing field. Robust post-market surveillance and adaptive regulatory practices are crucial for maintaining the balance between innovation and patient safety.

PCTC558

EMERGING TRENDS IN WEARABLE MEDICAL DEVICES: ENHANCING PATIENT MONITORING AND HEALTHCARE ACCESSIBILITY

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Abstract

Objective: This study aims to promote remote patient monitoring by enhancing use of wearable medical devices. **Methods:** 1.Wearable Sensors: Patients wear or use devices equipped with sensors to monitor vital signs, such as heart rate, blood pressure, blood

glucose levels, oxygen saturation, and respiratory rate. These sensors can be integrated into wearable devices like smartwatches, patches. 2.Data Transmission: The health data collected by the wearable sensors is transmitted wirelessly to a centralized platform or cloud-based system using secure communication protocols. 3.Data Analysis and Interpretation: Healthcare providers can access the collected data through a secure online portal. **Result:** Remote monitoring technologies enable healthcare providers to track patients' health status in real time, irrespective of geographical constraints, thereby enhancing the accessibility and efficiency of medical care. It can be used for Improvement in Patient Outcomes, Patient Engagement and Adherence, Data Accuracy and Reliability, Early Detection and Intervention, Chronic Disease Management. **Conclusion:** Remote patient monitoring is a necessary component in healthcare industry; it provides continuous patient monitoring and helps keep track of patients' health. Wearable medical devices are best medium through which remote patient monitoring can be achieved. These devices help patient understand about their health, and can be useful to avoid severe health problems.

PCTC559

LEVERAGING REGULATORY AFFAIRS FOR STRATEGIC BUSINESS DEVELOPMENT IN THE PHARMACEUTICAL INDUSTRY

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Abstract:

Objective: The objective of this study is to explore the synergistic relationship between regulatory affairs (RA) and business development (BD) in the pharmaceutical industry, identifying key strategies through which regulatory compliance can drive business growth and market success. **Method:** This study employs a qualitative approach, analysing case studies, news articles and industry reports to identify best practices and strategies for integrating regulatory affairs into business development. Additionally, a review of regulatory processes and their impact on market entry, product approval, and post-market surveillance was undertaken. **Results:** The study revealed that early-stage regulatory planning in business development significantly reduces time to market and mitigates risks associated with product approvals. Effective communication with regulatory bodies was found to streamline the approval process, while leveraging regulatory expertise in strategic decision-making helped identify growth opportunities and navigate regulatory challenges. Case studies demonstrated that companies integrating RA and BD were more successful in entering new markets, overcoming regulatory hurdles, and forming strategic partnerships that accelerated product development and market entry. **Conclusion:** Aligning regulatory affairs with business development goals is essential for achieving sustainable growth in the pharmaceutical industry. Companies that integrate regulatory strategies into their business planning can better manage risks, capitalize on market opportunities, and maintain a competitive edge. The future of RA and BD integration is promising, particularly with the advent of digital transformation, emerging regulations, and advancements in artificial intelligence and machine learning.

PCTC560

INNOVATIONS AND FUTURE TRENDS IN REGULATORY SCIENCE FOR NANO PHARMACEUTICALS

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Abstract:

Objective: To explore the latest innovations and future trends in regulatory science concerning Nano pharmaceuticals, focusing on advanced characterization techniques, novel toxicity testing

methods, *in silico* modelling, AI applications, and global regulatory harmonization efforts. **Method**: A comprehensive literature review including peer reviewed journals, regulatory agency guidelines, and industry reports. Analysis of case studies of approved Nano pharmaceuticals and examples of regulatory innovations to identify emerging trends and challenges. **Results**: Key innovations identified include advanced characterization techniques, *in silico* modelling, novel toxicity testing methods, AI applications, and global regulatory harmonization efforts. **Conclusion**: The regulatory science of Nano pharmaceuticals is evolving with significant innovations, promising to enhance the safety, efficacy, and quality assessment of advanced therapies. Future trends indicate a shift towards personalized nanomedicine, global regulatory harmonization, and the integration of emerging nanotechnologies.

PCTC561

GLOBAL REGULATORY PERSPECTIVE OF DRUG - DEVICE COMBINATION PRODUCTS

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Abstract:

Objectives: The objective of this study is to analyze and compare the regulatory frameworks governing drug-device combination products in India, the United States (US), and the European Union (EU). The study aims to identify commonalities and differences in the regulatory approaches, highlighting the challenges and opportunities in harmonizing global standards for these complex products. **Methods:** A comprehensive review of regulatory documents, guidelines, and frameworks was conducted for the US Food and Drug Administration (FDA), the European Medicines Agency (EMA), and India's Central Drugs Standard Control Organization (CDSCO). The study involved analyzing primary sources such as regulatory texts, official websites, and publications from relevant authorities, as well as secondary sources like academic articles and industry reports. Comparative analysis techniques were used to identify key regulatory requirements, processes, and approval pathways. **Results:** The regulatory frameworks for drug-device combination products show notable differences and some similarities across the US, EU, and India: United States: The FDA manages these products through the Office of Combination Products (OCP), focusing on the primary mode of action (PMOA) and employing a risk-based approach that includes rigorous premarket reviews and postmarket surveillance. European Union: The EMA works with Notified Bodies under the Medical Devices Regulation (MDR) and *In Vitro* Diagnostic Regulation (IVDR), emphasizing conformity assessments to ensure both drug and device components meet regulatory standards. India: The CDSCO is refining its regulatory framework to address combination products, combining drug and device regulations with recent updates aimed at streamlining approvals and improving clarity. **Conclusion:** Despite regional differences, all three regions are making strides toward regulatory harmonization. The US adopts a PMOA-based, risk-focused approach; the EU prioritizes conformity assessments; and India is aligning more closely with international standards. Ongoing international collaboration is crucial for harmonizing these regulations to support innovation and ensure global market access while maintaining high safety and efficacy standards.

PCTC562

COMPULSORY LICENSING OF PHARMACEUTICALS IN INDIA: IMPACT ASSESSMENT WITH TRIPS AGREEMENT

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Abstract:

Objectives: The objective of this review was to explore the impact assessment of Trade-Related Aspects of Intellectual Property Rights for Compulsory Licensing of Pharmaceuticals in India.

Methods: In the Indian Patent Act, 1970; Chapter XVI addresses compulsory licences in terms of Indian patent law. On January 23, 2017, WTO (World Trade Organisation) Ministerial Conference modified the TRIPS Agreement. It added a mechanism of compulsory licencing as a means of ensuring that the protection of intellectual property (IP) rights does not interfere with the public's ability to obtain reasonably priced medical care. **Results:** Before India became a member of TRIPS, product patents could not be granted under Indian patent laws, which meant that novel and inventive medications could only be introduced without the benefit of a patent. However, the Indian patent laws were changed to permit the patenting of product patents after the country joined the TRIPS Agreement. Natco Pharma obtained compulsory license for cancer drug Sorafenib against the patented product of Nexavar. **Conclusions:** In India, compulsory licensing licencing facilitates greater access to medications. With the TRIPS Agreement, compulsory license is allowed such as prior efforts to obtain license from the patent owner, adequate payment to the patent owner and non-exclusive & non-assignable use.

PCTC563
INVISALIGN ALIGNERS: A REVIEW ON CLEAR ALIGNER THERAPY (CAT) IN ORTHODONTIC CARE

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Abstract:

Objective: The aim is to review the effectiveness and aesthetic appeal of Clear Aligner Therapy (CAT), specifically Invisalign, in treating various malocclusions. The review aims to compare Invisalign aligners with traditional braces, focusing on their production, efficacy, treatment and its outcomes and their regulatory considerations. **Methods:** Clear Aligners, or Invisalign, are transparent PMMA trays that straighten teeth with gentle force, avoiding metal wires. Made from thermoformed thermoplastics and designed using 3D imaging, they utilize the patented SmartTrack material for enhanced predictability and comfort, safe and free from bisphenol-A (BPA) and phthalate plasticizers. The production process involves advanced CAD-CAM technology for precise customization for each patient. **Results:** Treatment & Outcomes: Invisalign effectively treats mild to moderate orthodontic issues with a comfortable, removable, and aesthetic alternative to braces. The fitting process of Invisalign aligners involves careful evaluation, customization, and guidance from your orthodontist. Safety and Efficacy**:** From a clinical perspective, Invisalign clear aligners offer greater comfort and safety than braces and can be enhanced with attachments and special features for treating various malocclusions and ensure patient satisfaction. Regulatory Considerations: As per EU, Invisalign clear aligner systems are Class II-a certified medical devices and as per USFDA classified as Class II medical devices. **Conclusions:** Invisalign offers a promising and effective treatment for mild to moderate malocclusions, providing a safe, convenient, and virtually invisible way to achieve a straighter smile. With ongoing technological advancements and supportive research, Clear Aligner Therapy's future looks bright. Clinicians should assess each patient's needs to choose the best treatment option.

PCTC564
REGULATORY LANDSCAPE OF NEURAL IMPLANTABLE DEVICES: A GLOBAL PERSPECTIVE REVIEW

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Abstract:

Objectives: The review aims to compare regulatory frameworks across major markets, identify challenges and opportunities within these systems, and propose recommendations for harmonizing and improving regulatory practices to better accommodate the rapid

advancements in neurotechnology. **Methods:** The review employs a systematic approach, utilizing a combination of literature review, analysis of regulatory documents, and expert interviews. Key regulatory frameworks in the United States, European Union, Japan, and other significant markets are examined. The study also investigates the role of international regulatory harmonization efforts, such as those led by the International Medical Device Regulators Forum (IMDRF). Data sources include peer-reviewed journals, official regulatory agency publications, industry reports, and input from stakeholders in the neuro-implantable device industry. **Results:** The review finds significant variability in regulatory requirements and approval processes across different regions. In the United States, the FDA's stringent premarket approval (PMA) process is contrasted with the European Union's CE marking process, which has recently been updated under the Medical Device Regulation (MDR). Japan's Pharmaceuticals and Medical Devices Agency (PMDA) offers a unique regulatory approach, balancing between stringent scrutiny and expedited pathways for innovative technologies. Emerging markets present a diverse set of regulatory practices, often influenced by local healthcare needs and infrastructural capabilities. The analysis identifies key challenges, such as the need for more robust post-market surveillance, ethical considerations in neurotechnology, and the difficulty in keeping regulatory frameworks updated with rapid technological advancements. **Conclusions:** The regulatory landscape for neuro-implantable devices varies significantly across regions, posing challenges for development and commercialization. Despite global harmonization efforts, disparities persist. This review recommends enhancing international collaboration, adopting adaptive regulatory frameworks, and strengthening post-market surveillance and ethical guidelines. A more cohesive and responsive regulatory environment will help stakeholders bring innovative neuro-implantable devices to market, ultimately benefiting patients worldwide.

PCTC565
REGULATORY TESTING OF MEDICAL DEVICES – EXPLORING CASE STUDY ON OCCULAR LENSES

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Abstract:

Objectives: The objective of this study is to explore the regulatory testing processes involved in the approval of ocular lenses, with a particular focus on the role of toxicological studies. The goal is to understand the comprehensive safety and efficacy evaluations required to bring ocular lenses, including contact lenses and intraocular lenses, to market. **Methods:** This study involves a detailed examination of the regulatory framework set by health authorities such as the FDA and EMA. It focuses on the key phases of regulatory testing, emphasizing toxicological evaluations: Preclinical Toxicological Studies: Assessing the biocompatibility, cytotoxicity, and potential toxic effects of the materials used in ocular lenses. Clinical Trials: Evaluating the performance, safety, and potential side effects in human subjects, incorporating data from toxicological studies to monitor adverse reactions. Post-Market Surveillance: Conducting long-term safety and effectiveness monitoring, including ongoing toxicological assessments to identify any emerging issues. **Results:** The findings highlight the complexity and rigor of the regulatory testing process for ocular lenses, with a strong emphasis on toxicological studies. Preclinical toxicological studies ensure that materials do not cause adverse reactions or toxicity when in contact with eye tissues. Clinical trials provide crucial data on the lenses' performance and safety, supplemented by toxicological

data to monitor and address any adverse effects. Post-market surveillance ensures continuous safety monitoring, incorporating toxicological assessments to identify and mitigate long-term risks. **Conclusion:** The regulatory testing of ocular lenses is a stringent and multifaceted process, with toxicological studies playing a vital role in ensuring patient safety and product efficacy. This study underscores the importance of thorough toxicological evaluation at each phase of testing and provides valuable insights into the challenges and strategies involved in bringing safe and effective ocular lenses to market.

PCTC566
GENERIC DRUG REGULATIONS IN GULF CO-OPERATION COUNCIL (GCC) COUNTRIES

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Abstract:

Objectives: To understand the regulatory requirements for the approval of generic drugs in GCC countries.To conduct a comparative study of the regulatory requirements in the GCC to reduce disparities and highlight milarities.To compare GCC regulatory review procedures for generic drugs, identifying key differences to optimize approval timelines and streamline the process across member states. **Methods:** This study conducted an extensive review of regulations and registration processes for generic drugs in GCC countries. The methodology included a comprehensive literature search using databases from official government websites, guidelines from the International Conference on Harmonization (ICH), Good Manufacturing Practices (GMP), and World Health Organization (WHO). Regulatory agency publications and journals related to generic drugs were also used as sources. The study compared the registration procedures, regulatory body functions, required submission documents, and approval timelines for generic drugs across the GCC. **Results:** The study revealed that while the centralized registration process under GCC-DR simplifies approval by involving a single review, it is followed by country-specific documentation and fee requirements. In contrast, the decentralized approach requires separate approvals from each GCC country. Harmonization efforts by the GCC-DR Committee have led to improvements in reducing discrepancies and streamlining the process, but variations remain in the procedures, timelines, and documentation across member states. **Conclusions:** The study concluded that although registration procedures in GCC countries exhibit some variations, adopting a consistent format and standardized information can promote transparency and efficiency. By understanding these differences, similarities, and best practices, pharmaceutical companies can better navigate the generic drug approval process in GCC countries, leading to more effective and timely approvals.

PCTC567
FDA STRATEGIES FOR ACCELERATED DRUG APPROVAL

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Abstract:

Objectives: To explore and analyze the strategies employed by the U.S. Food and Drug Administration (FDA) to accelerate the approval of new drugs, focusing on the regulatory frameworks and mechanisms that facilitate faster access to critical therapies.

Method: A comprehensive review of FDA guidelines, regulatory pathways, and case studies was conducted. The study examined various accelerated approval mechanisms, including Fast Track, Breakthrough Therapy, Accelerated Approval, and Priority Review. It also analyzed data from FDA public records, scientific

literature, and industry reports to understand the impact and efficiency of these strategies. **Result:** The review found that the FDA's accelerated approval s trategies have significantly reduced the time required for new drug approvals, particularly for therapies addressing unmet medical needs and life-threatening conditions. The Fast Track designation expedited the development and review of drugs, while Breakthrough Therapy designation provided intensive FDA guidance and a rolling review process. Accelerated Approval allowed earlier approval based on surrogate endpoints, and Priority Review shortened the review timeline. **Conclusion:** The FDA's strategies for accelerated drug approval have effectively facilitated the rapid availability of important new therapies. These mechanisms provide critical flexibility and support to developers, ensuring that patients have quicker access to innovative treatments. However, balancing the need for speed with ensuring drug safety and efficacy remains a vital consideration. Continued refinement and oversight of these pathways are essential to maintaining public health standards while fostering innovation.

PCTC568
RECALL OF COSMETICS PRODUCTS

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Abstract:

Objective The purpose of this study is to investigate the mechanisms and regulatory structures that control recalls of cosmetic products. It aims to underscore the importance of product recalls in protecting public health and consumer safety, with a specific focus on the presence of harmful substances, microbial contamination, mislabeling, and undisclosed allergens. Additionally, the study aims to assess the involvement of government agencies such as the FDA in the recall process, and to provide case examples and recommendations for avoiding future recalls. **Method:** The methodology utilized in this study includes: Regulatory Review: Examination of the policies and frameworks established by government agencies such as the FDA in the United States and international counterparts to oversee cosmetic product safety and enforce recalls. Case Analysis: In-depth review of significant cosmetic product recalls to identify common causes, evaluate the effectiveness of the recall process, and assess the impact on consumers and the industry. Industry Best Practices: Evaluation of preventive measures such as thorough product testing, quality control, and transparent labeling aimed at mitigating risks and upholding consumer confidence. **Results:** The research indicates that recalls of cosmetic products are commonly caused by the following factors: 1. Harmful Substances: Certain products contain ingredients that can jeopardize consumer health, prompting recalls. 2. Microbial Contamination: Contaminants such as bacteria or mold can result in unsafe products, leading to recalls. 3. Mislabeling and Undeclared Allergens: Inaccurate labeling or failure to disclose allergens increases the likelihood of recalls. 4. Government Intervention: Regulatory agencies like the FDA are crucial in identifying risks and initiating recall procedures. Analysis of significant recalls demonstrates varying levels of effectiveness in recall strategies, with some manufacturers responding promptly and others experiencing delays, leading to prolonged consumer risks. **Conclusion:** Recalling cosmetic products is pivotal in safeguarding public health and consumer safety. While the recall process, encompassing identification, public notification, product removal, and corrective action, can help mitigate risks, it's imperative to take proactive measures to prevent recalls altogether. Implementing rigorous testing, quality control, and transparent labeling is essential for upholding consumer trust and lowering the frequency of recalls. Strengthening collaboration between the industry and regulatory bodies is crucial in maintaining ongoing safety within the cosmetic sector.

PCTC569

SKIN CANCER RELATED TO FAULTY USE OF COSMETIC PRODUCTS

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Abstract:

Objective: The objective of this study was to explore, skin cancer related to faulty use of cosmetic products. **Method:** Skin cancer is a common and potentially life-threatening condition that has been increasingly linked to the improper use of cosmetic products. While ultraviolet (UV) radiation is the primary risk factor for skin cancer, there is emerging evidence suggesting that certain cosmetics, especially those containing carcinogenic ingredients, may increase the risk of developing skin cancer when used incorrectly. This abstract explores the connection between skin cancer and the misuse of cosmetic products, focusing on factors such as prolonged exposure to harmful chemicals, the use of expired products, and the application of cosmetics on compromised skin. The interaction of these factors with UV radiation can lead to DNA damage, causing mutations that contribute to the development of skin cancer, particularly non-melanoma types such as basal cell carcinoma and squamous cell carcinoma. **Results and Conclusion:** Public awareness about the potential dangers of misusing cosmetics, as well as stricter regulations on cosmetic formulations, are essential to reduce this emerging risk. Future research should further investigate the molecular mechanisms underlying this connection and develop guidelines for safer cosmetic use.

PCTC570

THE POTENTIAL USE OF BLOCKCHAIN TECHNOLOGY IN MEDICAL AND PHARMA FIELD

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Abstract:

Objectives: The aim of this study is to explore the potential of blockchain technology in regulatory science can create impact in pharmaceutical industry, clinical research & development, identify the counterfeit drugs & pharmaceutical supply chain management. **Methods:** Blockchain technology can enhance accountability and transparency in clinical trial reporting by storing links to relevant trials in the blockchain while the data can be stored anywhere. Each published study's trials can be organized into individual blocks and made accessible on the blockchain. This system can be offered as a subscription service for research labs, where partner institutions maintain dedicated project pages listing past and current trials. This approach facilitates transparency and enables research groups to upload links to negative data, with the advantage of timestamping. Given the annual publication of over 30,000 trials, manual outcome verification is impractical. Blockchain could incentivize comprehensive trial data publishing through a rewards program**. Results:** This thesis explores the application of blockchain technology in the pharmaceutical industry, focusing on its potential to eliminate counterfeit drugs and enhance drug traceability. Blockchain operates by storing data in a series of linked blocks, forming a secure, unalterable chain. If properly implemented, blockchain can streamline the pharmaceutical supply chain, preventing unnecessary complexity and inefficiencies. Additionally, this technology provides robust protection against cyber-attacks on a company's patents and intellectual property by ensuring data integrity and security. It enables comprehensive tracking and monitoring of data throughout the entire supply chain, making it a resilient solution in the digital Age. **Conclusions:** The study concluded blockchain technology matures, it is anticipated to expand into more industries beyond those currently discussed. Despite some views that blockchain could replace traditional databases as a universal solution, this is inaccurate. There are specific scenarios where traditional databases remain the preferred choice. The research highlights the key characteristics required for different application domains, which helps in selecting the appropriate blockchain and mechanisms tailored to the specific needs of each application.

PCTC571
TERBINAFINE-LOADED NANO EMULSION GEL FOR ORAL SQUAMOUS CELL CARCINOMA: A PROMISING APPROACH FOR TARGETED THERAPY

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Abstract:

Objective: This study aimed to develop and optimize a Nano emulsion-based gel loaded with terbinafine for the treatment of oral squamous cell carcinoma (OSCC), focusing on formulation parameters, physicochemical properties, *in vitro* drug release, and stability. **Materials and Methods:** A Nano emulsion gel was formulated using a pseudo ternary phase diagram, with the preformulation and optimized formulation evaluated by Differential Scanning Calorimetry (DSC), Fourier-Transform Infrared Spectroscopy (FT-IR), and X-ray Powder Diffraction (XRPD). The physicochemical properties, including particle size, polydispersity index (PDI), entrapment efficiency, pH, viscosity, extrudability, and spreadability, were measured. *In vitro* drug release was conducted over 24 hours, and stability studies were performed to assess long-term storage. **Results:** The optimized formulation exhibited a particle size of 196.1 nm, a PDI of 0.189, and an entrapment efficiency of 80.34±1.2%. The gel showed a pH of 6.7, viscosity of 2566 ± 8.3 cP, extrudability of 88.2 ± 3%, and spreadability of 6.31 ± 0.2%. *In vitro* drug release demonstrated a sustained release profile with 70.05% of terbinafine released over 24 hours. Stability studies confirmed the formulation's stability over the tested period. **Conclusion:** The terbinafine-loaded nanoemulsion gel presents a promising therapeutic approach for OSCC, with favorable physicochemical properties, sustained drug release, and stable formulation characteristics.

PCTC572
REDEFINING PHARMACY EDUCATION: A FOCUS ON INDUSTRY AND PATIENT OUTCOMES

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Abstract:

Objective: The aim of this poster is to investigate the transformative shift in pharmacy education by emphasizing patient-centered care, innovation, and industry preparation, thereby provide pharmacists to address the evolving healthcare landscape and contribute significantly to drug discovery, development, and patient outcomes. **Methods:** Search Strategy: A comprehensive search was conducted on Google Scholar and PubMed. *Study Selection:* Studies are selected based on the corresponds with the study topic. **Results:** Knowledge of medications and dispensing are frequently given priority in traditional pharmacy education. But to effectively serve complicated patient needs and support the pharmaceutical sector, chemists must possess a wider range of skills in light of the changing healthcare landscape. The necessity to redefine pharmacy education to develop pharmacists as patient-centred care providers and prepared innovators for the industry sight is examined in this abstract. Pharmacy schools may prepare graduates to drive into the drug discovery and development, optimize patient care, and perform in a variety of jobs by incorporating industry-relevant coursework, experiential learning opportunities, and an emphasis on patient outcomes. The focus of this presentation will be on particular tactics and best practices for modernising pharmacy education to take advantage of the opportunities and challenges presented by the twenty-first century. **Conclusion:** The study concluded that the traditional pharmacy education model, primarily focused on medication knowledge, is inadequate in preparing pharmacists for modern healthcare complexities. A paradigm shift incorporating industry-relevant coursework, experiential learning, and patient-centered care can cultivate graduates capable of excelling in clinical practice and driving innovation in the pharmaceutical sector.

PCTC573
ADVANCES IN WART TREATMENT: FROM TRADITIONAL TO INNOVATIVE THERAPIES

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Abstract:

Objectives: The objective was to review the evolution of wart treatment from traditional to contemporary methods, evaluate the efficacy and safety of various therapeutic approaches, and identify potential areas for future research. **Methods:** A comprehensive literature search was conducted to identify relevant studies on wart treatment modalities. Included studies were assessed for methodology, sample size, outcome measures, and level of evidence. Traditional treatments (salicylic acid, cryotherapy) and innovative therapies (immunotherapy, laser therapy, topical agents, surgical excision) were compared and analyzed. **Results:** Traditional wart treatments remain effective for many patients. However, the emergence of immunotherapy has shown promise in addressing the underlying HPV infection. Laser therapy offers precise and minimally invasive wart removal. Topical agents, such as cantharidin, provide alternative treatment options. Surgical excision and electrocautery are reserved for complex or resistant cases. **Conclusions:** Wart treatment has significantly advanced, with various therapeutic options available. The choice of treatment depends on wart type, location, patient preference, and severity. Future research should focus on optimizing immunotherapy protocols, exploring novel topical agents, and developing personalized treatment plans.

PCTC574
FORMULATION AND DEVELOPMENT OF NANOVESICULAR CARRIER FOR ANTIHYPERTENSIVE AGENT

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Abstract:

Objective: The aim of present study is to develop transethosomal gel of valsartan in order to eliminate the problems associated with the traditional delivery of the drug for a prolonged period of time. **Methods:** The transethosomes were formulated using the thin film hydration method, with Phospholipon-90H and Sodium Deoxycholate as key excipients. A chloroform-methanol mixture was employed to dissolve the phospholipid and bile salt, forming a thin lipid film upon solvent evaporation under reduced pressure. The antihypertensive agent was incorporated into the lipid film before hydration with a preheated aqueous ethanol solution, resulting in the formation of transethosomes. Size reduction was achieved via sonication to obtain nanometer-sized vesicles. A full factorial design was applied to optimize the formulation, varying the concentrations of Phospholipon-90H and Sodium Deoxycholate to study their effects on particle size, encapsulation efficiency, and stability. The optimized transethosomes were then incorporated into a Carbopol 934 gel base using the dispersion method, with pH adjustments made using Triethanolamine. The resulting transethosomal gel was characterized for viscosity, spreadability, drug content, and *in vitro* release, providing a novel nanovesicular carrier system for enhanced transdermal delivery of the antihypertensive agent. **Results:** All nine batches were evaluated with respect to the drug content and entrapment efficiency, *in vitro* drug release. The final optimized batch was evaluated with respect to particle size, zeta potential, PDI and FESEM. The *in vitro* drug release of transethosome was found to be 74.43% up to 12 hours, followed anomalous diffusion with korsmeyer peppas kinetics. The results of *in vitro* drug release revealed that valsartan transethosomes give a sustained release as compared to valsartan solution. The optimized batch was used to formulate valsartan

transethosomal gel. The 1% transethosomal gel was evaluated with respect to the spreadability, viscosity, drug content, pH measurement and *in vitro* diffusion study. *In vitro* diffusion study data of valsartan transethosomal gel compared with plain valsartan gel showed that transethosomal gel provide sustained release of drug 61.34% up to 12 hrs. **Conclusions:** The study concluded that the thin film hydration method was effective in developing a transethosomal gel for the transdermal delivery of Valsartan. The optimized formulation exhibited excellent physicochemical properties, including uniform particle size, high encapsulation efficiency, and stable zeta potential. Furthermore, the gel demonstrated sustained drug release, which is crucial for maintaining therapeutic levels of Valsartan over an extended period. This transethosomal gel formulation holds significant promise for commercial application as it offers a non-invasive alternative to oral administration, thereby reducing the gastrointestinal side effects associated with oral delivery and improving patient compliance in the management of hypertension.

PCTC575

MEDICATED GUMMY: A MODERN EXPLAINABLE APPROACH IN PERSONALIZED MEDICINE WITH BETTER BIO-AVAILABILITY INNOVATIONS

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Abstract:

Objectives: Traditional tablets and capsules can be challenging for children to swallow, leading to treatment non-compliance, and potentially jeopardizing their health outcomes. Gummy formulations have merged as a promising alternative, offering a palatable and potentially more enjoyable way for children to receive their medication. The use of gummy formulations for medication delivery in paediatric patients has gained significant traction in recent years. **Method:** For the formulation of medicated gummy few amounts of mannitol has been taken in the beaker under the continuous stirring at 800rpm with 80°C. Then few amounts of sodium bi-carbonate and I- Carrageenan has been added. After properly mixing of all ingredients the formulation has been put into a mould to form gummy under the -14°C to -18°C for 2 hours. **Result:**The medicated gummy has been characterized by the help of organoleptic characteristics, texturometer, stability study and pH- study, SEM study, DSC study and viscosity has been measured by Brookfield viscometer. The intact form of the resulting gummy formulations exhibited prolonged-release properties, while the crushed ones released the drug faster.In our gummy formulation faster drug release i.e. more than 80%drug release within 45mins has been reported. **Conclusion:** The oral drug gummy formulations were prepared and characterized successfully, in the current work. One of the most significant points here was that the prepared formulations were gelatin-freeand suitable for use by vegans and patients allergic to animal products. This is also important for global sustainability. This has been achieved with an eco-friendly polymer with controlled release properties, carrageenan. Further studies will be conducted to develop gummy formulations with desired drug release properties. Gummies, which are considered to be highly acceptable by patients, are thought to be promising in terms of increasing patient compliance with oral administration.

PCTC576

FEASIBILITY STUDY OF DIRECTLY COMPRESSED TABLETS OF BCS III DRUG MODEL

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Abstract:

Objectives: This work aims to substantiate the claim for solvent-free method development for directly compressed tablets of BCS Class III drug model. **Methods:** A model BCS Class III drug, Pantoprazole

Sodium, was selected for the study. Different directly compressed tablet formulations were prepared using varying concentrations of polymers such as hydroxypropyl methylcellulose, polyethylene glycol, carbopol 940, carboxy methyl cellulose; and magnesium stearate, talc, stearic acid and sodium bicarbonate. Each blend was prepared by mixing the fillers, polyethylene glycol and disintegrant for 20 min using a blender at 20 rpm blend speed and 200 rpm agitator speed, the magnesium stearate was then added and the mixture was blended for a further 10 min using the same speed settings. Tablets were compressed using an automated 16 station rotary tablet press machine. **Results:** The physical and chemical properties of the excipient blend were characterized using different methods. The tablet's identity has been verified by using techniques like FTIR spectroscopy. The tablets were evaluated for various parameters including hardness, friability, drug content uniformity, disintegration rate and *in vitro* drug release rate. The results showed that the compressed tablets possessed sufficient hardness, acceptable friability, and are uniform with respect to disintegration, drugs contents, and tablet weight.In directly compressed tablets, the drug followed zero-order kinetics. **Conclusions:** In conclusion, directly compressed tablets offer a valuable approach to tablet manufacturing, providing predictable release profiles, improved bioavailability and simplified processing with easy design dosage regimen for BCS Class III drug model. However, careful consideration of drug properties, excipient selection, and manufacturing variables is essential to ensure optimal tablet performance.

PCTC577

HYDROTROPY BASED SOLUBILITY ENHANCEMENT OF POORLY SOLUBLE DRUG

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Abstract:

Objectives: The aim of this study was to develop and evaluate oral formulation with Hydrotropy-based solubility enhancement technique for poorly soluble drug. **Methods**: Poor water-soluble drug, Roxithromycin was selected for this study. The Hydrotropic solubilization method was selected. Roxithromycin Solid dispersion was prepared using Hydrotropic agent like PEG 6000 and Sodium Citrate and further formulated into fast-dissolving tablet. The formulation was characterized for Solubility, particle size, stability. *In vitro*-dissolution studies was conducted. **Results**: The study successfully formulated Oro-dispersible tablets using the hydrotropic solid dispersion method, which met all standard requirements. The optimized batch was evaluated for following parameters which showed the result such as hardness (3.0±0.0010), friability (0.68±0.0017), disintegration time of 5.4 minutes and dissolution rate 92.3% along with consistent drug content and *in vitro* drug release. The solubility of Roxithromycin Drug was significantly improved 3 folds by using PEG-6000 and Sodium Citrate. FTIR analysis verified the stability of the drug and hydrotropic agents. This confirmed the tablets' suitability for oral administration with a fast dissolution rate, making them efficient for drug delivery. **Conclusion**:The study successfully formulated Oro-dispersible tablets using the hydrotropic solid dispersion method, which met all characteristics. Hence this method proved effective for drugs with poor water solubility and low bioavailability, making the tablets suitable for efficient drug delivery.

PCTC578

DEVELOPMENT OF A MULTIFUNCTIONAL POLYMER COMPOSITE HYDROGEL FOR SUSTAINED DRUG DELIVERY IN PERIODONTITIS TREATMENT

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Abstract:

Objectives: The objective of this study was to formulate and evaluate of polymer composite hydrogel and dental care. **Methods:** The Preformulation studies include the physiochemical

characterization of the drug and compatibility studies of the drug and excipients. Spectrophotometric analysis the λmax at 295.6nm for vit D3 and 211nm for hydroxyapatite. The IR spectra of API Polymer and mixture of formulation ingredients were determined using an FTI-R spectrophotometer. The hydrogel was subjected to various studies physical appearance, viscosity, pH, gelation temperature, gelation time. **Results:** Based on the study, Vitamin D3 appeared as a white to yellowish powder with no odour and having Melting point 84^0C, according to solubility test vitamin D3 is soluble in methanol and ethanol with phosphate buffer. Under UV spectroscopy Maximum absorption value found at λmax at 295.3 nm and pH was found to be 6.8 and compatibility study of drug and excipients study was determined by FT-IR. Based on the study, the formulation containing Carbopol 934 was identified as the most effective gel formulation. Among the nine batches tested Batch 8 was identified as the optimized batch due to its minimal spreadability value which is $2.85cm^2$, higher concentration of the poloxamer P407 and Carbopol 934 P increase the viscosity of formulation. Overall, batch 8 was selected as the best formulation due to its excellent stability, uniformity, and viscosity. **Conclusions:** This research successfully developed and optimized a polymer composite hydrogel using a cold physical crosslinking method for sustained drug delivery in periodontitis treatment. The hydrogel, containing higher concentrations of poloxamer P407 and carbopol 934, exhibited controlled drug release, improved spreadability, and increased viscosity. However, incorporating additional bioactive components like Vitamin D3, hydroxyapatite, and beta-tricalcium phosphate posed challenges, as maintaining a stable hydrogel with these components requires further optimization. The study highlights the need for careful balancing of these components to ensure synergistic effects without compromising the hydrogel's properties, laying the groundwork for future therapeutic advancements in periodontitis treatment.

PCTC579

BILAYER TABLET FORMULATION FOR METFORMIN AND TENELIGLIPTIN: ENHANCING EFFICACY AND PATIENT COMPLIANCE THROUGH DESIGN AND OPTIMIZATION

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Abstract:

Objectives: The objective of the present study was to prepare the bilayer tablet of anti-diabetic drugs Metformin HCL and Teneligliptin HCL by using the wet granulation method. **Methods:** Bilayer tablets are a strategic solution for diabetes management, combining Metformin hydrochloride and Teneligliptin hydrochloride in a single formulation. Metformin, a BCS Class III drug, has high solubility but low permeability, while Teneligliptin, a BCS Class I drug, offers high solubility and permeability. The bilayer design provides an immediate release of Teneligliptin for quick action and a sustained release of Metformin for a prolonged effect. Utilizing the wet granulation method, this formulation aims to enhance drug efficacy and patient compliance. The project includes pre-formulation, compatibility studies, release rate evaluation, and optimization through a 3^2 factorial design to achieve optimal performance. The tablet formulation process involved sifting Metformin HCl, methyl paraben, propylparaben, and carboxymethyl cellulose through a #40 sieve and mixing them. Guar gum was dissolved in water to prepare a binder, which was added to the mix to form wet granules, then passed through a #10 sieve and dried at 50°C. In the second part, pregelatinized starch, polyethylene oxide, hydroxypropyl methylcellulose, and hydrogenated castor oil were sifted and mixed, then combined with the dried granules. Magnesium stearate was added, and the mixture was compressed into tablets using a rotary tablet machine. **Results:** The organoleptic properties and solubility of Metformin HCl and

Teneligliptin HCl were consistent with standards, confirming their authenticity and purity. UV analysis showed Metformin HCl's λmax at 227 nm and Teneligliptin HCl's at 243 nm, with linearity in the 2-10 µg/ml range. FTIR spectra confirmed no interactions with excipients. Granules and powder blends exhibited good flow and compressibility, and tablets meet pharmacopoeial standards for hardness (118-150 N), thickness (9.3-9.6 mm), and friability (0.42%-0.74%). The drug content for both drugs was within 90.00%-110.00%, with the optimized batch showing a weight variation of 1101±1.02 mg, thickness of 9.5±0.02 mm, hardness of 128-150 N, friability of 0.42%, Drug content (%) of Metformin HCL 96.32%, Drug content (%) of Teneligliptin HCL 95.02%. All parameters complied with acceptable standards. **Conclusions:** The 3^2 factorial design effectively optimized the bilayer tablet formulation of Metformin HCl and Teneligliptin HCl. Using Design Expert 7.0 software, the *in vitro* release study revealed that HPMC K4M and Guar gum were pivotal in achieving an optimal sustained-release profile for Metformin HCl. Conversely, the immediate-release profile of Teneligliptin HCl was significantly enhanced by including Maize starch and LHPC (low-substituted hydroxypropyl cellulose), demonstrating their crucial role in the formulation. The optimized formulation achieved a drug release of 99.10% for Metformin and 99.18% for Teneligliptin, indicating its potential for improved diabetes management.

PCTC580
FORMULATION, DEVELOPMENT AND EVALUATION OF METALLIC ANTIBIOTIC NANOPARTICLES BY PROBE SONICATION METHOD

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Abstract:

Objectives: To synthesize and characterize Doxycycline and Curcumin metal ion nanoparticles using Ag, Pt, and Cu ions, and to evaluate their antibacterial effects against resistant strains of *E. coli* and *K. pneumoniae*. The study aims to explore the potential synergistic effects of these nanoparticles when used in combination. **Methods:** Nanoparticles were synthesized using probe sonication method with Ag, Pt, and Cu metal ions. The synthesized nanoparticles were characterized using UV-Vis spectroscopy, FTIR, FESEM, Zeta potential, and EDAX techniques. The antibacterial activity of the nanoparticles was assessed using the cup plate method. The minimum inhibitory concentration (MIC) was determined using the resazurin dye assay, and the synergistic effects of the Doxycycline and Curcumin metal complexes were analyzed using the checkerboard method. **Results:** The successful formation of Doxycycline and Curcumin metal nanoparticles was confirmed by color change and UV-Vis spectroscopy, with absorbance in the range of 270-355 nm for doxycycline and 300-450 nm for curcumin nanoparticles. FTIR analysis indicated possible coordinate bond formation with metal ions, while FESEM revealed spherical morphology for Dox-Ag nanoparticles (37.3-97 nm) and Cur-Ag nanoparticles (41.5-55 nm). Antibacterial studies showed that Dox-Ag, Dox-Pt, and Cur-Ag nanoparticles exhibited significantly greater activity against *E. coli* and *K. pneumoniae*. The lowest MIC against *E. coli* was 16 µg/ml for Dox-Ag, compared to 128 µg/ml for doxycycline alone. The checkerboard method demonstrated synergistic effects when Doxycycline and Curcumin metal complexes were combined. **Conclusions:** The successful formation of Doxycycline and Curcumin metal nanoparticles was confirmed by color change and UV-Vis spectroscopy, with absorbance in the range of 270-355 nm for doxycycline and 300-450 nm for curcumin nanoparticles. FTIR analysis indicated possible coordinate bond formation with metal ions, while FESEM revealed spherical morphology for Dox-Ag nanoparticles (37.3-97 nm) and Cur-Ag nanoparticles (41.5-55 nm). Antibacterial studies showed that Dox-Ag, Dox-Pt, and Cur-Ag nanoparticles exhibited

significantly greater activity against *E. coli* and *K. pneumoniae*. The lowest MIC against ***E. coli*** was 16 µg/ml for Dox-Ag, compared to 128 µg/ml for doxycycline alone. The checkerboard method demonstrated synergistic effects when Doxycycline and Curcumin metal complexes were combined

PCTC581
MILK-BASED SOLID DISPERSIONS OF OMEPRAZOLE FOR ENHANCED SOLUBILITY AND RELEASE: AN INVESTIGATION

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Abstract:

Objectives: To enhance the solubility and dissolution rate of omeprazole in milk-based solid dispersions. **Methods:** Preformulation studies were performed on omeprazole (OMP) and milk, including the physical properties and compatibility between OMP and milk. *In silico* docking studies using AutoDock were performed between OMP and milk protein. OMP-loaded solid dispersions (SDs) were prepared using milk as a carrier via lyophilization, and the composition was statistically optimized by 2^3 full factorial designs using R-Studio (version 4.3.3). Characterization of SDs, including solid-state analysis, solubility, and dissolution studies, was performed. The SDs were converted into granules and enteric-coated with the eudragit L 100 polymer solution for resistance in the gastric fluid. The *in vivo* drug release of enteric-coated granules of optimized OMP-SD was assessed using Wistar rats (IAEC No: CPS-GMC/IEC-1/24/PCS-02) and accelerated stability testing of optimized SDs was performed. **Results:** Preformulation studies of omeprazole and milk were conducted and compatibility studies were performed using an *in silico* docking method. The docking studies have shown bonding between milk proteins and OMP. 12 formulations were developed and found that F6 was the best formulation. The surface morphology and conversion from crystalline to amorphous SDs were confirmed by SEM, DSC, and XRD. The drug content, solubility, and cumulative drug release (10^{th} min) of SDs were 98.25±0.15 %, 16.285±1.21 mg/mL, and 44.60±2.51 % respectively. *In vivo* data indicated a significant enhancement in the OMP release (>50%) than the pure drug in 10 min. This was comparable to findings from the *in vitro* drug release study. The OMP-SDs were stable during the accelerated study conditions. **Conclusions:** A milk-based SD of OMP was successfully formulated, exhibiting significantly enhanced solubility and release compared with pure OMP. Enteric coating helps achieve site-specific delivery of OMP resulting in improved therapeutic response.

PCTC582
DEVELOPMENT AND EVALUATION OF FILM FORMING SPRAY FOR PSORIASIS

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Abstract

Objective: The aim of this research was to develop and evaluate a film-forming spray (FFS) using *Curcuma longa* mother tincture as the active pharmaceutical ingredient, combined with polymers like Ethyl Cellulose and Eudragit. The goal was to create a sustained-release drug delivery system to improve patient compliance, especially for those with difficulty swallowing traditional oral dosage forms, such as the elderly, children, and patients with specific medical conditions. **Methods:** The film-forming spray was prepared using the solvent evaporation technique to ensure uniform drug distribution within the film. The formulation was evaluated for various physicochemical parameters, including drug content, pH, stickiness, water washability, viscosity, drying time, spray angle, and the volume of spray solution delivered per actuation. *In vitro* drug diffusion and

ex-vivo permeation studies were conducted using a modified Franz diffusion cell to assess the drug's release profile and skin penetration, which are critical for transdermal delivery efficacy. **Results:** The transdermal drug delivery system was formulated with Ethyl Cellulose and Eudragit showed excellent performance across all evaluated parameters. The *in-vitro* drug release study over 6 hours showed drug release ranging from 25±0.34% to 91±0.54% across batches. The *in vitro* drug release study indicated that the formulation with a 1:1 ratio of Ethyl Cellulose and Eudragit had the highest percentage of drug release, demonstrating superior drug availability and effectiveness. The drug content varied from 56±0.82% to 88± 1.39%. **Conclusion:** The film-forming spray of *Curcuma longa* mother tincture with a 1:1 ratio of Ethyl Cellulose and Eudragit was identified as the optimal sustained-release transdermal system. This formulation enhances drug bioavailability and holds significant potential for improving patient compliance and therapeutic outcomes.

PCTC583

FORMULATION, DEVELOPMENT, AND EVALUATION OF AN ANTIACNE FORMULATION

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Abstract:

Objectives: The objective of this study was to formulate antiacne Probiotic preparation. Evaluation and characterization of Probiotic Composition by improving effectiveness and enhancing the activity and survival of probiotic composition for anti-acne.**Methods:** The antiacne gel formulation was developed using a systematic approach that began with the selection of key ingredients, including Carbopol 934 as a gelling agent, propyl paraben and methyl paraben as preservatives, propylene glycol 400 as a humectant, and triethanolamine as a pH adjuster. The gel base was prepared by dispersing Carbopol 934 in distilled water with continuous stirring to ensure uniformity. A preservative solution was added to the gel base, consisting of propyl paraben and methyl paraben dissolved in distilled water. The active ingredient, Lactobacillus acidophilus, was incorporated into the mixture, and thorough mixing was achieved using a magnetic stirrer. Finally, triethanolamine was added to adjust the pH of the formulation to 5.8. The formulated gel was then characterized for its viscosity, pH, and stability. Rheological properties were assessed to confirm the gel's consistency and ease of application. *In vitro* diffusion study and Anti-microbial study were also performed. **Results:** The antiacne gel formulations were assessed for physical properties such as spreadability and viscosity, as well as chemical characteristics like drug content and *in vitro* drug release. The spreadability of the formulations ranged from 4.654 to 20.367 g·cm/sec, with Batch F1 showing the highest spreadability. Drug content across all batches was uniformly distributed, with Batch F1 exhibiting the highest content at 85.96%. *In vitro*, drug release studies demonstrated sustained release, with Batch F1 achieving a maximum release of 70.21%, following near zero-order kinetics. Lactobacillus acidophilus contributed to the formulation's antimicrobial efficacy, enhancing its ability to inhibit acne-causing bacteria. These findings suggest that Batch F1 is the most promising candidate for further development in antiacne therapy. **Conclusions:** The formulated anti-acne gel, combining Lactobacillus acidophilus and Carbopol 934, offers a promising natural approach to acne treatment. It effectively balances skin microbiota, reduces inflammation, and inhibits acne-causing bacteria, while providing a stable and skin-friendly base. Future research should focus on long-term stability studies, clinical trials, and exploring additional natural ingredients to enhance efficacy. This formulation lays the groundwork for developing effective, natural, and user-friendly anti-acne treatments, advancing skincare and probiotic applications.

PCTC584
DEVELOPMENT AND CHARACTERIZATION OF FLOATING MICROSPHERES OF SITAGLIPTIN PHOSPHATE

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Abstract:

Objective: The aim of this is to develop and evaluate the floating drug delivery system which is one of the many techniques that have been developed to significantly extend the gastric residence time (GRT). For The long-term release, more effective bioavailability and in order to extend the medication release, Sitagliptin Phosphate floating microspheres are being produced by using different polymer concentration in these study. **Method:** The model drug, Sitagliptin phosphate incorporated floating microspheres was formulated by using emulsion solvent evaporation method in which acetone and ethanol were chosen as a solvent in a 10:5 proportion, and a mechanical stirrer operating at a 900 rpm stirring speed was set up to manufacture the final formulation by making use of Eudragit RS100, HPMC K100, and Ethyl Cellulose as polymers. **Result:** FTIR analysis confirmed no interaction between the Sitagliptin, polymers and excipients. The formed microspheres are almost cylindrical in shape and range in particle size from 230 to 470 µm. The range of the percentage yield was 74.84 to 91.92%. The drug entrapment efficiency was found between 80.83 - 97.16%. The findings concluded that the assay was between 79.06 and 98.23% and the floating ability was within 71.04 and 93.04%. The *in vitro* drug release of the optimised batch has been found to be 98.56% with a 12-hour extended medication release. **Conclusions:** The study concluded that, gastro-retentive floating microspheres which are formulated by using emulsion solvent evaporation approach by incorporating the drug in to the polymer combination of HPMC K100, Eudragit RS100, and ethyl cellulose is a promising technique that produces floating microspheres having the ability to extend the drug release.

PCTC585
DEVELOPMENT AND EVALUATION OF DIFLUNISAL LOADED POLYMERIC NANOSPONGES GEL FOR TOPICAL DRUG DELIVERY IN RHEUMATOID ARTHRITIS

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Abstract:

Objectives: The aim of this study was to enhance the solubility and therapeutic efficacy of a diflunisal-loaded nanosponge topical gel while minimizing systemic toxicity in the treatment of rheumatoid arthritis. **Methods:** Diflunisal (DIF) was selected for the study. Nanosponges were prepared using emulsion solvent evaporation methods, with various polymer ratios to optimize drug entrapment and release characteristics by central composite statistical design. The efficacy of the DIF-loaded nanosponges was tested in a CFA-induced arthritis rat model, assessing anti-inflammatory activity.Data from the experiments were statistically analyzed to validate the significance of the results, ensuring the reliability of the findings. **Results:** The optimized batch of DIF-loaded nanosponges exhibited a spherical morphology, with a drug release percentage of 65% and an entrapment efficiency of 82.45%. The practical yield was 75%, and the particle size measured was 120.1 nm. FTIR analysis confirmed the physical compatibility of the drug and excipients, as the functional group peaks remained consistent over time. *In vitro* release of the DIF-NS gel demonstrated a sustained release pattern compared to the plain DIF gel. It significantly reduced paw volume in CFA-induced arthritic rats compared to the control groups. **Conclusions:** The study demonstrated that the novel formulation significantly enhanced skin penetration and sustained drug release compared to traditional gels, indicating its potential for improved therapeutic efficacy. These findings suggest that this innovative approach could lead to more effective topical drug delivery systems, particularly in the treatment of conditions like rheumatoid arthritis.

PCTC586

DESIGN, CHARACTERIZATION, AND EVALUATION OF NANOEMULSIFIED HESPERIDIN-LOADED SILK FIBROIN HYDROGEL WOUND DRESSING

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Abstract:

Objectives: This study aimed to create a biocompatible, biodegradable, and multifunctional medical textile-based delivery system that offers excellent clinical and morphological support during wound healing and tissue regeneration and offers a more effective and safer alternative to existing scaffolds. **Methods**: Silk fibroin (SF) from *Bombyx mori* was extracted using an alkaline degumming process and dissolved in 9.3M lithium bromide, selected after comparison with Ajisawa's ternary solvent system and zinc chloride. The minimum inhibitory concentration (MIC) of hesperidin (HSD) was determined, and its antimicrobial properties were assessed. Hydrogel films were prepared using carboxymethyl cellulose (CMC), sodium alginate (SA), and polyvinyl alcohol (PVA) through physical crosslinking followed by solvent casting, and optimization was achieved using the One-Factor-at-a-Time (OFAT) technique. A nanoemulsion of hesperidin (n-HSD) was developed and optimized using the response surface method (RSM), and subsequently incorporated into the optimized hydrogel. The final n-HSD/SF hydrogel film was evaluated for physical, mechanical, and biological properties, including thickness, tensile strength, scanning electron microscopy analysis, water uptake capacity, swelling behavior, water vapor transmission rate, porosity, *in vitro* drug release, antimicrobial activity, and wound healing efficacy, using the chorioallantoic membrane (CAM) and wound scratch assays. **Results**: The MIC of HSD was determined to be 8 mg/mL, demonstrating its effectiveness against selected microorganisms. SEM analysis indicated that the pore size of the n-HSD/SF hydrogel film supported fibroblast migration and proliferation, with optimal porosity for oxygen and nutrient transport. The F9 formulation demonstrated ideal swelling (4.917±0.002), water uptake capacity (318.3±1.8), and water vapor transmission rate (1412.3±1.8) along with suitable mechanical properties, making it appropriate for incorporating n-HSD. The CAM assay confirmed that the n-HSD/SF hydrogel film was nonirritant similar to the negative control (0.9% w/v NaCl) and biocompatible, indicating its safety for use as a wound dressing. *In vitro* wound healing studies showed nearly complete wound closure in L929 cultures treated with the n-HSD/SF hydrogel film within 72 h, with significant wound contraction on days 1 and 3 post-wounding. This formulation effectively promoted fibroblast mobilization and rapid skin cell regeneration, thereby accelerating wound healing. Additionally, the hydrogel film exhibited significant antimicrobial activity against the tested microorganisms and showed 98±1.2% drug release *in vitro*, compared to 42±0.04% for the HSD/SF hydrogel film without nano-emulsification. **Conclusions**: The developed medical textile-based n-HSD/SF hydrogel wound dressing provides excellent clinical and morphological support for tissue regeneration and wound healing. The optimized hydrogel film demonstrated strong antimicrobial activity, efficient drug release, and rapid wound closure *in vitro*, closely mimicking the natural extracellular matrix. These findings indicate that the developed hydrogel could be a more effective and safer alternative to current wound healing materials, with significant potential for clinical application as an advanced wound care solution.

PCTC587

FORMULATION AND *IN VITRO* EVALUATION OF NANOSUSPENSIONS OF NATEGLINIDE USING POLOXAMER AS POLYMER

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Abstract:

Objective: The aim of this study was to develop and *In vitro* evaluation of Nanosuspensions of Nateglinide Using Poloxamer as polymer by using decreasing a drug's particle size, which in turn resulted in a higher rate of dissolution and absorption. **Method:** A model drug Neteglinide, was selected for the study. Different formulations were prepared using varying concentrations of poloxamer. Nano-precipitation method for preparing nateglinide nanosuspension by sing the solvent evaporation method. **Result:** The composition of nateglinide nanosuspension was determined using various drug polymer ratios, as indicated . Drug particle were decreased to nano size by nano-precipitation method and NNF4 has the highest percentage yield (78.5%), formulation F4 had the highest percentage drug content (99.43%), *in vitro* drug release found (92.78±2.48) when compared to other formulations, NNF4 showed the best release and was deemed the best formulation, and release kinetic data were all assessed in the formulations. The drug release from all formulations follows Higuchi model, as demonstrated by greater R^2 values. **Conclusions:** This study developed a method to create a nanosuspension of Nateglinide, a drug used to manage diabetes, using poloxamer as a stabilizer. By adjusting factors like the stabilizer concentration, surfactant concentration, and mixing rate, the size of the nanoparticles could be controlled. The nanosuspension showed better drug release in a lab test compared to the pure drug, suggesting it might be a better way to deliver drugs that don't dissolve well in water. This approach could lead to improved drug effectiveness and sets the stage for future research on how well the drug works in the body and its overall impact. The successful results in increasing Nateglinide's solubility show promise for using nanosuspensions to enhance other poorly soluble drugs as well.

PCTC588

DEVELOPMENT AND EVALUATION OF ORAL FORMULATION CONTAINING CORN SILK EXTRACT FOR URINARY TRACT INFECTION

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Abstract:

Objectives: Objectives of the study is evaluation of antimicrobial activity of corn silk extract and formulation of suitable oral dosage form in combination with D-mannose. The primary of the study is developing a stable and effective oral dosage form against UTI pathogens. **Methods:** The ethanolic solvents are used for extraction of corn silk and then the extract was dried to a powder. While D-mannose is sourced in its pure form. The different tablet batches are formulated by the combination of corn silk extract and D-mannose with excipients by direct compression methods. Then the tablets are evaluated such techniques are physical appearance, hardness, friability, disintegration, weight variation and *in vitro* dissolution. **Results:** The results showed that the ethanolic extract of corn silk had a significant antibacterial activity that was depicted through the zone of inhibition against UTI pathogens such as *E. coli* (up to 13mm), *S. aureues* (up to 10mm) and *K. pneumoniae* (up to 10mm) at a concentration of 250mg. Tablets were formulated and optimized using 3^2 full factorial design, achieving optimal disintegration time (34 seconds) and drug release (75.06% in 60min). Post formulation evaluations confirmed that tablets met standard quality parameters such as hardness (5.7kg/cm^3), friability (0.86%) and

wight variations (found within the criteria was ±5% of the average weight). **Conclusions:** This study demonstrated that the combination of corn silk extract and D-mannose has a potential effect against the urinary tract infection. The factorial design optimization provided a robust formulation with desirable disintegration and drug release characteristics, paving the way for future *in vivo* preclinical evaluations and potential clinical applications in UTI management.

PCTC589

PREPARATION AND EVALUATION OF LIP BALM USING *BOUGAINVILLEA SPECTABILIS*

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Abstract:

Objective: In the current study, Lipbalm using bougainvillea spectabilis was prepared and evaluated. **Material and methods**: 10 grams of bougainvillea spectabilis powder was extracted with 500ml of methanol. Petroleum jelly was taken in a porcelain dish and heated in a heating mantle at 55- 600C till molten mass was formed. Rose oil was added and stirred to this almond oil. The mixture was thoroughly stirred and the temperature was lowered slowly with stirring. To this semisolid mass Bougainvillea extract and vitamin E were added. Further, the mixture was stirred to get a uniform mixture. • This mass was then poured in the lip balm container. **Results:** The formulation's pH was found to be safe for lip application, with a melting point range of 68-70°C, which is consistent with standard ranges and similar to petroleum jelly. The spreadability was tested using glass slides and graded on a scale from good to bad. A skin sensitivity test was carried out by applying the product as a patch on the skin for 30 minutes, with no allergic reactions observed. This ensures the product's safety and efficacy for topical use. **Conclusion**: The bougainvillea extract lip balm showed positive results in pH, melting point, spreadability, and skin sensitivity tests. Comparing formulations 1 and 2, formulation 2 proved safer and more efficient, matching the quality of marketed lip balms and surpassing formulation 1. Thus, formulation 2 successfully met the study's objective.

PCTC590

DEVELOPMENT AND EVALUATION OF DRUG REGIMEN TOWARDS TRIPLE NEGATIVE BREAST CANCER

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Abstract:

Objective: In the current study, a drug regimen towards triple-negative breast cancer (TNBC) was developed and evaluated. **Material and methods**: The preparation method for Liquid Crystalline Nanoparticles (LCNPs) of compound S followed the literature procedure. Compound S and Glyceryl Monooleate (GMO) were dissolved in ethanol (oily phase), while Pluronic F-127 was dissolved in deionized water (aqueous phase). The aqueous phase was added dropwise to the lipid phase using the vortex method at 3200 rpm for 5-10 minutes. This process resulted in a colloidal dispersion of LCNPs. **Results:** To optimize the formulation of Liquid Crystalline Nanoparticles (LCNPs) for compound S, varying concentrations of components like GMO, ethanol, and Pluronic F-127 were tested to achieve stable, non-toxic nanoparticles with high drug loading capacity. The optimized formulation resulted in nanoparticles with a particle size of 197.7 nm, PDI of 0.098, and 96.5% entrapment efficiency. Drug release studies showed that LCNPs extended the release of compound S to 72 hours, following first-order kinetics, with PEGylated and targeted formulations showing even higher effectiveness in cell viability studies. Stability studies confirmed the formulation's stability at 4°C, with significant changes observed at 25°C. **Conclusion**: Compound S-LCNPs were prepared for managing Triple Negative Breast Cancer

to enhance bioavailability. The optimized nanoparticles showed acceptable physicochemical characteristics, including a particle size of 197.7 nm, PDI of 0.098, and 96.5% entrapment efficiency. Drug release studies revealed that LCNPs extended the release of compound S to 72 hours, with PEGylated and F3 peptide-targeted formulations showing 69.9% and 85.6% release, respectively. Stability at 4°C was confirmed, and *in vitro* cytotoxicity tests demonstrated that the nanoformulations were significantly more effective against MB 468 and MB 231 cell lines than the pure drug.

PCTC591

FORMULATION, DEVELOPMENT AND EVALUATION OF INTRANASAL LIPOSOMES FOR ANTIEPILEPTIC DRUG

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Abstract:

Objective: The objective of this study is to develop and evaluate intranasal liposomes containing antiepileptic drugs (AEDs) to enhance drug bioavailability and solubility. The goal is to explore the formulation and development of these liposomes as a novel drug delivery method for AEDs, aiming to improve treatment outcomes for epilepsy by targeting drug delivery directly to the brain, bypassing the blood-brain barrier, and minimizing systemic adverse effects. **Method:** Liposomes loaded with an antiepileptic drug were prepared using the thin-layer hydration technique with soybean phosphatidylcholine and cholesterol as the primary components. The liposomal formulations were characterized for particle size, zeta potential, polydispersity index, entrapment efficiency (EE), and morphology using various techniques, including transmission electron microscopy (TEM). Ex vivo permeation studies were performed using sheep nasal mucosa to evaluate nasal absorption, while an *in vivo* pharmacokinetic study was conducted in Wistar albino rats to assess brain uptake of intranasal liposomal formulations in comparison to the pure drug. **Result:** This study aimed to enhance brain delivery of an antiepileptic drug through intranasal administration using liposomal formulations. Liposomes were prepared via the thin-layer hydration technique with soybean phosphatidylcholine and cholesterol as the main components. The formulations were characterized for particle size, polydispersity index (PDI), entrapment efficiency (EE), zeta potential, and morphology. The liposomes demonstrated particle sizes ranging from 90 to 210 nm, a low PDI (<0.5), and high EE (60%–85%), which increased with higher phosphatidylcholine concentration. Transmission electron microscopy (TEM) confirmed the spherical shape of liposomes, with sizes below 250 nm. *Ex vivo* and *in vivo* studies showed that intranasal liposomal formulation (F4) enhanced brain-targeting and drug delivery efficiency. **Conclusion:** The results indicate that intranasal liposomes, which provide enhanced solubility, bioavailability, and targeted administration to the brain, are a viable delivery strategy for antiepileptic medications. This strategy may result in epilepsy treatments that are more successful by lowering the need for larger dosages and the negative consequences of using traditional delivery methods. To investigate the long-term safety and effectiveness of these formulations in clinical settings, more research is necessary.

PCTC592

ENHANCING RANOLAZINE EXTENDED-RELEASE TABLETS: APPLICATION OF RESPONSE SURFACE METHODOLOGY FOR OPTIMIZATION

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Abstract:

Objectives: This study aimed to develop and optimize ranolazine extended-release (ER) tablets utilizing response surface methodology (RSM) to enhance the therapeutic efficacy and patient compliance in the

management of chronic angina. **Methods:** Ranolazine, characterized by its short half-life, requires frequent dosing in its conventional form, making it an ideal candidate for an extended-release formulation. Extended-release tablets were formulated using a direct compression method, incorporating hydrophilic (hydroxypropyl methylcellulose, HPMC) and hydrophobic (ethylcellulose, EC) polymers as matrix-forming agents. A 3^2 full factorial design was employed to assess the impact of polymer concentration (X1) and compression force (X2) on the tablet integrity (Y1) drug release profile (Y2). Response surface methodology was utilized to model and optimize the formulation parameters, with the goal of achieving a controlled release of Ranolazine over a 24-hour period. **Results:** The results demonstrated that both polymer concentration and compression force significantly influenced the drug release rate and tablet integrity. The optimized formulation, as predicted by the RSM model, exhibited a controlled release profile following a zero-order kinetic model, with consistent drug release over 24 hours. Experimental validation confirmed the accuracy of the RSM predictions, underscoring the utility of this approach in optimizing extended-release formulations. **Conclusions:** This study concluded that Ranolazine extended-release tablets was successfully developed and optimized using response surface methodology. The optimized formulation provides a promising approach to improve patient adherence and therapeutic outcomes in chronic angina management.

PCTC593
SELF-EMULSIFYING DRUG DELIVERY SYSTEM CONTAING ITRACONAZOLE: FORMULATION AND IT'S EVALUATION

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Abstract:

Objectives: The main objective of formulation is to enhance the bioavailability of the drug within the body. Some of the challenging subjects associated with poorly water-soluble drugs concern solubility and bioavailability factors. To overcome these problems, new technologies, such as lipid-based drug delivery systems including micro or nano emulsifying drug delivery system, have obtained importance in recent years, due to their enhanced solubility and bioavailability in the gastrointestinal tract. Such systems are solubilized within the lipid excipients or mixed with oils or surfactants/co-solvents to facilitate the solubility and absorption rate, which can enhance the bioavailability of the targeted drug. The research was targeted to develop a self-Nano Emulsifying drug delivery system (SNEDDS) for oral bioavailability enhancement of BCS II antifungal drug Itraconazole.Nano Emulsions are consignment methods that improve the solubility and distribution of lipid medicines to the intended areas. **Methods:** SNEDDS of Itraconazole were developed using Castor oil, Tween 20 as surfactant and PEG 200 as co-surfactant. SNEDDS formulation can be obtained through phase diagram approach. Pseudo Ternary phase diagrams were constructed, using Chemix software, to optimize the concentrations of excipients. Thermodynamic stability studies were satisfactory. Robustness to dilution did not exhibit phase separation and drug precipitation. **Results:** Among 4 formulations, B1F3 formulation showed more than 95% of drug content and were considered superior and subjected to droplet size analysis and zeta potential measurement. Droplet size ranged from 120 nm to 505 nm. The Nano size was obtained for formulation. The zeta-potential results indicated the range -35 mV. Based on all evaluation tests, formulation B2F3 was chosen as the best. **Conclusion:** Thus, this self-Nano Emulsifying drug delivery system should be an effective oral dosage form for improving oral bioavailability of lipophilic drug Itraconazole.

PCTC594

IN VITRO AND *IN SILICO* EVALUATION OF CONTROLLED RELEASE TABLETS OF AN ANTIDIABETIC DRUG PREPARED BY USING POLY (ACRYLIC ACID) GRAFTED GELLAN GUM

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Abstract:

Objectives: To synthesize poly (acrylic acid) grafted gellan gum and prepare matrix tablets of Metformin HCl (antidiabetic drug) using the grafted polymer, To evaluate the tablets by *in vitro* physical methods and simulating the plasma profile by *in silico* method. **Methods:** The synthesis of poly-acrylic acid grafted gellan gum was carried out using cerric (IV) ammonium nitrate assisted graft copolymerization process in a microwave oven. Concentration of the acrylic acid was taken as an independent variable.Wet granulation method was employed to prepare matrix tablets of Metformin employing the grafted gellan gum. The prepared tablets were evaluated by weight variation, hardness test, friability test, *in vitro* drug dissolution studies.Plasma concentration versus time profile of the tablets were simulated using the dissolution data with the help of PKSim® Software ver. 11.3. **Results:** A sharp peak of Metformin HCl was found intact at 231^{0}C when the matrix tablet was passed through differential scanning calorimetric (DSC) study indicating minimum interaction with the grafted copolymer of gellan gum. The tablet hardness was found within the range 8 to 9 kg/cm^2, friability within0.259 to 0.278%, drug contentin between 98.66 to 98.84% and thickness around 5.01 to 5.10 mm. Dissolution profile of the tablets were employed to simulate plasma profile by PKSim® Software ver. 11.3. The simulation profile showed prolonged release of Metformin from the tablets. Kinetic analysis of the dissolution profile closely matched with Higuchi kinetic model of drug release. **Conclusion:** The tablets prepared by the grafted gellan gum formulation were carried out using wet granulation method. The *in-vitro* release study of the tablets exhibited controlled prolonged release tablet when compared with marketed compressed tablets. It can be concluded that the grafted gum can be used as polymer matrix to prepare controlled release tablets of water soluble drug Metformin.

PCTC595

SYNTHESIS OF BIOCOMPATIBLE NANO HYDROXYAPATITE USING A GREEN TEMPLATE FOR POTENTIAL APPLICATIONS AS BONE AND TEETH MATERIALS

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Abstract

Objectives: Hydroxyapatite (HA) is a crucial mineral for biomedical applications due to its natural presence in human bones and teeth. This study synthesized nanohydroxyapatite particles using the chemical precipitation method.Maintaining the size of nanohydroxyapatite particles within the nano range requires careful consideration of various factors. **Methods:** To achieve this, banana peel was used as a green template, serving as a reducing, capping, and stabilizing agent to maintain the nanohydroxyapatite particles. **Results:** The creation of nanohydroxyapatite particles was confirmed by fourier transform infrared spectroscopy (FTIR), which showed notable strong peaks at 1100-1000 cm{ ^{1}, 1400-1450 cm{ ^{1}, and 600-700 cm{ ^{1}, corresponding to phosphate groups, carbonate groups and calcium-oxygen bonds respectively. The generated nanohydroxyapatite particles purity was further demonstrated by XRD analysis, where the highest diffraction peak was displayed at 31.152^0,

which was similar to that of the standard JCPDS database. This analysis further added that the average crystalline size of synthesized nanoparticles was found to be 17 nm. The hemolysis study indicated that the synthesized nanohydroxyapatite particles exhibited non-hemolytic properties, confirming their biocompatibility. **Conclusion:** Therefore, the nanohydroxyapatite particles so synthesized are good candidates for further biomedical applications as bone and teeth materials.

PCTC596

DESIGN AND *IN VITRO* AND *IN SILICO* EVALUATION OF PREPARED LIPOSOME CONTAINING QUERCETIN

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Abstract:

Objectives: Preparation of liposome containing Quercetin by using thin lipid film method. Evaluation of the liposomes by *in vitro* methods and simulating the plasma profile by *in silico* method. **Methods:** The liposomes containing Quercetin were prepared by thin lipid film method using soya lecithin, cholesterol and chloroform. The prepared liposomes were evaluated by drug entrapment efficiency and drug release study. Drug release kinetics were determined and release kinetic models were checked against Zero order, First Order, Higuchi model, Hixon Crowell model, Korsmeyer-Peppas model. Plasma concentration versus time profile of the liposome was simulated using the dissolution data with the help of PKSim® Software ver. 11.3. **Results:** Liposomes containing Quercetin exhibited drug entrapment efficiencies ranging from 81 to 83%. Dissolution profiles of the liposomes were employed to simulate plasma profile by PKSim® Software ver. 11.3. The simulation profile showed prolonged release of Quercetin from the liposomes over 4 hours. **Conclusions:** Quercetin liposomal formulations were developed and showed entrapment efficiency of above 80%. When the dissolution profile was used for simulation in PKSim® the results exhibited controlled release of drug delivery from the liposomes.

PCTC597

TO FORMULATE AND EVALUATE HERBAL ANTIBACTERIAL CREAM FROM *FICUS RELIGIOSA* LEAVES EXTRACT

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Abstract:

Objective: The objective of this study was to prepare and evaluate antibacterial creams using hydroalcoholic and aqueous extracts of *Ficus religiosa* leaves, targeting both Gram-positive (*Staphylococcus aureus*) and Gram-negative bacteria (*Pseudomonas aurignosa, Escherichia coli*). **Methods:** *Extraction Process:* A simple maceration process was used to formulate the antibacterial cream of hydroalcoholic and aqueous extracts of *Ficus religiosa* leaves. *Formulation of Creams:* Oil in water [O/W] and water in oil [W/O] were formulated using the extract of *Ficus religiosa* leaves and were denoted as F1 to F4 respectively. *Evaluation Parameters: Physical Properties:* Appearance, consistency, and phase separation were checked. *pH:* The pH of each formulation was measured. *Viscosity:* was carried out to assess texture and ease of cream application. *Spreadability:* Testing the spreadability of the creams on appropriate surfaces. *Stability:* Accelerated Stability at 40 °C ± 2 °C/75% RH ± 5% RH for one month period. *Antibacterial Activity:* Assessment of the antibacterial efficacy of the formulated creams against *Staphylococcus aureus, Pseudomonas aurignosa, and Escherichia coli.* **Results:** All the formulated creams demonstrated good physical properties, including uniform appearance, appropriate

consistency, and no phase separation during the study period. Both O/W and W/O creams exhibited satisfactory spreadability and maintained consistent pH and viscosity. Antibacterial activity tests showed that the creams retained effective inhibition against *Staphylococcus aureus, Pseudomonas aurignosa*, and *Escherichia coli*, indicating preserved antibacterial properties of the *Ficus religiosa* leaf extracts. **Conclusion:** The study successfully formulated antibacterial creams using hydroalcoholic and aqueous extracts of *Ficus religiosa* leaves. The creams exhibited desirable pharmaceutical characteristics such as good spreadability, consistency, and antibacterial activity. These findings suggest that *Ficus religiosa* leaf extracts could be a valuable ingredient in topical formulations to treat skin and soft tissue infections caused by Gram-positive and Gram-negative bacteria. Further research could explore these formulations' clinical efficacy and safety for potential therapeutic applications.

PCTC598

FORMULATION DEVELOPMENT AND EVALUATION OF MEDICATED CHEWING GUM TO ENHANCE ALERTNESS

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Abstract:

Objectives: The aim of this study was to formulate and evaluate medicated chewing gum containing caffeine by direct compression method and to perform *in-vitro* evaluation studies. **Methods:** Caffeine was selected as the model drug for the study. Various formulations (F1 to F6) were prepared using the gum base "Health in Gum®" from Cafosa (Barcelona, Spain) and soya lecithin. These formulations were created via direct compression using a Rimek mini press compression machine. The physical and chemical properties of the drug and gum base were characterized using differential scanning calorimetry (DSC) and Fourier transform infrared spectroscopy (FTIR). Pre-formulation studies were conducted on the powder mixture containing the drug, gum base, and other excipients. The prepared formulations were evaluated for parameters including thickness, hardness, friability, stickiness, drug content, *in vitro* drug release, and stability. Optimization was based on drug release and hardness. **Results:** The optimized formulation showed all parameters within acceptable ranges: mean thickness values ranged from 5.09 to 5.1 mm, hardness ranged between 4-5 kg/cm², and percentage friability was 0.01%. The medicated chewing gum was non-sticky, with drug content ranging from 98% to 102%. *In vitro* release studies demonstrated that 90% of the drug was released within 20 minutes. **Conclusions:** Medicated chewing gum containing caffeine was successfully formulated and evaluated. The *in vitro* drug release study indicated that formulation F6 was the best, with other parameters like hardness, thickness, friability, stickiness, and content uniformity within acceptable ranges. The study confirmed that medicated chewing gum containing "Health in Gum®" and soya lecithin was found to be dosage form for caffeine delivery.

PCTC599

FORMULATION AND EVALUATION OF SUSTAINED RELEASE 5-ASA LOADED MICROBEADS BASED ON COMPOSITE OF *BUTEA MONOSPERMA* AND SODIUM ALGINATE

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Abstract:

Objective: This study aimed to formulate and characterize 5-ASA Microbeads by using different concentrations of natural polymer [gum of *Butea monosperma*] and sodium alginate. **Methods:** The microbeads were prepared by ionic gelation method with different concentration of drug and polymer

ratio. The polymer used is *Butea monosperma* gum and sodium alginate. The cross-linking agent used is calcium chloride. **Results:** The formulations were evaluated with respect to size and shape, drug entrapment, swelling index, loss on drying, moisture content, *in vitro* dissolution profile, FTIR, XRD, SEM . The microbeads have a high swelling index made with gum. These microbeads with good mucoadhesive properties can attach to colon tissues and release the drug slowly. The entrapped drug (DEE) found was in a range between (74-89) %. The dissolution studies showed sustained release with the microbeads prepared with the gum of *Butea monosperma*. **Conclusions:** The study concluded that the ionotropic gelation method successfully formulated stable microbeads with desired properties demonstrating efficient encapsulation and sustain release, making it a promising technique for drug delivery. As the dissolution studies showed good sustained release of microbeads using the gum of *Butea monosperma*. This lays out the possibility for the gum to act as release retardant as well.

PCTC600
FORMULATION AND EVALUATION OF HERBAL ORAL GEL

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Abstract:

Objective: This study aimed to formulate and evaluate herbal ora gel containing herbal extracts of *Senegalia catechu, Azadirachta indica, Vachellia nilotica, Tinospora cordifolia.* **Method:** The dried plant parts were washed properly and shade-dried. Then they were reduced to a coarse powder with a mechanical grinder and subjected to extraction by hot maceration for 24 hours under occasional shaking, after 24 hours filtered and collected. Herbal ora gel was prepared using Carbopol 940 as a gelling agent and triethanolamine was added to the formulation to adjust the mouth skin pH. The formulation was then evaluated for viscosity, spreadability, clarity, gel strength, and anti-microbial activity. **Results:** Several tests were conducted on the prepared gel to guarantee its effectiveness, stability, and safety. The gel's appropriateness for oral application was evaluated by analyzing its physicochemical characteristics, including spreadability, pH, and viscosity. To assess the gel's antibacterial efficacy against common oral pathogens was tested and microbiological investigations were carried out. The results showed that the herbal oral gel's pH and viscosity remained consistent throughout the study period, ensuring application comfort and stability. The antimicrobial investigations indicated significant inhibitory zones against the studied pathogens, indicating the gel's ability to reduce microbial burden in the oral cavity. **Conclusions:** Overall the study concluded that the gel obtained has anti-microbial, anti-inflammatory, analgesic, and wound-healing properties. Also, further clinical tests are required to understand its efficacy.

PCTC601
HYDROXYAPATITE-CIPROFLOXACIN COMPOSITE/PLASTER OF PARIS IMPLANTS FOR BONE DRUG DELIVERY: PREPARATION AND *IN VITRO* EVALUATION

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Abstract:

Objective: The present research deals with preparation and *in vitro* evaluation of effective ciprofloxacin-releasing implantable systems made of hydroxyapatite (HAp)-ciprofloxacin composite (HAp-Cip) powder and plaster of Paris (POP) for bone drug delivery through a one-stage surgical osteomyelitis management. **Method:** HAp-Cip powder was synthesized by wet precipitation

methodology, where the starting raw materials used were $Ca(OH)_2$ and H_3PO_4 in a stoichiometric molar ratio of 10 : 6 along with ciprofloxacin HCl. By the chemical reaction of $Ca(OH)_2$ and H_3PO_4 in the aqueous environment, the yellowish-white colored precipitate of HAp-Cip was formed. The chemical precipitation reaction for HAp synthesis is: 10 $Ca(OH)_2$ + 6 H_3PO_4 '! $Ca_{10}(PO_4)_6(OH)_2$ "!+ 18 H_2O. The HAp-Cip powder was used for HAp-Cip/POP bone-implants (2 mm x 2 mm) via molding technique. **Result:** *In vitro* drug release study of different HAp-Cip/POP bone-implants in phosphate buffer saline (pH 7.4) was carried out, *in vitro* and all these bone-implants exhibited sustained releasing of ciprofloxacin over 8 weeks. HAp-Cip/POP (33/67) bone-implants exhibited comparatively slower sustained *in vitro* ciprofloxacin releasing (51.02 ± 3.04%) over a period of 8 weeks than that of HAp-Cip/POP (50/50) and HAp-Cip/POP (42/58) bone-implants (66.07 ± 1.30% and 55.97 ± 2.52%, respectively). The *in vitro* ciprofloxacin releasing from these HAp-Cip/POP bone-implants followed the Korsmeyer-Peppas model with Fickian diffusion mechanism of ciprofloxacin releasing. The HAp-Cip/POP (33/67) bone-implants were characterized by FTIR spectroscopy analysis (demonstrated the absence of any interaction in-between excipients-drug interaction within bone-implants) and P-XRD analysis (demonstrated the slightly transformation of the crystalline of ciprofloxacin HCl into its amorphous state within bone-implants). **Conclusion:** These newly developed HAp-Cip/POP bone-implants can be usedin one-stage surgical treatment of osteomyelitis with desired prolongedlocalized drug delivery with the bone tissue regeneration possibility to fill the diseased bone voids.

PCTC602

EXTRACTION, FUNCTIONALIZATION, AND ISOLATION OF BETALAIN COMPOUND FROM BEET ROOT AND ITS APPLICATION AS A NATURAL DYE IN ORAL DISSOLVING FILM

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Abstract:

Objectives: Beet root (Beta vulgaris) is the tap root portion of a beet plant. Beet root is a rich source fantioxidant and minerals including sodium, potassium, iron and magnesium and it has several medicinal properties such as anti-hypertensive, anti-microbial, anti-inflammatory, anti-cancer and diuretic. Beet root is low in calories value (about 45Kcal per 100g) and zero cholesterol. Food colour is the most important parameters improve food quality to a significant level. The beet root peels can be a sustainable source of betalains. The aim of this study was aqueous extraction of natural dye (betalain, the colouring agent) from the beet root and then using betalain as colouring agent in oral dissolving film. **Methodology:** Extraction of natural dyes from beet root has been done by ultrasonic assisted extraction method under the 40-50 æ%C. By this sonication process the dye has been extracted. Different formulations has been taken to check the pH and concentration of betalain. Then the extract which is obtained from beet root goes for functionalization process by the help of acetic acid and ethanol. After identification of betalain we have applied as a natural dye in oral dispersible film preparing by solvent evaporation method. **Results:** The isolated compound that is betalain obtained from extracted beetroot has been confirmed by ATR-FTIR spectroscopy study. UV visible spectroscopy study also proves that its a colouring compound bearing absorbance at visible range. The colour intensity depends on the pH and concentration of betalain which has been optimised by experimental studies. It has been found that betalain compound remains stable below 50 æ%C and above which its starts degrading. The oral dissolving film has been prepared by the solvent evaporation method using this betalain compound as a colouring agent of the film along with other ingredients and the evaluation study of ODF (tensile strength, film elongation, thickness, weight variation and colour intensity) has been checked to optimise the formulation. **Conclusion:** The extraction of Betalain has been done by the sonication method. Functionalization and isolation has been conducted and confirmed the presence of betalain group by ATR-FTIR study and UV-VIS spectrophotometer applied as a natural dye in oral dispersible film.

PCTC603

POLYMERIC DEPOT FORMULATION AGAINST *STAPHYLOCOCCUS AUREUS*: DESIGN, FORMULATION AND *IN-VITRO* EVALUATION

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Abstract:

Objectives: This study aimed to explore and evaluate innovative approaches to develop novel antimicrobial combinations using anti-virulence and antibiotic drug combinations and develop a depot formulation for treating skin and soft tissue infections (SSTIs) caused by S. aureus. **Method:** Preformulation studies such as organoleptic properties, solubility profile, drug excipient compatibility studies, and optimization studies were carried out using design expert using central composite design. A polymeric depot formulation was developed to deliver combination drugs such as anti-virulence (metformin) and anti-biotic (Vancomycin) using chitosan and guar gum. The polymeric depot was a triple-layered polymeric preparation. The top layer was a biodegradable polymer PLDLLA (poly [L- Lactide- co-D, L-Lactide]) that prevents the drug flow to the external environment. The middle layer was guar gum and vancomycin and the bottom layer was chitosan and metformin layer. The depot formulation was evaluated for thickness, surface morphology, thermal stability, swelling ratio, and *in vitro* drug release profile. **Results:** FT-IR spectral analysis of the Individual drugs, polymers, and drug polymeric mixtures showed that both the drugs and polymers were compatible. The optimization study revealed that the guar gum concentration was the deciding factor for the drug release from the depot formulation. The thickness of the implants was found to be 8mm±2mm. Surface analysis study using SEM revealed that the inner surface (chitosan layer) which is in contact with the wound is smooth and does not cause any irritation. DSC results showed that both drugs are thermally stable. The swelling ratio for the implants was found to be 34.7% after 7 hrs. The Checkerboard assay results showed the synergism between the two drugs. The *in vitro* drug release studies revealed that metformin has a 100% release rate, and vancomycin has a release rate of 52.5% for 24 hours. The zone of inhibition for both drugs A and B and the polymeric formulation vs marketed Mupirocin ointment was tested using the disc diffusion method and cup plate method respectively. Drug A and Drug B showed the best Zone of Inhibition against S. aureus at 40µg/ml and at 60µg/ml concentration respectively. In the *in-vitro* antimicrobial assay, the depot formulation exhibited the most potent activity, with a fractional inhibitory concentration (FIC) of 0.3-0.5 compared to the marketed formulation. Statistical analysis was performed using GraphPad Prism and it was found to be significant. **Conclusion:** The Above Formulation design ensures that both anti-virulence and antibiotic components are released in sufficient concentration to exert their therapeutic effects. Thus, the combinational formulation developed with synergistic activity provides a way to reduce the antibiotic pressure for recurring infection against Staphylococcus aureus. The anti-virulence and antibiotic combination may enhance the host's immune response against the infectious agent and promote effective clearance of infection at a faster rate due to its localized action in comparison to the available marketed single formulation.

PCTC604

FORMULATION AND EVALUATION OF GASTRORETANTIVE FLOATING TABLETS OF SILDENAFIL CITRATE FOR PULMONARY HYPERTENSION

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Abstract:

Objectives: The objective of the present study was to formulate the gastro-retentive floating tablets containing Sildenafil Citrate, which would remain in the stomach and/or upper part of GIT for a prolonged period of time. **Method:** Floating matrix tablets were

prepared using the conventional wet granulation method. After thoroughly mixing the ingredients, granulation was done using 2-propanol as the granulating agent. The wet mass was dried at 45°C for 2 hours. The dried granules were then lubricated with magnesium stearate and mixed with sodium bicarbonate as a glidant. Tablet compression was carried out to achieve 100mg using a rotary compression machine. **Result:** In this study, compatibility study was performed using ATIR and all excipients and API are compatible where seven different batches of floating tablets containing Sildenafil Citrate were formulated and evaluated. Each 100 mg tablet underwent pre and post-compression tests to evaluate quality and performance. The F6 formulation of Sildenafil Citrate floating tablets was determined to be the best batch. All the evaluation parameters of F6 are in range (weight variation- 103 mg, friability test- 0.81%, Hardness Test- 5.2 kg, Thickness Test- 2.3 mm, Diameter- 6.03mm, Floating time- > 8 hrs Dissolution Test- 91.33 % in 12 hrs). This formulation effectively retains the drug in the stomach for a prolonged period, showing promise for improving the bioavailability and therapeutic efficacy of Sildenafil Citrate. **Conclusion:** After the Formulation and evaluation of the gastroretentive floating tablet, we conclude that all the formulation of tablets is formulated successfully especially F-6 tablets give the best result. All the parameters show the most promising results in F-6. In the Dissolution test average drug release was 91.33% (Formulation – 06).

PCTC605
DESIGN, DEVELOPMENT, AND CHARACTERIZATION OF NEBIVOLOL-LOADED NANOSTRUCTURED LIPID CARRIERS BY USING QUALITY BY DESIGN APPROACH

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Abstract:

Objectives: This study aimed to develop and evaluate Nebivolol (NEB) Nanostructured Lipid Carriers (NLCs) using hot high-speed homogenization to enhance bioavailability and therapeutic potential. **Methods:** Nebivolol, a third-generation β1-adrenergic blocker, was chosen as the model drug. NLC formulations were created using a 2^3 full factorial design, with solid lipid Glycerol monostearate (GMS), liquid lipid Oleic acid, surfactant Tween 80, and homogenization cycles as variables. The NLCs were frozen with 2% mannitol at –75 °C and lyophilized. The optimized NEB-NLC batch was characterized by Transmission Electron Microscopy (TEM), Differential Scanning Calorimetry (DSC), and X-ray Diffraction (XRD). Pharmacokinetic studies were conducted with single doses of NEB and NEB-NLCs, and stability was assessed at 45 ± 2 °C and 75 ± 1% RH. **Results:** NEB-NLCs formulated by hot high-speed homogenization had a mean particle size of 203 nm, zeta potential of –20.6 mV, PDI of 0.465, and entrapment efficiency of 68.75%. The formulation achieved a cumulative drug release of 74.10%. Characterization confirmed uniform size distribution and smooth surfaces. Pharmacokinetic studies showed NEB-NLCs had a higher C_{max} (960 ng/ml), longer T_{max} (4 hours), extended half-life (19.921 hours), and increased AUC0-” (18607 ng h/ml) compared to free NEB. Stability studies indicated that NEB-NLCs remained stable for 3 months. **Conclusions:** NEB-NLCs, using GMS and Oleic acid with Tween 80, demonstrated enhanced drug loading and stability compared to Solid Lipid Nanoparticles (SLNs). This formulation could improve oral bioavailability and warrants further studies on oral absorption and lymphatic transport.

PCTC606
SYNTHESIS AND CHARACTERIZATION OF PH-SENSITIVE HYDROGELS FOR CONTROLLED RELEASE OF DIDANOSINE BY FREE RADICAL POLYMERIZATION OF METHACRYLIC ACID (MAA) AND ACRYLAMIDE (AAM)

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Abstract:

Objective: The aim of this study was to perform synthesis and Characterization of pH-sensitive Didanosine hydrogels using methacrylic acid (MAA) and acrylamide (AAm for the controlled release of Didanosine. **Methodology:**The hydrogels were synthesized by free radical polymerization technique using, N,N^2 -Methylene bisacrylamide (MBA) to polymerize methacrylic acid to poly(methacrylic acid). Ammonium persulphate (APS) was used as a polymerization initiator to form an interpenetrating polymeric network (IPN). N,N^2 -Methylene bisacrylamide was used for crosslinking of methacrylic acid and acrylamide to form IPN. Sixteen formulations were prepared by varying drug-polymer ratio and concentration of polymers and crosslinking agents to study the swelling and *in vitro* drug release profiles. The amount of ammonium persulphate was kept constant in all the formulations. The compatibility of the drug with the polymers was confirmed by Fourier transform infrared spectroscopy (FT-IR) and Differential scanning calorimetry (DSC). The X-ray diffraction (XRD) studies were carried out to check the nature of the drug in the hydrogel formulations. Surface morphology was studied by using Scanning electron microscopy (SEM). **Result**: The IPN hydrogels swelled in alkaline pH and swelling was minimal in acidic pH. It was found that as the concentration of crosslinking agents increased, there was a decrease in swelling. The optimum crosslinker concentration was found to be 15 %. The release data showed that, as the concentration of methacrylic acid was increased; swelling decreased in the acidic pH but increased in the basic pH resulting in increased release of the drug in the intestine. The drug: polymer ratio was varied from 1:5 , 1:10 and 1:20 respectively and the % drug release was found to decrease from 49 to 34 % in SGF for 6 hours and 93 to 84 % in SGF and SIF for 12 hours. The best fit model in all the cases was found to be Peppas model and regression coefficient (R^2), 'n' and 'K' value of the best formulation FPP 4 was found to be 0.989, 1.036 and 0.074 respectively. It was concluded that Didanosine could be administered through the hydrogels. The drug remained intact and stable in the hydrogels during storage, with no significant chemical interaction between the drug and the excipients. **Conclusion:** The preliminary results suggest that poly(methacrylic acid) and poly(acrylamide) IPN hydrogels can be used for the pH sensitive controlled release drug delivery of Didanosine for a sustained release for twelve hours.

PCTC607
FORMULATION AND EVALUATION OF AGMATINE-DEXTRAN SULFATE NANOPARTICLES FOR NASAL ADMINISTRATION

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Abstract:

Objectives: This study was aimed to develop and evaluate an intranasal nanoplex formulation combining agmatine, for neurological disorder and dextran sulfate, a biocompatible and biodegradable polymer. The objective was to enhance the bioavailability and therapeutic efficacy of agmatine

through direct nose-to-brain transport, addressing the limitations of traditional drug delivery methods constrained by the blood-brain barrier. **Methods:** An intranasal nanoplex of agmatine and dextran sulfate was formulated by self-assembled drug-polyelectrolyte method. Various characterization techniques were employed, including Differential Scanning Calorimetry (DSC), X-ray Diffraction (XR), Field Emission Scanning Electron Microscopy (FESEM), zeta potential measurement, and *in vitro* drug diffusion studies. The stability, drug content, entrapment efficiency, and release kinetics of the nanoplex were thoroughly assessed. **Results:** The nanoplex exhibited a negative zeta potential of -24.6 mV, indicating good stability due to effective particle repulsion. Drug content varied from 36.92% to 43.54%, and entrapment efficiency ranged between 86.92% and 98.17%. Optimization Formulation F2 demonstrated the highest drug release of 72.01% at 12 hours and significant ex-vivo permeation with 71.23% after 10 hours. **Conclusions:** The study concludes that the agmatine-dextran sulfate nanoplex is a promising formulation for intranasal administration. It offers favorable particle size 297.1 nm, Zeta potential -24.6 mv, high encapsulation efficiency, and effective drug diffusion properties, making it a viable alternative to neurological disorder. This approach potentially enhances the delivery and efficacy of therapeutic agents by bypassing the blood-brain barrier.

PCTC608
FORMULATION DEVELOPMENT AND *IN-VITRO* EVALUATION OF ANTI AGING CREAM USING THE EXTRACT OF *DAUCUS CAROTA*

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Abstract:

Objective: The aim of this study was to develop and evaluate an anti aging cream using the extract of "*Daucus carota*" using trituration method. **Method:** An extract, Daucus carota was selected for the study. Two formulations were prepared using varying concentrations of chemicals such as Oil phase (Stearic acid and other oil soluble ingredients) and water phase (Preservatives and other water soluble components). By mixing the two phases and Daucus carota extract in mortal and pestle we get the anti aging cream formulation. **Result:** The study successfully formulated and evaluated an anti-aging cream using the extract of Daucus carota. The formulated creams (F1 and F2) exhibited favorable physical properties, including a smooth texture and homogeneity, with no observed irritancy upon application. The pH values of the formulations were within the acceptable range (6.78 for F1 and 6.45 for F2), indicating compatibility with skin. Antimicrobial activity was assessed using the agar disc diffusion method against Staphylococcus aureus, with the extract showing a notable zone of inhibition (20% for the extract and 15% for the formulated cream). This suggests that the cream not only has anti-aging properties but also provides a protective effect against microbial infections. Furthermore, the Sun Protection Factor (SPF) of the formulations was calculated, with F2 showing a higher SPF value of 10.63 ± 0.06 compared to F1's 8.36 ± 0.05. This indicates that the cream can offer some degree of protection against UV radiation, further enhancing its anti-aging claims. Overall, the results indicate that the anti-aging cream formulated with Daucus carota extract possesses significant antioxidant and antimicrobial properties, making it a promising candidate for cosmetic applications aimed at reducing the signs of aging while also providing skin protection. Further studies are recommended to explore the long-term effects and stability of the formulations in various environmental conditions. **Conclusion:** The taproot, which is the edible part of the carrot, can vary in size and shape depending on the cultivar. Carrots have a crunchy texture and a mildly sweet flavor, which can vary in intensity based on their maturity and growing conditions. Daucus carota extract underwent early phytochemical screening, which identified the plant's alkaloids, flavonoids, tannin, carbohydrate, and amino acid content. The goal of the current study activity is to prepare an anti-ageing cream that fills in the gaps left

by the existing anti-ageing formulations. The research found anti-oxidant and anti-microbial activity in two different anti-ageing cream formulation. The most activity was seen with formulation. However, it is impractical to increase the product's efficacy by employing a single plant extract; as a result, the product's efficacy can be increased by combining a number of substances.

PCTC609

FORMULATION, DEVELOPMENT AND EVALUATION OF IRON OXIDE NANOCOMPOSITE FOR ANTIBACTERIAL ACTIVITY

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Abstract:

Objectives: To develop and evaluate iron oxide nanocomposites loaded with Amoxicillin trihydrate and Cefuroxime axetil, aiming to enhance the antibacterial efficacy, stability, and bioavailability of these antibiotics, and to explore their potential in combating antimicrobial resistance (AMR). **Methods**: Iron oxide nanocomposites were synthesized and loaded with Amoxicillin trihydrate and Cefuroxime axetil to improve the antibiotics therapeutic efficacy. Characterization involved X-ray diffraction (XRD) for crystalline structure, transmission electron microscopy (TEM) for nanoparticle morphology and size, and Fourier-transform infrared spectroscopy (FTIR) for chemical bonding analysis. The physicochemical properties of the nanocomposites, including stability and release characteristics, were thoroughly assessed. *In vitro* antimicrobial testing demonstrated their effectiveness against various bacterial strains, while stability studies confirmed their long-term reliability and performance in therapeutic applications. **Results**: UV and FTIR spectral analysis confirm the purity of Cefuroxime axetil and Amoxicillin with distinct absorption peaks. Interactions with iron oxide nanoparticles induce shifts in IR peaks, such as a shift in Cefuroxime's hydroxyl stretch from 3571.58 to 3561.73 cm^-1, reflecting altered molecular interactions. X-ray diffraction of Amoxicillin iron oxide nanoparticles shows Bragg peaks at 35.5° and 63.4°, while Cefuroxime axetil iron oxide nanoparticles show a peak at 35.62°, both suggesting an amorphous state. Particle size analysis shows a uniform size distribution with a low polydispersity index, indicating stability. SEM imaging reveals spherical and rectangular shapes in Cefuroxime-Fe iron oxide nanoparticles. EDAX analysis confirms the presence of carbon, oxygen, chloride, sodium, and iron in the Cefuroxime-Fe nanoparticles. Antimicrobial testing using the agar well diffusion method shows significant inhibition zones: 16 mm against Staphylococcus aureus and 14 mm against Pseudomonas aeruginosa, demonstrating effective antimicrobial activity. **Conclusion**: The study highlights the successful development and formulation of iron oxide nanocomposites loaded with Amoxicillin trihydrate and Cefuroxime axetil. These nanocomposites showed improved stability, controlled release, and enhanced bioavailability of the antibiotics. The *in vitro* antimicrobial testing underscored their potent activity against multidrug-resistant bacterial strains, demonstrating the significant potential of nanotechnology in advancing antimicrobial therapy and addressing the challenge of antimicrobial resistance (AMR).

PCTC610

FORMULATION, DEVELOPMENT AND CHARACTERIZATION OF TRANSDERMAL PATCHES FROM *PSORALEA CORYLIFOLIA* FOR THE MANAGEMENT OF VITILIGO.

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Abstract:

Objectives: The objective of this study was to formulate and evaluate a transdermal drug delivery system for Psoralea corylifolia, using various polymers such as Hydroxypropyl Methylcellulose (HPMC) and Eudragit, via the solvent casting technique. The goal was to achieve sustained drug release and increased

bioavailability of *Psoralea corylifolia*, which has a short half-life. **Methods:** Transdermal drug delivery systems including transdermal patches were formulated using Hydroxypropyl Methylcellulose (HPMC) and Eudragit as polymers through the solvent evaporation technique. The formulations were carefully assessed for several physicochemical properties, including thickness, folding endurance, drug content, and moisture-related attributes such as percent moisture absorption and percent moisture loss. Weight uniformity was also evaluated to ensure consistency across the patches. To determine the effectiveness of drug release, *in vitro* studies were performed using a modified Franz diffusion cell, which provided insights into the drug release profile and overall performance of the transdermal systems. **Results:** UV scanning of *Psoralea corylifolia* showed maximum absorbance at 260 nm with an R^2 value of 0.9844. FTIR confirmed drug-polymer compatibility. The optimized transdermal patches, particularly formulation F5, demonstrated superior drug content (83.02±0.59), moisture content (6.47%), moisture uptake (26.21%), and water vapor transmission (237±2.51). The transdermal patches varied in thickness of 0.1284 mm, weight of 0.03231 mg, tensile strength of 48, and a pH of 7.2. SEM analysis revealed a smooth polymer distribution. *In vitro* and *ex vivo* studies indicated that F5 outperformed others in drug release, while stability tests at 40°C/75% RH and skin irritancy tests confirmed its stability and skin compatibility. **Conclusions:** Based on the *in vitro* drug release and drug content results, the transdermal patches containing HPMC and Eudragit in a 1:1 ratio were identified as the optimal formulation. This formulation showed superior performance in terms of drug release, indicating its potential for effective sustained release of *Psoralea corylifolia.*

PCTC611

FORMULATION AND EVALUATION OF CAPTOPRIL TRANSDERMAL LIPOSOMAL GEL

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Abstract:

Objectives: The objective of this study was to provide sustained and prolonged release of drug which lead to less dosing frequency and to enhance and improve the bioavailability of drug. **Methods:** Liposomes were prepared via the Ether injection method using Phospholipon-90H, cholesterol and stearyl amine in varying concentrations, with a full factorial design employed to optimize these excipients. The formulations were evaluated for drug content, entrapment efficiency and *in vitro* drug diffusion. Optimized liposomes were characterized through particle size analysis, FESEM, FTIR and zeta potential measurements. Their *in vitro* drug release was assessed over 12 hours. The most effective liposomal formulation was then incorporated into a 1% liposomal gel, which was evaluated for spreadability, viscosity, drug content, pH and *in vitro* diffusion. Comparative analysis of the *in vitro* diffusion data showed that the Captopril liposomal gel offered improved sustained drug release over a conventional Captopril gel formulation. **Results:** The *in vitro* drug release from the liposomal formulations was 45.48±0.36% at 10 hours and 54.84±2.63% at 12 hours, adhering to a super case-II transport mechanism with zero-order kinetics. The optimized liposomes demonstrated favorable characteristics in particle size, FESEM, FTIR and zeta potential analyses. Incorporating these liposomes into a 1% gel formulation resulted in a sustained drug release of 45.18±0.51% over 12 hours. Comparative studies showed that the liposomal gel provided a more prolonged release of Captopril compared to conventional gel formulations. **Conclusions:** The Captopril liposomal gel effectively overcame the issues of short drug half-life and first-pass metabolism typical of oral administration. It provided a sustained release over 12 hours, which enhanced both the bioavailability and therapeutic efficacy of Captopril. Additionally, the transdermal delivery reduced hepatic degradation and improved patient compliance compared to oral formulations.

PCTC612
DEVELOPMENT AND EVALUATION OF SUSTAINED-RELEASE LINEZOLID BEADS: A NOVEL APPROACH FOR TUBERCULOSIS THERAPY

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Abstract:

Objectives: Tuberculosis (TB) remains a major global health issue, especially in developing countries. The current TB treatments involve long-term, multi-drug regimens, leading to patient non-compliance and drug resistance. Linezolid, a potent TB antibiotic, has poor bioavailability and systemic toxicity in its conventional oral form. Therefore the objective of the present study was to prepare and evaluate Linezolid-loaded alginate beads for enhanced drug delivery. **Methods:** Alginate beads were prepared using an ionotropic gelation technique. The optimized beads were characterized for surface morphology, drug loading, entrapment efficiency, FTIR spectroscopy, water content, drug release, and swelling index. **Results:** The beads have irregular surfaces with a diameter of 127.41 µm and entrapment efficiency of 83.29%. FTIR analysis confirmed complete drug incorporation. The beads showed a swelling index of 50.624% after 2 hours. The water content was 18.98%, based on the weight change before and after drying depicting controlled swelling behavior. *In vitro* release studies showed 70.37% released in the first 12 hours followed by 97.68% of the drug release over 24 hours, indicating an initial burst and sustained release effect. **Conclusions:** The alginate beads are a promising delivery system for linezolid, by controlling drug release for a longer duration reducing its dose, dosing frequency, and possible toxic adverse effects thereby improving its therapeutic efficacy & patient compliance.

PCTC613
DEVELOPMENT AND EVALUATION OF A GASTRORETENTIVE *IN SITU* GEL FORMULATION OF NIFEDIPINE FOR ENHANCED BIOAVAILABILITY AND SUSTAINED RELEASE

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Abstract:

Objective: This study aims to develop a gastroretentive floating *in situ* gel formulation of nifedipine to provide sustained drug release for the management of hypertension and angina pectoris. **Methods:** Nifedipine *in situ* gel was formulated using sodium alginate as a gelling agent and calcium carbonate as a gas-forming agent. A 3^2 factorial design was employed to optimize the concentrations of sodium alginate and calcium carbonate, and their effects on floating lag time and drug release were evaluated. Preformulation studies confirmed the drug's compatibility with excipients, and the formulations were evaluated for pH, viscosity, *in vitro* buoyancy, and drug release. **Results:** Formulation F7 containing 1.5% sodium alginate and 2% calcium carbonate exhibited the shortest floating lag time of 30 seconds, while F9 demonstrated the optimal viscosity and gelation properties. *In vitro* release studies indicated a sustained release of 76.86% over 12 hours, with formulation stability in gastric fluids. The factorial design confirmed that sodium alginate and calcium carbonate concentrations significantly influenced drug release and buoyancy. **Conclusion:** The developed nifedipine gastroretentive *in situ* gel formulation provides sustained drug release and prolonged gastric retention, enhancing bioavailability and therapeutic efficacy. This formulation has potential for improved patient compliance and optimized management of hypertension and angina pectoris.

PCTC614
FORMULATION AND EVALUATION OF CEFPODOXIME PROXETIL-LOADED MICROPARTICLES COATED WITH CHITOSAN AND ETHYL CELLULOSE.

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Abstract:

Objectives: The objective of the present study was to develop a microparticulate sustained drug delivery system for the prodrug Cefpodoxime proxetil encapsulated within ethyl cellulose coated with mucoadhesive cationic polymer chitosan, crosslinked with glutaraldehyde. Methods: The prepared microparticles were characterized by FT-IR and DSC for drug and polymer compatibility and surface morphology of these particles was studied by SEM, while Particle size analysis of the microparticles was done by Malvern mastersizer. The prepared microparticles were evaluated for percentage yield, entrapment efficiency, *in vitro* release studies and mucoadhesive studies. Sixteen formulations containing different drug polymer ratios and different concentrations of cross-linking agent were prepared for the drug. FT-IR and DSC studies showed no chemical interaction between the drug and polymers. **Results:** The surface morphology showed that particles were almost spherical and had smooth surface. The FT-IR (Fourier-transform infrared spectroscopy) data, confirms the presence of key functional groups in both pure Cefpodoxime proxetil and its formulations, such as ester, beta lactam, and amine groups. The particle size analysis data revealed that 90% of the particles of the optimized formulation were of 76.1µm. The formulations showed high yields, ranging between 94% and 98%. The entrapment efficiency of drug ranged from 47.4% for formulation containing drug ratio of 1:1 followed by 42% for formulation containing 1: 1.5, 38.96 % for formulation containing 1:2 ratio and 28.12% for ratio containing 1: 2.5 ratio of drug and polymer. The formulation containing the drug: polymer ratio of 1:1 yielded the highest drug entrapment. The rate of drug release was found to be highest for formulations Fa1, Fb1, Fc1 and Fd 1 which did not contain any crosslinking agents and in acidic conditions (pH 1.2), while neutral conditions (pH 6.8) slowed the release and the release pattern followed Non- Fickian diffusion type. Strong bioadhesion was observed, with over 70% adhesion after washing. The optimized formulation (Fa2) remained stable but showed slight degradation at 40°C/ 75% RH. **Conclusions:** The bio adhesive study showed that the microparticles adhered to the stomach mucosa confirming the mucoadhesive property of the microparticles and the stability study confirmed that the formulation prepared were stable.

PCTC615
EVALUATION OF MUCILAGE FROM HIBISCUS AND *IN-VITRO* EVALUATION AS A TABLET BINDER

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Abstract:

Objective: The aim of this study was to performtheevaluation of mucilage from hibiscus and *in vitro* evaluation as a tablet binder. **Method:** The flower and leaf of hibiscus (*Hibiscus rosa-sinensis)* were used in the research to extract the mucilage for use as a natural binding agent in the tablet formulation. The natural binders have some advantages like low toxicity, biodegradable, availability and low cost, increase the stability, precision and accuracy of dosage form due to which these are widely used now a day. Isolation of mucilage was done using decoction process and the tablet was formulated using the mucilage extract as a binder. **Result and discussion:** The result obtained from this research will give

important information on the potential of hibiscus mucilage, as a natural binder in tablet preparation. By evaluating different parameters of the hibiscus mucilage, because it includes the amino acid, we discovered that hibiscus mucilage can be employed successfully as a binder in tablet formulation. Carbohydrates and flavonoids can contribute to the binding properties of tablets. The hardness of the tablet formulated with 5% and 10% hibiscus mucilage falls within the acceptable range, indicating that these formulations have sufficient strength and integrity. However, tablets formulated with a lower percentage of hibiscus like 2% hibiscus mucilage fails to meet the hardness requirement. **Conclusion:** Evaluation of mucilage was done and before formulation all the necessary preformulations studies and method development were studied. After the formulation process, various evaluation parameters were studied and performed and drug release rate was evaluated to check the efficacy of mucilage as a natural binder

PCTC616

FORMULATION AND EVALUATION OF *PSIDIUM GUAJAVA* EXTRACT BASED TABLETS WITH ANTIDIABETIC DRUG.

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Abstract:

Objectives: To develop and evaluate a herbal tablet formulation combining *Psidium guajava* leaf extract with Metformin for enhanced therapeutic effects in diabetes management, while addressing common side effects of Metformin such as diarrhoea and cardiovascular issues. **Methods:** Herbal tablets were prepared using the direct compression method. Initially, all formulation ingredients were accurately weighed. These ingredients were then mixed in a mortar and pestle to ensure a homogeneous blend. The mixture was allowed to dry briefly and subsequently passed through a sieve with a mesh size of 60 to achieve uniform particle size. Finally, the prepared powder blend was compressed into tablets using a punching machine. **Results:** The herbal tablets combining Psidium guajava and Metformin were successfully formulated using direct compression. Evaluation of the tablets showed good flowability and mechanical stability. All tablets had a drug content within 50-90%, with batch F2 demonstrating optimal results: 88.31% drug content and 80.22% drug release. The tablets also passed tests for weight variation, hardness, friability, and disintegration. The physical appearance was consistent across batches, and all met the required standards for tablet quality. Batch F2 was identified as the best formulation based on its drug content and release profile. **Conclusions:** The study successfully developed a herbal tablet formulation combining *Psidium guajava* with Metformin, showing improved therapeutic efficacy in diabetes management. The formulation not only enhanced the effectiveness of Metformin but also alleviated its side effects and contributed to better cardiovascular health, making it a promising option for diabetes treatment.

PCTC617

DESIGN OPTIMIZATION AND EVALUATION OF PATENTED FAST DISSOLVING ORAL THIN FILM OF AMBRISENTAN FOR THE TREATMENT OF HYPERTENSION

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Abstract:

Objectives: The present research deals with the progress of fast-dissolving oral thin film (OTF) of Ambrisentan for the prevention and cure of hypertension. **Methods:** The OTF was established by the solvent casting method. The compatibility of Ambrisentan with film former HPMC E15 was checked with FTIR and DSC. The optimization was assessed with the Design of the experiment using Box-

Behnken design. The independent parameters were filmed former (X1: HPMC E15), plasticizer (X2: PEG 400) and super disintegrant (X3: cross povidone) and dependable parameters were disintegration time (Y1) and dissolution release (Y2). **Results:** The optimized batch F7 showed the least disintegration time (9 sec), folding endurance of (99), content uniformity (98.57 %), pH (6.4), and dissolved within 5 min. The scanning electron microscopy confirmed the evenness, smoothness of the film with the particle size of 10 µm. **Conclusions:** The investigation indicated that the dissolving oral thin film of Ambrisentan improves the solubility and therapeutic efficacy in preventing and treating cardiovascular complications. The prompt release of Ambrisentan minimizes the mortality associated with heart attack and hypertension.

PCTC618

DEVELOPMENT AND CHARACTERIZATION OF BIOSURFACTANT ISOLATED FROM SPECIES OF AGARICUS BISPORUS FOR FORMULATION OF LIPOSOME.

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Abstract:

Objectives: This study aimed to develop and evaluate liposomes from surfactants isolated from yeast species for drug delivery. **Methods:** The fermentation process was conducted in a laboratory fermentor using a culture medium optimized for nutrient content to maximize yield. The inoculum was prepared using yeast culture in the exponential growth phase, cultivated in the same medium. After fermentation, the cell biomass and cell-free supernatant were separated by centrifugation at 1000x g for 15 minutes. The dry weight of the cell biomass was then measured to estimate growth and biosurfactant production. **Results:** The CTAB-Methylene Blue Plate Assay and CPC-Bromothymol Blue Assay both yielded positive results, indicating the presence of biosurfactants. Additionally, biosurfactant production was observed through the blood agar method, further supporting these findings. The emulsification capacity index (EC24) demonstrated the ability of the biosurfactants to stabilize emulsions of immiscible liquids, with stability maintained over a 24-hour period. These combined methods validate the presence and functionality of biosurfactants in the tested samples. Genetic study of biosurfactant and characterization of biosurfactant including Surface tension, surface charge, interfacial tension was performed. **Conclusions:** The study confirms that surfactant isolated from could be beneficial for the development of liposomes. Its unique properties suggest it could play a valuable role in advancing biotechnological and pharmaceutical innovations.

PCTC619

FORMULATION AND EVALUATION OF PHYTOSOME

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Abstract:

Objectives: The aim of this study was to prepare and evaluate Green tea loaded phytosomal complex by using the anti-solvent evaporation method. **Methods:** Green tea extract was choosen as a model drug for the study. The formulation containing different molar ratio were prepared using Soya Lecithin as a phospholipid. They were prepared by the anti-solvent evaporation method. The phytosome were then characterized by performing different evaluation studies such as solubility, particle size, drug content, % entrapment efficiency, Differential Scanning Calorimetry (DSC), Fourier Transform Infrared Spectroscopy (FTIR) and *in-vitro* dissolution study. **Results:** The chemical and physical properties of the drug substance were characterized by using Differential Scanning Calorimetry (DSC), Fourier Transform Infrared Spectroscopy (FTIR). The results showed that the average particle size of optimized

formulation was 355.5nm. The Drug content and Entrapment efficiency was found to be 83.28% and 81.83% respectively. *In-vitro* drug release studies revealed that the optimized formulation followed a sustained release pattern for up to 4 hours, which showed a zero-order release kinetics. **Conclusion:** The study concluded that there was no interaction between the active pharmaceutical ingredient and the excipients and that it could be used for formulation development and the anti-solvent evaporation method is an effective technique for creating the phytosomes. The optimized formulation demonstrated good physical and chemical qualities along with sustained drug release, implying that it would serve as a useful novel drug delivery system and provide improved oral bioavailability.

PCTC620

EFFECT OF PROCESSING PARAMETERS ON ETHYL CELLULOSE MICROSPHERES PREPARED BY EMULSION SOLVENT EVAPORATION PROCESS

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Abstract:

Objectives: To study the effect of operational procedures like thermal treatment (10°C room temperature and 45°C) on the performance (drug release characteristics, particle size, surface topography) of prepared microspheres. **Methods**: The microspheres were prepared by emulsion solvent evaporation method at variable temperatures like low, room and higher temperature using ethyl cellulose as polymer and Indinavir sulfate as a module drug. The prepared microspheres were subjected to various studies like percentage of yield, encapsulation efficiency, *in vitro* dissolution, surface topography and FTIR etc. **Results**: FTIR study confirmed the intactness of the drug in the prepared microsphere revealing processing temperature did not have any deleterious effect on the stability of the microsphere. The study of mean particle size shows that with increasing processing temperature the mean particle size increases from 266 µm to 518µm. Surface topography studies confirm the microspheres prepared at high temperature had smooth surface, lower density, porous interior structure, a large mean size and a wider particle size distribution whereas microspheres prepared at low temperature had irregular surface and lower mean particle size. Higher temperature supports microspheres with higher entrapment efficiency (94.42%) as compared to that of prepared at lower temperature (85.2%). *In vitro* drug dissolution study demonstrated that microspheres prepared at higher temperature sustained the drug release up to 7 hours as compared to microspheres prepared at low temperature that is 4 hours. Microspheres prepared at lower temperature favors microspheres with small and uneven size, rough and wrinkled surfaces, which gives them a large surface area for faster drug release. The drug release kinetic study shows that the release mechanism follows a diffusion mechanism with n value <0.5. **Conclusion**: From the above study we conclude that the thermal treatment during the process of preparation of microspheres had an influential effect on the various characteristics of the microsphere.

PCTC621

EVALUATION OF *IN-VITRO* ANTI-DIABETIC ACTIVITY OF *BEGONIA BURKILLII* DUNN

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Abstract

Objective: The aim of this study was to extract and evaluate the anti-diabetic activity of the plant *Begonia burkillii* Dunn. which is a plant found mostly in the borders of Arunachal Pradesh and Myanmar, and also in some parts of Assam. **Methodology:** The fresh leaf and stem of the plant was collected in the month of November month from Mirza, Kamrup, Assam and it was further extracted successively with increasing

polarity of solvents. Various preliminary screening methods were performed to determine the presence of active constituents present in the extract. The ethanolic extract was selected for evaluation of *in-vitro* antidiabetic activity. For evaluation of anti-diabetic activity, *in-vitro* Q-amylase activity assay was performed using acarbose as standard. **Results & Discussion:** Phytochemical screening of the extract revealed the presence of alkaloids, carbohydrates, phenols, glycosides, tannins, terpenoids and flavonoids in the ethanolic extract of *Begonia burkillii* Dunn. For the Q-amylase inhibitory activity, *B. burkillii* Dunn. also showed an IC_{50} of 115.01 µg/ml and the standard showed IC_{50} of 139.21 µg/ml, which implies that the IC_{50} value of plant extract is significant as compared to the standard, which might show a similar potential therapeutic effect for Diabetes mellitus (DM). **Conclusion:** The plant extract of *Begonia burkillii* Dunn. was found to be containing many phytochemicals obtained from phytochemical screening results, and hence there may be a linear relationship between the anti-diabetic activity and the phytochemicals present in the plant. The presence of phytochemicals like phenols, tannins, terpenoids and flavonoids may attribute to antidiabetic action of the plant extract. The comparative study by *in-vitro* Q-amylase activity revealed that extract has significant antidiabetic activity. Therefore, this plant extract can be further studied for therapeutic and other utilities.

PCTC622
FORMULATION AND CHARACTERIZATION OF BIOPOLYMER-BASED ORAL FAST-DISSOLVING FILMS FROM *ARTOCARPUS HETEROPHYLLUS* FRUIT PULP: A SUSTAINABLE APPROACH TO ENHANCED DRUG DELIVERY

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Abstract:

Objectives: This study aims to develop and evaluate sustained release oral fast dissolving film using biopolymer obtained from *Artocarpus heterophyllus* fruit pulp by solvent casting method. **Methods:** A model drug, Diclofenac sodium along with *Artocarpus heterophyllus* fruit pulp was selected as bioadhessive polymer for this study. Different formulations were prepared using varying concentrations of polymers such as *Artocarpus heterophyllus* fruit pulp, HPMC and Propylene Glycol (PG) and polyethylene glycol (PEG). The formulations went under solvent casting procedure at optimized processing parameters to compose a thin oral fast dissolving film. **Results:** The physico-chemical properties of the oral fast dissolving film were examined using Fourier-transform infrared spectroscopy (FTIR) which resulted the wave number of HPMC as 3453 (cm^{-1}) and 2886 (cm^{-1}), Diclofenac sodium as 3244 (cm^{-1}) and 1452 (cm^{-1}) and *Artocarpus heterophyllus* fruit pulp as 3435 (cm^{-1}) and 2927 (cm^{-1}) respectively and Scanning electron microscopy (SEM) results were also obtained. The films were evaluated for various parameters including surface thickness, folding endurance, disintegration time, percent elongation, percentage moisture loss and *in-vitro* drug release as 0.29mm, 115 ± 2.00 folds, 20 ± 2.00 seconds, 28 ± 0.59%, 6% and 92% respectively in the best formulation. The outcome indicated that the model drug was uniformly distributed within the polymer matrix. **Conclusions:** The study concluded that *Artocarpus heterophyllus* fruit pulp polymer used as bioadhessive agent is a good candidate for the development of sustained release oral fast dissolving film. The optimized formulation showed excellent physicochemical properties and sustained drug release, proving it to be a potential candidate for implementation.

PCTC623
PREPARATION AND CHARACTERIZATION OF CHLORZOXAZONE POLYMORPHS

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Abstract:

Objectives: Chlorzoxazone, 5-cglorobenzo (d) oxazol- 2(3H)-one is a centrally active muscle relaxant which is insoluble in water. By considering this property we have developed four different polymorphs (form I, form II, form III and form IV) of chlorzoxazone in different solvents. In this study it was aimed to assess the various polymorphic forms of Chlorzoxazone by analyzing their physical and chemical properties, including compressibility, melting point, crystal habit, color, density, solubility, dissolution rate, stability, filtration, and bioavailability. Identify the most stable form for use in products, ensuring it remains stable throughout manufacturing and storage. Also, examine how different solvents affect polymorph formation. **Methods:** Prepare Chlorzoxazone crystals using various solvents: chloroform (Chlor-1), ethanol (Chlor-2), acetone (Chlor-3), and ethyl acetate (Chlor-4). Characterize the crystals with optical microscopy, differential scanning calorimetry, IR spectroscopy, and powder X-ray diffraction. Create a standard curve and 0.1 N HCl. Conduct formulation studies and evaluate *in vitro* dissolution through direct compression. **Results:** In case of Chlor-1 (Chloroform) and Chlor-2 (Ethanol) the intensity of scattering angle (200s 2θ) was same and the main scattering peaks of each form are clustered between 20-300 2θ. But these solvate morphs could not be differentiated from an inspection of the pattern. This was evidenced that the two crystal structures were similar except difference between 27-290 2θ. Therefore, it was concluded that Chlor-1 and Chlor-2 were existed in same crystal forms. In case of Chlor-3 (Acetone) and Chlor-4 (Ethyl acetate) the main scattering peaks of Chlor-3 was between 25-320 2θ and for Chlor-4 is between 27-340 2θ. The most intense peak of Chlor-3 was at 140 2θ but Chlor-4 appearance of two most intense peak was noted between 13 and 140 2θ. Therefore, it was concluded that Chlor-3 and Chlor-4 were existed in differentcrystalbforms. Chlorzoxazone, obtained as a free base, was used for preparing crystal forms. It exhibited appreciable solubility in chloroform, ethanol, acetone, and ethyl acetate, suitable for crystallization. However, it was too soluble in dimethylformamide and dichloromethane and insufficiently soluble in water, making these solvents unsuitable for crystallization. Photomicrographs revealed that Chlor-1 and Chlor-2 crystals were of the same shapes and sizes, whereas Chlor-3 and Chlor-4 differed in both. Melting points were consistent across all samples except for Chlor-3 and Chlor-4. DSC data indicated slight differences in onset of peak and heat of fusion between Chlor-1 (179.48ºC, 98.42ºC) and Chlor-2 (182.72ºC, 102.16ºC). However, significant differences were observed for Chlor-3 (190.09ºC, 121.88ºC) and Chlor-4 (190.15ºC, 97.08ºC). These observations conclude that Chlor-3 and Chlor-4 exist in different crystal forms, while Chlor-1 and Chlor-2 are almost identical. **Conclusion:** The study identified four chlorzoxazone polymorphs, with Chlor-1 and Chlor-2 dissolving fastest, indicating better bioavailability, and Chlor-4 having slower dissolution, emphasizing the importance of selecting specific crystal forms.

PCTC624
HPTLC PROFILING OF CITRUS FLAVONOIDS

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Abstract:

Objective: The objective of the study is to identify and quantify the various flavonoids present in Citrus species by using "High Performance Thin Layer Chromatography" (HPTLC). Flavonoids are

recognised for their antioxidant potential and possible health advantages. They can be separated, identified, and quantified using HPTLC. The goal of the study is to present a thorough profile of Citrus flavonoids which will be helpful for standardisation, quality assurance, and future investigations into their potential uses and health advantages. **Methods:** Citrus plants are rich in flavonoids that are well known for their anti-inflammatory, anti-cancer, and antioxidant capabilities. Polymethoxylated flavones (PMFs) like hesperidin, naringin, quercetin, rutin, eriocitrin, limonin, are abundantly found in Citrus plants. The profiling of the flavonoids from several citrus species, such as Citrus aurantium, Citrus reticulata, and Citrus sinensis using high-performance thin-layer chromatography (HPTLC) has been reported in literature. Flavonoids were extracted using standardized solvent solutions and were identified and quantified with silica gel plates using HPTLC. Comparative analysis was performed to determine the presence and concentration of important bioactive flavonoids like rutin, hesperidin, naringin, and quercetin was quantified and reported. **Results:** The results imply that HPTLC is a useful method for both qualitative and quantitative flavonoid analysis that advances our knowledge of the phytochemical composition of citrus fruits. The flavonoid composition of different citrus species can also be revealed in these studies that provide useful information for nutritional research and quality control of citrus-based products. Factors like sensitivity, accuracy, precision, and repeatability were assessed and reported to ascertain the efficiency of HPTLC. **Conclusion:** It can be concluded that HPTLC offers similar sensitivity and accuracy as HPLC albeit with a number of advantages that include less complicated sample preparation and reduced operating costs. HPTLC is, therefore, a reliable and effective method for quantifying flavonoids in citrus peels, especially useful in situations where resources are scarce.

PCTC625
FORMULATION AND EVALUATION OF NEEM OIL LIPOSOMES PREPARED WITH NATURAL SAPONIN FOR TOPICAL DELIVERY

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Abstract:

Objectives: The main objective of this study is to formulate Neem oil liposomes which is prepared by natural saponin with the help of lipid layer hydration technique for topical delivery. **Methods: 1.** Preparation of Neem oil loaded Liposomes : Liposomes containing neem oil were prepared using the lipid layer hydration technique with saponin and cholesterol. Neem oil, saponin and cholesterol in different concentration were dissolved in chloroform, and the solvent was evaporated to form a lipid film. This film was hydrated with phosphate buffer (pH 7.4), followed by extensive vortexing and sonication at 60°C. Non-incorporated neem oil was removed via ultracentrifugation, and the saponin-loaded liposomes were resuspended in phosphate buffer. The final liposome suspension was stored at 4°C. Preparation of Liposomal Gel: Liposomal topical gel formulations were prepared by incorporation of liposome dispersions into the structured vehicle of carbopol 940 (1%) and HPMC (0.5 %) with gentle mechanical mixing about 25 rpm for 5 minutes and triethanolamine was added for neutralization. **Results:** Vesicle size by optical microscopy spherical lamellar vesicles with drug are observed under 100x oil immersion lens. The average particle size liposomes was found to be 3.2 µm ± 0.67. Evaluation of liposomal gel . Physicochemical Evaluation this liposomal gel evaluated for colour, transparency, clarity, pH, drug content, viscosity, spreadability, homogenicity, *in vitro* diffusion and skin retention. The pH was found to be 6.5 with particle size of 3.2 µm ± 0.67. The spreadability of 13.5 ± 0.3 g.cm/sec indicates that the gel is easily spreadable by small amount of shear. The *in vitro* drug release of liposomal

batch at the end of 6 hour was found to be 82.178 ± 0.91 %. **Conclusions:** The study concludes that the optimal liposomal formulation for neem oil was achieved using saponin and cholesterol in a 1:1 ratio. The inclusion of cholesterol improved neem oil entrapment due to its effect on membrane rigidity. *In vitro* release studies indicated a prolonged drug release of up to 6 hours.The formulation with natural saponin was successfully prepared, and the resulting topical gel exhibited favorable organoleptic properties. The gel's pH, viscosity, and spreadability were suitable for topical use, and it demonstrated stability at room temperature over an extended period.

PCTC626
FORMULATION, DEVELOPMENT AND EVALUATION OF MOISTURIZING CREAM CONTAINING SALICYLIC ACID

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Abstract:

Objectives: To formulate and enhance the hydration level of moisturizing cream, to characterize and evaluate the properties of formulated cream, to estimate exfoliating effect of moisturizing cream. **Methods:** weighing and heating the oil phase ingredients—Stearic Acid, Grapeseed Oil, Emulsifying Wax NF, Lanolin, and Shea Butter—in a heat-resistant container. Use a double boiler or microwave to gently melt and combine these ingredients, aiming for a temperature of 70-75°C (160-170°F). Concurrently, weigh and heat the water phase ingredients to the same temperature range. Triethanolamine should be used sparingly for pH adjustment, typically less than 1 gram. Once both phases are at the desired temperature, slowly pour the water phase into the oil phase while stirring continuously. Utilize a hand blender or mixer to thoroughly emulsify the mixture, continuing to mix until the cream starts to cool and thicken. After the mixture has cooled sufficiently, add rose oil for fragrance and mix well to ensure even distribution. Finally, allow the cream to cool further to around 30°C before incorporating Salicylic Acid, mixing thoroughly to complete the formulation. **Results:** The result is a well-emulsified cream with a smooth texture and consistent formulation. After following the steps, the cream should have a stable, thickened consistency, suitable for application. The addition of rose oil provides a pleasant fragrance, while the Salicylic Acid offers targeted benefits, such as exfoliation or acne treatment, depending on your formulation goals. Overall, the cream will have a balanced blend of oil and water phases, with a carefully adjusted pH and desired active ingredients. **Conclusions:** The present study focused on developing and optimizing a moisturizing cream with salicylic acid, assessing its preformulation characteristics, such as solubility and melting point. FTIR analysis confirmed the presence of key functional group, while UV spectroscopy established the λ_{max} at 301.2nm, allowing for accurate quantification. A 3^2 full factorial design was employed to optimize the cream's viscosity and 14.08 cm spreadaability, identifying the optimal formulation (f8) with 4800 cP viscosity 14.08 cm spredability. Exfoliation and moisturizing effectiveness were demonstrated through improved skin clarity, smoothness and hydration. Characterization of the cream showed acceptable pH, viscosity, spreadability, no irritation, easy washability and high drug content, confirming the formulation's efficacy and therapeutic potential.

PCTC627

DEVELOPMENT AND EVALUATION OF SELF MICRO-EMULSIFYING DRUG DELIVERY SYSTEM OF LUMEFANTRINE

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Abstract

Objectives: The aim of the study was to develop a self-micro emulsifying drug delivery system (SMEDDS) for lumefantrine, an anti-malarial drug classified as a Class II drug under the Biopharmaceutics Classification System (BCS) due to its low solubility, dissolution, and bioavailability. The study sought to improve lumefantrine's solubility and oral bioavailability through a lipid-based formulation. **Methods:** Various excipients were screened to optimize the formulation for stability and drug release characteristics. The physicochemical properties of the formulations, including droplet size, polydispersity index, zeta potential, and drug loading capacity, were evaluated. *In vitro* dissolution studies were conducted to determine the release profile of lumefantrine from the SMEDDS. Additionally, *in vivo* studies, including pharmacokinetic and pharmaco-dynamic evaluations, were performed to assess the bioavailability and efficacy of the optimized formulation. **Results:** The SMEDDS and S-SEDDS formulations containing 50% w/w oleic acid, 34% w/w Tween 80, and 16% w/w polyethylene glycol were successfully developed. These formulations showed increased solubility and dissolution rates of lumefantrine. Stability studies confirmed the stability of the developed formulations. **Conclusions:** The study demonstrates that the developed SMEDDS formulation for lumefantrine can significantly improve its solubility and drug release, making it a potential alternative to traditional oral formulations of lumefantrine.

PCTC628

PHYTO-PHARMACOGNOSTICAL ANALYSIS AND *IN VITRO* ANTHELMINTIC AND ANTIOXIDANT ACTIVITY OF HYDRO-ALCOHOLIC EXTRACT OF *PSEUDERANTHEMUM RETICULATUM* (HORT. EX HOOK. FIL.) RADLK: A LOCALLY USED MEDICINAL HERB OF DHULE DISTRICT

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Abstract:

Objectives: To establish phyto-pharmacognostic standards and evaluate *in-vitro* anthelmintic and antioxidant efficacy of *Pseuderanthemum reticulatum* hydro-alcoholic leaves extract (PRHAL) to prove scientifically its traditional claims. **Methods:** Histological and anatomical features performed the morpho-anatomical standardization of the fresh leaves. Physicochemical analysis (ash value, extractive value, moisture content, fluorescence analysis) was carried out per the WHO guidelines. The dried leaves powder was subjected to Soxhlet extraction using hydro-alcoholic solvent (20:80) to yield the desired extract. Phytochemical screening (Total phenolic and Total flavonoid), and HPTLC fingerprinting of the hydro-alcoholic extract were carried out as per the standard protocol. The anthelmintic activity of PRHAL extract (10-100 mg/ml) was investigated against *Pheretima postuma* and *Ascardi galli* which involved the determination of time of paralysis and time of death of the worm. The *in vitro* antioxidant activity of PRHAL extract was determined by diphenyl-picryl-hydrazyl (DPPH) and Nitric oxide (NO) scavenging assay. **Results:** The fresh leaves are fleshy, bitter in taste with a characteristic odor, and dark green in color. The size of the mature leaf is about 5 to 8 cm long and 3 to 4 cm wide. The

transverse section of the leaf surface revealed the presence of a lignified arch-shaped vascular bundle. The total ash, water-soluble ash, and acid-insoluble ash compositions were 4.08, 0.30 and 0.92% respectively. The moisture content, alcohol-soluble extractive, and water-soluble extractive values obtained were 7.8, 27.9, and 29.2% respectively. Qualitative chemical analysis showed the presence of flavonoids, tannins, steroids, phenols, and alkaloids. The quantitative estimation of total phenolic and total flavonoid content in PRHAL extract was found to be 205 ± 2.0 mg/g and 40 ± 3.0 mg/g respectively. The HPTLC chromatogram at 214 nm showed the presence of quercetin and exhibited a blackish (visible) band in the Rf range of 0.47 to 0.52. PRHAL extract exhibited significant anthelmintic activity at the highest concentration of 100 mg/ml. Piperazine citrate (10 mg/ml) was used as standard reference and distilled water as control. In the DPPH and NO method, Ascorbic acid which was used as standard, showed IC_{50} of 19.89 ± 2.0 µg/ml and 5.60 ± 2.3 µg/ml respectively. Whereas, the PRHAL extract showed IC_{50} of 26.20 ± 0.6 µg/ml and 36.60 ± 2.5 µg/ml respectively. **Conclusions:** The present study serves as quality control norms for the identification, standardization, and contribution to the development of this species. The traditional claims as an anthelmintic have been confirmed as the PRHAL displayed against the worms used in the activity. Moreover, PRHAL showed remarkable and concentration-dependent antioxidant activity comparable to that of standard.

PCTC629

DEVELOPMENT AND CHARACTERIZATION OF ZIDOVUDINE SUSTAINED-RELEASE MATRIX TABLETS: A RESPONSE SURFACE APPROACH

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Abstract:

Objectives: The aim of this study is to develop and optimize Zidovudine sustained-release matrix tablets using response surface methodology (RSM) to maintain therapeutic drug levels over an extended period, thereby reducing the frequency of dosing. **Methods:** Zidovudine, an antiretroviral drug used in the management of HIV, has a short half-life necessitating frequent dosing, which can lead to poor patient adherence. Sustained-release formulations offer a solution by maintaining therapeutic drug levels over extended periods. Matrix tablets were prepared using a direct compression method with various concentrations of hydrophilic (hydroxypropyl methylcellulose, HPMC) and hydrophobic (ethyl cellulose, EC) polymers as release-controlling agents. A 3^2 full factorial design was employed to systematically evaluate the effects of the polymer ratio (X_1) and tablet hardness (X_2) on the tablet swelling index (Y_1) and drug release profile (Y_2). Response surface methodology was utilized to model and optimize the formulation variables, with the aim of achieving a desired drug release over a 24-hour period. **Results:** The results indicated that both the polymer ratio and tablet hardness significantly influenced the drug release rate and swelling behavior of the matrix tablets. The optimized formulation, predicted by the RSM model, showed a controlled and sustained release of Zidovudine, with drug release following a zero-order kinetic model. The model's predictive ability was confirmed by experimental validation, demonstrating the efficacy of RSM in the formulation development of sustained-release dosage forms. **Conclusion:** This study successfully developed Zidovudine sustained-release matrix tablets with the aid of response surface methodology, providing a promising approach to enhance patient compliance and therapeutic efficacy in HIV management.

PCTC630
SYNTHESIS AND *IN-VITRO* CHARACTERIZATION OF PAROXETINE-LOADED POLYMERIC NANOPARTICLES

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Abstract:

Objective: The primary objective of this study was to synthesize paroxetine-loaded polymer nanoparticles to enhance the drug's bioavailability and provide sustained release. Paroxetine, an antidepressant commonly prescribed for the treatment of major depressive disorder, faces challenges such as poor bioavailability and rapid clearance. Encapsulating paroxetine in polymer nanoparticles could potentially address these issues and improve therapeutic outcomes. **Method:** Paroxetine-loaded polymer nanoparticles were synthesized using the solvent evaporation method with HMPC and Ethyl cellulose as the polymer matrix. The drug and polymer were dissolved in an organic solvent and emulsified in an aqueous phase containing Tween 80 as a surfactant. The organic solvent was evaporated, resulting in the formation of nanoparticles. The nanoparticles were characterized by particle size analysis, zeta size measurement, drug loading efficiency, and encapsulation efficiency. *In-vitro* drug release studies were conducted to evaluate the release profile of paroxetine from the nanoparticles. **Results:** The synthesized nanoparticles exhibited an average particle size of 351-369 nm with a narrow size distribution and indicating good colloidal stability. The drug loading and encapsulation efficiencies were optimized to 59.36%. and 44.41% respectively. *In-vitro* drug release studies showed a sustained release of paroxetine over 210 minutes, highlighting the potential of the nanoparticulate system for controlled drug delivery. **Discussion and Conclusion:** The successful synthesis of paroxetine-loaded polymer nanoparticles with desirable physicochemical properties demonstrates the feasibility of using HMPC and Ethyl cellulose -based nanoparticles to improve the solubility and bioavailability of paroxetine. The sustained release profile observed *in vitro* suggests that this delivery system could enhance the therapeutic efficacy of paroxetine. Further *in vivo* studies are required to validate these findings and assess the clinical applicability of this approach.

PCTC631
DEVELOPMENT AND EVALUATION OF A POLYHERBAL CREAM CONTAINING *LAWSONIA INERMIS*, *CYNODON DACTYLON*, AND *PIPER BETLE* TO EXPLORE ITS ANTIOXIDANT PROPERTY AND EFFECTIVENESS

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Abstract:

Objectives: This study focuses on the formulation and evaluation of a polyherbal cream that contains Lawsonia inermis, Piper betle, and Cynodon dactylon, three well-known medicinal herbs, and their phytochemical screening. **Methods:** Lawsonia inermis, Piper betle, and Cynodon dactylon were the plant materials that were collected and authenticated as part of the study. These plant's extracts were prepared by maceration and percolation methods, and then their active ingredients were identified by phytochemical screening. Then, an aqueous phase containing glycerine, borax, methyl paraben, isopropyl myristate, and plant extracts was combined with an oil phase including liquid paraffin, stearic acid, glyceryl monostearate, and lanolin to create a polyherbal cream. Physical assessments of the prepared cream included viscosity, pH, and stability testing. To evaluate the antioxidant activity of the cream, an *In vitro* antioxidant experiment employing the DPPH method was carried out. **Results:** Phytochemical screening of the extracts revealed the

presence of various bioactivecompounds, including steroids, alkaloids, phenolics, tannins, polysaccharides, saponins, glycosides, and flavonoids, indicating their potential for wound healing. Comprehensive physicochemical testing of the formulated polyherbal cream confirmed its stability, pH, viscosity, and suitability for topical use. The cream had a pH of 6.6 and a viscosity of 2856 cP. Thermal stability tests at 65% relative humidity and 30°C showed no oil separation, confirming the cream's stability. Additionally, the cream's antioxidant activity was assessed using the DPPH assay, which demonstrated a notable percent inhibition of 79.26%. This suggests that the cream has strong potential for neutralizing free radicals, which may contribute to its efficacy in skincare applications. **Conclusions:** The study successfully developed and assessed a polyherbal cream containing Lawsonia inermis, Piper betle, and Cynodon dactylon. Phytochemical analysis revealed the presence of bioactive compounds with potential wound-healing properties. The cream displayed favorable physical attributes, including a pH of 6.6, a viscosity of 2856 cP, and stability under thermal conditions. Antioxidant activity, evaluated using the DPPH assay, showed a significant inhibition of 79.26%. These results indicate that the polyherbal cream is not only stable but also possesses substantial antioxidant and therapeutic potential. Its ability to neutralize free radicals suggests effectiveness in skincare applications.

PCTC632

EXTRACTION AND *IN VITRO* ANTIOXIDANT ACTIVITY STUDY OF SOME SELECTED ALLIUM SPECIES

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Abstract:

Objective: This study aims to extract and characterize polysaccharides from onions (*Allium cepa*) and garlic (*Allium sativum*) and evaluate their antioxidant properties to assess their potential as natural antioxidants for food and pharmaceutical applications. **Methods:** This methodology involves extracting polysaccharides from onion and garlic using different solvents to maximize yield. These polysaccharides are then analyzed using FTIR to identify their structure and functional groups. Finally, their antioxidant properties are tested using DPPH and FRAP assays to measure their ability to neutralize free radicals and reduce oxidants. **Results:** The results showed that polysaccharides from Allium cepa (onion) and Allium sativum (Garlic) exhibited significant antioxidant activity, as confirmed by DPPH and FRAP assays. FTIR revealed key functional groups and structural features linked to their antioxidant properties, suggesting potential health benefits for use in food and pharmaceutical applications. **Conclusion:** The study concluded that the strong flavor of onions makes them an important ingredient in Indian cuisine, used by almost every household there. Due to their bioactive components, onions and garlic also have a wide range of therapeutic uses. More specifically, onions' polysaccharides have the potential to be antioxidants, which can aid in the management of hypercalcemia. These antioxidants guard the pancreatic β cells, which are essential for secreting insulin.

PCTC633

DESIGN, DEVELOPMENT AND CHARACTERIZATION OF SILVER NANOPARTICLES OF ANTI-BACTERIAL DRUG

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Abstract:

Objective: To perform formulation and characterization of metallic nanoparticles, assessment of the antimicrobial potential of synthesized metallic nanoparticles, identify and evaluate various

hydrotropic agents that can increase the solubility of specific phytoconstituents without altering their chemical integrity or therapeutic properties. **Method:** Meropenem metal ion nanoparticles (Mero-M NPs) containing Silver (Ag), Copper (Cu), and Zinc (Zn) were synthesized via probe sonication. Using a 32-factorial design, the nanoparticles were optimized for size and stability. Characterization methods confirmed the successful formation of Mero-M NPs: UV-Vis spectroscopy showed shifts in absorption peaks, FTIR analysis indicated changes in functional groups, X-ray diffraction (XRD) confirmed their crystalline nature, Field Emission Scanning Electron Microscopy (FESEM) revealed varying shapes, and Energy-dispersive X-ray Spectroscopy (EDX) verified the elemental composition.Top of FormBottom of Form **Result:** UV-Vis Analysis**:** Meropenem showed a peak at 308 nm. Mero-Ag nanoparticles had a peak at 320 nm, Mero-Cu absorbed between 300 and 350 nm, and Mero-Zn had a peak at 340 nm, all indicating successful nanoparticle formation. Particle Size and Stability**:** Mero-Ag nanoparticles averaged 189.7 nm with a zeta potential of -13.3 mV. Mero-Cu nanoparticles were 121.1 nm and had the highest stability with a zeta potential of -28.6 mV. Mero-Zn nanoparticles averaged 283.5 nm and had good stability with a zeta potential of -37.5 mV. FESEM and EDX Analysis**:** FESEM revealed Mero-Ag as irregular, Mero-Cu as spherical, and Mero-Zn as flower-like. EDX confirmed their elemental composition and morphology. Antibacterial Activity**:** Mero-Ag nanoparticles showed superior effectiveness against resistant bacteria compared to Mero-Cu, Mero-Zn, and standard Meropenem, with a larger zone of inhibition. **Conclusion:** The study successfully synthesized and characterized metallic nanoparticles of meropenem, confirmed through methods like UV spectrophotometry and FTIR analysis. These nanoparticles exhibited distinct shapes—irregular and spherical for Mero-Ag and Mero-Cu, and a flower-like structure for zinc. High zeta potential values indicated their stability. EDX analysis confirmed the presence of silver, carbon, and oxygen. All metal nanoparticles demonstrated strong antimicrobial activity against drug-resistant E. coli, K. pneumoniae, and S. aureus, with meropenem silver nanoparticles showing the highest efficacy. This research highlights metallic antibiotic nanoparticles as a promising approach to address antibiotic resistance.

PCTC634

ESTABLISHMENT OF QUALITY CONTROL PARAMETERS AND PHARMACOLOGICAL EVALUATION OF PROPRIETY VAGINAL TIGHTENING CREAM

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Abstract:

Objective: The objective of this thesis is to establish quality control parameters and conduct a pharmacological evaluation of a proprietary vaginal tightening cream. The formulation, containing natural ingredients, aims to moisturize, tighten, and revitalize the skin by enhancing elasticity and promoting collagen synthesis. The study seeks to ensure product safety, efficacy, and regulatory compliance through detailed quality control measures and pharmacological studies. **Methods**: Quality control measures, including microbial testing, heavy metal analysis, and stability testing, were implemented to ensure the product's safety and consistency. The concentration of active ingredients was quantified to ensure uniformity across batches. Preclinical pharmacological studies were conducted to evaluate the cream's effectiveness in enhancing collagen production, restoring skin elasticity, improving vaginal tightness, and assessing its moisturizing, anti-inflammatory, and antimicrobial properties. **Results:** The quality control tests confirmed that the cream is free from contaminants and remains stable over time.

Pharmacological evaluation demonstrated the cream's effectiveness in enhancing collagen production, restoring skin elasticity, and improving vaginal tightness. Additionally, the formulation showed significant moisturizing and anti-inflammatory effects, reducing skin dryness, itching, swelling, and unpleasant odors, while also providing protection against microbial pathogens and vaginal fungus. **Conclusion:** The proprietary vaginal tightening cream meets stringent safety and efficacy standards, making it a viable option for consumers seeking natural and effective solutions for vaginal laxity. The robust quality control parameters and comprehensive pharmacological evaluation provide a strong foundation for regulatory approval and market acceptance, ensuring consumer trust and product success.

PCTC635

DEVELOPMENT AND EVALUATION OF NANOEMULGEL TOPICAL FORMULATION OF LULICONAZOLE FOR PERMEABILITY ENHANCEMENT.

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Abstract:

Objectives: This study aimed to design and evaluate a Nanoemulgel topical formulation of luliconazole to increase its permeability. **Methods:** A BCS class II Antifungal drug, Luliconazole IP, was selected for the study. Oil selection was based on drug solubility. Surfactants(S) and co-surfactants (CoS) were screened for drug solubility, and HLB values were also considered for selection. Various Smix(S: CoS) ratios were screened for Pseudo ternary phase diagrams. The Selected Nanoemulsions(NEM) were screened for Particle size, Freeze-Thaw cycles, Centrifugation, and Agitation. The selected LCZ-loaded NEM were mixed with the gelling agent to formulate Nanoemulgel(NEG). The developed NEG and marketed gel(MKT) were compared for evaluation parameters viscosity, spreadability, *In vitro* drug release, and total ex-vivo drug permeation(sum of ex-vivo drug release and skin retention). **Results:** After solubility studies, Propylene Glycol Monocaprylate (TYPE II), Tween 20, and Transcutol P were selected as the oil, surfactant, and cosurfactant. From the phase diagrams, the Smix ratio of 6.35:1 was selected for NEM. The selected NEM showed a particle size of 302nm with a PDI of 0.372. NEG was formulated by mixing Drug-loaded NEM and Sepineo DERM. The Viscosity of MKT and NEG was 3960 and 2160 cps respectively. The spreadability of NEG was better than MKT. The *In vitro* drug release at 6 hours for MKT and EMG was 2.06% and 5.00%, respectively. Total ex-vivo drug permeation at 24 hours for marketed and NEG was 6.81% and 11.94% respectively. **Conclusions:** The study concluded that nanoemulgel can be the formulation of choice for the delivery of Luliconazole. Formulated NEM and NEG formulations showed enhanced permeability in *In-vitro* and *Ex-vivo*. The optimized NEG formulation was developed including simple processes and instruments, which can reduce the cost of effective treatment of fungal skin diseases.

PCTC636

FABRICATION AND EVALUATION OF HYDROXYCHLOROQUINE SULPHATE AND ATORVASTATIN INCORPORATED BILAYER TABLETS FOR SIMULTANEOUS MANAGEMENT OF RHEUMATOID ARTHRITIS AND HYPERLIPIDEMIA

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Abstract:

Objectives: The study aimed to develop and optimize bilayer tablets combining Hydroxychloroquine Sulphate (HCQ) for immediate release and Atorvastatin (ATR) for sustained release, targeting the simultaneous management of rheumatoid arthritis and hyperlipidemia. **Methods:** A bilayer tablet

formulation was designed with HCQ in the immediate-release layer and ATR in the sustained-release layer. The formulation was optimized by using central composite design in which stearic acid, soya lecithin and pluronic F68 were taken as independent variables whereas particle size, polydispersity index and entrapment efficiency were selected as dependent variables. Pre-formulation studies were conducted to evaluate the compatibility of the active pharmaceutical ingredients with selected excipients. The optimized tablets were further assessed for hardness, friability, weight variation, and *in vitro* drug release. **Results:** The dissolution studies demonstrated that the optimized formulation achieved desired drug release profiles. HCQ was released within 30 minutes whereas ATR exhibited controlled release over 12 hours. The bilayer tablets met quality criteria for hardness, friability, and weight variation. Stability testing under accelerated conditions confirmed the formulation's robustness and consistency in drug release. **Conclusion:** The developed bilayer tablets provide an effective approach for managing both rheumatoid arthritis and hyperlipidemia through a single dosage form, potentially enhancing patient compliance. The promising results from *in vitro* testing warrant further *in vivo* studies to validate the therapeutic efficacy of this novel formulation.

PCTC637
FORMULATION AND *IN-VITRO* EVALUATION OF BILAYER TABLET CONTAINING ZOLMITRIPTAN AND NAPROXEN

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Abstract:

Objective: The objective of the present investigation was to develop and evaluate a bilayer tablet dosage form containing Zolmitriptan (ZT) and Naproxen Sodium (NS) in a fixed dose combination. The formulation aimed to achieve an immediate release of ZT and NS in one layer, while providing a delayed release of ZT in the other layer, thereby maintaining optimal plasma levels of both drugs simultaneously over a prolonged period. **Method**: Immediate release (IR) and sustained release (SR) granules were evaluated for pre-compression parameters, including angle of repose (measured by fixed funnel method), bulk and tapped densities (using tapped density apparatus), and compressibility index and Hausner's ratio (calculated according to USP guidelines). Loss on drying (LOD) was measured for Zolmitriptan granules only. Compatibility of Zolmitriptan and Naproxen with excipients was studied through individual and binary mixtures. Formulation blends were packaged in glass vials and incubated at room temperature (25 °C ±2 °C & 60% ±5% RH), accelerated condition (40 °C ±2 °C & 75% ±5% RH), and dry heat condition (50 °C) for one month. **Result**: The study successfully formulated and evaluated a bilayer tablet combining an anti-migraine drug, Zolmitriptan, and an NSAID, Naproxen. The immediate release layer of Zolmitriptan was optimized with formula using Crospovidone as a super disintegrant, while the sustained release layer of Naproxen was optimized with formula using a combination of Lactose Monohydrate and Carboxy Methyl Ethyl Cellulose as release retardants. FTIR drug-excipient compatibility studies showed no interaction between the drugs and excipients. All pre- and post-compression parameters were within official limits. The *in vitro* release study revealed that the Zolmitriptan immediate release layer released 98.64% ± 2.34% of the drug within 30 minutes. **Conclusion**: An anti-migraine medication called Zolmitriptan and an NSAID called Naproxen were effectively combined in a bilayer tablet that was created and assessed for the study. Within 30 minutes, the Zolmitriptan instant release layer with Crospovidone optimization reached 98.64±2.34% release. Effective release retardation was proven by the Naproxen sustained release layer, which was improved using lactose monohydrate and carboxymethyl ethyl cellulose. Drug-excipient interactions were ruled out by FTIR analyses, and pre- and post- compression data were within permissible bounds.

PCTC638

TRANSUNGUAL DELIVERY OF MODEL ANTIFUNGAL DRUG ITRACONAZOLE THROUGH OPTIMIZED NAIL LACQUER

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Abstract:

Objectives: Effective topical treatment options considering the possible adverse effects of systemic antifungal therapy. The current work is focused on development of an adhesive and resistant, drug-delivering and permeation-enhancing polymeric film containing Itraconazole for topical antifungal use. **Methods:** The formulation of the lacquer was developed by simple mixing using magnetic stirrer. Amongst of the all formulation Eudragit RSPO at 12% *w/w* was found to be the ideal adhesive polymer for the application and an optimal permeation-enhancing lacquer formulation was achieved by the optimization of other formulation excipients, such as plasticizer and the solvent system. **Results:** *In vitro* drug release testing and ex-vivo nail permeation testing demonstrated that the optimized nail lacquer performed better than control lacquer lacking the permeation enhancer by achieving a faster and sustained delivery of Itraconazole. **Conclusions:** In summary, this is a possible medication delivery system that may be used topically to treat onychomycotic nails with antifungals. The innovative characterisation methods might be used in the future for formulations that are similar to this one.

PCTC639

PULSATILE DRUG DELIVERY OF THEOPHYLLINE FOR TREATMENT OF NOCTURNAL ASTHMA- A NOVEL APPROACH FOR CHRONOTHERAPY

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Abstract:

Objectives: This investigation of an oral colon-specific, pulsatile device aims to achieve time and/or site-specific release of theophylline, based on Chrono pharmaceutical considerations.

Methods: Accurately weighed Eudragit L-100 and S-100 in 1:2 ratios were dissolved in 10 ml of acetone to form a homogenous polymer solution. Core material, i.e. TPH was dispersed in it and mixed thoroughly. This organic phase was slowly poured at 15 æ%C into liquid paraffin (100 ml) containing 1% (w/w) of Span80 with stirring at 1000 rpm to form a uniform emulsion. After that, it was allowed to attain room temperature and stirring was continued until residual acetone evaporated and smooth-walled, rigid, and discrete microcapsules were formed. The microcapsules were collected by decantation and the product was washed with petroleum ether (40–60 æ%C), four times and dried at room temperature for 3 h. The microcapsules were then stored in a desiccator over fused calcium chloride (Ahmed et al., 2002). Four batches were prepared with different proportions of core to coat materials (drug: polymer = 1:0.5, 1:1, 1:1.5, and 1:2 (w/w) named TM-1–4, respectively). **Results:** *In vitro* release studies of pulsatile devices revealed that increasing the hydrophilic polymer content resulted in delayed release of theophylline from microcapsules. The gamma scintigraphy study pointed out the capability of the system to release drugs in lesser parts of GIT after a programmed lag time for nocturnal asthma. **Conclusion:** Time-controlled pulsatile drug delivery, colon-specific release has been accomplished from a capsule device over a 2–24 hr, consistent with the demands of a chronotherapeutic drug delivery system.

PCTC640

DESIGN AND CHARACTERIZATION OF DRUG CONJUGATED ZINC OXIDE NANOPARTICLES FOR ENHANCED ANTI- DEPRESSANT ACTIVITY.

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Abstract:

Objectives: The objective of the current research is to develop viloxazine zinc oxide (VLX-ZNO) nanoparticles (NPs) and to investigate their intra nasal delivery as well as anti-depressant activity. The VLX-ZNO-NPs were prepared by direct precipitation method. Box- Behnken design (Design expert software 12.0.1.0) was used for the optimization of VLX-ZNO-NPs formulations. The VLX-ZNO-NPs were evaluated for their physiochemical nature, The optimized VLX-ZNO-NP formulation showed that a particle size of 153nm, zeta potential value 12mv, and entrapment efficiency of 78%. The morphology of VLX-ZNO-NP was confirmed by the FE-SEM analysis. **Methods:** Zinc acetate dihydrate solution was prepared by dissolving 10g of zinc acetate dihydrate in 50ml of deionized (DI) water. Similarly, the solution of sodium hydroxide was prepared by dissolving 2.0g of NaOH pellets in 50ml DI water. **Results:** From the above experiment we found that particle size is in between 100-150, which gives good *in vivo* pharmacokinetics and its determined by a device named zeta sizer. **Conclusion:** The zinc oxide nanoparticles were made by using zinc acetate dehydrate and sodium hydroxide. Drug and the presence of ZNO NP were conformed by us-vis spectrophotometry shows absorption 0.1228 was shown by zinc oxide nanoparticles at 273nm ZNO NP shows average size of 149nm the zeta potential was found at 27.1 mv which confirms their high stability.

PCTC641

ADVANCING SUPPLY CHAIN INTEGRITY: THE IMPACT OF GS1 DATA MATRIX ON PHARMACEUTICAL AND MEDICAL DEVICE TRACEABILITY

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Abstract:

Objective: This study aims to explore the transformative impact of GS1 Data Matrix on the pharmaceutical and medical device industries by addressing key challenges in traceability. Specifically, it investigates the role of GS1 Data Matrix in: Providing a standardized approach to product identification, enabling accurate inventory tracking, enhancing patient safety through authentication mechanisms. By encoding vital information such as product identification, batch numbers, and expiration dates in a compact format, the integration of GS1 Data Matrix into the global supply chain facilitates end-to-end traceability, authentication, and regulatory compliance. **Methods:** A literature review approach is employed to gather relevant information on the implementation and impact of GS1 Data Matrix in pharmaceutical and medical device traceability. Existing research, case studies, and regulatory guidelines are reviewed to understand the practical applications and benefits of GS1 Data Matrix. **Results:** Our analysis reveals that GS1 Data Matrix effectively addresses challenges in pharmaceutical and medical device traceability, including counterfeit products, inefficient inventory management, and regulatory requirements. Real-world case studies demonstrate its benefits in improving supply chain integrity, streamlining logistical operations, and safeguarding patient health. **Conclusion:** The findings underscore the crucial role of GS1 Data Matrix in advancing traceability standards in pharmaceuticals and medical devices. By providing standardized identification and authentication, GS1 Data Matrix ensures transparency, safety, and efficacy throughout the healthcare supply chain, with potential for further innovation and improvement.

PCTC642
ROLE OF PRONIOSOMES IN TRANSFORMING PSORIASIS TREATMENT

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Abstract:

Objectives: Psoriasis is a chronic inflammatory skin disorder characterized by red, scaly patches, impacting individuals globally. The prevalence of psoriasis is estimated to be around 2-3% of the global population. Conventional treatments often lack sustained efficacy, necessitating novel drug delivery systems for enhanced therapeutic outcomes. This study focuses on developing a proniosomal-based delivery system for Azelaic acid, a potent anti-psoriatic agent, to address the limitations of current treatment modalities. The primary objective of this research is to formulate and evaluate proniosomes loaded with Azelaic acid for targeted and sustained delivery in psoriatic skin. The study aims to optimize the formulation parameters to achieve prolonged drug release and improved skin penetration, enhancing the therapeutic efficacy of Azelaic acid. **Method:** The formulation of Azelaic acid-loaded proniosomes was optimized using a 3^3 full factorial design with Central composite design. Various physicochemical characteristics such as pH, homogeneity, spreadability, viscosity, and drug content were assessed to ensure the quality of the proniosomal formulation. *In vitro* release studies were conducted to evaluate the sustained release profile of Azelaic acid from the proniosomal dispersion and gel. Permeability studies using excised rat skin were performed to assess the skin penetration of the drug-loaded proniosomes. **Results:** The optimized proniosomal formulation exhibited desirable characteristics, including sustained drug release for up to 24 hours and enhanced skin permeation. Physicochemical evaluations demonstrated satisfactory homogeneity, spreadability, and drug content, indicating the formulation's stability and efficacy. **Conclusion:** The study concludes that proniosomes represent a promising drug delivery system for localized delivery of Azelaic acid in psoriatic skin, offering sustained release and improved therapeutic outcomes. The optimized formulation showed potential for reducing skin irritation and maintaining plasma drug concentrations, highlighting its clinical relevance in psoriasis treatment.

PCTC643
STUDY TO EXPLORE THE WASTAGE OF SEMI-SOLID FORMULATIONS FROM TUBE PACKAGING

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Abstract:

Objective: To collect the data, which will assist to analysis the waste of medicament from the collapsible tube and loss of effectiveness of the formulation meant for treatment can be minimize. **Methods:** After the used of consumers, the semisolid collapsible tube of medicament was collected. The material left in packaging (unused) is scrap off with the help of spatula and the unused or wastage material is quantified by simple weighing technique. **Results:** According to the results obtained, the data interpretation showed that, 5 % to 18 % of wastage was observed in the tube having packing size of 10gm-50gm of medicament, while 5% -10 % of wastages were observed in the tube having size of 55gm-100gm of medicament. In case of large packing with 125gm to 150gm tube and 170 gm to 200 gm the wastage was found to be 2% -10% And 2% -8%, comparatively less than the smaller packing. **Conclusion:** By analysing the data it is concluded that there was more wastage of medicaments in metal packaging tubes than the plastic packaging tube. Also the small size of packaging shows more wastages when compared to the large packaging size tube. The packaging size and materials could a

reason and because of this, the consumers are unable to fully utilize the medication due to the current packaging, leading to economic losses. So it is concluded that to avoid the wastage of medicament and its efficacy, there is a need for the modified pharmaceutical packaging, especially for semisolid preparations, to reduce wastage and improve economic efficiency.

PCTC644

REVOLUTIONIZING PHARMACY PRACTICE: THE FUTURE OF AUTOMATION IN MEDICATION MANAGEMENT

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Abstract:

Objectives: This study aims at investigating how pharmacy automation influences the medication management process with respect to effectiveness, precision, and enhancement of safe practices. The paper discusses some of the major automated devices such as Automated Dispensing Cabinets (ADCs), Robotic Prescription Dispensing Systems, and Automated Compounding Systems which have got potentiality to boost pharmacy efficiency as well as patient care. **Methods**: The scientific evidence presented analyses different drug dispensing technologies regarding their abilities to reduce occurrence of medication errors; help to manage stock levels; and overall processes in pharmacies. **Results**: It is found that all pharmacy automation devices increase effectiveness and efficiency in medication preparation and dispensing with a great deal of accuracy for patients' safety. The recent advancements in technology research indicate that this has a positive impact on patients' health. **Conclusions**: The current state of healthcare, including drugs used by the patients being treated with today's drugs depends highly on how drugs are dispensed.

PCTC645

PHYSIOLOGICALLY BASED PHARMACOKINETIC (PBPK) MODELLING AND SIMULATION APPROACHES OF ALPRAZOLAM: A DOSE DEPENDENT COMPARATIVE *IN-SILICO* STUDY

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Abstract:

Objectives: The aim of the study is to leverage PBPK modelling to create alprazolam dosing regimens for this age group, taking into account dose-specific physiological and metabolic characteristics. **Methods:** PK-Sim® as part of the Open Systems Pharmacology (OSP) Suite is a well-established PBPK tool through which we have created different structural models together with relevant physiological and molecular database information for PBPK modeling of small molecule of Alprazolam drug in different aged human populations. The study used PK-Sim® and Model parameter optimization, as well as sensitivity analysis. Due to a lack of data on alprazolam in PKSim8, parameters were collected from published literature. **Results:** The study yielded various parameters are AUC_{inf} of 0.25 mg Intravenous Bolus Administration (11.89 µmol*min/l), 1 mg for 1min Intravenous Infusion Administration (94.76 µmol*min/l) and 4 mg Intravenous Bolus Administration (378.65 µmol*min/l) the value were found to be increasing in respect to the amount of dose, C_{max} of 0.25 mg (0.04 µmol/l), 1mg continuous infusion (0.17 µmol/l) and 4 mg Cmax 0.62 µmol/l) the value were found to be increasing in respect to the amount of dose. For 0.25mg dose V_d (1061.48ml/kg), 1mg dose V_d (1029.45ml/kg), 1mg dose V_d (1030.52ml/kg). t_{max} (0.05 h) for all doses. For 0.25mg $t_{1/2}$ (13.14 h), for 1mg $t_{1/2}$(25.40h), for 4mg $t_{1/2}$(25.40 h). Total body clearance 0.25mg (0.93 ml/min/kg), 1mg & 4mg (0.47 ml/min/kg). t_{max} is dose independent for all doses. And

$t_{1/2}$, Total body clearance is dose independent for 1mg, 4mg doses. **Conclusions:** This study claims alprazolam's linear pharmacokinetics in the healthy European population at specific age 30 years old, emphasizing the importance of personalized dosing strategies based on dose-specific factors for optimal treatment efficacy and safety of administration.

PCTC646

DESIGN EXPERT AS A STATISTICAL TOOL FOR OPTIMIZATION OF FLAVONOID LOADED PHYTOSOME IN FACTORIAL DESIGN

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Abstract:

Objectives: This work uses factorial design approaches to optimize the formulation of phytosomes loaded with flavonoids through the use of Design Expert software, a comprehensive statistical tool. **Methods:** The impact of different formulation parameters, such as the ratio of flavonoid to phospholipid, the concentration of surfactant, and the preparation method, on important performance attributes like particle size, entrapment efficiency, and drug release profile, was assessed using a systematic factorial design approach. By examining how many elements interact and affect the results. The outcomes showed that the performance of the flavonoid-loaded phytosomes was considerably enhanced by a particular combination of formulation variables. This method produced a strong statistical foundation for forecasting the formulation parameters that yield the intended product qualities, in addition to streamlining the optimization process. **Results:** We studied a 2 level 3 factor design where two formulation was prepared and observed the best compatible formulation. Several variables such as phospholipids and flavonoid ratio are nter-changed. As per fractional designing, we get some potential runs for optimizing the experimental analysis. **Conclusions:** Maximizing the efficiency of flavonoid-loaded phytosomes is contingent upon their optimization, given their poor water solubility and recognized therapeutic potential. The effective use of Design Expert demonstrates its potential as a crucial instrument in the pharmaceutical development of delivery systems based on phytosomes, opening the door to the development of flavonoid formulations that are more potent and bioavailable.

PCTC647

REVIEW ON EMERGING ADVANCES OF TRANSFEROSOMES IN DRUG DELIVERY SYSTEM

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Abstract:

Objectives: This review aims to analyse the impact of penetration ability of transferosomes through Stratum Corneum with the help of transdermal osmotic gradient. This kind of drug carrier system is special because it can hold medications that are amphiphilic, lipophilic, and hydrophilic. Transferosomes can also be used to produce formulations for controlled release. With this kind of drug delivery technology, peripheral medication targeting and transdermal immunization can also be accomplished. **Methodology:** This review aims to explore the recent advances of transferosomes in drug delivery system in comparison with the other conventional delivery methods in some parameters like permeation enhancement, stability, ultra deformable properties, molecular weight, etc. An extensive literature survey was conducted in various databases like PubMed, Scopus, Wiley Online Library, ScienceDirect, etc. using various keywords like "transferosomes", TDDS, permeability of transferosomes. **Results:** One of the most prevalent barriers to medication administration is the epidermis.

However, transferosomes, being ultra-deformable vesicular carriers, exhibit exceptional effectiveness in penetrating this barrier. Their adaptability to the skin's microstructure significantly boosts transdermal permeability, solely due to their elasticity. Transferosomes improve regulated and sustained release, enhance medication targeting accuracy at the target location, and boost drug bioavailability, according to study. Among the many bioactive chemicals that transferosomes have shown promise in delivering include insulin, NSAIDs, herbal extracts, anticancer medications, proteins, peptides, and other similar substances with enhanced stability and less systemic adverse effects. Their capacity to carry bigger molecules and those with low skin permeability further emphasises their promise to transform transdermal therapeutics. This unlocks the door to new therapeutic uses for transferosomes and makes them a very sophisticated and flexible tool in contemporary drug delivery systems, solving problems like stability, drug solubility, and molecular weight limits. **Conclusion:** Transferosomes represent a significant advancement in the field of transdermal drug delivery, offering a range of benefits that address some of the limitations of traditional systems. Their unique structure, characterized by their flexible, deformable nature, allows them to penetrate the stratum corneum more effectively, facilitating the delivery of a wider variety of drugs, including those with larger molecular weights or poor skin permeability. Therefore, the advancement of transferosome technology in transdermal drug delivery, nano-formulations, gel formulations represent a promising frontier in pharmaceutical science, with the potential to significantly impact the future of drug delivery systems.

PCTC648

NANOCARRIERS IN ALZHEIMER'S DISEASE : REVOLUTIONIZING DRUG DELIVERY FOR ENHANCED THERAPEUTIC OUTCOMES

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Abstract:

Objective: Alzheimer's disease (AD) is a progressive neurodegenerative disorder characterized by cognitive decline and memory loss, affecting millions worldwide. Conventional drug delivery systems often struggle to effectively target the brain due to the restrictive nature of the blood-brain barrier (BBB), resulting in suboptimal therapeutic outcomes. This work aims to provide a comprehensive overview of nanocarriers, including liposomes, polymeric nanoparticles, solid lipid nanoparticles, and nanostructured lipid carriers, and their potential in revolutionizing Alzheimer's disease (AD) therapy. The focus is on enhancing drug delivery across the blood-brain barrier (BBB), improving therapeutic outcomes, and minimizing systemic side effects. Additionally, the potential of multifunctional nanocarriers combining diagnostic and therapeutic functions, is explored. **Methodology:** A detailed literature review was carried on to evaluate current advancements in nanotechnology forAD treatment. The mechanisms for targeted delivery, including surface modifications to facilitate BBB transport and receptor-mediated endocytosis are also reviewed and its significance in therapy for AD is explored. Key aspects such as the preparation, surface modifications, and mechanisms for brain-targeted delivery of nanocarriers were determined. Further various future applications in AD therapy were also investigated and enlisted. **Results:** Through thorough literature study it has been demonstrated that the nanocarriers have the ability to enhance drug penetration through the BBB, offering more effective targeting of brain tissue while reducing systemic side effects for the treatment of AD. Multifunctional nanocarriers, in particular, show promise in providing both diagnostic and therapeutic functions, enabling early diagnosis and targeted treatment of AD, potentially transforming the standard of care for patients worldwide. Moreover, the

concepts of patient-specific nanomedicine are discussed, which is based on various advanced technologies to enable the implementation of current and more efficient treatment. **Conclusion:** From the overall comprehensive literature studies it can been concluded that the nanocarrier-based systems represent a significant advancement in AD therapy by offering more precise and effective drug delivery to the brain. These systems not only improve the treatment outcomes but also pave the way for future innovations. As research progresses, nanotechnology is poised to transform the standard of care for AD patients, addressing key challenges in drug delivery and providing more sustainable management of the disease.

PCTC649
REVIEW ON A THERMODYNAMICALLY STABLE NANOLIPOIDAL DRUG DELIVERY SYSTEM

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Abstract:

Objective: The focus of current work is to have a detail review on thermodynamically stable nanolipoidal drug delivery system. The objective of this review is to have an insight on Winsor IV type nanolipoidal system such as microemulsion utilizing pseudo-ternary phase diagrams, the internal structure of the developed system employing NMR spectroscopy, the thermodynamic and dynamic behaviours of the developed system by using isothermal titration calorimetry (ITC), nanoliopoidal formulation for stability and other physico-chemical properties. **Methods:** From several peer reviewed journal the study was done to obtain specified objectives as mentioned above and the loop holes of the study were also identified. From the preformulation studies melting point, NMR, IR, XRD, UV-visible spectrophotometry studies were obtained. The preparational studies suggested that the formulation was prepared by the screening of oil, surfactant and co-surfactant, miscibility study, construction of pseudo ternary phase diagram. In all the journals the formulation was evaluated through the following parameters, pH, conductivity, viscosity, dilution shock, *In vitro* bioavailability studies, etc. **Results:** From the review a wide variety of melting range and λ max was observed due to variations in the API. A range of surfactants and co-surfactants, including Polyoxyethylenesorbitan monolaurate (Tween20, Span20, Glycerol, Isopropyl Alcohol, and Sorbitan monooleate (Span 80), were screened for their HLB values and mutual solubilities. **Conclusion**: From the above review it can be concluded that the role of microemulsion is to provide an environment to overcome the problems of poor water solubility of highly lipophilic drug compounds and offer more reliable and reproducible bioavailability to the drug. They are also useful to optimize drug targeting without any type of systemic absorption. However, challenges are there due to the layers of GIT that need to overcome by microemulsion formulation to reach to the target cells. Microemulsion has the capability to protect labile drug substances, control the release of drug, and reduce patient inconsistency. Furthermore, it has proven that microemulsion preparations are suitable for most routes of administration.

PCTC650
INNOVATIVE APPROACHES IN BIOPHARMACEUTICS: ENHANCING DRUG SOLUBILITY AND BIOAVAILABILITY

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Abstract:

Objectives: The objective of this study was to explore and evaluate innovative approaches to enhance the solubility and bioavailability of poorly water-soluble drugs. By improving these properties, the

effectiveness and therapeutic outcomes of such drugs can be significantly increased. **Methods:** Two poorly water-soluble model drugs, Ibuprofen and Ketoconazole, were selected for this study. The strategies employed included the use of solid dispersions, lipid-based formulations, and nanosuspensions. Solid dispersions were prepared using a hot melt extrusion technique with various polymers such as Polyvinylpyrrolidone (PVP) and Polyethylene Glycol (PEG). Lipid-based formulations were developed using medium-chain triglycerides and surfactants. Nanosuspensions were produced by high-pressure homogenization. The formulations were characterized for solubility, particle size, and stability. *In vitro* dissolution studies and *in vivo* bioavailability studies in animal models were conducted. **Results:** The solid dispersions significantly increased the solubility of both Ibuprofen and Ketoconazole, with PVP showing the most promising results. Lipid-based formulations enhanced the bioavailability of the drugs, with a noticeable improvement in the absorption rate. Nanosuspensions achieved the smallest particle size and provided the highest increase in dissolution rate. The *in vivo* studies confirmed that the enhanced solubility translated to improved bioavailability, with the nanosuspensions showing the most significant improvement. **Conclusions:** This study demonstrated that innovative formulation strategies such as solid dispersions, lipid-based formulations, and nanosuspensions can effectively enhance the solubility and bioavailability of poorly water-soluble drugs. These approaches provide valuable tools for improving drug delivery and therapeutic efficacy. Future research should focus on optimizing these techniques for commercial application and evaluating their long-term stability and scalability.

PCTC651
CHALLENGES AND FUTURE PERSPECTIVE OF FLOATING DRUG DELIVERY

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Abstract:

Objectives: HBS/FDDS formulations could be useful for administering aspirin and other comparable medications. These are beneficial in cases of diarrhea and vigorous intestinal movement because they keep the drug in a floating state in the stomach, allowing for a better response. **Methods:** The FDDS was formulated by using hydrophilic polymers, and effervescent materials like sodium bicarbonate, and citric acid. The floating tablets were prepared using wet granulation techniques. **Results:** The formulation with optimized ratios of polymer and effervescent agents demonstrated effective floating properties, with a floating lag time of less than 1 minute and a sustained floating duration of over 12 hours. Drug release studies revealed a controlled and prolonged release of the drug, with approximately 80% release over 12 hours, indicating successful formulation of a floating system with extended gastric residence time. **Conclusions:** The developed FDDS effectively prolonged the gastric residence time of the drug and provided controlled release, which can potentially enhance drug absorption and therapeutic efficacy. Further, *in vivo* studies are recommended to confirm the improved bioavailability and clinical benefits of the FDDS.

PCTC652
ARTIFICIAL TEARS ON DRY EYE DISEASE

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Abstract:

Objective: The objective of this study was to explore, artificial tears on dry eye disease. Method: Dry eye disease (DED) is a common and complex condition characterized by either not enough tear production or excessive tear evaporation, leading to discomfort, inflammation, and potential damage to the cornea and conjunctiva. It significantly affects quality of life, causing symptoms such as dryness, irritation, and

visual disturbances. To manage DED, artificial tears are a key treatment, providing relief by mimicking natural tears, stabilizing the tear film, and protecting the eye surface. These artificial tears vary in viscosity, osmolarity, and preservative content, all of which are crucial in determining their effectiveness and patient comfort. Low-viscosity artificial tears offer quick relief but may need frequent application, while high-viscosity options provide extended protection but may temporarily blur vision. Preservative-free formulations are recommended for patients who need to use them frequently or those with sensitive eyes, as they reduce the risk of preservative-induced toxicity. **Result & Conclusion:** This review explores the different types of artificial tears, their mechanisms of action, and their role in managing DED. It also emphasizes the importance of customizing treatment to individual patient needs, considering factors such as symptom severity, underlying causes of DED, and patient preferences, to achieve the best therapeutic results.

PCTC653
FORMULATION AND EVALUATION OF THE ANTIOXIDANT POTENTIAL OF POLYHERBAL TABLETS

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Abstract:

Objectives: Herbal remedies are natural which show the alternative treatment of exposure and related ailments with minimal adverse effects. Here, the study aimed to formulate a standard polyherbal tablets using herbal extracts exhibiting antioxidant property. **Methodology:** The extraction was ensued with *Phyllanthus emblica* fruits*, Solanum nigrum* leaves*, Psidium guajava* leaves*, Curcuma longa* rhizomesand *Glycyrrhiza glabra* roots by maceration process using distilled water as common solvent. Tablets were prepared using the aqueous herbal extracts and standard excipients as microcrystalline cellulose, starch, microcellose sodium, silicon dioxide, talc, magnesium stearate. Tablets were evaluated for physical parameters, FTIR-ATR analysis, Absorption maxima (λmax), DPPH radical scavenging assay and *In-vitro* dissolution study. Antioxidant property of the tablets is assessed using *in-vitro* assay. The herbal extracts showed compatibility under evaluation and polyherbal tablets were formulated. **Result & Conclusion:** This study was designed to investigate the antioxidant potential of a novel polyherbal tablets which showed commendable physical parameters and content integrity and promising antioxidant property through *in-vitro* assay. The results till now showed promise in development of a new polyherbal antioxidant formulation.The DPPH antioxidant assay was employed to assess the free radical scavenging activity of the polyherbal tablet extract at various concentrations.

PCTC654
TRANSTYMPANIC DRUG DELIVERY IN THE MANAGEMENT OF OTITIS MEDIA

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Abstract:

Objectives: The current work is focused on development of localized treatment that enhances drug concentration, reduces systemic side effects & improves patient compliance in the management of otitis media. **Methods:** the current work methods use potentially long-acting bioadhesive nanoparticle to deliver drugs across the tympanic membrane. **Results:** Transtympanic drug delivery directly targeting the middle ear cann improve drug concerntration at the infection site, potentially enhancing efficacy, reduced side effect by minimizing systemic absorption & improved patient compliance. **Conclusions:**

Transtympanic drug delivery systems for otitis media offer a targeted approach to treatment by delivering medication directly to the middle ear. This method enhances drug concentration at the site of infection, potentially improving therapeutic outcomes and reducing systemic side effects.

PCTC655
FORMULATION AND EVALUATION OF EMULGELS FOR THE TOPICAL DELIVERY OF MEFENAMIC ACID

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Abstract

Emulgels offer potential as a drug delivery system for less hydrophilic drugs. The goal of the study was to generate an emulgel loaded with an NSAID mefenamic acid, utilizing Carbopol 934 as the gelling agent. Urea and SLS were both used as penetration enhancers to enhance the permeability through skin when applied topically. The emulsion has been made and then added into the gel foundation of carbopol 934. The compositions were tested for rheological attributes, spreading coefficients, bio-adhesion, skin irritation, *in vitro* and *ex vivo* drug diffusion, anti-inflammatory, and analgesic property. When compared to commercially available aceclofenac gel, compositions EG-3 and EG-6 had significant effects on pain relief and inflammation. As an outcome, produced topical mefenamic acid emulgel has substantial anti-inflammatory and analgesic properties.

PCTC656
ADVANCEMENTS AND OBSTACLES IN DRUG DISCOVERY FOR DIVERSE DISEASES THROUGH DRUG REPOSITIONING

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Abstract:

Drug repurposing has become increasingly popular in the industry of drug development due to its lower production costs and higher throughput. This has led to a shift in emphasis away from the more traditional de novo approaches. This tactical shift provides a novel method for addressing the difficulties associated with discovering novel therapeutic solutions for a wide variety of ailments. When probable candidates for drug repositioning are analyzed, it becomes clear that some pharmaceuticals, which were initially unremarkable in their primary indications, may demonstrate exceptional efficacy in different illness contexts. This becomes apparent as the process of drug repositioning is called drug repositioning. In addition, studies have indicated that the synergistic effects of multiple medications working together have the potential to improve therapeutic results. It is important to note that the significance of drug repositioning is highlighted by the major part it plays in the response to critical situations affecting public health, such as the COVID-19 pandemic. In this extensive study, we investigate a selection of exemplary medications that have been successfully repositioned for diverse diseases. We focus on the mechanisms of action for these treatments as they relate to their new therapeutic contexts and examine how they have been successfully repurposed. In the context of a wide range of disorders, the purpose of this study is to offer some useful recommendations for the conduct of future research and the hunt for new drugs.

PCTC657

ZINC OXIDE NANOPARTICLES IN THE TREATMENT OF ORAL DISEASES: A REVIEW

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Abstract:

Public health worldwide faces significant challenges from oral diseases such as dental caries, periodontal disease, and oral infections. Conventional therapeutic approaches frequently face restrictions such as inadequate eradication of pathogens, resistance to drugs, and unfavorable side effects. Innovative developments in nanotechnology, particularly the application of zinc oxide nanoparticles (ZnONPs), have created new opportunities for the efficient treatment of oral diseases. The present review offers a thorough examination of the therapeutic potential of ZnONPs in the management of diverse oral disorders, with particular emphasis on their antimicrobial, anti-inflammatory, and regenerative characteristics. Zinc oxide nanoparticles (ZnNPs) have shown strong antibacterial effects against a broad range of oral pathogens, including those that cause dental caries and periodontal inflammation. The nanoscale dimensions of these particles enable improved infiltration and disintegration of microbial biofilms, which frequently exhibit resistance to traditional treatments. Moreover, ZnONPs exhibit anti-inflammatory characteristics that suppress the immune response of the host, so decreasing tissue injury and facilitating the healing process. Studies investigating the regenerative efficacy of ZnONPs in dental applications have demonstrated their capacity to stimulate bone formation and tissue regeneration in oral wounds and defects.This review assembles existing research on the use of ZnONPs in relation to oral health, emphasising their benefits compared to conventional treatment methods.

PCTC658

ARTIFICIAL INTELLIGENCE AND THE EVOLUTION OF DIABETES MANAGEMENT: A PARADIGM SHIFT

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Abstract:

Objective: The objective of this study was to discover, explore, and evaluate innovative approaches to enhance the diagnosis, treatment, management, and risk stratification of diabetes mellitus, along with its underlying complications, with the aid of artificial intelligence and machine learning (AI/ML). **Methods:** A thorough review of research using databases like NIH and Medline, among others, and search engines like PubMed and Google Scholar was carried out with the goal mentioned earlier. This review provides insights into the numerous options that can be used in the prevention, early diagnosis, and management or monitoring of a diabetic patient. It draws from a large body of literature. The study covers a wide range of scenarios, including the rise in the use of AI-powered devices for automated retinal screening, clinical diagnosis support, patient self-management tools, and even patient-friendly smartphone applications that have been approved by numerous reputable organizations, including the FDA and EMA, with excellent success rates. **Results:** The study's findings are consistent with the growing understanding of AI's capacity to enhance several diabetes management-related factors, whether it's AI-powered assistance with blood glucose monitoring, hypoglycemic event prediction, or treatment plan customization for diabetics. **Conclusions:** It is anticipated that the predictive performance of AI will soon be boosted by a large amount of organized data and abundant computational resources, which will

contribute to an exponential improvement in the accuracy of disease prediction models for diabetes. AI is continuously proving itself to be the new frontier in healthcare since it has been subjected to the clinical management of diabetes. Therefore, further opportunities for improved results will undoubtedly arise from ongoing machine learning research.

PCTC659
SUPER COMPUTER BASED APPROACHES TO RATIONAL DRUG DESIGN

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Abstract:

Objectives: We aim to study and evaluate Predict protein-ligand interactions, identify leads, optimize properties, and design novel compounds using computational tools to accelerate drug discovery. **Methods:** Molecular docking, molecular dynamics simulations, virtual screening, pharmacophore modeling, QSAR analysis, machine learning, and structure-based drug design are crucial methods used in supercomputer-based approaches to rational drug design, accelerating discovery and optimizing lead compounds. **Results:** Supercomputer-based approaches to rational drug design accelerate discovery, improve lead compound quality, increase success rates, and enable personalized medicine, resulting in cost-effective and efficient drug development with minimized adverse effects. **Conclusions:** Supercomputer-based approaches to rational drug design revolutionize drug discovery, enabling faster and more accurate lead compound optimization, improving efficiency, effectiveness, and safety.

PCTC660
ARTIFICIAL INTELLIGENCE IN BIOMEDICAL DEVICES

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Abstract

Objectives: This paper primarily aims to: present various areas of application for AI in biomedical devices; assess the effect of AI on diagnostic accuracy, monitoring of patients, and effectiveness of treatment; spot challenges and limitations to integration; present future directions and potential advancements in this field. **Methods:** A literature review was conducted by detailed analysis of peer-reviewed journals, case studies, and clinical trials with respect to AI applications in biomedical devices. Key focal areas were on medical imaging, wearable health monitors, surgical robotics, and personalized medicine. Detailed AI methodologies are described. Literature data were derived from major medical databases/journals such as PubMed, IEEE Xplore, and ScienceDirect. **Results:** The study identified that AI improves biomedical devices' capabilities in several aspects: **Medical Imaging**: Deep learning mainly has improved the accuracies of diagnosing conditions from medical images. For instance, AI algorithms detect tumors in radiological images more precisely than the conventional ways of detection. This has led to earlier diagnosis and improved patient outcomes. **Wearable Health Devices**: AI-powered wearable devices continuously monitoring vital signs and health metrics. They analyze the trend in real-time data to be prepared for any potential heart attack or stroke. They also provide personalized health insights, helping in the management of chronic diseases. **Personalized Medicine**: AI algorithms interpret genomic data in order to personalize treatments for each patient, improving therapy efficiency. AI supports the effort of identifying genetic mutations in tumors that appear only in specific cases, thus guiding targeted treatment plans in oncology. **Conclusions:** AI is giving a face-lift to biomedical devices by providing improved diagnostics, monitoring, and treatment tools. Amongst many benefits are increased diagnostic accuracy, patient-centered treatment planning, and improved outcomes. However, integrating AI into healthcare also poses challenges that need to be dealt with in pursuit of safe and ethical applications.

PCTC661
BIOINFORMATICS ADVANCES: METHODOLOGIES, USES, AND PROSPECTS

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Abstract:

Objectives: This paper assesses the uses of current bioinformatics technology advancements in systems biology, proteomics, and genomics. Through an evaluation of the present obstacles and constraints in bioinformatics research, such as problems with data integration and computational complexity, the study offers insights into prospective future directions and areas of growth. These developments are crucial for improving biological research and resolving persistent issues in the discipline. **Methods:** A thorough analysis of recently published research papers, peer-reviewed articles, and developments in bioinformatics tools and approaches was done. Data from many sources, such as genetic databases, computational models, and bioinformatics tools, were included in the study. The effect and applicability of these developments were evaluated using both qualitative and quantitative methodologies. **Results:** The study emphasized important developments in bioinformatics, including increased data processing algorithms, better sequencing technology, and integrative methods that integrate systems biology, proteomics, and genomics. These developments have improved our comprehension and ability to work with biological data. Nonetheless, there are still issues to be resolved, such as the requirement for established protocols, computational complexity, and data integration. **Conclusions:** Bioinformatics has advanced significantly thanks to new tools and techniques that improve biological research. Even with these developments, problems like computing needs and data integration still exist. To further enhance the discipline and broaden its uses, future research should concentrate on creating more effective tools, standardizing procedures, and tackling computational problems.

PCTC662
AI IN HEALTHCARE

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Abstract:

Objective: This research highlights the following issues: i) important factors to take into account when assessing clinical decision support offered by artificial intelligence (AI); ii) difficulties and real-world implications associated with AI development, design, selection, application & continuous monitoring. Methods: A review of a narrative in previous studies and assessment methodologies combined with professional viewpoints from the Working Groups on TechnologyEvaluation and Enhancement of Quality in Health Informatics Association and the European Federation of Medical Informatics (EFMI). **Results**: The evaluation of artificial intelligence in healthcare has a long and rich history. Questions remain even though assessors may construct models to evaluate the security and usefulness of AI that is dynamic-harnesses massive volumes of genetic, biomarker, phenotypic, electronic record and data on the provision of care from several health systems on best practice evaluation frameworks and methodologies and learn from previous efforts. This paper initially offers a historical overview of the assessment of artificial intelligence in healthcare. **Conclusion:** The safe and successful integration of AI in intricate sociotechnical ontexts will depend on a dedication to thorough initial and continuing evaluation. Through real-world use, specific improvements needed for the next generation of AI-enabled clinical decision assistance will become apparent.

PCTC663
THE FUTURE OF DISEASE FORECASTING: INTEGRATING AI INTO PREDICTIVE HEALTHCARE MODELS

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Abstract

The integration of Artificial Intelligence (AI) into predictive healthcare models marks a transformative shift in the field of disease forecasting. This paper explores the potential of AI-driven technologies to enhance the accuracy and efficiency of disease prediction, enabling early intervention and improved patient outcomes. By leveraging vast datasets, machine learning algorithms, and deep learning techniques, AI can identify patterns and risk factors that are often overlooked in traditional models. This capability not only allows for the precise forecasting of disease onset but also facilitates personalized treatment plans tailored to individual patient profiles. The study examines current applications of AI in predicting chronic and acute diseases, such as diabetes, cardiovascular conditions, and infectious diseases, highlighting successful case studies and innovations. Furthermore, it addresses the challenges associated with the implementation of AI in healthcare, including ethical considerations, data privacy concerns, and the need for interdisciplinary collaboration. Ultimately, this research underscores the promise of AI as a powerful tool in the future of disease forecasting, advocating for its broader adoption in healthcare systems worldwide. As AI technology continues to evolve, its integration into predictive models is poised to revolutionize healthcare, moving from reactive to proactive approaches in disease management and prevention.

PCTC664
THE IMPORTANCE OF ARTIFICIAL INTELLIGENCE IN CLINICAL DATA MANAGEMENT SYSTEM

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Abstract:

Objectives: Clinical data management is the procedure of accumulating and managing research data and accordance with regulatory strands to get quality information that is complete and error free. It also supports the conduct, handling and analysis of studies across the spectrum of clinical research defined by National Institutes of Health. The use of various software in clinical data management methodology is described in this presentation. Representing how the software perform various function to keep the data in managed, secured and an available form. **Methodology**: Today, there is an overwhelming supply of AI-based software; employing it, one can turn intricate problems and errors by -1. BRAAN, Data Labs, Fast Track Systems, IRBWISE, ProIRB,743368, IRBNet for Agreement design & for Institutional Review board 2. Patient subject and study profit, Phase Forward, Data Track, Parexel, eResearchTechnology, DataLabs, Nextrial. Tracking of Clinical trials and Reporting Oracle Clinical, Phase Forward, Net Regulus, Aris Global for clinical trial Supply Management, cost tracking, Document Management, Adverse Event Reporting. **Conclusions:** The study explores strategies for regenerative medicine, including scaffold fabrication, graft integration, and altering the host environment for therapeutic responses. It highlights decellularization, which captures organ structure and material composition in engineered tissues, and ell infusions, which induce therapeutic responses through growth factor secretion and host cell interaction.

PCTC665
A SURVEY ON THE SIGNIFICANCE OF ARTIFICIAL INTELLIGENCE IN PHARMACEUTICAL DISPENSING

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Abstract:

Objectives: Artificial Intelligence (AI) offers potential opportunities to automate tasks like packaging and labelling medication, detect drug-drug interactions, cross-reference dispensed medication against patients' health records,which allows pharmacists to focus on patient care and research. The objective of this word survey was to cover the idea of Artificial Intelligence in pharmaceutical dispensing and integrating AI to improve its accuracy and optimized pharmacy operations. **Methods:** A comprehensive literature survey was conducted and the survey was carried from 2005 onwards till date in the databases that included "artificial intelligence in healthcare," "AI," "pharmaceutical dispensing," and "machine learning in pharmacy,". The significance of AI in drug delivery system has been studied through studies on different scientific reports, technological insights various scientific discussions were all considered for inclusion. Information about the kinds of AI technologies employed, particular applications in dispensing, and results reported were retrieved. **Results:** Through our survey we could analyse that the practical implications of AI are substantial, with authoring potentiality to streamline dispensing processes and reduce medication errors. Even though AI has an overall improvement, employee morale, and pharmacy functionality have been progressively positive, mechanical faults continue to occur. The errors, in turn would require human intervention. **Conclusions:** From our survey we can conclude that ai involves the combination of human knowledge, expertise and resources with artificial intelligence, and it significantly improvement pharmaceutical dispensing, and ongoing advancements that are likely to bring continued enhancements to accuracy and efficiency. As the field evolves, the integration of AI into pharmacy practice will play a crucial role in shaping the future of pharmaceutical care.

PCTC666
REVOLUTIONIZING PHARMACY EDUCATION: LEVERAGING ARTIFICIAL INTELLIGENCE, BIOINFORMATICS, AND DATA ANALYTICS FOR ENHANCED INDUSTRY AND PATIENT IMPACT

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Abstract:

Objectives: To develop ai-powered simulations for pharmacy students to practice clinical decision-making and patient care, integrate bioinformatics tools into the curriculum to enhance pharmacogenomics and personalized medicine education, implement data analytics modules to teach students how to analyze and interpret large datasets for informed decision-making, establish industry partnerships to provide students with real-world projects, mentorship opportunities, and enhanced employability. These objectives focus on the core aspects of revolutionizing pharmacy education. challenges: integration of new technologies: incorporating artificial intelligence, bioinformatics, and data analytics into pharmacy education can be complex and require significant resources. curriculum redesign: revolutionizing pharmacy education may require a complete overhaul of the existing curriculum, which can be time-consuming and challenging. Data management and security: handling large amounts of data, particularly sensitive patient information, requires robust data management and security measures. Additional challenges like faculty training, infrastructure and resources, student preparedness, industry partnerships, regulatory and accreditation issues, continuous evaluation and improvement,

cybersecurity threats and technical difficulties. result: the incorporation of ai, bioinformatics, and data analytics addresses the growing need for pharmacists skilled in data analysis, informatics, and precision medicine. As healthcare evolves, pharmacy education must keep pace. Embracing innovation and collaboration, we can equip graduates with the skills and knowledge to drive positive change in patient care and outcomes. by integrating these technologies into our curriculum, we can shape a brighter future for pharmacy education and improve patient care. conclusions: the fusion of artificial intelligence, bioinformatics, and data analytics in pharmacy education has transformative potential. by harnessing these technologies, we can craft a learning experience that is tailored, effective, and efficient, better preparing students for the complexities of modern pharmacy practice.

PCTC667

AI UNLEASHED: TRANSFORMING INDUSTRIES WITH NEXT-GENERATION ARTIFICIAL INTELLIGENCE.

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Abstract:

Objectives: The purpose of this study is to look into how artificial intelligence (AI) is changing a variety of industries. The specific goals are to: Examine the latest developments and uses of AI in a variety of industries, including healthcare, finance, and transportation; Assess the advantages and disadvantages of implementing AI in these industries; Investigate the moral implications and societal effects of AI technologies; and Determine possible future directions and areas for AI innovation. **Methods**: This study takes a multimodal approach, integrating case studies, empirical analysis, and a thorough evaluation of contemporary literature. Information is gathered from industry reports, peer-reviewed publications, and conversations with AI specialists. The influence of AI technology is evaluated using both qualitative and quantitative approaches in the study. These methods include performance measurements, case study assessments, and examination of AI applications tailored to certain industries. **Results**: According to the report, AI technologies have advanced tremendously and are having a big impact on a lot of different industries. AI-powered diagnostic technologies and individualized treatment regimens have enhanced patient outcomes and operational effectiveness in the healthcare industry. AI algorithms improve risk management and fraud detection in the financial sector. AI helps the transportation industry by enabling more efficient logistics and driverless car technology. Notwithstanding these advantages, problems including algorithmic biases, integration difficulties, and data privacy issues still exist. It's also important to give considerable thought to ethical concerns and societal effects like justice and job displacement. **Conclusion**: Artificial intelligence is revolutionizing a number of sectors at a quick pace by offering creative ideas and improving operational capacities. Even though AI has many advantages, its responsible and successful application depends on resolving related issues and ethical problems. Upcoming research and development have to concentrate on enhancing AI algorithms, resolving biases, and guaranteeing fair access to AI tools. Future developments and uses of AI will be shaped by ongoing research into its possibilities, which will influence both society and technology.

PCTC668

PROS AND CONS OF AI IN PHARMA AND HEALTHCARE SECTOR

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Abstract:

Objectives: Potential applications of Artificial Intelligence in pharmacy and healthcare are enormous in the spheres of increased efficiency, reduced costs, and better patient outcomes. However, AI also raises

significant concerns about algorithm bias and data privacy. This review investigates the present status of these fields in AI technologies, showing their applications, advantages, and challenges. **Methods:** The following review is an effort to critically survey the present AI technologies and their practical applications in pharmacy and healthcare, along with the associated benefits and challenges. It will also shine a light on the future potentials of AI in fields such as virtual reality, personalized medication, predictive analytics, etc. Ethical considerations that must be factored into developing and implementing AI tech. **Results:** The review on AI in relation to pharmacy and healthcare presents a balanced argument; it reveals some very promising capabilities as well as challenges. It maintains that even as AI improves efficiency and produces better patient outcomes, it requires great caution in managing bias of algorithms and data privacy concerns. The research illuminates how AI is currently used in the industry and provides recommendations regarding its ethical use in the future, targeting researchers, experts in the industry, and healthcare professionals. **Conclusions:** Incorporation of AI can revolutionize pharmacy and healthcare by delivering important patient outcomes reduced costs and enhanced efficiency. The challenges and limitations that the adoption of AI, it's associated benefits and opportunities remain overwhelming, while the industry continues to evolve, efforts must be made to address the challenges and limitations by developing and using AI in a responsible and ethical way.

PCTC669
DEVELOPMENT AND EVALUATION OF PSIDIUM GUAJAVA LEAF EXTRACT LOADED ANTIMICROBIAL TOPICAL EMULGEL

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Abstract

Objective: The objective of this study is to identify the antibacterial properties of the Psidium guajava leaves extract in a controlled environment and produce herbal antifungal emulgels for the treatment of skin-related infections. **Methods:** Psidium guajava has been documented to have a broad spectrum of antibacterial activity. Solvent extraction of guajava leaves was conducted using methanol, ethanol, and *n*-hexane. An *in vitro* antibacterial screening was carried out to determine the most effective extract in terms of antimicrobial activity. The antibacterial activity of the methanolic extract against the tested strains was shown to be substantial, leading to its selection as an optimized extract. Emulgels were synthesised by incorporation of methanolic extract. To produce herbal emulgels, fusion method was employed, followed by high-speed homogenization. **Result:** All the obtained emulgels exhibited excellent *in vitro* antibacterial characteristics and favorable physicochemical behaviour. The measured viscosity ranged from 6443 to 6632 cPs, while the pH ranged from 5.4 to 6.2. The pH values are within the acceptable range for skin pH and will not cause skin irritation during application. The produced emulgels exhibited spreadability within the range of 42.36 to 46.42 g.cm/s, indicating a favorable capacity to disperse the formulations and facilitate rapid adhesion to the skin following application. **Conclusion:** The produced formulations were found to be compatible and effective against bacterial strains inducing skin infections, indicating their potential efficacy in treating such conditions.

PCTC670
A NEW APPROACHES TO PEPTIDE DRUG DELIVERY SYSTEM

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Abstract:
Objective: The use of proteins and peptide medicines in the treatment of a wide range of serious illnesses has transformed the pharmaceutical and biotechnology industries due to their enormous therapeutic potential. **Methods:** Many attempts have been undertaken to efficiently distribute proteins and peptide medicines using a variety of administration routes in order to achieve successful therapeutic effects. Drug delivery methods, both parenteral and non-parenteral, are recognized as important pathways for drug absorption. For protein and peptide treatments, the oral route is more efficacious than intravenous, subcutaneous, and intramuscular methods. To boost medication absorption more efficiently, non-parenteral drug delivery systems (DDS) must be improved. **Result:** The present narrative overview aims to describe the paths and challenges encountered by protein and peptide drugs as well as methods for efficiently improving drug delivery systems. The effectiveness of the therapies was found to be significantly influenced by the targeting protein or peptide selection, the targeted antigen's differential delivery, and the drug-release characteristics of the used linker. Furthermore, non-parenteral DDSs need to be enhanced in order to administer drugs correctly. **Conclusion:** Delivering protein and peptide drugs presents significant challenges due to various biological barriers across different administration routes, with the oral route being particularly problematic due to enzymatic degradation in the gastrointestinal tract. In addition to intravenous, subcutaneous and intramuscular routes, the oral route is more effective for protein and peptides therapeutics. However, there is a need to improve non-parenteral drug delivery systems to increase drug absorption in a more effective way.

PCTC671
EMPLOYING GRAPHENE OXIDE FOR BIOMOLECULR APPLICATIONS AS NANOCARRIERS AND NANOMEDICINES

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Abstract:
Objectives: The current study presents the methods for producing graphene oxide (GO) on a large scale and modifying the surfaces of graphene-based nanocarriers using useful chemical techniques to decrease their toxicity and increase their biocompatibility. **Methods:** In order to illustrate the function of graphene and graphene derivatives (GD) as nanocarriers for anti-cancer medications and genes (such as miRNAs), it also highlights the most pertinent research situations. **Results:** Additionally, the blood pH and regulated release mechanisms within the cell compartments for targeted therapies release in the intracellular compartments or in the acidic environment of tumor cells are discussed. **Conclusions:** the use of these nanocarriers can also be integrated with other novel therapies, such as PTT and gene therapy, for synergistic treatment of various cancers to further improve therapeutic efficacy. Overall, GO's versatility and functionality position it as a valuable tool in the field of nanomedicine, with significant potential for future applications.

PCTC672
DISPOSAL OF EXPIRED DRUGS SAFELY TO AVOID ANY POTENTIAL RISKS AT HOME

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Abstract:

Objectives: Proper disposal of expired medicines at home is crucial to prevent accidental ingestion, misuse, and environmental contamination. By following recommended disposal methods, such as using drug take-back programs or specific disposal instructions, we ensure safety for your household and contribute to a cleaner environment by reducing pharmaceutical pollution. **Methods:** Identify expir ed or unused medications. Remove personal information from labels. Avoid flushing medicines down the toilet or sink. Use local programs or pharmacy drop-off sites if available. If these options are not feasible mix medications with inedible substances like coffee grounds or cat litter, seal in a container or bag, and place in household trash. Follow specific disposal instructions for these items according to local regulations. **Results:** The result of these methods is a significant reduction in the risk of accidental ingestion and misuse, along with minimized environmental contamination. Also, effective disposal methods help in reducing the release of pharmaceuticals into waterways, which could have detrimental effects on aquatic life. **Conclusions:** Effective disposal of expired medicines involves using available take-back programs or safely mixing them with inedible substances before trashing them, thereby protecting public health and the environment while adhering to best practices.

PCTC673
A COMPARATIVE ANALYSIS OF REGULATORY APPROACHES AND THEIR IMPACT ON DRUG DEVELOPMENT

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Abstract:

Objectives: The safety and effectiveness of novel medications are ensured in large part by the drug approval procedure. With the goal of accelerating medication development while upholding strict safety standards, recent developments have drastically changed regulatory frameworks. The FDA (United States), EMA (European Union), and PMDA (Japan) are three major regulatory bodies whose recent improvements in medication approval processes are compared in this study. We analyse these developments to find patterns, advantages, and difficulties related to each strategy. Our results demonstrate the impact of these modifications on drug approval schedules, regulatory loads, and the overall efficacy of drug development. **Methods:** Getting new pharmaceutical items approved for sale depends heavily on the medication approval procedure. More recently, this process has been improved to speed up the availability of innovative medicines, improve safety assessments, and expedite approvals. In this study, the FDA (United States), EMA (European Union), and PMDA (Japan) compare and contrast the most recent advancements in medication approval processes. It also recommends areas for future improvements and assesses the effects of these improvements on approval delays and patient safety. Even though developments have sped up the approval of drugs considerably, harmonization and risk assessment continue to be difficult problems. **Results:** We carried out a comprehensive analysis of recent regulatory modifications to the medication approval procedures from significant health authorities, such as the FDA, EMA, and PMDA. Policy documents, recent research, and reports from regulatory agencies were important

sources. We compared and contrasted improvements including rolling reviews, expedited approval procedures, and real-world evidence integration using a comparative framework. To evaluate the effects on medication approval timeframes, development costs, and the pace of new medicine introduction into the market, data was synthesized. reduce the paragraph **Conclusions**: Recent advances in drug approval processes have made notable strides in accelerating drug development and access, with each regulatory agency adopting unique approaches tailored to their contexts. While these innovations have led to faster market entry and potentially lower costs, they also present new challenges, including the need for rigorous post-market surveillance and consistent global standards. Future efforts should focus on harmonizing these processes internationally to optimize drug development efficiency while ensuring patient safety.

PCTC674

REGULATORY AFFAIRS IN PHARMA: A PILLAR FOR SAFE AND EFFECTIVE DRUG DEVELOPMENT

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Abstract:

Objectives: The objective of this article is to explore the pivotal role of regulatory affairs in pharmacy companies. It aims to provide a comprehensive understanding of how regulatory affairs impact drug development, market access, and compliance within the pharmaceutical industry. **Methods:** Regulatory Affairs collaborates with federal, state, and local regulatory bodies and staff to address particular issues that impact their company. advising their businesses on the laws and conditions that might impact the planned operationsThe Two regulatory perspective are as follows:from the standpoint of the company: new medications and modifications to already-marketed products have to be authorized as soon as feasible and maintained on the market. From an authority standpoint: evaluate the paperwork included in applications for registration or modification and for monitoring the use of pharmaceuticals. **Results:** Regulatory Affairs works to maintain public health protection while guaranteeing the drug product's efficacy, safety, and quality. **Conclusions:** The aim is to optimize competitiveness by presenting the company's position in the best possible light and satisfy statutory requirements by bringing the product to market as soon as possible. To prolong the product's life in the market. The creation of independent regulatory agencies is warranted by the challenges associated with some directing and regulating responsibilities as well as the detrimental impacts of political interference.

PCTC675

DRUG REGULATORY AFFAIR & PHARMACEUTICAL MANAGEMENT

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Abstract:

Objectives: Analyzing current practices and issues in pharmaceutical management and drug regulatory affairs is the goal of this study. Identifying regulatory trends, evaluating how regulatory changes affect pharmaceutical companies, and investigating effective regulatory compliance tactics are some of the specific goals.**Methods:** To acquire knowledge about pharmaceutical administration and regulatory concerns, a thorough literature review was carried out. Regulatory agency websites, PubMed, Scopus, and other pertinent databases were searched using keywords pertaining to pharmaceutical management, compliance, and drug regulation. **Results:** Significant changes in international drug regulatory frameworks were identified by the investigation, including the rise in harmonization initiatives and the influence of digital technology on regulatory procedures. Among the difficulties noted were regional variations in regulatory standards, the necessity of accelerated

approval procedures, and the increasing impact of real-world data on regulatory decision-making. **Conclusion:** Robust regulatory policies that adjust to changing international norms and technology breakthroughs are essential for efficient pharmaceutical management. Proactive involvement, strategic planning, and the application of cutting-edge techniques are necessary to meet regulatory obstacles and maintain patient safety and product quality while securing prompt market access.

PCTC676
INVESTIGATING HOW TO IDENTIFY AND REDUCE RISKS IN THE MANUFACTURING PROCESS USING FMEA

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Abstract:

Objectives: This research work's primary purpose is to examine FMEA as a systematic tool in identifying and preventing adverse effects in the production process of drugs. In this respect, the research looks at probable failure modes and the outcomes to enhance product safety and quality. **Methods:** The FMEA of a specific manufacturing process in the production of pharmaceuticals was then conducted following a comprehensive approach. It is one of the approaches where a multifunctional team of specialists is formed to identify potential failure scenarios at each stage of the process. The RPN of each failure mode is the product of evaluating it according to the level of severity, occurrence and, finally, the detectability. Other high-risk sections were focused in the investigation because they had the most significant RPN values, and risk decreasing strategies were aimed towards these areas. Some of these tactics included; Staff training programs, improvement of the procedures and the introduction of new controls. **Results:** From the FMEA analysis, it was possible to unveil so many critical failure modes in the manufacturing procedure, which encompasses mistakes made by people, faulty machinery and equipment, and inconsistent raw materials. The research lowered the RPN by such routes substantially while eliminating these failure modes, which indicated a reduced risk of failure. Specific measures were instituted, such as: the increase of annual staff training; the rationalization of a service schedule; and the introduction of higher standards of quality control. The decrease of deviation reports and the increase of batch quality imply that these actions have greatly enhanced the dependability of process and quality of products. **Conclusions:** This research also brings out the fact that FMEA may be useful in identification and prevention of risks in the procedure of manufacturing of pharmaceuticals. Manufacturers can effectively identify and control high-risk areas by applying Failure Mode and Effect Analysis (FMEA) approach that allows identifying potential failure modes and their impact. The outcomes revealed the paramount significance of the focused risk prevention activities which will ensure the quality and safety of the products. Application of FMEA in the manufacturing process: regulatory requirement compliance, and constant improvement of such a process and less failure possibilities. Towards the improvement of FMEA in the pharmaceutical industry, further research should be carried out to establish on how the mentioned instrument can be combined with other risk management tools.

PCTC677
CURRICULUM INNOVATIONS IN PHARMACY EDUCATION

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Abstract:

Objectives: The goal of professional pharmacy and pharmaceutical education is to provide graduates the know-how, abilities, and competences they need to make meaningful contributions to healthcare. The

goals can be divided into many important categories**:** **Methods:** The methods for achieving the objectives of pharmaceutical education and professional pharmacy typically involve a combination of educational strategies, practical training, and continuous assessment. Curriculum Design, :Hands-On Training, Interdisciplinary Learning ,Continuous Assessment. **Results:** India's pharmacy education system has seen significant changes in the last few decades. This is a quick rundown of the current state of pharmacy education and the pharmacy sector in India. Diploma in Pharmacy (D. Pharm): The scientific stream's entrance criteria for the two-year, three-month program are 10+2. A science stream 10+2 is required for admission to the four year undergraduate Bachelor of Pharmacy (B.Pharm) program. The two-year postgraduate Master of Pharmacy (M. Pharm) program requires a B. Pharm to be admitted. A 10+2 degree in the scientific stream is required for admission to some private universities' six-year Doctor of Pharmacy (Pharm. D) program, which launched in 2008. **Conclusion:** India can develop a more robust pharmacy profession that makes a major contribution to patient care and public health by addressing issues including employment opportunities and the integration of pharmacists into healthcare teams. In India, pharmacy education and practice have a bright future if stakeholders collaborate to close current gaps and adjust to the evolving healthcare environment.

PCTC678
INTEGRATION OF TECHNOLOGY IN PHARMACY EDUCATION

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Abstract:

Objectives: The aim of this study is to review about incorporation of technologies in pharmacy education to enhance learning, improve, clinical skills & prepare students for modern healthcare practice by incorporating enhanced learning experience, improvement in clinical competencies, integration of evidence-based practice, flexibility & accessibility, interdisciplinary collaboration, ethical and professional development, efficacy & quality improvement, global perspective & adaptability, career readiness and competitiveness. **Methods**: Integrating technology in pharmacy education involves various methods and strategies such as simulation-based learning by virtual reality (VR) & augmented reality (AR), E-learning and online platforms, interactive educational tools, electronic health records (ERH) training & 3D printing.VR used to simulate clinical scenarios where students can practice patient counseling, medication administration & emergency response. Integrated AI driven platforms for personalized learning clinical decision support, data analysis & research, simulation & virtual training, efficacy & automation. **Results:** According to a study, Incorporating AI in University of Toronto, students have benefits of personalized learning, clinical decision support, data analysis & research, simulation & virtual training, efficacy & automation. **Conclusion**: The study concludes that integration of technology in pharmacy education represents a transformative shift that enhances learning outcomes, prepares students for modern healthcare practice & fosters innovation in pharmaceutical care. Ultimately, integration of technologies such as VR, AR, AI, Simulation software & personalized medicine tools in pharmacy education not only equips students with essential skills but also ensures that they are well prepared to meet the evolving demands of health care industry. Embracing these advancements enhances educational outcomes, strengthens professional competencies & positioning pharmacists as integral members of healthcare team in providing high-quality patient care.

PCTC679

ASSESSING INTERPROFESSIONAL EDUCATION'S (IPE) EFFICIENCY IN DEVELOPING PHARMACY STUDENTS' AND HEALTHCARE PROFESSIONALS' COLLABORATIVE PRACTICE

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Abstract:

Objectives: The purpose of this approach is to ascertain to what extent IPE enhances students and other members of the healthcare team in terms of their preparedness for collaborative practice skills. Some of the specific goals are identifying strategies for implementing the IPE as well as understanding specific concerns that might arise in the course of the process, as well as in rating participants' perception, and their ability to solve problems after the IPE. **Methods:** The current study, therefore, seeks to determine the roles of IPE in cultivating interprofessional practice competencies among both faculties of pharmacy and other trainees in the health facilities. These are to determine the extent to which IPE changes; participants' attitudes, perceptions, and problem-solving skills; Appraised best practices; and Experience with implementation challenges. For this mixed method analysis, surveys were conducted amongst the participants and interviews were conducted qualitatively. Multi-institutional surveys and focus groups were held with participants of IPE programs regarding how their attitudes toward collaboration, ability to work in a team, and readiness to practice the profession interprofessionally had changed. In an attempt to deepen such understandings about participant experiences and actual results, IPE would have on working relationships; focus groups and semi-structured interviews were conducted. **Results:** It seeks to evaluate the extent to which IPE was helpful in developing collaborative practice skills among the pharmacy students and healthcare professionals. Among the specific objectives are assessment of how IPE affects the attitudes, perceptions, and problem-solving abilities of the participants and establishment of the best practices together with the challenges of implementation. The study found that there had been a remarkable development in collaborative competencies of pharmacy students, most importantly, in the problem-solving, communication, and team-work aspects. The participants now display more positive attitudes toward interprofessional collaboration and a better understanding of the roles and expertise of other health professionals. Data from focus groups and interviews indicated that participation in integrated patient care has increased the understanding of team dynamics and team importance. However, other challenges were identified as well, such as scheduling conflicts, variability in IPE program quality, and early resistance to interprofessional activity. **Conclusions:** This research study aims to assess how much effectiveness of interprofessional education is in assisting undergraduate pharmacy students and practicing healthcare professionals to develop collaborative practice competencies. Specific goals that should be met include the assessment of the effects of IPE on participants' attitudes and perceptions in terms of interprofessional collaboration and problem-solving skills, and the identification of best practices and issues associated with the implementation process. It was found out that IPE has positive impacts on attitudes toward interprofessional collaboration and also proved to be very effective in helping pharmacy students and healthcare professionals acquire important skills for collaborative practice. Among such skills are advanced communication, teamwork, and problem-solving abilities. The study recommends resolving issues with standardized IPE courses, flexible scheduling, and ongoing stakeholder participation to maximize the advantages of IPE. Provided that these tactics are put into practice, this will help strengthen IPE's capacity for educating upcoming medical professionals in patient-centered integrated care.

PCTC680

FORMULATION, CHARACTERIZATION AND EVALUATION OF GEL INCORPORATED SILVER NANO PARTICLE USING *OXYSTELMA ESCULENTUM* FOR ANTI MICROBIAL ACTIVITY

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Abstract:

Objectives: Herbs are often used as raw materials in traditional medicine for variety of Nano formulation. This aim of the study is to synthesize gel incorporated silver nanoparticles (AgNPs) using formulation of whole plant of*Oxystelma esculentum*, exploring an eco-friendly method for nanoparticle synthesis. The objectives included characterizing the nanoparticles, evaluating their antimicrobial properties and assessing their suitability for drug delivery applications. **Methods:** Phytochemical screening of *Oxystelma esculentum* aqueous extract identified various bioactive compounds. The silver nanoparticles (AgNPs) were prepared by green synthesis methods. The FTIR spectroscopy confirmed the chemical constituents and functional groups involved in AgNPs synthesis. UV-Vis spectroscopy was used to monitor AgNPs formation, SEM for morphology analysis, and Zeta analyser for stability. *In vitro* antibacterial assays were conducted to assess the antimicrobial activity of both the plant extract, AgNPs and Gel incorporated AgNPs. Carbopol 934 and HPMC K_4M gels were formulated for drug delivery and their compatibility with AgNPs was evaluated along with drug release kinetics. **Results:** The biosynthesis of AgNPs resulted in stable nanoparticles with a size range of 89-163.3 nm and a zeta potential of -10.4 mV indicating good stability. FTIR analysis identified hydroxyl and carboxyl groups as reducing and stabilizing agents, respectively, with phenolic compounds acting as capping agents. The biogenically of AgNPs and gel incorporated AgNPs exhibited significant anti-microbial activity against both Gram-positive (*Staphylococcus aureus, Bacillus subtilis*) and Gram-negative (*Pseudomonas aeruginosa, E. coli*) bacteria than *Oxystelma esculentum* aqueous extract. Drug release studies from Carbopol and HPMC gels showed zero-order kinetics and non-Fickian diffusion, indicating controlled release behaviour suitable for drug delivery applications. **Conclusion**: The study demonstrates that *Oxystelma esculentum*-mediated synthesis of AgNPs is effective and environmentally benign. The nanoparticles showed promising antibacterial activity and were successfully incorporated into gel-based drug delivery systems. This research contributes to the development of sustainable nanotechnology applications and suggests potential benefits over conventional chemical methods in terms of reduced environmental impact and enhanced biomedical applications.

PCTC681

FORMULATION AND EVALUATION OF HALOPERIDOL SOLID DISPERSION FAST-DISSOLVING TABLETS.

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Abstract:

Objectives: This study aimed to improve the anti-psychiatric medicine haloperidol's dissolution behavior and anti-psychiatric action by designing fast-dissolving tablets (FDT) in solid dispersion forms. **Methods:**Investigations were conducted on haloperidol's solubility in different polymer solutions. Solvent evaporation and melting techniques were employed to prepare the solid dispersion of the chosen

polymer, Polyethylene glycol 4000, which has a high drug solubility. Haloperidol solid dispersion is combined into tablets with additional solid powder excipients. The tablets that were produced were assessed based on the British Pharmacopoeia (B.P.) guidelines. The pre-and post-compression research has been out for the evaluation of the solid dispersion system and to ascertain the flow properties, then using the forced swimming test (FST) for *in vivo* research. **Results**: Pre-compression tests demonstrated that the polymer and solid excipients were compatible with haloperidol and had sufficient flowability. Together with acceptable friability and hardness, the chosen solid dispersion tablet (SD2) showed the best ratio of disintegration to water absorption. Thermodynamic stability investigations and *in vitro* dissolution attempts yielded satisfactory results for the (SD2) formulation using PEG 4000 polymer that was melted. The *in vivo* investigation of (SD2) preparation showed that rats given commercial haloperidol products had the longest periods of immobility when compared between control rats and other types of rats. **Conclusions**: The rapid beginning of action and improved anti-psychiatric activity of haloperidol were expressed by fast-dissolving tablets containing a solid dispersion containing haloperidol using PEG4000.

PCTC682
DEVELOPMENT AND EVALUATION OF TABLETS USING DRUMSTICK POLYSACCHARIDE AS AN EXICIPIENT

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Abstract:

Objectives: The purpose of this Study was to formulate and characterize Immediate release and Sustained release tablets of Metformin employing novel dosage forms utilizing DSP powder and polysaccharide as exicipient. **Methods:** A model drug, Metformin hydrochloride, was selected for the study. Total four batches were prepared using different proportions of Drumstick powder and Mucilage. The formulations were prepared using three methods dry granulation, wet granulation and direct compression method. **Results:** The physical and chemical properties of the tablets were characterized using differential scanning calorimetry (DSC). The tablets were evaluated for various parameters including disintegration, hardness, friability and dissolution. The results indicated that out of all formulation studied the batch 2 has shown the best release pattern 99.14% in 60 minutes (wet granulation method) in immediate release tablets and batch 4 shown 63.28% in 7 hours in sustained release tablets. **Conclusions:** The investigation of natural polysaccharide as DS powder and polysaccharide as Sustain release and Immediate release agents the different batches made were tested against the pharmaceutical Immediate release and Sustain release.The whole study concluded that the SR and IR tablets of Metformin could be developed and tested, because this would enhance the bioavailability of metformin, therefore these formulations will be beneficial in the treatment of diabetic mellitus.

PCTC683
FORMULATION AND EVALUATION OF CREAM USING BANANA PEEL EXTRACT

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Abstract:

Objective: The objective of this study is to formulate and evaluate the cream which is prepared with bananapeel extract. Bananapeel extract has anantioxidant activity which helps skin from damage and aging and also improve skin texture. It containsvitamin E, Resveratrol, polyphenols, carotenoids. **Methods**: the extraction of bananapeel

was done using isopropyl alcohol.For the formulation of cream, stearic acid (emulsifiers), cetylalcohol (emulsion stabilizers), beeswax (emollients), mineraloil (film formers), methyl paraben (preservatives) and water(vehicles) were used. Evaluation of cream was done based on physical and chemical proper tieslike was hability, homogeneity, pH, viscosity, spreadability, irritancytest. **Result**: The extract of bananapeel was obtained using 70% isopropyl alcohol. The antioxidant activity of isopropyl alcohol extractis determined and referred based on the graph between concentration and absorbance of extract and standard graph of gallicacid. The absorbance of extract increase with the increase in concentration of extracts. **Conclusion**: Bananapeel is rich in phytochemical compound, mainly antioxidants. Extensive research was conducted on antioxidantactivity of banana peel. Cosmetics are used to protect the skinagainst exogenous and endogenous harmful effects and also to enhance the beauty of the skin .Herbal products have fewer side effect than the products that general lycontain synthetic materials. It is concluded that the creams prepared using isopropyl extract can be used for antioxidant activity.

PCTC684
FORMULATION AND EVALUATION OF DOMPERIDONE SUSPENSION USING ITS HYDROTROPIC DISPERSIONS

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Abstract:

Objective: Domperidone is an antiemetic and prokinetic drug. It belongs to a group of drugs called dopamine antagonist. It is used to treat stomach related issues such as nausea and vomiting. It is a poorly water-soluble drug thus exhibit a poor bioavailability. It is also highly permeable in nature. The hydrotropic dispersions are used in this suspension to enhance the aqueous solubility of poorly soluble drug. **Methods**: The *in vitro* release of domperidone and hydrotropic dispersion was carried out in dissolution apparatus the drug Each sample was determined spectrophotometrically at 283nm. The FTIR spectra were obtained for domperidone and HD2 hydrotropic dispersion. The Formulation of domperidone suspensions was done by using Domperidone, sodium CMC, Microcrystalline cellulose, Tween 20, Mannitol, Sodium saccharin, propyl paraben, water. **Result**: It was found that domperidone alone in water showed 0.1563 mg/ml of solubility. The solubility of drug in hydrotropic solutions increased with increase in concentration of hydrotrope. Citric acid showed higher solubility than urea. There was not any change in the characteristic peaks of drugs in the FTIR of hydrotropic dispersion. The sedimentation volume was calculated for pure drug suspension, citric acid suspension, urea: citric acid suspension for above 0.95 up to 60 min and after 24 hours the sediment was formed slowly. the pH of formulation S1 was nearly alkaline. The suspensions S2 & S3 are acidic in nature due to presence of citric acid. The results was found to be similar in both water and 0.1 and Hcl as dissolution media. **Conculsion**: The solubility studies of domperidone in hydrotropic solutions concluded that there was an increase in the solubility of domperidone in hydrotropic solutions compared to pure drug in water and hydrotropic dispersion was prepared using citric acid and urea: citric acid. An increase in dissolution rate was observed in hydrotropic dispersion (HD2) when compared to pure drug. the suspensions prepared were stable and there was no significant difference in dissolution profiles of suspensions. It can be concluded that hydrotropic is not a suitable technique the enhance the solubility of domperidone

PCTC685
FORMULATION AND *IN VITRO* EVALUATION OF OLMESARTAN-METHYL BETA-CYCLODEXTRIN COMPLEX

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Abstract:
Objective: This study aimed to enhance the solubility and bioavailability of Olmesartan, an antihypertensive agent, by formulating it into a methyl beta-cyclodextrin (MβCD) inclusion complex and evaluating its *in vitro* performance. **Methods**: The Olmesartan-MβCD complex was prepared using a co-precipitation method and kneading technique. Various molar ratios of Olmesartan to MβCD were tested to determine the optimal formulation by Phase solubility study. **Results:** The inclusion complex significantly improved the solubility of Olmesartan in both gastric and intestinal fluids compared to the pure drug. The optimized ratio (1:1 Olmesartan to MβCD) showed a marked increase in drug release rate, with over 94.12%, 15 minutes comparison to other formulation and pure drug (21.9%, 15 min). FTIR, XRD, and DSC analyses confirmed the successful formation of the complex and its stability. **Conclusion**: The Olmesartan-MβCD complex effectively enhances the solubility and dissolution rate of Olmesartan, suggesting potential improvements in oral bioavailability and therapeutic efficacy. These findings support the use of MβCD complexes for the development of more effective antihypertensive formulations.

PCTC686
FORMULATION AND *IN VITRO* EVALUATION OF TELMISARTAN EFFERVESCENT FLOATING TABLET

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Abstract:
Objective: The study aims to enhance the bioavailability and therapeutic efficacy of drugs by prolonging their gastric residence time in the stomach or upper gastrointestinal tract. This system helps in achieving sustained and controlled release of medication, which can improve drug absorption and efficacy and minimize side effects. FDDS are particularly useful for drugs that are best absorbed in the stomach. **Methods:** In the present work, Telmisartan was prepared by direct compression technique. The active ingredients are different synthetic polymer like HPMCK4M, HPMCK15M, HPMCK100M, NaHCO3, citric acid, starch, MCC at various concentrations were accurately weighed. After weight the mixture was direct compressed on a single station punch machine using round flat surface punches of 9mm diameter. **Results:** Organoleptic characteristics of pure drug (Telmisartan) showed that the drug is pure in nature. The *in vitro* floating test revealed that, floating lag time for F3 (33sec) is less comparison to all other formulations and remained buoyant more than a period of 24 hours. *In vitro* dissolution study of F3 shows maximum drug-release comparison to other formulation. **Conclusion**: In the present day, Telmisartan floating effervescent tablet were prepared by direct compression method using polymers like HPMCK4M, HPMCK15M and HPMCK100M and all formulations are following zero order release kinetics with non-fickian diffusion model.

PCTC687
FORMULATION AND *IN VITRO* EVALUATION OF TELMISARTAN BY SOLID DISPERSION TECHNIQUE

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Abstract:

Objective: Telmisartan, an antihypertensive drug which belongs BCS II. By using solid dispersion techniques, Telmisartan can be dispersed as a solid matrix, often with a hydrophilic carrier, to improve its dissolution rate in the gastrointestinal tract. Thus, approach aims to increase the drug's solubility, leading to improved absorption and therapeutic efficacy. **Methods:** Preparation of solid dispersion was done by Melting method and Physical mixing method by taking hydrophilic polymers like PEG 6000 and PEG 4000. **Results:** Solid dispersions of Telmisartan were prepared by Fusion Method and Physical Mixing Method using PEG 6000, PEG 4000 in different concentrations like 1:1, 1:2, 1:3 (Drug: Carrier). From wettability studies it was found that F3 shows less wetting time (46sec) than other formulations. From the dissolution studies of all formulations, F3 (Drug: PEG 6000, 1:3, 98.87% in 15 min) shows highest % of drug release than other formulations and Pure drug (42.08%, 15 min). From FT-IR study it indicates that no interaction occurred in solid dispersion of Telmisartan, PEG 6000, PEG 4000. **Conclusion:** The solubility and dissolution rate of the poorly water-soluble drug Telmisartan were significantly improved using solid dispersion techniques withhydrophilic carriers like PEG 6000, PEG 4000. The solid dispersion showed enhanced drug release comparedto the pure drug, with the optimized formulations exhibiting the best results.

PCTC688
MICRONEEDLES: AN ASPECT TO ENHANCED TRANSDERMAL DRUG DELIVERY

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Abstract

Objectives: To develop the microneedle formulation through several sophisticated techniques like photolithography, Nano laser and Silicone micro molding. To develop and evaluate microneedles of various biodegradable polymers with and without drugs. **Methods:** The mother silicone micro mould was prepared by pouring method with help of Kostech Adjustable Derma Stamp. Different concentrations of various polymers like trehalose, Poly vinyl pyrrolidone, Poly vinyl alcohol, hyaluronic acid have been used in preparation of dissolved microneedles. Micro centrifugation and vacuum drying have been used for preparation of microneedles. The various evaluation parameters of formulated microneedles of both drugs like physical characterization, drug content, scanning electron microscopy, optical coherence Tomography, *in vivo* transdermal release studies, *ex-vivo* Penetration Studies has been carried out. **Results:** The dissolvable polymeric microneedles of Acyclovir and Ketoprofen were formulated and evaluated significantly.These nonconventional and novel TDDS possess the satisfactory attributes of *in-vitro* and *in vivo* medicament delivery. **Conclusions:** This less invasive and painless drug delivery system can fulfil a promise of a large variety of medication administration in an easy and more compliance manner. Through this technology we can easily permeate the targeted therapeutic drug molecules into our systemic circulation. So before approaching pain receptors in inner layers of skin the microneedle releases the medication in our skin.

PCTC689
DEVELOPMENT AND CHARACTERIZATION OF CAPECITABINE-LOADED TRANSFEROSOMAL GEL FOR EFFECTIVE TREATMENT OF METASTATIC BREAST CANCER

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Roland Institute of Pharmaceutical Sciences, Berhampur, Odisha, India

Abstract

Objective: To develop and evaluate a capecitabine-loaded transferosomal gel that enhances transdermal drug delivery, aiming to improve bioavailability and reduce side effects as an alternative to oral administration for metastatic breast cancer treatment. **Methods:** Transferosomes were prepared using the thin-film hydration method with phosphatidylcholine and surfactants (Tween-80 and Gelucire-39/01) employing rotary evaporator. These were characterized for particle size, zeta potential, encapsulation efficiency, and morphology. The transferosomes were then incorporated into a carbopol 934 gel base. Evaluation included *in vitro* drug release (using Franz diffusion cell), *ex vivo* permeation studies (rat skin), and stability studies. **Results:** Transferosomes displayed small particle size, high encapsulation efficiency, and favourable zeta potential. Transmission electron microscopy confirmed the vesicular structure. The transferosomal gel provided sustained drug release over 24 hours *in vitro* and showed enhanced skin permeability in *ex vivo* studies. Stability studies confirmed the gel's robustness under various conditions. **Conclusion:** The capecitabine-loaded transferosomal gel is a promising transdermal drug delivery system, offering improved bioavailability and reduced side effects compared to oral administration, making it a viable option for cancer therapy.

PCTC690
DESIGN, DEVELOPMENT AND OPTIMIZATION OF SUMATRIPTAN LOADED NANO-ETHOSOMAL INTRA-NASAL GEL FOR BRAIN TARGETING

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Abstract:

Objective: The fundamental focus of the study is to develop the Sumatriptan loaded intra nasal nano-ethsomal gel with aid of QbD principles that govern the varied compositions and blends of polymers like; HPMC K100M, Phospolipon 90G in order to develop a sustained release dosage form . Sumatriptan is one of the most essential drugs for treating migraines, however dosage-related side effects are still a worry despite its 14% oral bioavailability and recurrence of migraine-associated diseases. **Methods:** Using a novel intra-nasal brain targeting approach by adapting the film hydration technique, the current issues might be addressed, and the drug's duration of residence at the absorption site uptake substantially increase. To efficiently modify the drug's residence through the intra-nasal route, this work focuses on developing a nano-ethosomal gel loaded with Sumatriptan, **Results:** The present study considered three observable responses; vesicle size, Zeta potential, and percent drug release after 24 hours—taken into consideration during the optimisation of the ethosomal formulations utilising 3^2 CCD design. The preliminary FT-IR and DSC studies revealed that no interactions existed between the drug and their physical mixtures. The vesicle size (122.23 nm), zeta potential (-40.2 mV), and drug release percentage (92.61 %) for all formulations were seen in the F12 batch after 24 hours. **Conclusions:** The p-XRD and SEM studies indicated that the nano-ethosomal gel were stable. The stability studies indicated the preparation of more stable formulation with respect to the parameters under study protocol. The ex-vivo permeation studies affirm that the intra-nasal formulation of Sumatriptan showed enhanced solubility as well as drug permeation through this route.

PCTC691
NANOGEL SUSPENSIONS FOR NASO-BRAIN DELIVERY: A NOVEL APPROACH TO ALZHEIMER'S DISEASE DRUG DELIVERY

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Abstract:
Alzheimer's disease is a neurological disorder that causes a steady deterioration in cognitive function. The current treatment involves the delivery of drugs by oral, parenteral, and transdermal methods. The challenge of crossing the blood-brain barrier (BBB) restricts the use of approved medications. Nanogels are drug delivery systems designed to target the brain through the nasal route, bypassing the blood-brain barrier (BBB) and delivering medications directly to the desired region upon intranasal administration. Nanogel systems filled with nanosuspensions offer a promising strategy for delivering drugs from the nose to the brain. This method aims to decrease the required dose and frequency of administration while also enhancing the drug's bioavailability. The chosen method is to improve lipid-based nanosystems, specifically nanostructured lipid carriers made in *in-situ* gelling hydrogels. These formulations possess properties that enable direct medication delivery to the brain, hence minimizing adverse effects. We optimized the use of "gellan gum" to create the nano-suspension-filled nanogels. The improved formulations exhibited the intended viscosity to effectively stick to the nasal mucosa through ionic interactions. This comprehensive analysis highlights the potential to completely transform the management of Alzheimer's disease through safe and effective implementations. Adopting this approach has the potential to advance the treatment of Alzheimer's disease.

PCTC692
DEVELOPMENT AND EVALUATION OF LEVOFLOXACIN OCULAR *IN SITU* GEL FOR THE MANAGEMENT OF BACTERIAL INFECTIONS

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Abstract:
Objective: Traditional eye drops that are used for topical delivering drugs exhibit inadequate ocular bioavailability because of the biological obstacles of the eye. There is a motivation to design and develop novel drug delivery systems that would extend the precorneal residence period, reduce the frequency of insertion and lessen dose-related toxicity. The current study intended to prepare an eye *in situ* gel containing model antifungal Levofloxacin. **Method:** Several *in-situ* gels with different gelling agents were prepared by simple mixing followed by stirring with magnetic stirrer. Different grade of HPMC, Poloxamers, carbopol and distilled water was used for this purpose. The optimization process was based on the gelation time and capacity. The formulation containing Poloxamer 407 was optimized and further evaluated. **Result:** The Physicochemical properties of the formulation were satisfactory. *In situ* gels manufactured with Poloxamer 407 exhibited a prolonged drug release and shown effective antibacterial action against both gram-positive and gram-negative bacteria, as verified by the cup plate technique. **Conclusion:** The prepared *in situ* formulation was safe and effective, which can be a potential delivery system for other antibiotics also.

PCTC693
USE OF TECHNOLOGY IN DIAGNOSIS TREATMENT AND PREVENTION OF NEURO DEGENERATED DISEASE

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Abstract:

Objectives: The goal of this study is to inform how technology may be used to diagnose, treat, and prevent neurodegenerative illnesses. Assessing how advances in different technology domains affect patient outcomes for individuals with these incapacitating illnesses is the aim. **Methods:** The most recent developments in biomarker analysis, neuroimaging (MRI, PET, CT), genetic testing, and machine learning for diagnosis were thoroughly reviewed. Gene therapy, pharmaceutical advancements, regenerative medicine (stem cell therapy), neurostimulation techniques (DBS, TMS), and assistive technology were among the many therapeutic modalities that were explored. Research platforms, public health campaigns, lifestyle tracking applications, early intervention programs, and risk assessment tools were used to evaluate prevention measures. Peer-reviewed journals, clinical trial reports, and technical reviews were the sources of the data**. Results:** The study found that neuroimaging and genetic testing significantly increased diagnostic accuracy, enabling early diagnosis and customized treatment plans. While stem cell and gene therapy research gives hope for modifying and curing disease, developments in neurostimulation and pharmacology have allowed for more efficient symptom management. Assistive technologies have improved everyday functioning and cognitive function support. Two well-liked methods for preventing disease are lifestyle monitoring and predictive modeling, which assist lower risks and delay the development of illness. **Conclusions:** Since technology provides advanced diagnostic tools, cutting-edge treatment options, and proactive preventive measures, it has greatly influenced research on neurodegenerative illnesses. To improve patient care and eventually the quality of life for persons suffering from neurodegenerative disorders, more integration of these technologies into clinical practice and public health initiatives is required. To further expand the accessibility and efficacy of current technologies, future research should concentrate on improving them and investigating novel ideas.

PCTC694
DEVELOPMENT OF DENGUE VIRUS VACCINES

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Abstract:

Objective: Dengue is one of the arboviral infections that spreads the fastest, according to the World Health Organization. Any one of the four antigenically and genetically unique dengue virus serotypes carried by mosquitoes in the family Flaviviridae genus Flavivirus is the cause of dengue. This sickness can present as dengue fever, a self-limiting febrile illness, or more serious dengue hemorrhagic fever. **Method:** Vaccines against dengue are intended to guard against the virus that causes severe flu-like symptoms or dengue hemorrhagic fever. The dengue virus is spread by Aedes mosquitoes. Using a live attenuated vaccination or a recombinant subunit vaccine is the main technique. Weakened strains of the virus are included in the live attenuated vaccines, which elicit an immune response without actually spreading illness. **Result:** Results for dengue vaccinations have been encouraging, especially since multiple vaccines have been introduced and are being used in different areas. All things considered, the creation of dengue vaccinations is a big step in managing and preventing dengue fever, which is still a serious public health

issue in many tropical and subtropical areas. **Conclusion:** The creation and implementation of a dengue vaccine mark a noteworthy progress in combating this potentially dangerous viral ailment. Reducing the frequency of dengue fever, easing the intensity of symptoms, and eventually lowering the disease's impact on public health are all possible with effective vaccinations.

PCTC695
CHALLENGES IN PHARMACY PROFESSION FOR IMPROVED HEALTHCARE

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Abstract:

Objective: To improve healthcare outcomes, a number of difficulties facing the pharmacy profession must be addressed. Improving medication safety and adherence, and incorporating pharmacists into healthcare teams are among the main goals. It's also critical to manage prescription expenses, advance pharmacist education. By addressing these problems, it will be possible to improve patient care and efficient use of pharmaceuticals. **Methods**: There are various strategies that can be used to improve healthcare and address issues facing the pharmacy profession. These include increasing services to boos Telemedicine access, encouraging patient-centered counseling to improve adherence, and using cutting-edge technologies for drug management. Important tactics also including pharmacists into interdisciplinary healthcare teams, pushing for more accessible drug options. Result: It is critical for the advancement of healthcare that pharmacy professionals overcome obstacles including heavy workloads and complicated medication administration. Pharmacists can optimize therapy outcomes, increase medication safety, and improve patient care by training, advanced technology. Ultimately, this leads to a more responsive and effective healthcare system. **Conclusion**: In conclusion, enhancing healthcare requires addressing the issues that the pharmacy industry faces, such as rising demands and intricate prescription regimens. By making improvements to training, technology support, and resource availability. By focusing on these solutions, pharmacists can play a crucial role in advancing overall health and care quality.

PCTC696
3D CELL CULTURES IN DRUG DISCOVERY AND DEVELOPMENT

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Abstract:

Objectives: The past decades have witnessed significant efforts toward the development of three-dimensional (3D) cell cultures as systems that better mimic *in vivo* physiology. Today, 3D cell cultures are emerging, not only as a new tool in early drug discovery but also as potential therapeutics to treat disease. **Methods** In this review, we assess leading 3D cell culture technologies and their impact on drug discovery, including spheroids, organoids, scaffolds, hydrogels, organs-on-chips, and 3D bioprinting. We also discuss the implementation of these technologies in compound identification, screening, and development, ranging from disease modeling to assessment of efficacy and safety profiles. **Conclusion** A wide range of 3D cell culture technologies have been developed to address the need for continuously improving the productivity of pharmaceutical R&D. Three-dimensional cell cultures hold great potential as a tool for drug discovery—ranging from disease modeling to target identification to screening to lead identification—and as a new type of therapeutics/ replacement therapy that may transform our lives. Future developments in screening readily available 3D cell models and assays, preclinically validated 3D cell models for animal replacement, and functional, safe, and transplantable 3D cell models will no doubt bring them closer to reaching these potentials.

PCTC697
SMART NANOMATERIALS: REVOLUTIONIZING CANCER DIAGNOSIS AND TREATMENT

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Abstract

Objective: Smart nanomaterials have recently become a great interest in cancer detection and treatment. This article is a review of the current status of smart nanomaterials used in cancer theragnostic, their unique properties, uses, and possible futures. **Methods:** A thorough search of the literature was performed using databases including PubMed, Embase, and Web of Science. Articles from the past ten years were chosen, specifically dealing with the creation and uses of smart nanomaterials in cancer detection and treatment. **Results:** Smart nanomaterials have many benefits over conventional cancer diagnostic and therapeutic materials, such as increased stability, biocompatibility, and targeted delivery. These materials can be made to react to certain stimuli, allowing for controlled drug release, increased tumour localization, and decreased off-targeting. Many different kinds of smart nanomaterials have been studied for cancer theragnostic, including pH responsive nanoparticles, enzyme triggered drug delivery systems, and temperature sensitive liposomes. There have been many preclinical studies that show these nanomaterials can help detect cancer better, also monitor how the cancer is responding to treatment, and even improve the effectiveness of the therapy. **Conclusion:** There is so much potential for smart nanomaterials to completely change the face of cancer detection and therapy. Through the use of their stimuli responsive properties and their targeted delivery abilities, these materials can allow for earlier diagnosis of cancer, more efficient treatments, and individualized approaches to treatment. But more investigation must be done to overcome the hurdles of safety, scalability, and clinical translation. As nanotechnology and materials science continue to progress, intelligent nanomaterials will soon play a large role in the treatment of cancer.

PCTC698
THE ROLE OF PHARMACEUTICAL TECHNOLOGY IN PHARMACEUTICAL INDUSTRY

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Abstract:

Objectives: To develop innovative drug formulations and delivery systems that enhances therapeutic efficacy and patient compliances. To optimize manufacturing processes for increased efficiency, cost effectiveness. To explore new technologies for personalized medicine and targeted therapies. **Methods:** Method involves analyzing drug formulation processes, manufacturing techniques, and technology integration to optimize quality, efficiency, and patient outcome in pharmaceuticals. **Results:** Pharmaceutical technology enhances drug development, manufacturing and delivery, ensuring high-quality, effective, and safe medications for patients. **Conclusion:** The aim in the pharmaceutical technology is pivotal in transforming drug development, manufacturing, and delivery ensuring high quality and effective medications. By advancing drug formulations, optimizing processes and integrating new technologies, it significantly improves treatment outcomes and patient safety. Continued innovation in this field is essential for addressing evolving healthcare needs and challenges.

PCTC699
PHARMACEUTICAL TECHNOLOGIES

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Abstract:

Objectives: This study's main goal is to thoroughly examine and assess the most recent developments in pharmaceutical technology, with an emphasis on how they might improve production, formulation, and drug administration. In particular, this study attempts to: Assess how new drug delivery methods, like nanotechnology and controlled-release mechanisms, can enhance therapeutic results and reduce side effects; Examine how sophisticated formulation techniques affect drug stability, bioavailability, and patient adherence; Analyze how automation and digital technologies are changing pharmaceutical manufacturing, increasing production efficiency, and guaranteeing quality control. Identify future trends and potential challenges in integrating these technologies into clinical practice and industrial settings. Evaluate the contributions of personalized medicine in tailoring treatments based on individual genetic profiles and clinical needs. **Methods**: The literature review encompassed journals of industry publications, clinical trial reports, peer-reviewed journals and technological reviews, which summarised the recent developments of automated pharmaceutical manufacturing, nano-formulation, tailor-made medication therapy, the controlled-release drug delivery systems and the factors that precision engineering influence the toxicity and efficacy of therapeutic agents. The devices compare in terms of cost-effectiveness, security and effectiveness in various case studies and comparisons. **Results**: The review highlights a few of the most significant advances in the field. Firstly, nanotechnology-based advanced formulation techniques have greatly enhanced the distribution and bioavailability of pharmaceutical products, subsequently improved the therapeutic efficacy and reduced the dosage, side effects and adverse effects leading to more effective treatment and higher patient compliance. Importantly, the research has demonstrated that the prolonged presence of high drug concentrations during administration was very useful for designing the controlled-release systems and improved the therapeutic efficacy of the delivery systems. Secondly, the contemporary medicine is benefited from personalized medicine, which provides more precise and efficient medication by tailoring a treatment plan to the patient's unique genetic and clinical profile, leading to more specialized and effective medicines to ensure effective dose prescription and determine the patients' response while minimizing treatment's side effects. **Conclusion**: In the review, achievements within the field of pharmaceutical technology are highlighted. Thanks to the use of nano-formulation approach, pharmaceutical distribution has been considerably enhanced and an increase in their bioavailability has been achieved, which have further resulted in better outcomes of treatments and fewer side effects. To be precise, researchers have stated that the sustained therapeutic concentrations of a drug are much preferred in controlled-release pharmaceutical systems because they indeed lead to improved patient compliance to treatment plans.

PCTC700
ADVANCEMENTS IN PHARMACEUTICAL MANUFACTURING TECHNOLOGIES: A FOCUS ON QUALITY AND EFFICIENCY

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Abstract:

Objectives: To incre the efficacy and stability of drugs For an optimized therapy from a pharmacological viewpoint. Part of the training process technical-scientific students for their effective work in field turn,

as Medicine Extraction and Qualification Knowledge Construction Drug Development, Technical and Scientific Preparation Industrial Environment Learning Bio- Engineering Research Innovation Quality Control Conserved Regular Condition Multidisciplinary Knowledge Lifelong. **Methods:** The creation, formulation, and production of pharmaceutical goods are the goals of the procedures and activities that make up pharmaceutical technology. Research and Development, Regulatory Compliance, Quality Control and Assurance, Compounding and Manufacturing, Stability Studies, Analytical Techniques, and Formulation Development **Results:** Search results include a wealth of knowledge about pharmaceutical technology aims and methodologies, especially in teaching and research contexts. The principal conclusions are as follows: Using Pharmaceutical Technology in Hospital Pharmacy Fundamentals of Pharmaceutical Technology, Educational Results, With the ultimate objective of improving prescription therapy and patient outcomes, these data show how pharmaceutical technology is a complicated discipline that encompasses formulation, research, quality control, and training. **Conclusion:** Pharmaceutical technology maintains the effective research, production, and quality control of medications, which makes it indispensable to the healthcare system. The results of this field's inquiry highlight many significant difficulties, Impact on global health, quality and safety, research and development, educational foundations, and integration of new technologies To sum up, pharmaceutical technology is essential to the healthcare system since it makes sure that medications are manufactured safely and effectively. Progress in healthcare, propelled by technological advancements and a commitment to quality, is essential to meeting the needs of a diverse population on a global scale.

PCTC701

MICROSPONGES: A REVOLUTIONARY INSTRUMENT FOR DRUG DISCOVERY

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Abstract:

Drug delivery can be done in an organized and inventive fashion with the help of a microsponge delivery system. Now, controlled drug delivery may be accomplished fast and simply with the use of microsponge drug delivery. MDS is made up of porous microspheres having a large porous structure and a microscopic spherical form, ranging in size from 5 to 300 microns. Normally, microsponge delivery system is used to administer medications through topical channels; however, new research has demonstrated the possibility for oral, ocular, and parenteral drug delivery. Microsponge delivery system can readily reduce the adverse effects of the medication while enhancing formulation stability and changing the pharmaceutical release contour. Achieving the highest feasible peak plasma concentration in the blood is the main goal of medication administration by microsponge. The most notable feature of microsponge delivery system is their ability to self-sterilize. The foundation of Microsponge Systems is a small polymer-based microsphere that may be used to suspend or entrap a broad range of compounds. These microspheres can then be added to a prepared product, such as a gel, cream, liquid, or powder. Numerous studies have shown that microsponge delivery system is non-irritating, anti-allergic, and anti-mutagenic. This review covers formulation, the requirements for medications to be included in microsponge delivery system, formulation techniques, evaluation criteria, and its function in the treatment of different illnesses.

PCTC702
MICROENCAPSULATION: AN ADVANCED TECHNIQUE TO ENHANCE SHELF LIFE OF THE DRUG

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Abstract:

Objective: Its use encompasses all other small particle systems, including self-assembling structures requiring preparatory manipulation, and goes beyond traditional microcapsules. The paper discusses the materials used for encapsulation, the mechanics of release through the capsule wall and/or desorption from the carrier, preparation methods, and the numerous applications for microcapsules. **Method:** With the use of cutting-edge food processing technology, micro encapsulation, any compound may be encapsulated inside a specific substance to create minuscule spheres with diameters ranging from 1 μm to several hundred μm. The process of microencapsulation is used to safeguard delicate substances and guarantee their safe distribution. Polymeric and nonpolymeric substances such as gelatin, cellulose, and ethylene glycol can be used as encapsulants. Micro encapsulation can be achieved using a variety of methods, including fluidized bed coating, extrusion, coacervation, spray chilling, and spray drying. **Result:** It is possible to characterize and optimize successful encapsulation by looking at the morphology, size, hydrophobicity, hygroscopicity, solubility, surface tension, mechanical properties, and thermal behavior of the capsules as well as their encapsulation efficiency. Microencapsulation is a widespread method in food manufacturing that can be used to improve existing meals or to generate new ones that are useful. **Conclusion:** Numerous industries, including beverage production, food quality and safety, agriculture, the environment, and the preservation of liquid crystals, have found use for the microencapsulation process.

PCTC703
A REVIEW ON- CURRENT STATUS OF REGENARATED MEDICINE IN INDIA

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Abstract:

Objective: Regenerative medicine focuses on finding novel tools to better the treatment of infections, degenerative, and metabolic disorders, as well as particular applications for human and animal dysfunctions and illnesses associated to aging and genetics, ranging from diagnostics to therapies. **Method:** The study investigates regenerative medicine technologies such as decellularization, which captures organ shape and material composition in synthetic tissues, and ell infusions, which stimulate therapeutic responses via growth factor release and interaction with host cells. These techniques try to recreate organ and tissue structure, integrate grafts into the host, and modify the host environment to facilitate therapeutic responses. Decellularization is employed in animal illness models, whereas ell infusions stimulate tissue healing and restore the wounded or sick environment.**Conclusion:** This series delves into the cutting-edge regenerative medicine (RM) methodologies that are transforming disease treatments, cures, and diagnostics. RM seeks to equip modern medical practice with scientifically driven technology that targets metabolic, degenerative, and infectious diseases. The global RM landscape is constantly shifting, with novel technologies originating from research centers and translational clinical manufacturing groups.

PCTC704
NIOSOME: A NOVEL STRATEGY IN MODERN DRUG DELIVERY

Priti Das Ukil*, Parag Ghosh, Somsubhra Ghosh
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Abstract:

Objectives: Niosomes are a cutting-edge and innovative method of medication delivery. Niosomes are an alternative to liposomes for the chemical delivery of drugs. Niosomes are an effective medication delivery vehicle for proteins and peptides. It is frequently used as a carrier of oligonucleotides. **Method:** Technique used to prepare niosomes: ether injection method, hand shaking method (thin film hydration method), sonication method, micro fluidization method, multiple membrane extrusion method, reverse phase evaporation technique. Noisome is composed of ionic amphiphiles, cholesterol, non-ionic surfactants, and drugs. **Result:** Drug distribution via the parenteral, transdermal, and ophthalmic routes has been thoroughly researched using noisome. The niosomal formulation doesn't seem harmful. It is used to treat a variety of illnesses, including inflammation, AIDS, neoplasia, and lung ailments. **Conclusion:** A unique and effective method of medication delivery is Noisome, a bilayer vesicle containing non-ionic surfactant. The non-ionic surfactant and cholesterol vesicle membrane encapsulates the medication. Niosomes improve bioavailability and decrease toxicity.

PCTC705
AN OVERVIEW ON HERBAL EFFECTIVE MOSQUITO REPELLENTS: RECENT DEVELOPMENTS AND PROSPECTS

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Abstract:

Objectives: The objective of this research is to examine the latest advancements in herbal repellents and recognize the potential benefits they offer concerning safety, effectiveness, and branding. This includes identifying and utilizing plant extracts, essential oils, and natural ingredients that exhibit promising mosquito repellent qualities. **Method:** A thorough analysis of related books, research papers, journal articles, and scientific literature was done. We looked through databases like Google Scholar, PubMed, and Scopus. **Result:** Recent developments in this field have demonstrated the possibility of successfully repelling mosquitoes with natural substances. However, in order to assure their effectiveness and safety, thorough scientific research and uniform safety assessments are required. **Conclusion:** In conclusion, the study evaluates the most current advancements in herbal repellents. The interest in herbal alternatives has been triggered by the negative aspects of traditional synthetic repellents, such as worries about chemical toxicity and environmental effect. The application of plant extracts, essential oils, and natural substances with promising mosquito-repelling qualities is one of the most recent developments. In addition, there are a lot of commercial potential due to the expanding market need for safe and natural products. Scientists, producers, and businesspeople working together can lead to the creation of novel and reasonably priced herbal repellent products.

PCTC706

ROLE OF NANOPARTICLE IN TREATMENT OF ALZHEIMER'S DISEASE

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Abstract:

Objective: Based on its specific qualities, we employ nanotechnology for this treatment, which offer an alternative platform for the targeted diagnosis and management of Alzheimer's Diseases. The current review focused on recent developments related to the use of nanoparticles in the treatment of AD. Nanotechnology (NT) offers a novel approach to developing new drug delivery treatments for AD in all stages. **Methods:** An up to date (till august 2024) search was done in Google scholar, pubmed, science directed database with several keywords to select all possible helpful and informative evidence to be reviewed in this paper. The search yields 26 articles. After exclusion, a total of 9 articles were finally selected to perform the study. **Results:** They can be made in a variety of shapes (spherical, cubic, rod-like) to alter their movement across biological barriers. NPs are helpful in both diagnosis and treatment of diseases. They can interact with a wide range of desired ligands (by adsorbing, entrapping, or covalent bonding) to acquire novel physiological, therapeutic, or diagnostic characteristics, including the ability to cross the blood-brain barrier. Additionally the development of vaccines and medication formulation for intransal delivery has made by using nanoparticle. **Conclusion:** Thus, treating Alzheimer's is crucial, and it can be treated successfully by using nanotechnology.

PCTC707

CANCER THERAPY- GROWING AND EMERGING THERAPIES IN CANCER MEDICINE

Ankit Datta*, Ananya Das, Mama Mandal, Madhusmruti Khandai, Susanta Kumar Panda, Sweta Mishra.
Royal College of Pharmacy and Health Sciences, Berhampur, Odisha, India

Abstract:

Objectives: The present work focus on highlighting the goal of epigenetic therapeutics so as to suppress the epigenetic features in order to restore normal chromatin modification patterns thereby assisting Cancer management. **Methods:** Gene expression abnormalities and the development of cancer can result from abnormalities in the epigenetic regulation of chromatin structure and function. Therefore, epigenetic treatment approach has been investigated in this review for management of cancer. **Results:** The first potential epigenetic treatments were histone deacetylase and DNA methyltransferase inhibitor; however, these medications have pleiotropic effects, and it is yet unknown how they induce therapeutic responses. Drugs that block histone methyltransferase have been produced more recently; they may be more specialized agents. Thus, few models with new and novel approach with possible epigenetic therapeutic and epigenetic target have been examined in cancer treatment. The use of medications that target epigenetic enzymes has been proven by the use of DNA methyltransferase and histone deacetylase inhibitor in patients. This has reinforced the necessity for the development of new therapies. **Conclusions:** Thus, this review outlines the epigenetic anomalies that have been found recently, their consequences for cancer, and the methods used to find small molecule inhibitors that target different aspects of the epigenetic machinery

PCTC708

CONTINUOUS CRYSTALLIZATION A FEATURED PROCESS ANALYTICAL TOOL FOR PHARMACEUTICAL PRODUCT MANUFACTURING

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Abstract:

Objectives: An overview of continuous solution crystallization in the pharmaceutical sector along with case study is represented in this study. **Methods**: Recent developments in lab-scale solution-based

continuous crystallization research are discussed, along with four major components: (1) a case study; (2) important design and operational parameters; (3) process intensification techniques; and (4) a five-step generic design procedure. Tubular laminar/ segmented/slug-flow crystallizers, fluidized beds, oscillatory baffled flow, and mixed-suspension mixed-product removal are some of the continuous crystallizers that are studied. They are summed up in terms of generic characteristics (like residence time) and crystallizer-specific parameters and techniques (like mixing methods) that relate to them. The application of micromixers, wet milling, ultrasonication, temperature cycling, and recycling selection (filter, sedimentation) are among the categories of in-line nucleation and crystal modification techniques that are discussed and highlighted. In order to aid in the comprehension and design of continuous crystallizers, connections are made throughout the study with a wealth of previously established knowledge regarding batch crystallizers **Results**: The enhancement of manufacturing processes' efficiency and the uniformity of product quality have drawn more attention to continuous crystallization. The design process and particular configuration for continuous crystallizers may change in response to potentially shifting needs. These needs include: (1) more stringent and more demanding process requirements; (2) faster collection of more precise thermodynamic and kinetic data (e.g., throughput screening); (3) increased availability and improvement of a wider range of crystallizer configurations; and (4) the possibility of using software to create detailed designs for any chosen crystallizer configuration, thereby accelerating the exploration of novel designs. **Conclusions**: The crystallization process may be made more intelligent, intense, and integrated by incorporating the MPC for pharmaceutical product development. Based on the survey, the MPC out performs model-free control by a significant margin.

PCTC709

LIPOSOMES AS TARGETED CARRIERS FOR ANTIHYPERTENSIVE DRUGS: OPTIMIZING THERAPEUTIC OUTCOMES

Shreyasi Dey*, Debashis Mishra, Sushree Sambita Swain, Debaprasad Routray, Lipanjali Badhai, Adrita Banerjee, Himansu Bhushan Samal, Gurudutta Pattnaik, Prafulla Nandi, Kirtimaya Mishra
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Abstract:

Objectives: This article aims to analyze and classify current developments in the technology used to produce liposomes, focusing on how these liposomes are used as drug-delivery vehicles for antihypertensive drugs. The main focus is on the potential of liposomes to address issues related to low patient compliance, adverse effects, and medication resistance in the treatment of hypertension. **Method:** The paper examines the benefits and drawbacks of both conventional and cutting-edge liposome preparation methods. It also looks at important factors affecting liposomal function, such as particle size, surface charge, and drug release kinetics. The efficacy of liposomal antihypertensive medication formulations in enhancing treatment results is evaluated through a review of preclinical and clinical research. **Results:** Advances in liposome synthesis have improved manufacturing scale for industrial applications and simplified the implementation of point-of-care applications. Liposomal formulations have demonstrated better drug absorption, customized distribution, and fewer systemic side effects in preclinical and clinical studies. Issues with scalability, regulatory approval, and the necessity of further clinical validation still need to be resolved. **Conclusion:** For antihypertensive drugs, liposomes offer a promising drug delivery method with the potential to maximize therapeutic results by enhancing drug targeting and minimizing side effects. Future studies should investigate the potential of liposomes in customized and combination therapy for hypertension, emphasizing overcoming obstacles related to scalability and regulatory constraints.

PCTC710

SELF NANO EMULSIFYING DRUG DELIVERY SYSTEMS: A COMPREHENSIVE REVIEW

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Abstract:

Objectives: Most of the new drug products is, about 35-40%, are lipophilic and fail to reach the market due to their poor aqueous solubility. To overcome these challenges various formulation strategies have been investigated. The current study highlights recent advancements in preparing self-nano-emulsifying drug delivery systems (SNEDDS) and expands on their potential pharmaceutical application beyond drug delivery. **Methods:** Different methodologies, including lipid-based formulations, amorphous or solid dispersion, and micronization have been investigated for a long time to work on the oral administration of drug candidates to enhance the solubility and bioavailability of poorly water-soluble compounds. **Results:** Recently, self-nano-emulsifying drug delivery systems have gained great significance as a promising methodology to enhance the solubility of poorly water-soluble drugs. SNEDDS is often described as a homogeneous mixture of oil & surfactants. However, in some cases, it may involve hydrophilic solvents & co-solvents, which are optimized by the experiment's phase diagram approach and statistical design. The encapsulated drug SNEDDS can lead to increased solubility and improved absorption in GIT.The change of fluid SNEDDS into strong measurement structures has been displayed to expand the strength and patient consistency. **Conclusion:** In conclusion,the current review emphasizes various formulation techniques, components, and mechanisms of action that contribute to their enhanced drug solubility.

PCTC711

NAVIGATING BRONCHIAL ASTHMA: AN OVERVIEW OF SYMPTOMS, RISK FACTORS, AND MANAGEMENT

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Abstract:

Objectives: To provide a comprehensive understanding of bronchial asthma & to identify and describe the key symptoms of bronchial asthma along with exploration of various risk factors associated with bronchial asthma also to review current management strategies for bronchial asthma. **Methods:** Compare various asthma care strategies, including pharmaceutical and non-pharmacological, to assess their efficacy, safety, and patient outcomes. This will include a review of the most recent treatment guidelines and emerging options. Integrate all available data and insights to produce a full overview of bronchial asthma symptoms, risk factors, and management techniques. **Result:** Bronchial asthma is a major global health problem that affects over 339 million people, according to the Global Initiative for Asthma (GINA). The prevalence of asthma varies greatly by location, ranging from 1% to 18% of the population. It frequently occurs in countries belongs to high income scale, but its prevalence is increasing in countries having low-, and middle-income scale as a result of rising urbanization and changing environmental circumstances. **Conclusion:** Bronchial asthma, a complex chronic respiratory illness that impacts millions of individual around the world. This emphasized the significance of recognizing its symptoms, risk factors, and appropriate management strategies. Early detection of symptoms such as wheezing, coughing, and shortness of breath is critical for rapid diagnosis and care, which can reduce severe exacerbations and improve patient outcomes.

PCTC712
ADVANCES IN MAGNETIC NANOPARTICLES-BASED TOPICAL FILM: APPLICATIONS, FORMULATIONS, STRATERGIES, AND FUTURE PROSPECTS

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Abstract:

Objectives: To summarize approaches and materials used to formulate MNPs-based topical films, including particle size and shape, surface coatings, and polymer matrices and to describe approaches used to improve the efficacy of MNPs in topical films including controlled magnetic fields, targeted delivery, and combination therapies. **Methods:** MNPs were synthesized utilizing assorted means, such as, chemical co-precipitation, thermal decomposition, and biosynthesis. The Nano sized particles are characterized by various methods such as X-ray diffraction (XRD), transmission electron microscopy (TEM), and dynamic light scattering. MNPs are placed in a polymer matrix and subsequently engineered into a topical film. The film's physical properties were evaluated to determine zeta potential and partical size distribution. MNPs are functionalized by targeting moieties and coated with polymers to promote biocompatibility and targeting efficiency. **Results:** Topical formulations containing MNPs have been demonstrated through numerous studies to facilitate active agent delivery, which improves therapeutic outcomes. MNP topical films have the capability for controlled drug release that can be designed and tailored to meet particular therapeutic needs. Properly formulated MNPs have been documented to be nontoxic and biocompatible; thus, they are suitable for long-term applications. **Conclusions:** The magnetic nanoparticles-based topical films would, therefore, be very useful in various biomedical applications involving targeted drug delivery, hyperthermia, and diagnostic imaging. Success in this area depends upon the precision in formulating MNPs according to their size and surface coatings, including the application of an external magnetic field for control purposes. In this respect, future studies should aim at the optimization of these formulations in the pursuit of minimal toxicity and maximum therapeutic efficacy.

PCTC713
THE GENETIC EPIDEMIOLOGY OF BULIMIA NERVOSA

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Abstract:

Objective: The main objective of this study was to identify and clarify the major risk factors for Bulimia Nervosa from both an **e**pidemiologic and genetic perspective, and to understand the relationship between the very scarcely defined bulimia and bulimia-like syndromes which are in prevalence in the modern-day society. **Methods:** Individual personal psychiatric interviews were conducted with over an estimated record of 2,163 female **twins** from a population-based register which record all new cases in a defined population with an emphasis on epidemiology and public health. Psychiatric disorders were identified and assessed using DSM-III-R criteria. **Results:** Lifetime prevalence and risk for narrowly defined bulimia were 2.8% and 4.2%**,** respectively. Including bulimia-like syndromes increased these estimates to 5.7% and 8.0%, respectively. Risk factors for bulimia included 1) birth after 1960, 2) low paternal care, 3) a history of wide weight fluctuation, dieting, or frequent exercise, 4) a slim ideal body image, 5) low self-esteem, 6) an external locus of control, and 7) high levels of neuroticism. Significant comorbidity was found between bulimia and anorexia nervosa, alcoholism, panic disorder, generalized anxiety disorder, phobia, and major depression. The best-fitting model indicated that familial aggregation was due solely to genetic factors with a heritability of liability of 55%. A multiple threshold model indicated that narrowly defined bulimia nervosa and bulimia-

like syndromes represented different levels of severity among different persons. **Conclusion:** The liability to fully syndromic bulimia nervosa, which affects around one in 25 women at some point in their lives. However, bulimia can also affect any gender or age type which is highly influenced by both epidemiologic and genetic risk factors. These factors that influence the risk for narrowly defined bulimia also influence the risk for less severe bulimia-like syndromes which may be potentially life threatening.

PCTC714

VINCRISTINE: AN ANTI-CANCER DRUG AND ITS SIGNIFICANCE IN PUBLIC HEALTHCARE VIA PHARMACOEPIDEMIOLOGIC FUNCTIONS

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Abstract:

Objectives: One essential chemotherapeutic drug for the treatment of malignancies like lymphoma and leukemia is vincristine. This study uses clinical trials, patient data, and healthcare provider questionnaires to evaluate its efficacy, safety, usage trends, and influence on public healthcare. The results highlight the value of vincristine in oncology as well as its enhancement of cancer survival rates. **Methods:** A comprehensive assessment of the literature, clinical trials, patient records, and provider interviews were used to gather data. Pharmacoepidemiologic instruments and statistical analyses were used to assess treatment results, side effects, and drug use trends. Throughout the whole trial, patient confidentiality and ethical permission were upheld. **Results:** while compared to other therapies, vincristine shown a notable improvement in remission rates and overall survival while treating hematologic tumors. Constipation, myelosuppression, and neuropathy were common side effects, but overall, the risk-benefit ratio was still beneficial. Utilization differed by area and healthcare system, with settings with enough resources showing better results. Vincristine's notable improvements in cancer survival rates, particularly in pediatric oncology, underscore its significance for inclusion in national cancer treatment guidelines and public health initiatives. **Conclusions:** Vincristine has a considerable effectiveness and a reasonable safety profile, making it an essential therapy for cancer. It is a part of normal therapy procedures and raises cancer survival rates. Sustained observation and investigation are required to maximize its application, control negative consequences, and guarantee fair access. In order to improve patient outcomes, the study promotes ongoing funding for cancer research and supportive care techniques.

PCTC715

IMPACT OF PHARMACOECONOMICS AND PHARMACOEPIDEMIOLOGY IN THE PHARMACEUTICAL FIELD

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Abstract:

Together, pharmacoeconomics and pharmaco-epidemiology are evaluating the overall worth of pharmaceuticals in the healthcare system. By integrating economic evaluations with epidemiological data, these fields support the development of evidence-based guidelines and policies, ultimately aiming to improve patient outcomes and optimize healthcare expenditures. There are combined with advancing quality, safety, and efficiency of drug therapies. These analysis the economic aspects of pharmaceutical sciences. It impacts on public health and Education, it also underscore the critical role in these two fields in optimizing healthcare delivery, enhancing patient outcomes and ensuring the efficient use of cost management and resources. These use the effects

of drugs in large populations. It combines principles of epidermiology and clinical pharmacology to understand the model, motives and effects of medication use. Pharmacoeconomics focuses on assessing the economic impact of drug therapies, including their cost-effectiveness, cost-utility, and cost-benefit. On other hand, pharma-coepidemiology evaluates the templates, reasons and effects of drug use in large populations. The present study is planned to review about the impact of Pharma-coeconomics and Pharma-coepidemiology in pharmaceutical field.

PCTC717
PHARMACOECONOMICS OF ANTIHYPERTENSIVE MEDICATIONS: COST-EFFECTIVENESS ANALYSIS OF ACE INHIBITORS VERSUS ARBS

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Abstract:

Objective: This study aims about the cost-effectiveness of Angiotensin II receptor blockers (ARBs) with Angiotensin-converting enzyme (ACE) inhibitors for the treatment of hypertension, taking into account both direct medical expenses and health outcomes. **Method:**A retrospective cohort analysis was carried out with information from patient files from 2010 to 2020 that were included in a sizable healthcare database. The study comprised patients diagnosed with hypertension who were recently taken ACE inhibitors and ARBs. Drugs, hospitalization, and outpatient visit cost data were retrieved, and Quality-Adjusted Life Years (QALYs) gained were used to calculate the effectiveness. In order to compare the two therapy groups, incremental cost-effectiveness ratios, were computed. **Results:** There were 5000 participants which were assigned to the ACE inhibitor group & 5000 to the ARB group in the study database. For ACE inhibitors and ARBs, the average annual cost per patient was 1200[1] and 1500[1] , respectively. For ACE inhibitors and ARBs, the QALYs gained were 0.8 and 0.85, respectively. When comparing ARBs to ACE inhibitors, 6000 for each QALY was gained. Sensitivity tests revealed that changes in prescription costs & the utility values attributed to various health states had the greatest impact on the cost-effectiveness of ARBs. **Conclusion:** The existing evidence on costs and health outcomes indicate that ACE inhibitor are more economical. ARBs have a higher costs, despite being marginally more effective in terms of QALYs obtained. These results should be taken into account by medical professionals when formulary decisions and treatment guidelines for the control of hypertension are being developed. The long-term effects and the influence of different patient groups on cost-effectiveness outcomes require more investigation.

PCTC718
EXPLORATION OF SOME PHARMACOLOGICAL ACTIVITIES OF ETHANOL AND AQUEOUS EXTRACTS OBTAINED FROM THREE INDIGENOUS NON-HERB CROP

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Abstract:

Objectives: The objective of the study is to get the knowledge of pharmacological effects of the medicinal plant as future source of herbal drugs and also to assess the potent activity like anti-ulcer, antioxidant and thrombolytic of the ethanol and aqueous extracts of the aerial part of *Mikania scandens*, *Croton bonplandianum* and *Eupatorium triplinerve*. **Methods:** Phytochemical screening of both extracts of the selected plants were carried out by standard chromogenic reagents. Pyloric ligation

method was used to determine the ulcer protective activity. DPPH scavenging radical assay and Clot-lysis method were followed to evaluate the antioxidant and thrombolytic potential. **Results:** Two extracts of *Mikania scandens* at 200 mg/kg exhibited strongest ulcer protective activity 68.19% and 63.63% with comparison of standard drug lansoprazole at 8mg/kg 81.83%. All extracts have scavenging activity at the concentration of 50 to 250µg/ml. The significant potential antioxidant activity (IC50 value) were observed in the aqueous extract of *M.scandens, C.bonplandianum, E.triplinerve* 65.35µg/ml, 69.52µg/ml, 74.52µg/ml respectively. The aqueous extract of *M.scandens* exhibited the highest significant clot lysis activity 59.78±2.042 in comparison with standard streptokinase vial 80.23±1.969. **Conclusion:** The findings of the study suggested that the aqueous extract of *Mikania scandens* has strong gastroprotective, antioxidant and thrombolytic effects. Therefore, considering the phytochemicals like polyphenolic, flavonoids and tannins present in the plant which could be responsible for these effects. Further research on isolating the responsible compounds from the extracts can only reveal the mysterious mechanism of action for pharmacological properties.

PCTC719

BIODEGRADABLE HOLLOW MICROBALLOONS FOR SITE SPECIFIC SUSTAINED DRUG RELEASE: FORMULATION, *IN VITRO* AND *IN VIVO* STUDIES

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Abstract:

Objectives: In this research, we aim to design sustained release hollow microballoons of poorly water-soluble drug to enhance a) gastric residence time, b) bioavailability, and c) to decrease the dose size and dosing frequency. **Methods:** The o/w emulsion-solvent diffusion approach was used to manufacture hollow microballoons utilizing Eudragit S100 of a poorly water soluble drug. An exterior phase is an aqueous solution of polyvinyl alcohol and salt, while the solvent system for the drug and polymer is a blend of dichloromethane and ethanol (1:1). In order to improve entrapment efficiency the external aqueous phase is modified by partial saturation with salt reduces the leaching of drug in the aqueous external phase. **Results:** The SEM studies reveals that microballoons design by incorporating Eudragit S100, in relate to cellulose derivatives (viz EC & HPC), proven to be porous, round, and hollow. No drug-polymer interaction was detected, as confirmed by the FT-IR spectra. The microballons derived from Eudragit S100 exhibited a favorable *in vitro* buoyancy and prolonged release pattern over an extended period of time with enhanced bioavailability. Microballoons made of anionic acrylic were found to retain excellent buoyancy for longer than 12 hours. The optimized formulation were subjected to *in vivo* activity on streptozotocin induced diabetic healthy male albino rats exhibit the promising results. **Conclusions:** Microballons made from Eudragit S100 display substantial buoyancy compared to microparticles produced from alternative polymers like ethyl cellulose and HPMC. They feature deeper hollow structures with pores that are necessary for prolonged therapeutic activity. It was also revealed that entrapment efficiency was increased up to 80% as a result of salting out effect as it reduces the partitioning of drug in external aqueous phase. The study's most important discovery is that Eudragit S100 drug-loaded microballons offer a potentially effective gastro-retentive drug delivery system to reduce dose size and dose frequency which ultimately reflect the bioavailability of drug absorbed in stomach.

PCTC720
PH/NIR-RESPONSIVE MOF NANOPLATFORM FOR COMBINED CHEMO-PHOTOTHERMAL-PHOTODYNAMIC THERAPY OF BREAST CANCER

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Abstract:

Objectives: This work aims for the development and evaluation of pH/NIR-Responsive MOF-based nanoplatform loaded with chemotherapeutic agent and photothermal agent (PTA) and functionalized with photo-responsive polymer (PRP) and targeting ligand for chemo-photothermal-photodynamic targeted therapy of breast cancer. **Methods:** this involves the synthesis of MOF via solvothermal approach and characterized by size, zeta, PDI (poly dispersity index), SEM, TEM, and XRD. The prepared MOF was loaded with chemotherapeutic agent and PTA into the pores of MOF by incubating for 24h. The drug loaded MOF was then functionalized with a PRP and targeting ligand. Drug release pattern, photothermal characteristics, and cellular assays (MTT Assay and Cellular uptake) with and without NIR (Near-infra red) irradiation were performed. The MOF-based formulation was then tested on animals to assess pharmacokinetic parameters as well as acute and sub-acute toxicity. **Results:** The synthesized MOF exhibited several advantages such as uniform size, high drug encapsulation efficiency of 92%, and effective pH/NIR-mediated controlled drug release. The MOF-based nanoformulation displayed excellent photothermal characteristics even after six on-off cycles of NIR irradiation. *In vitro* cytotoxicity (MTT) evaluation with an 808 nm NIR laser showed that drug-loaded, functionalized MOF nanocarriers exhibited exceptional inhibitory effects on cancer cells due to the combined chemo-phototherapies. Besides, cellular uptake studies revealed that MOF-based formulations could precisely target tumor cells through receptor-mediated internalization. *In vivo* toxicology and pharmacokinetic studies on Wistar rats found no evidence of significant toxicity and improved pharmacokinetic properties. **Conclusions:** In conclusion, we successfully developed a pH/NIR-responsive MOF-based drug delivery system for chemo-photodynamic-photothermal combinational therapy. Because of its high drug encapsulation efficiency, significant cellular uptake and cytotoxicity, pH/NIR-responsive rapid drug release, and improved pharmacokinetic parameters, our versatile MOF-based nanoplatform holds great promise for synergistic breast cancer treatment.

PCTC721
ADVANCED TECHNIQUES IN SOLUBILITY ENHANCEMENT OF POORLY WATER-SOLUBLE DRUGS

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Abstract:

The essential solubility characteristic lies in the solute's ability to dissolve in a solution at varying parameters, emphasizing its importance. It has been evaluated that, about 30-50% of medicaments have poor solubility and dissolution rate. A drug's bioavailability and pharmacokinetics are heavily influenced by its solubility. These poorly soluble drugs can lead to gastrointestinal, and mucosal toxicity and reduced pharmacological action. It is among the most significant issues encountered during the planning and creation of NCEs. The Biopharmaceutical Classification System is a highly advanced methodology to differentiate the drug substances established by considering their Solubility and

Permeability. This methodology is widely used for management in the early development process of medications and the identification and development of NCEs Currently, there are several techniques used for enhancing the aqueous solubility of drugs for increased therapeutics. Throughout the decade, various traditional approaches have been utilized to improve the solubility of medicinal compounds.

PCTC722
FORMULATION AND *IN VIVO* EVALUATION OF CONTROLLED POROSITY OSMOTIC PUMP TABLETS OF STAVUDINE

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Abstract:

Objectives: The aim of this study was to develop and evaluate controlled porosity osmotic pump(CPOP) tablets of stavudine(SD) using wet granulation technique. **Methods:** Wet granulation technique was adopted for the preparation of all these formulations. Conventional spray coating pan was used to develop coating upon core tablets by using cellulose acetate as wall forming material and sorbitol as pore former. Different formulations were prepared using varying concentrations of polymer Hydroxypropyl Methylcellulose (HPMCE5LV) and Sodium chloride as osmogen. All the other excipients are mixed properly according to procedure and compressed into round tablets. The developed core tablets were coated using conventional spray coating pan by incorporating cellulose acetate as wall forming material and sorbitol as pore former. The optimized formulation was selected for *in vivo* pharmacokinetic study along the marketed stavudine conventional capsules of innovator Zerit in rabbit model. The developed tablets were evaluated for pre compression parameters, post compression parameters, *in vitro* drug release study,Fourier Transform Infrared Spectroscopy(FTIR) study,Differential Scanning Calorimetry(DSC) study and scanning electron microscopy (SEM) study with specified procedure. **Results:** From the FTIR and DSC study of optimized formulation SS5 drug-excipient mixture reveals that there was no incompatibility was observed between stavudine and other excipients. The tablets were evaluated for various parameters including pre-compression and post compression, and *in vitro* drug release. All are found within acceptable range. Based upon the highest f_2 (95.78) and lowest f_1 (1.41) values the CPOP formulation SS5 was identified as the optimized formulation as it controls the release of the drug. Among all the formulations SS5 formulation has given the best dissolution studies 99.02% at the end of 18 h. The *in vitro* dissolution data of optimized formulation SS5 were fitted in various kinetic models. Among all the kinetic models R^2 value was found to be maximum in Higuchi model showing 0.979 which followed Higuchi kinetics. The release exponent of Korsmeyer-Peppas model n for optimized formulation SS5 was found to be 0.374 ($n<0.45$) showing Fickian diffusion release mechanism. The optimized formulation was found to be stable up to 3 months when tested for stability study at 40±2ºC/ 75±5% RH. The Cmax for marketed and test SS5 was found 1367.98 ng/ml and 1369.05 ng/ml respectively. The results showed that more Cmax for test formulation indicates prolonging of drug release from dosage form and maintain the plasma drug concentration within therapeutic range. Higher value of $AUC_{0\text{-}t}$ 14965.5 for test formulation denoted the extent of absorption is more compared to marketed formulation (14890.3). **Conclusions:** This study indicated that dry granulation is a viable technique for the development of CPOP tablets of SD. The optimized formulation showed excellent properties from its *in vitro* study and *in vivo* study making a potential candidate for commercial application.

PCTC723
FABRICATION OF QUERCETIN NIOSOMAL *IN-SITU* GEL FOR THE MANAGEMENT OF PARKINSON'S DISEASE

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Abstract:

Objectives: The aim of this study was to enhance the bioavailability and therapeutic potential of quercetin for the treatment of Parkinson's disease (PD) by formulating quercetin-loaded niosomes for intranasal delivery. The study aimed to improve motor function, protect dopaminergic neurons, and alleviate oxidative stress. **Methods:** The niosomes were formulated using the ethanol injection method and evaluated for particle size, entrapment efficiency, and zeta potential. The optimized formulation was then incorporated into an *in situ* gel for intranasal administration to enhance drug delivery to the brain. The efficacy of the formulation was assessed using behavioral tests for motor function, histopathological evaluations for neuroprotection, and biochemical assays for oxidative stress reduction in male Vistar rats. Additionally, short-term stability tests were conducted to confirm the robustness of the formulation. The outcomes were compared with disease controls and standard treatment groups using the haloperidol model of Parkinson's disease in sister rats. **Results:** The results demonstrated that the optimized niosomal formulation had a particle size of 195 nm, a polydispersity index (PDI) of 0.29, a zeta potential (ZP) of -30.63 mV, and an encapsulation efficiency (EE) of 82.77%. Behavioral tests in the haloperidol model showed significant improvements in motor function in rats treated with the niosomal formulation compared to disease controls and standard treatment groups. Histopathological evaluations indicated better protection of dopaminergic neurons in the substantia nigra, and biochemical assays revealed a significant reduction in oxidative stress markers in the niosomal treatment group. Short-term stability tests confirmed the formulation's robustness, indicating its potential for sustained release and long-term efficacy. **Conclusions:** In conclusion, the study successfully developed a quercetin-loaded niosomal formulation optimized for intranasal delivery, demonstrating significant improvements in drug delivery and efficacy. The formulation provided enhanced neuroprotection, improved motor function, and reduced oxidative stress in a PD model. These findings suggest that the niosomal formulation, particularly when incorporated into an *in situ* gel for intranasal administration, holds promise as a superior treatment option for PD over traditional dosage forms.

PCTC724
DESIGN AND DEVELOPMENT OF BRAIN TARGETED NEUROPROTECTIVE NANOPARTICLES IN THE MANAGEMENT OF CEREBRAL STROKE

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Abstract:

Objectives: The objective of the present study is to formulate and optimize the intranasal brain targeted neuroprotective nanoparticles for the treatment of the cerebral stroke by QbD approach, and to evaluate it on the various *in vitro* and *ex vivo* parameters. **Methods:** Cerebral stroke and hemorrhagic stroke are fatal conditions arising due to dysregulation of the coagulation-fibrinolysis cycle. Neuroprotection is as preferred strategy for delaying and preventing further brain tissue damage in strokes. Neuroprotective brain targeted nanoparticles were prepared using nanoprecipitation method. Briefly, possible targets for the treatment of the stroke and its agonist were identified and various therapeutic

molecules from different classes able to cause the neuroprotection were selected and *in-silico* screening was carried out by using the Schrodinger software. Pioglitazone, is the traditional Type-2 anti-diabetic drug and a PPAR-γ agonist was selected and nanoparticles were formulated using the poly (lactic-co-glycolic acid) (50:50) PLGA50:50 as polymer and pluronic F-127 as the surfactant and optimized these nanoparticles by using Box-Bhenken Design (BBD). We fabricated total of 15 batches and evaluated them on the basis of their particle size, polydispersity index (PDI), and entrapment efficiency (%EE). Optimized batch was studied for XRD, DSC, FTIR, SEM, *in-vitro* drug release and release kinetics, *ex-vivo* permeation study, histopathology, and stability study. **Results:** In the docking studies we run the 8 ligands and got the best docking score for the Pioglitazone after reference molecule. The intranasal brain targeted neuroprotective nanoparticles for the treatment of the cerebral stroke by using 3^3 Box-Behnken design. Optimized batch was prepared with the 1:8 drug polymer ratio, with surfactant concentration of the 0.25% w/v, and sonication time of 15 minutes. It showed particle size of 250 nm, PDI of 0.441, and zeta potential of -16 mV, EE 81% and the drug loading 4.5% respectively. SEM analysis revealed a spherical particle with smooth surface, compatibility was determined by FTIR and DSC study. XRD data shows that the drug is become amorphous in the formulation. *In Vitro* release was found to be 88% and follows the Korsmeyer-Peppas model of release. While permeation studies showed good permeation through the nasal mucosa. Stability study data indicated that the stability of formulation. **Conclusion** This work highlights the advantage of the docking study in the drug selection, as well as the use of the QBD approach in the development of the nose to brain drug delivery system of polymeric nanoparticles (PNPs). While evaluating the PNPs we came to know that the nanoprecipitation method is useful in the preparation of the nanoparticles for the intranasal drug delivery system. *In vitro* release study and *ex vivo* diffusion study showed that the PGZ-PNPs have the potential of targeted brain drug delivery by intranasal route. Preclinical and clinical investigation can confirm its neuroprotective potential in the management of cerebral stroke.

PCTC725

MUCOADHESIVE POLYELECTROLYTE NANOCAPSULES OF MOXIFLOXACIN FOR THE TREATMENT OF BACTERIAL KERATITIS. *IN-VITRO* AND *IN-VIVO* EVALUATION

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Abstract:

Objectives: The main aim of this work was to develop a moxifloxacin loaded chitosan-based mucoadhesive polyelectrolyte nanocapsules to treat bacterial keratitis. **Methods:** The mucoadhesive nanocapsules were prepared by polyelectrolyte complex coacervation method by using the various concentration ratios of chitosan and gellan gum. The prepared nanocapsules were evaluated by various parameters such as nanocapsule size, zeta potential, surface morphology, mucoadhesive property, *in-vitro*and *ex-vivo* release, ocular irritation potential, and antimicrobial efficacy studies. The *in-vivo* antibacterial activity was conducted in a bacterial infection-induced rabbit eye model. **Results:** The developed nanocapsules showed nanometric in size with positive zeta potential and superior mucoadhesive pattern and showed a sustained release profiles. *Ex-vivo* and *in-vivo* release profileconcluded that higher permeation and improved antibacterial activity were observed in moxifloxacin-loaded nanocapsules than in marketed formulations. **Conclusions:** The formulated polyelectrolyte nanocapsules are a feasible alternative to treating bacterial keratitis with existing approaches. The positively charged nanocapsules showed improved corneal retention through the interaction with the negatively charged surface of mucous membrane of the cornea.

PCTC726
Q-TOF-LCMS-BASED PHYTOCHEMICAL PROFILING TO REVEAL THE BIOACTIVE COMPONENTS OF VARIOUS MEDICINAL PLANTS: A SMART STRATEGY IN PHARMACEUTICAL DRUG DEVELOPMENT

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Abstract:

Aim: The goal of this research is to analyze the bioactive components of medicinal plants using online tools that is relatively easy to use, reproducible, non-destructive, and can be used for quick analysis of traditional plants. **Methods:** In the present work the extracts of selected medicinal plants like *Nyctanthes arbor-tristis* Linn, *M. charantia*, *A. paniculata* etc were characterized by LCMS (LC_TOF-MS/MS). The samples were evaluated using online tools based on the diagnostic peaks. The structural information of bioactive phytoconstituents was retrieved from different open-source databases. The compounds were then anticipated for their hits with the probable targets in the various types of diseases. The complex relationships between the bioactive, targets, and pathways were conducted through the smart graph.The protein-protein interaction network of potential targets was constructed using the Cytoscape plug-in (v3.8.0), Gene Ontology (GO) and Kyoto Encyclopedia of Genes and Genomes (KEGG) pathway enrichment analyses. **Results** The parameters include a screening of components from medicinal plants., construction and analysis of the target PPI network, and construction of the disease target network,A total of 29 active compounds in both varieties of *M.charantia* were screened and hit by active 30 potential targets related to viral infection. A total of 14 active compounds in *Nyctanthes arbor-tristis* were retrieved from the fingerprinting by LCMS. A total of 14 compounds in *Andrographalide* were retrieved. Compound-target pathways for each medicinal plant were performed using an online tool. Computer models have been encouraged as a valid substitute for experimental procedures for the prediction of ADME through a web tool run by the Swiss Institute of Bioinformatics (SIB). **Conclusions:** Identification of compounds by LC-HRMS analysis followed by a new discipline called omics technology to understand drug actions and interactions with multiple targets that provided a new perception of the mechanism of selected medicinal plants in the treatment of various diseases. The study also provided new insights into the development of new drugs for treatment of complex diseases.

PCTC727
ISOLATION, QUANTIFICATION, AND PHARMACOLOGICAL EVALUATION OF FLAVONOIDS FROM *BOSWELLIA SERRATA*, *CELASTRUS PANICULATUS*, *COSTUS SPECIOSUS*, AND *GLORIOSA SUPERBA* FOR ANTIOXIDANT AND ANTIMICROBIAL ACTIVITY

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Abstract:

Flavonoids, a class of polyphenolic compounds, are known for their significant pharmacological activities, including antioxidant and antimicrobial properties. This study focuses on the isolation, quantification, and evaluation of flavonoids extracted from four medicinal plants: *Boswellia serrata*, *Celastrus paniculatus*, *Costus speciosus*, and *Gloriosa superba*. The aim was to investigate their potential as natural sources of antioxidants and antimicrobial agents. The extraction of flavonoids was carried out using standard solvent extraction techniques, followed

by purification through chromatographic methods. The quantification of flavonoids was performed using UV-visible spectrophotometry and high-performance liquid chromatography (HPLC). The isolated compounds were subjected to *in vitro* assays to determine their antioxidant activity, utilizing DPPH radical scavenging and ferric reducing antioxidant power (FRAP) assays. Antimicrobial activity was evaluated against a spectrum of pathogenic bacteria and fungi using the disc diffusion and broth microdilution methods. The results demonstrated that the flavonoid-rich fractions from all four plants exhibited substantial antioxidant potential, with ***Boswellia serrata*** and ***Costus speciosus*** showing the highest radical scavenging activity. The antimicrobial screening revealed broad-spectrum activity, particularly against gram-positive bacteria and certain fungal strains, with ***Gloriosa superba*** displaying the most pronounced inhibitory effects. In conclusion, the flavonoids isolated from these medicinal plants exhibit promising antioxidant and antimicrobial properties, suggesting their potential application in the development of natural therapeutic agents for managing oxidative stress and microbial infections. Further *in vivo* studies are warranted to explore their full pharmacological potential.

PCTC728

PREPARATION, SOLID STATE CHARACTERISATION OF NICLOSAMIDE CO-CRYSTAL WITH ENHANCED SOLUBILITY

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Abstract:

Objectives: This study aims to improve the solubility of Niclosamide by forming and characterising a co-crystal of the drug. Despite its well-known anthelmintic and anticancer qualities, Niclosamide's low water solubility limits its therapeutic efficacy **Methods:** Niclosamide co-crystals were prepared using two different processes: solvent evaporation and dry grinding. The dry grinding method involved mechanically grinding Niclosamide with appropriate co-formers, and the solvent evaporation method used slow evaporation of a solvent mixture, including Niclosamide and the co-former. **Results:** Compared to pure Niclosamide, the Differential scanning calorimetry (DSC) thermograms, Fourier Transformed infrared (FTIR) spectra, and X-ray diffraction (XRD) patterns showed distinct shifts and peaks that indicated the production of stable co-crystals using both techniques. Distinctive characteristics of co-crystal formation were identified by analysing the solid-state characterisation data. These included shifts in melting points seen in the DSC thermograms, new FTIR spectra peaks corresponding to interactions between the Niclosamide and co-former, and changes in crystalline structure found in the XRD patterns. After this, the solubility study was conducted, and it showed that the co-crystal prepared by the dry grinding method of ratio 1:2 shows the highest solubility with a 1.86-fold increase in solubility. **Conclusions:** These results demonstrate the effective production of co-crystals and indicate the improvement of Niclosamide's solubility, which may increase its bioavailability and therapeutic efficacy.

PCTC729

REVOLUTIONIZING MIGRAINETHERAPY: ORODISPERSIBLE TABLETS CRAFTED WITH CRYSTAL ENGINEERING AND COMPUTATIONAL TOOLS

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Abstract:

Objectives: The objective behind this study was to prepare co-crystals of poorly water soluble drug and to develop a suitable formulation for the treatment of Acute Migraine. **Methods:** Drug selection was justified based on the data obtained through *in silico* screening using SwissADME and Molinspiration. Co-crystals of the model drug were prepared by Solvent

Evaporation method. The solvent used is Ethanol which is considered as a green solvent. The solubility and melting point of the crystalline phase was determined. The potential co-crystals were characterized by IR, DSC, XRPD and SEM. Other pharmaceutical properties like solubility and dissolution rate were also evaluated. Orodispersible tablets of the prepared co-crystals were formulated, optimized using QbD approach and evaluated. **Results:** The co-crystals that were prepared revealed the variation in melting point and solubility. The analysis of IR indicated the shifting of characteristic bands of pure drug. The changes in 2θ values in XRPD were observed. DSC spectra of co-crystals indicated altered endotherms corresponding to the melting point. The prism-like co-crystal particles were seen in the SEM images. The proposed technique was found to enhance the drug solubility by 7 folds. The co-crystals exhibited faster dissolution rate about 54% increase as compared to pure drug and 20% increase as compared to marketed formulation. The use of Box-Behnken response surface methodology helped to found the relationship between factors and responses. Seventeen formulations offered by the Box–Behnken design through Design Expert Software (version 11) were prepared. The final formula was prepared based on predicted and observed values. The prepared batch was compared with dissolution rate of pure drug and marketed formulation. The difference factor (f_1) and similarity factor (f_2) was computed to compare the dissolution profiles of optimized batch and marketed formulation. The f_1 and f_2 value was found to be 12 and 51 respectively. The orodispersible tablets of co-crystals were successfully prepared by direct compression method using superdisintegrant with improved disintegration time and dissolution rate. **Conclusions:** The model drug co-crystal with modified properties was prepared with a suitable coformer and formulated as orodispersible tablets having faster disintegration and greater dissolution rate. Thus, it can be concluded that the optimized formulation with desirable parameters can be obtained by Box–Behnken design with the response and variable relation.

PCTC730
FORMULATION AND EVALUATION OF IMMUNOMODULATORY NANONEUTRACEUTICALS

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Abstract:

Objectives: Nano formulations aims to indorse the distribution of environmental, healthy, stable, and safety knowledge and best practices. It coordinates international efforts for sharing data and best practices for risk assessment and management. Their properties for safe use of nanotechnologies. NFs are used in drug delivery research to improve bioavailability, solubility, and targeted delivery. NFs also identifies immunomodulatory and that can lower drug administration doses. **Methods:** Various techniques like thin-film hydration, emulsification, and nanoprecipitation are used to prepare BPC-NFs, with various NF platforms like liposomes, SLNs, NLCs, phytosomes, nanoparticles, and nanoemulsions available. **Results:** Obesity rates are increasing rapidly in developed and third-world countries due to unhealthy lifestyles, fast food consumption, and inactivity. Obesity increases the risk of severe disease due to lowered immunity and old age. A healthy, balanced diet with vitamins, antioxidants, and omega-3 fatty acids is crucial. **Conclusions:** The *in vitro* release profile study showed an 85% drug release in 12 hours, with optimized batches showing 95%. The batch was selected for further investigation through SEM, XRD, and Accelerated Stability Studies. After 3 Months, the stability of the optimized formulation remained stable, with no significant changes in entrapment efficiency, drug loading, or particle size.

PCTC731
EFFECT OF HYDROXY PROPYL METHYL CELLULOSE (HPMC E5 LV PREMIUM AND HPMC E15 LV PREMIUM) ON THE ORAL POLYMERIC FILM OF CHLORPHENIRAMINE MALEATE

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Abstract:

Objectives: Orally dissolving films (ODFs) are a novel drug delivery system that offers a convenient, patient-friendly alternative to traditional dosage forms. Orally dissolving films (ODFs) have gained considerable attention as a promising alternative to conventional oral dosage forms due to their ease of administration and convenience. In this study, we aimed to formulate and evaluate chlorpheniramine maleate (CPM) ODFs using croscarmellose sodium (CCS) as a super disintegrant. **Methods:** The ODFs were prepared by solvent casting method using hydroxypropyl methylcellulose (HPMC E5 lv premium) as a film-forming agent, propylene glycol as a plasticizer, and CCS as a super disintegrant. The films were characterized for thickness, weight uniformity, disintegration time, folding endurance, drug content, and *in vitro* dissolution profile. **Results:** The results showed that the prepared ODFs were uniform in thickness, weight, and drug content. The films were found to be disintegrated within 30 seconds, indicating that they are a rapid dissolving dosage form. The dissolution profile revealed that the ODFs had an immediate release of the drug, with more than 80% of the drug being released within 5 minutes. Overall, the use of Croscarmellose Sodium (CCS) as a super disintegrant was found to be effective in improving the disintegration time of CPM ODFs, resulting in a rapid release of the drug. **Conclusion:**In conclusion, the ODFs of CPM were successfully formulated and showed promising results in terms of their disintegration time and dissolution profile. The prepared ODFs can offer a patient-friendly, easy-to-administer alternative for the treatment of allergies and related conditions, especially for paediatric and geriatric patients who may have difficulty swallowing traditional dosage forms.

PCTC732
CHARACTERIZATION AND OPTIMIZATION OF EDOXABAN TOSYLATE MONOHYDRATE-LOADED POLYCAPROLACTONE NANOPARTICLES FOR VENOUS THROMBOEMBOLISM

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Abstract:

Objective: This study aimed to develop and characterize Edoxaban Tosylate Monohydrate (ETM) -loaded polycaprolactone (PCL) nanoparticles for improved drug delivery efficiency. Polymeric nanoparticles, specifically PCL nanoparticles, offer a promising approach to enhance drug solubility and control release kinetics. **Methods:** ETM-loaded PCL nanoparticle were prepared using a nanoprecipitation method. The nanoparticles were characterized for particle size, zeta potential, drug loading, and encapsulation efficiency. *In vitro* release studies were conducted under simulated physiological conditions to evaluate the release profile of ETM from the nanoparticles. **Results:** The optimized formulation of ETM-loaded PCL nanoparticles exhibited a uniform size (100 nm) with high drug entrapment efficiency (88%). SEM analysis confirmed the spherical morphology and smooth surface of the nanoparticles. *In vitro* release studies revealed sustained drug release over 14 hours, indicating the potential for prolonged therapeutic action.

Conclusion: ETM-loaded PCL nanoparticles demonstrated promising characteristics for enhancing the solubility and controlled release of ETM. The findings highlight the feasibility of using PCL nanoparticles as a delivery system for improving the therapeutic efficacy of ETM in thromboembolic disorders. Optimized formulation further enhances the potential of ETM-loaded PCL nanoparticles.

PCTC733

A SUCCESSFUL EVOLUTION OF ATORVASTATIN LOADED PLGA NANOPARTICLE BY THE DYNAMIC DOUBLE EMULSION SOLVENT EVAPORATION TECHNIQUE

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Abstract:

Objective: Development of the BCS Class II drug Atorvastatin-loaded PLGA nanoparticles by the potent double emulsion solvent evaporation Technique. **Method:** The effective and simple Double emulsification solvent evaporation method is a unique and popular method for preparing uniform-size polymeric nanoparticles. Polylactic co-glycolic acid (PLGA), an FDA-approved biodegradable and biocompatible polymer, has gained prominence in recent research for drug delivery systems. Incorporation of the ratio of Methanol: Dichloromethane (1:9) as a solvent of formulation along with 5% & 0.5% PVA solution used as a stabilizing agent of the primary & secondary emulsion. The nanoemulsion is formulated by the probe sonicator instrument. The Secondary emulsion was lyophilized at -60! and solidified as nanoparticles. It was kept for the characterization experiments at -20! in a deep freezer. **Result and Discussion:** The resulting nanoparticles demonstrated an average diameter of 141 nm, a polydispersity index (PDI) of 0.202, and a zeta potential of -28 mV, as measured by dynamic light scattering (DLS) by the Malvern Instruments. By this promising preparation method, the drug loading and drug encapsulation percentages of these nanoparticles are 85.13% and 77.39% respectively. The use of PLGA provides a controlled release mechanism, potentially enhancing the bioavailability of atorvastatin and improving its therapeutic efficacy. **Conclusion:** The PLGA polymer and the promising double emulsion solvent evaporation technique were used to create uniform-sized nanoparticles, along with a controlled release phenomenon which is justified by the *in vitro* release study by dissolution apparatus.

PCTC734

PLANT-DERIVED BIOACTIVE MOLECULES IN THE MANAGEMENT OF DIABETIC NEUROPATHY: INSIGHTS AND FUTURE PROSPECTS

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Abstract:

Objectives: Diabetic neuropathy (DN) is considered as a major healthcare challenge caused as diabetes mellitus (DM). This study shed light on the possible molecular role those plant metabolites that may play key role in managing DN, as well as the potential significance of several different pathways and processes in the progression of the condition. Additionally, a putative mechanism that involves a flavonoid component scavenging reactive oxygen species was described in the study. **Methods:** Databases and search engines used for the study included Google Scholar, Pubmed, Scopus, and Pubchem. Research articles, review articles, and book chapters were searched. The keywords used for analyzing the articles/ chapters included: hyperglycemia, diabetic neuropathy, pain, plant

metabolites. **Results:** No allopathic drug that is both safe and effective for treating DN is currently on the market. One possible approach to managing DN and other neurological complications associated with diabetes is the use of bioactive chemicals, which have anti-inflammatory and neuroprotective properties. Now it is the time to emphasis on the phyto medicines, extracted from medicinal plants to fight against diabetic neuropathy having less negative effects. In this review paper we are highlighted some of those phyto costituents having efficacy against diabetic neuropathy like: curcumin, resveratrol, berberine, quercetin, epigallocatechin, genistein etc. **Conclusions:** If sustained efforts to use therapeutic plants continue, herbal medicinal plants and the bioactive compounds they contain have the potential to be a solution for DN with minimal or no adverse effects. Even though the therapeutic role of medicinal plants in managing DN has been recorded, clinical trials have not yet been explored for their potential application. As a result, the herbal formulation that has been described ought to be promoted and supported to circumvent the problems related to conventional pharmaceuticals.

PCTC735

IN VITRO RELEASE TEST FOR ACYCLOVIR OINTMENT AND ITS COMPARATIVE STUDY AS PER SUPAC GUIDELINES

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Abstract:

Objectives: Acyclovir is formulated in semisolid topical dose forms and is marketed in several countries for the treatment of herpes labialis, also known as "cold sores." The purpose of this study was to examine the *in vitro* release of acyclovir from different generic ointment products sold in India, taking into account the potential differences in formulations across the various acyclovir products. **Methods:** Vertical diffusion cells with a diffusional surface area of 1.767 cm2 and a variety of commercially available membranes were used for the *in vitro* investigations. The temperature was kept at 32 ± 0.5°C and Phosphate buffer saline pH- 7.40 was employed as the receptor fluid. The US Food and Drug Administration's Draft Guidance for acyclovir ointment and the SUPAC-SS Guidance for non-sterile semisolid dosage forms provided the basis for the *in vitro* release comparisons. **Results:** We analyzed and compared the release rates (slope) of the appropriate reference product (R) and the test (T). When acyclovir was released from each of the generic formulations in comparison to the reference product, the results showed that the release ranged from 75–133.33% with a 90% confidence interval. **Conclusion:** According to this study it was concluded that the innovator product's release rates were met by the generic acyclovir cream formulations, suggesting that they were bioequivalent.

PCTC736

SMART NASAL NANOCARRIERS IN THERMOSENSTIVE GELLING SYSTEM: A POTENTIAL BREAKTHROUGH FOR MENSTRUAL MIGRAINE RELIEF

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Abstract:

Objectives: This study aimed to develop nanostructured lipid carriers (NLCs) loaded in an *in-situ* gel for nasal delivery of rizatriptan benzoate (RB) to overcome limitations of menstrual migraine treatments, addressing issues such as low oral absorption, high first-pass metabolism, and poor nasal cavity retention. **Methods**: RB-NLCs were optimized using a 2^3 full factorial design, considering solid lipid concentration, surfactant concentration, and sonication cycles. The optimized formulation (S8) was characterized and incorporated into an *in-situ* gel using poloxamer 407 and carbopol 934. *In vitro* release studies and ex vivo permeation studies using goat nasal mucosa were conducted. **Results**: Both

RB-NLC and RB-NLC loaded *in situ* gel formulations demonstrated sustained drug release over 8 hours. Although *ex vivo* studies showed superior drug permeation for RB-NLC (51%) compared to RB-NLC loaded *in situ* gel (39%) and raw *in situ* gel (25%) after 8 hours but the RB-NLC loaded *in situ* gel exhibited controlled release and improved retention on the nasal mucosa. **Conclusions**: The study demonstrated that the combination of NLCs and *in situ* gelling systems offers a promising approach for nasal delivery of rizatriptan benzoate. The optimized formulation showed potential for enhanced nose-to-brain drug transport, suggesting its efficacy in managing moderate to severe migraines.

PCTC737
DEVELOPMENT OF A GASTRORETENTIVE POLYHERBAL FORMULATION AND ITS EVALUATION

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Abstract:

Objective: The main aim of the existing study was to formulate polyherbal gastroretentive capsules by using Carbopol 934 and 971P in different concentration ranges to get desired buoyancy rate. **Methods:** Standard procedures were used to estimate the organoleptic properties, extractive values, and ash values of the crude drugs used in formulations. Extraction was carried out using Soxhlation followed by preliminary phytochemical evaluation and HPTLC fingerprinting of the extracts. The extracts were formulated into a gastroretentive polyherbal capsule and assessed for physical parameters. The prepared formulation was characterized by physicochemical parameters and pharmaceutical quality control tests. **Results:** The phytochemical assessment established the presence of flavonoids, alkaloids, saponins, steroids, and glycosides. R_f values obtained from the HPTLC studies of the extracts signified the presence of important phytoconstituents such as Shogaols, 6-Gingerol, 8-Gingerol, Glycyrrhizin, Andrographolides, Marmelosin, and Conessine. Percent Carr's consolidation index ranging from 8.111 ± 0.157 to 8.827 ± 0.186, Hausner's ratio between 1.088 ± 0.002 to 1.097 ± 0.002, and angle of repose below 30 are indicative of excellent flow property of the granules. The optimized formulation PHF4 with loosely cross-linked and low molecular weight polymer Carbopol 971P at the concentration of 75 mg yielded the granules with effectual floating properties and structural integrity over 24 hours. **Conclusion:** The gastroretentive capsules PHF4 containing granules formulated using 75 mg Carbopol 971P showed a buoyancy effect of more than 24 hours with desired structural integrity. The granules also possessed excellent flow properties suitable to be encapsulated within the capsule shells. Development of the capsule also aided in the concealing of the bitter and acrid taste of the component extracts which would enhance patient compliance. However, pharmacological confirmation of the formulation to increase therapeutic efficiency in gastric disorders needs to be estimated.

PCTC738
DEVELOPMENT AND EVALUATION OF NANOEMULGEL OF MILK THISTLE SEED EXTRACT

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Abstract:

Objectives: The objective of the present study was to formulate nanoemulsion gel, a novel herbal formulation loaded with *Silybum marianun* (Milk Thistle) seed extract for effective treatment of psoriasis. **Methods:** Milk Thistle seeds were extracted in two steps using Soxhlet extractor. Firstly, oil was

separated by extracting with petroleum ether and then defatted seeds were further extracted using ethanol. Based on solubility data, oleic acid, labrasol and transcutol P were selected as oil, surfactant and co-surfactant respectively. Nanoemulsion region was obtained using pseutoternary phase diagram obtained for various combinations of oil and surfactant mix by water titration method. Composition of nanoemulsion obtained from pseudoternary phase diagram was studied for reproducibility and other evaluation parameters which includes pH, appearance, release kinetics, particle size, PDI, zeta potential and scanning electron microscopy. Developed nanoemulsions were formulated as gel using Xanthan gum at concentration of 2% w/w **Results:** Brownish, odourless nanoemulsions, with no precipitation of extract on centrifugation was obtained with optimized ethanolic extract of Milk Thistle seeds nanoemulsions. The pH was found to be in range of 6.2-7.0, and drug content was found to be 86.321±0.78 %. The release of actives from the ethanolic extract of Milk Thistle seeds nanoemulsions at the end of the 8 hours was found to be 70.80 %.Mean globule particle size 116.8 nm and PDI 0.158 respectively. Zeta potential was found to be -39.9mV. Differential scanning colorimetry (DSC) analysis further confirm the dissolve state of ethanolic extract in For topical application ethanolic extract of Milk Thistle seeds nanoemulsions was converted into ethanolic extract of Milk Thistle seeds nanoemulgels. Xanthan gum 2 %w/w was chosen as gelling agent, with pH value 6.2-7 which is suitable for topical application, drug content of 2 % w/w ethanolic extract of Milk Thistle seeds nanoemulgels was found to be 72.321.±0.140%. The spreadability coefficient of the ethanolic extract of Milk Thistle seeds nanoemulgels was found to be 227.2±0.15 g.cm/s. EE-M nanoemulgel. **Conclusions:** The study concluded that the nanoemulsion gel formulated with Xanthan gum (2% w/w) for Milk Thistle seed extract was successfully prepared by incorporating nanoemusion of extract made with oleic acid, labrasol and transcutol P as oil, surfactant and co- surfactant respectively.

PCTC739

FORMULATION AND EVALUATION OF TRIMETAZIDINE COMPRESSIBLE FLOATING CONTROLLED RELEASE TABLETS USING NATURAL EXCIPIENTS

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Abstract:

Objectives: The aim of the current research was to formulate and evaluate Trimetazidine controlled release tablets using natural gums as excipients which offers delayed drug delivery. **Methods:** Trimetazidine, an anti-anginal agent was selected for the present study. The drug was loaded into microspheres using calcium silicate in varying concentrations. The formulation showing best drug load was selected and tablets were prepared using varying concentrations of Xanthan gum and Gum karaya and HPMC K4M. The buoyancy was evaluated for the prepared tablets. Along with this, various pre and post compression parameters along with *in vitro* dissolution studies were performed. **Results:** The microspheres with high amount of calcium silicate exhibited delayed drug release. Such formulations were selected for the prepared of tablets. The tablets prepared with gums and HPMC K4M exhibited good flow properties. The *in vitro* drug release studies showed that the preparations made with higher concentrations of gums exhibited delayed drug release which is compared to that of HPMCK4M. The results indicated that the gums used in the formulations caused this delay. This was further supported with the release kinetics. **Conclusions:** The study concluded that the usage of calcium silicate and gums in the formulations is a better option for the formulation of controlled release tablets. The optimized formulation could be a potential commercial anti-anginal agent which showed excellent physicochemical properties and drug release.

PCTC740
RILUZOLE LOADED POLYMERIC NANOPARTICLES FOR THE TREATMENT OF AMYOTROPHIC LATERAL SCLEROSIS

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Abstract:

Objectives: ALS involves its neurological and clinical manifestations, while the objectives focus on understanding its pathophysiology, improving diagnosis, developing therapies, enhancing supportive care. These efforts aim to improve outcomes and quality of life for individuals affected by ALS. **Methods:** The blood-brain barrier acts as a natural obstacle for preventing delivery of drugs effectively reaching the brain to treat neurological disorders like amyotrophic lateral sclerosis (ALS). One of the FDA-approved medication for the treatment of ALS is a derivative of 2-amino-6 [tri-fluoro-methoxy] benzo-thiazole. To enhance its therapeutic potential, researchers loaded the drug, known as Riluzole (RLZ), into poly- (lactic-co-glycolic acid) (PLGA) nanoparticles using emulsification solvent diffusion technique. By utilizing design expert software, the prepared polymeric nanoparticles loaded with riluzole are optimized various formulation parameters. **Results**: Following the assessment of 20 trials were conducted, among them three formulations were selected for further investigation. Notably, the analyses revealed there is no significant interactions between Riluzole and the excipients used for the formulation. Scanning electron microscopy (SEM) illustrated that the nanoparticles exhibited a smooth texture and spherical morphology. Encapsulation efficiency ranges from 42.61 ± 3.61% to 60.02 ± 1.94%, depending on the drug-to-polymer ratios, spanning from 1:1 to 1:4. Release studies demonstrated a sustained release of RLZ from the polymeric nanoparticles over a period of time 22 to 26 hours, with 24% of the drug being released within 3 hours after administration, allowing for the establishment of a loading dose strategy**. Conclusion**: The data obtained from this study suggest the dosage form's reliable stability and applicability. It is appropriate for a wide range of modes of administration from oral to IV injection, as the particle size range supports for the same.

PCTC741
QUALITY BY DESIGN (QBD)-ENABLED DEVELOPMENT OF MANNOSYLATED NANOSTRUCTURED LIPID CARRIERS OF CLOFAZIMINE TO IMPROVE ITS PHYSICOCHEMICAL, SAFETY, AND EFFICACY PROFILE FOR LUNG TARGETING

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Abstract:

Objective: Clofazimine, a riminophenazine derivative and a vital drug against the treatment of *Lepromatous Leprosy*, has been reinstated clinically for the treatment of multidrug-resistant tuberculosis (MDR-TB). However, it has severe gastrointestinal and skin pigmentation-related adverse effects after oral administration. The present research was aimed to establish the safety and enable selective targeting of Clofazimine towards alveolar macrophages (AMs) against MDR-TBinfectionby loading it into nanostructured lipid carriers (CLF-NLCs). **Methods:** The CLF-NLCs were formulated by precipitation-hot microemulsification-probe sonication method and optimized by using 3^3 Box–Behnken design. Further,

the surface of optimized CLF-NLCs was modified with mannose (M-CLF-NLCs) to facilitate their internalization by AMs. Both CLF-NLCs and M-CLF-NLCs were evaluated against various physicochemical and parameters.The safety and efficacy studies of CLF-NLCs and M-CLF-NLCs were performed by *in-vitro* cell viability studies on macrophage J774 cell lines, haemocompatibility studies, acute inhalation toxicity studies, and pharmacokinetics and biodistribution studies. **Results:** CLF-NLCs and M-CLF-NLCs showed particle size 300-350 nm, polydispersity index ~ 0.300, zeta potentials +44 mV and -38 mV, and percent encapsulation efficiencies greater than 70%. The spherical morphologies of NLCs were confirmed by field-emission scanning electron microscopy. *In-vitro* drug release studies showed pH-dependent and sustained drug release profiles. The release of formulations were best fitted into first order and Higuchi kinetic models. Formulations further depicted high storage stability at ambient and refrigerated conditions. In haemocompatibility studies, the highest count of RBCs and least haemolysis was observed for M-CLF-NLCs treated group as compared to CLF-drug dispersion. Cell viability studies revealed greater safety of M-CLF-NLCs than CLF-drug dispersion. In *in-vivo* acute toxicity studies, no physiological or behavioural changes and no mortality were recorded over 14 days period. In pharmacokinetic studies, a maximum concentration of the drug (C_{max}) of 35.44 ± 0.34 µg/g from M-CLF-NLCs at the end of 48 hr (T_{max}) and longer residence time in lung tissues were observed due to its sustained release and mannose receptor-mediated endocytosis. M-CLF-NLCs showed a maximum $AUC_{0-\infty}$ value of 2691.83 h µg/ml in lungs that indicated two-fold greater bioavailability as compared to CLF-drug dispersion. **Conclusion:** In conclusion, this research investigation establishes the importance of a computational QbD approach in designing and optimizing the stable, biosafe, and bioefficient nanocarrier system of the CLF for inhalation use in the management of MDR-TB. Most significantly, lung targeting of the developed nanocarrier formulation will evade the side-effects of the CLF drug. The future scope of this research reflects the need for efficacy studies in TB infected animal models.

PCTC742

THE MOLECULAR MECHANISM OF COMPATIBILITY OF *ACHYRANTHES BIDENTATA* AND RADIX PAEONIAE ALBA MEDIATING ANTIOXIDANT DAMAGE

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Abstract:

Objectives: The aim of this study was to explore the molecular mechanism of antioxidant damage of *Achyranthes bidentata* and Radix Paeoniae Alba. **Methods:** *Detection of serum oxidative stress indicators:* 24 Wistar rats (half male and half female) were randomly divided into control group, low dose group, middle dose group and high dose group, with 6 rats in each group. Rats in each group were given intragastric administration every day. Among it, the dose of *Achyranthes bidentata* and Radix Paeoniae Alba in the low-dose group was 2 g/kg body weight/d. Each experimental group was given drug 1, 2 and 4 times of the low-dose group, while the control group was given deionized water as a blank control. 7 d later, the rats were killed and the serum was separated. The oxidative stress indexes in the serum were detected by Malondialdehyde (MDA) detection kit and SOD activity detection kit. **Results:** The results of western blot showed that Akt and PKCδ phosphorylation level increased in serum-treated cells

of rats in *Achyranthes bidentata* and Radix Paeoniae Alba group, but the total amount of Akt and PKCδ did not change significantly. Furthermore, compared with the control group, the protein level of Nrf2 in the nucleus was significantly higher. Comparison of Akt and PKCδ phosphorylation level and Nrf2 content in serum-treated cells of rats in each group. **Conclusions:** Serum oxidative stress indicators of rats in each group were compared. Compared with the control group, the MDA content in serum of rats in each group treated with *Achyranthes bidentata* and Radix Paeoniae Alba decreased and SOD activity increased significantly ($p<0.05$). Compared with the low-dose group, the serum MDA content in the medium and high dose groups was lower ($p<0.05$).

PCTC743
PEGYLATION OF NANOEMULSION CONTAINING RESVERATROL: A STRATEGY TO OVERCOME RES UPTAKE AND OPSONISATION

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Abstract:
The aim of our research was to develop a nanoemulsion containing an anti cancer drug resveratrol and performing PEGylation of the formulation which is considered as a strategy to overcome the RES uptake and opsonization. The solubility studies were carried out using shake flask method. The study was performed using various fixed oils such as Arachis oil, Linseed oil, Evening prime rose oil, Avocado oil, Grape seed oil, Jojoba oil, Almond oil, Liquid Paraffin, Olive oil, Castor oil, Soyabean oil .The solubility of the drug in oil was determined by adding minimum weighable quantity of drug to the capryol 90 until the point of saturation was reached. The solubility of the drug Resveratrol was found to be 13 mg/ml of Capryol 90.Nanoemulsion was prepared using the spontaneous emulsification method using the optimized oil, surfactant and cosurfactant. A total of 11 formulations i.e. F1 to F11 were formulated and studies were carried out for the same. PEG of different Molecular weight such as PEG200, PEG 400 and PEG6000 were used during the PEGylation process. PEG were used in different ratios and the physical method was used during the process of PEGylation. The particle size, zeta potential and polydispersity index as considered as a major parameters of an nanoemulsion. These parameters for the selected samples were determined using zeta sizer. the Particles size and Zeta Potential are within the desired range. The Polydispersity index showed that the distribution of particles are within the narrow range. Also the impact of PEGylation on the characteristics of nanoemulsion is observed. The PEGylation has led to an increase in the size of the particle which is important to escape the RES uptake and renal clearance.

PCTC744
ENHANCING RISPERIDONE DELIVERY THROUGH OPTIMIZED NIOSOMAL FORMULATION USING CENTRAL COMPOSITE DESIGN

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Abstract:
Objective: The research was planned to make Risperidone Niosomes made through the film hydration method and optimized using a central composite design (CCD). **Materials and Methods:** Niosome formulations were optimized using a three-level, two-factor CCD. The input factors were the concentrations of Brij 58 (X1) and Brij 72 (X2), and the response variable was the entrapment of Risperidone (Y1). The optimized niosomes were assessed and served as the foundation for subsequent

elastic vesicle development. **Results:** The optimal niosomeformulation, containing 150 mg each of Brij 58 and Brij 72, exhibited enhanced entrapment efficiency (85.6 ± 2.12%). These niosomes demonstrated a desirable particle size of 215 ± 5.87 nm (RN-5) and zeta potential values ranging from -39.00 ± 0.82 mV to -52.36 ± 1.56 mV. However, the polydispersity index (PDI) of the prepared niosomes varied considerably, with values ranging from 0.378 ± 0.01 (RN-6) to 0.80 ± 0.02 (RN-1). **Conclusion:** The study successfully developed niosomes using the CCD, a statistical method that optimizes formulation parameters like surfactant concentration, cholesterol content, and hydration time. This approach enabled the identification of optimal conditions for niosome formation, resulting in desirable assets viz., particlesize and encapsulation. Thefindings demonstratetheeffectiveness ofCCDin optimizing pharmaceutical formulations and elevate the importanceof niosomesasdrug delivery carters.

PCTC745

DESIGN, DEVELOPMENT AND CHARACTERIZATION OF MOUTH DISSOLVING FILMS FOR BETTER THERAPEUTIC EFFICACY

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Abstract:

Objective: The objective of this study regarding the fast dissolving film i.e. mouth dissolving film Technology that can be administrated in the buccal cavity for a shorter period of time in Sec and gives better therapeutic action. **Methods**:Preparation of film with different polymers All the ingredients were weighed accordingly. The polymer was dissolved in quantity sufficient (5) ml water. The drug andsaccharin were dissolved in quantity sufficient (5) ml water. The resultant solution is plasticized with using suitable plasticizer (PEG-400 and glycerol). Add surfactantand stirred for 15 minutes to produce a clear solution, which kept aside for 15 minutes to get bubble free solution. Sonicate if necessary for a cycle of 10 min. These solutions were casted slowly and with continuous flow on glass plate to prevent formation of bubbles then it kept for drying. The dried film was gently separated from glass plate and evaluated. **Result & Conclusion**:The developed formulation which disintegrates in oral cavity in less than 60 seconds without the need of drinking water; and improved patient compliance particularly for those who have difficulty in swallowing. A Preformulation study was carried out during the early stages of this work. It has found that, Levocetrizine hydrochloride, Montelukast sodium are having maximum absorption at wavelength 230nm &280nm respectively. The drug-polymer compatibility study was done and stability study is also done.

PCTC746

NANOPARTICLES-MEDIATED NOSE-TO-BRAIN DRUG DELIVERY SYSTEMS: FORMULATION, CHARACTERIZATION, AND EVALUATION

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Abstract:

Objectives: The primary objective of the current research is to formulate, characterize, and evaluate nanoparticle-mediated targeted nose-to-brain drug delivery systems for anticancer drugs, to increase their availability in the central nervous system (CNS). **Methods:** PEG-PLGA nanoparticles, synthesized via the emulsification solvent evaporation technique, involve the integration of PLGA, a biodegradable polymer, and PEG, a hydrophilic polymer. These nanoparticles enhance drug delivery and efficacy in the body. The preparation begins with dissolving PEG-PLGA in acetone ((CH3)2CO) to form a solution. This solution is then mixed with an aqueous solution containing polyvinyl alcohol (PVA) to create an emulsion. Sonication of the emulsion results in the

formation of smaller droplets. Subsequently, the acetone is evaporated, leading to the formation of PEG-PLGA nanoparticles. Finally, the nanoparticles are collected and washed to remove any residual solvents and impurities. The prepared nanoparticles were evaluated based on their particle size, Transmission Electron Microscopy (TEM) analysis, zeta potential, Hemagglutination assay, loading capacity, and entrapment efficiency (%EE). **Results:** Nanoparticles with a size of 231.2 nm, a polydispersity index (PDI) of 0.128, and a zeta potential of -21.2 mV were produced. After 24 hours, the system achieved a cumulative drug release of approximately 96.69% in a phosphate buffer at pH 6.8. *In vitro* studies evaluated the cytotoxicity of various drugs on human lung cancer cell lines (A549) at concentrations ranging from 10 to 100 µg/mL using the MTT assay. The rate of cell growth was indirectly measured by the color intensity of the dye, which is inversely proportional to the number of cells. **Conclusion:** Chitosan, Avastin, and Carmustine were characterized using FTIR spectroscopy, with PEG-PLGA and chitosan content over 78%. High deacetylation improved controlled release, and polymer-loaded nanoparticles showed a 97% *in vitro* release. Avastin-loaded nanoparticles, prepared via modified solvent evaporation emulsification, had a particle size of 296 ± 0.01 nm and a 44.07 ± 0.30% drug encapsulation efficiency. Carmustine-loaded nanoparticles, prepared using modified ionic gelation, had a particle size of 274.7 ± 0.11 nm and a 42.52 ± 0.41% drug encapsulation efficiency. Ex-vivo nasal permeation studies showed better permeability for optimized nanoparticle formulations than drug solutions. This highlights the efficiency and permeability improvements of chitosan-based nanoparticles for drug delivery. Intranasal delivery offers a promising alternative to oral routes for CNS treatment, providing higher brain targeting potential with fewer side effects.

PCTC747
IMPACT OF CYP2C19 GENETIC POLYMORPHISM ON POPULATION PHARMACOKINETICS OF SERTRALINE IN SOUTH INDIAN PATIENTS – AN APPROACH TOWARDS PRECISION MEDICINE

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Abstract:

Objectives: Sertraline is metabolized chiefly by CYP2C19 and comparatively the prevalence of CYP2C19 poor metabolizers is very high in south Indian population. Hence, the impact of CYP2C19 genetic polymorphism on the pharmacokinetics of Sertraline was studied using pharmacometric approach. **Methods**: Patients achieved the steady state concentration of Sertraline at a given dose are recruited and blood samples were collected at pre-determined time points, that were used for quantifying the plasma concentration of the drug and its metabolite using HPLC and to identify the CYP2C19 genotype using RFLP methods. The sampling time, plasma concentration, dose, demographic characteristics and genotype of the patients were incorporated for pharmacometric analysis using NONMEM®. The final mathematical model derived was validated by statistical procedures. **Results:** A data set comprising of 258 plasma concentrations from 104 patients along with their CYP2C19 genetic polymorphism was constructed for NONMEM® analysis. The frequency of poor metabolizer allele (*2/*2, *3/*3) in the study patients was found to be 12.5 %. One compartment open model with first order absorption well described the data set. The clearance and volume distribution were estimated as 76.8 L/h and 1870 L respectively by base model. The final model included age and genetic polymorphism as the covariates influencing clearance. Also, about 42 - 48 % reductions were observed in the drug to metabolite ratio in poor metabolizers at peak time. **Conclusion:** Decrease in Sertraline dosage may be required for elderly and CYP2C19 poor metabolizers and the PopPK model can be used for individualizing the dosage regimen.

PCTC748
REVOLUTIONIZING MEDICINE: THE TRANSFORMATIVE POWER OF 3D PRINTING IN PHARMACEUTICALS

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Abstract:

Objectives: Additive manufacturing, or 3D printing, creates objects by layering thermoplastic materials under the guidance of computer-aided design software. Since Charles Hull introduced 3D printing in 1980, its use has expanded significantly. Today, it's employed in various fields, including jewelry, robotics, rocket engineering, and medical sectors like organ bioprinting, biomedical devices, and custom medications. The pharmaceutical industry is particularly interested in 3D printing for its potential to produce high-quality, customizable dosage forms with various drug release patterns. According to PubMed, scholarly papers on the topic have surged, from 3 in 2013 to 1349 in 2020 and 3040 in 2024. **Methods:**Personalized medicine, blending different medications, and customized drug release timings areadvantages of 3D-printed pharmaceuticals over traditional methods. Different technologies, such as inkjet printing, drop-on-demand printers, binder jet printers, fused deposition modeling, selective laser sintering, stereolithography, and pressure-assisted microsyringe printing, are being adopted for these purposes. **Result:** 3D printing revolutionizes pharmaceuticals by offering customized medication solutions and enhancing drug delivery through controlled release mechanisms. It significantly increases manufacturing efficiency and precision, meeting diverse patient needs effectively. **Conclusions:** In conclusion, the rapid advancement of additive manufacturing has opened new frontiers in various industries, particularly pharmaceuticals. The ability to create customized dosage forms offers significant benefits, promising improved patient outcomes and enhanced treatment efficacy. However, challenges such as higher costs, slower production times, and limitations in mass production need to be addressed to fully realize the potential of 3D-printed pharmaceuticals. As technology evolves, the future of medicine may see even more innovative applications, driving the industry toward a new era of personalized healthcare.

PCTC749
ENHANCEMENT OF SOLUBILITY OF POORLY WATER-SOLUBLE DRUGS USING COMPLEXOL: A CYCLODEXTRIN-BASED APPROACH

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Abstract:

Objectives: The Aim of this Study was to develop and evaluate tablets using various concentrations of Complexol by Direct Compression Technique, which offers the enhanced Solubility and Dissolution Rate of poorly soluble drugs. **Methods:** A Drug Telmisartan Hydrochloride, was selected for the Study. DifferentFormulations were prepared by Using Various Concentrations of Complexol B And Complexol HP. The Formulations were Prepared by Co Evaporation and Kneading Method. The Inclusion Complexes were then Compressed into Tablets. **Results:** The physical and chemical properties of the complexes were characterized using differential scanning calorimetry (DSC) and X-ray powder diffraction (XRPD). The tablets were evaluated for various parameters including hardness, friability, drug content, and *in vitro* drug release, Solid State Characterization (FTIR, DSC, SEM And XRD). The Solubility of TLM in water was significantly Increased in An Average of 2 and 9-Fold by using

Complexol B and Complexol HP resp. Results indicated that the drug shows better solubility with Complexol. **Conclusions:** The Study Concluded that Inclusion Complexes of Telmisartan with Complexol B and Complexol HP have been Successfully Prepared. The Results of this study Highlight Complexol HP gave better Solubilization Effect for Insoluble Molecules.

PCTC750

DESIGN AND DEVELOPMENT OF FILM COATING TABLET OF TOPIRAMATE

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Abstract:

Objectives: The main purpose of this study was to design and formulate film-coated topiramate to improve patient compliance and increase the bioavailability of the drug. **Materials and Methods:** Formulation was prepared by solvent casting method. Good mechanical strength and film integrity can be controlled by increasing the polymer concentration (HPMC, PEO or PVP), which will enhance the mechanical strength of the film formed and prevent it from cracking or breaking. **Result:** Topiramate is a sulfamate-substituted monosaccharide prescription-only medicine (POM) that is intended for use as an anti-epileptic drug. This carbonic anhydrase inhibitor is also used to prevent migraine. Many medicaments are sensitive to elements such as light, oxidation and moisture. Wrapping the tablet in a film coating can protect API from these external forces, which causes the drug to breakdown too quickly. The physical and chemical properties of the polymers were characterized using TGA, XRD & SEM. HPMC, PVP, and PEO were selected as film forming polymers which should give shape, provide mechanical strength and prevent from cracking or breaking of tablets. Amongst the different formulations prepared one showing same dissolution profile (f1less than 10, f2 greater than 50) as that of innovator Topamax was selected. Formulation F6 showed dissimilarity factor(f1):4.35 &similarity factor(f2):68.01. Formulation F6 was subjected to stability study at 40^0C &75% relative humidity for three months. No significant variation in drug release &other parameters were observed Plasticizers are added to the polymers used as film forming agents in order to promote plasticity and flexibility. **Conclusion:** This study concluded that solvent casting method is a viable technique for the development of film-coated topiramate tablets. The optimized formulation showed excellent physicochemical stability of the drug as analyzed using TGA, XRD, and SEM.Finally we concluded that the stable and effective tablet of topiramate can be prepared by using formula batch no 6.

PCTC751

DEVELOPMENT AND TESTING OF PEMETREXED DISODIUM-LOADED LIPID-POLYMER HYBRID NANOPARTICLES (LPH-NP) AND CHITOSAN-LOADED NANOPARTICLES (C-NP) FOR THE TREATMENT OF PROSTATE CANCER

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Abstract:

Objectives: The aim of this study was to develop and test Pemetrexed Disodium-loaded lipid-polymer hybrid nanoparticles (LPH-NP) and Chitosan-loaded nanoparticles (C-NP) for the treatment of prostate cancer. **Methods:** A drug, pemetrexed Disodium, was selected for the study. Lipid Polymer Hybrid nanoparticles was made and later it was blended with chitosan nano particles Drug encapsulation was done. **Results:** Box Behnken design analysis and optimization was carried out and followed by the Effect on particle size and the Effect on the drug entrapment efficiency was carried out. Differential

scanning calorimetric studies, X ray diffraction studies were also carried out. **Conclusions:** The Pemetrexed Disodium-loaded LPHNPs were successfully fabricated and evaluated for various physicochemical and *in vitro* characterizations. The promising variables i.e particle size, drug release were optimized by response surface methodology through box behnken approach. The optimized formulation showed nanosized particle with good monodispersity and well controlled drug release profile. Further plan is recommended to carry out invivo comparative study.

PCTC752

FORMULATION AND EVALUATION OF IMMEDIATE RELEASE TABLETS OF CALCIUM CARBONATE & VITAMIN-D_3(CHOLECALCIFEROL)

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Abstract:

Objective The present research work is design and evaluate of Immediate Release tablet of Calcium carbonate and Vitamin D_3 tablets (500mg/400 IU). Vitamin D is important for bone structure. If there is too little Vitamin D available not enough calcium reaches the blood through the intestinal walls. Calcium carbonate & vitamin D_3 essential for bone synthesis otherwise intensify to Osteoporosis. Calcium carbonate is also credited with stabilizing functions in bone building. If there is no stabilizing function of $CaCO_3$ during bone synthesis, this also decrease bone density. The term Osteoporosis already indicates a lack of calcium in the bones. Calcium carbonate & vitamin D_3 rich diet can help to bring calcium back to where it belongs. All the formulations were evaluated for physical characteristics, disintegration, *in vitro* disintegration study and stability. Following conclusions have been made from the present study. **Methods:** *Pre-formulation studies:* The pre-formulation study carried out that angle of repose, bulk density, tapped density, compressibility, Hausner's ratio. The results were clearly shown. Manufacturing process is lengthy but in the formulated product shows greater stability with adding less overages. All the formulations were evaluated for physical characteristics, disintegration, *in vitro* disintegration study and stability. **Results:** *Post formulation studies* Physical characterization of all the lubricated blends were carried out and found to have good flow properties. The physical characteristics of all the blended formulations were satisfactory. The tablets prepared with the plain polymer mixture combination were found to have desired limits of hardness and thickness and complies to weight variation and within the official limits of friability. The drug release for formulation F10 was found to be 99.85% at the end of 45 mins. The prepared tablets were evaluated for In-process parameters like - Weight variation, Hardness, Friability, Disintegration time, Drug content and the prepared tablets evaluated for Assay, weight variation, thickness and Disintegration timewere found to be within the official limits. The results were clearly shown. Accelerated Stability studies were also done for optimized formulation F9 F10 and the results were found satisfactory. This research work proven formulation tablet in tablet F10 of shows good stability compared with other 9 formulation. **Conclusion:** The results Vitamin D3 tablet in tablets of evaluation of different batches were done. The HPLC assay study shows that there was drug content final tablet. The weight variation limited tablets were found maximum up 1601±10mg. Hardness was found to be within 180-220 N which limit friability within -0.48% only. The evaluation results of F10 batches were found to be satisfactory within limit and the disintegration time (6min 20 sec.)**.** the same ratio the formulation F10 gave 99.85% drug release at 45 mins time point. The drug Contents was found to be within limits and all tablets were passing the dispersion test. Vitamin D_3 tablets of optimized all batch were of satisfactory stability during 3 months of accelerated stability studies.

PCTC753
REVIEW OF STRATEGIES FOR DEVELOPING ROBUST IMMEDIATE-RELEASE TABLETS TO ENHANCE BIOAVAILABILITY OF BCS CLASS II DRUGS

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Abstract:
Objectives: The Aim of study is to address present obstacles in developing immediate-release tablets for BCS Class II drugs. and to improve drug release and bioavailability. **Methods:** Loperamide HCl is an antidiarrheal agent of antimotility class which is used to treat diarrhoeal disease in BCS Class II drugs are poorly soluble and in turns it may results in low oral bioavailability is selected for the study and transformed into its salt form to enhance solubility. To achieve immediate drug release and improve solubility, various formulations were prepared by wet granulation technique with the help of different superdisintegrants like sodium starch glycolate and PVP K30. This method will effectively convert the poorly soluble drug into a more soluble form. **Results:** The study identified challenges in formulating immediate-release tablets for BCS Class II drugs, focusing on loperamide's poor solubility. By the salt formation technique poorly soluble loperamide drug converts loperamide hydrochloride and formulation of tablet by wet granulation techniques effectively improved drug release and solubility, highlighting potential strategies for enhancing the bioavailability of BCS Class II drugs in future formulations. **Conclusions:** The study successfully obtained final formulation of immediate release tablet by wet granulation method with sodium starch glycolate as super disintegrants. Physical parameters of the tablet studied and its improved the solubility and drug release of loperamide by transforming it into loperamide hydrochloride. These strategies effectively address formulation challenges and enhance bioavailability, providing promising approaches for BCS Class II drugs.

PCTC754
A REVIEW ON FDA WARNING LETTERS TO PHARMACEUTICAL INDUSTRIES

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Abstract:
Objectives: The objective is to improve Culture of quality to sustain the compliance in the organization. Management has the realization that quality culture is mandatory if the firm want to be in this business. **Methods:** The drug substance and drug product manufacturers received warning letters from 2020 to 2023, which were reviewed to classify the causes of observations into categories based on their nature. A Pareto analysis was conducted to determine the top categories, and further review and analysis identified the specific causes within these top categories. **Results:** Total observations are reported in warning letters for last 3 years. Pareto analysis of the observations revealed that the top four issues among all categories of the plants are contributing in observations. These are related to poor quality system followed by breach of data integrity, poor laboratory controls and poor production controls. **Conclusion:** The review of warning letters from the past three years clearly shows that the pharmaceutical industry needs to enhance its quality systems, particularly in the areas of investigation, CAPA, adherence to SOP compliance, and stability programs. The authors recommend that other drug product and drug substance manufacturers should regularly review these warning letters in order to proactively implement preventive actions and avoid similar occurrences in their own organizations.

PCTC755
HEDONIC CHARACTERS AND LANGUAGES USED IN PROMOTING SKINCARE COSMETICS: A COMPARATIVE STUDY OF US, EUROPE AND INDIAN COSMETIC PRODUCTS

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Abstract:

Objectives: The aim of this study was to analyze and compare hedonic characters including languages used in promotingcosmetic products among US, Europe and Indian cosmetic market. **Methods:** The data collection was done for various skincare brands of Indian origin companies available online as well as in stores like supermarkets, beauty and wellness stores. In case of European and American origin cosmetics, the data was collected from the online e-commerce websites. Total sample size used for study was 97 Indian skincare products, 87 American skincare products and 39 European skincare products as per availability for selling on website. Selected parameters for analysis of hedonic value for cosmetic products were, Company name, Brand name, Languages, Meaning behind the Brand name and Brand communication. **Results:** For Indian cosmetic products, English is the most widely used language for brand communication, accounting for exactly 53%, followed by French (20%), Sanskrit (16%), and Others (9%), which includes languages such as German, Italian, Greek, and Latin. 2%, was in Hindi. In USA, English is the most widely used language for brand communication, accounting for exactly 63%, followed by French (21%), Greek (8%), and Latin (5%), and lastly Japanese at 3%. In Europe, French words were widely used with 77% and 23% compared with English words.**Conclusions:** The study concluded that brand names and branding elements like brand communication, brand positioning can influence customers attitudes. The uniqueness and distinctive features of the products create hedonic experience for the consumers.

PCTC756
ANTIALZHEIMERS DRUGS: CLINICAL AND REGULATORY PERSPECTIVE

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Abstract:

Objectives: The paper investigates several suitable treatment strategies under trial, and role of different regulatory bodies like FDA and EMA. **Method:** A key search strategy of Antialzheimers drugs and several combinations has been developed. The search strategy will include several important several clinical trials, through databases like Web of Science, PubMed and Scopus (2019-2023). The development of newer strategies through clinical and regulatory assessment, leads to a tail of effective and scientific evidence. Data from published reports was extracted, and the regulatory overview from FDA and EMA has been investigated thoroughly. **Result:** In view of varying and differing data, we restricted our regulatory assessments to FDA only. It has been found that 1158 clinical assessments are under investigation, as seen through Pubmed (Last 5 Years 2020 - 2024) against Alzheimer. The assessment through Scopus revealed 1029 assessments. Hence, our study was limited to 213 assessments in Scopus (published in 1ast 5 year). The regulatory assessment-based journey of FDA (Involving approvals and accelerated approvals) has been investigated (For last 5 Years). **Conclusion:** The results revealed about the ongoing approvals, by FDA against Alzheimers. The data-based decisions must be critically analysed by scientists for positive outcomes. The decisive process must be rapid enough for an efficient usage and patient compliant strategy.

PCTC757
COMPARATIVE STUDY OF REGULATORY PATHWAY OF INFUSION PUMP MEDICAL DEVICE IN USA AND INDIA

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Abstract:

Objectives: The present study was conducted to identify the regulatory requirements and documentation needed to approve an Infusion Pump as a Class II (USA) and Class C (India) medical device **Methodology:** Medical devices in the USA are divided into three classes based on their risk to the patient. Class-II medical devices are moderate-risk devices. An example of a class II medical device is an infusion pump, which has different regulatory pathways and approval processes. **Results:** Toget FDA Approval for an Infusion Pump, Prepare and submit a 510(k) Premarket Notification application and pay the required fee. Due to the moderate-risk device class, the FDA issues a 510(k)-clearance letter. According to CDSCO class C medical devices, InfusionPump medical strategies are moderate to high risk. The Central Licensing Authority(CDSCO) shall receive and process applications from manufacturers of class Cdevices for the grant of a manufacturing license. **Conclusion:** Navigating the regulatory pathway of medical devices, including Infusion pumps, in the USA and India requires adherence to stringent standards and thorough documentation. Manufacturers must demonstrate compliance with regulatory requirements related to safety, performance, and labelling.

PCTC758
STUDENTS PERCEPTION AND ATTITUDE ON ADVERTISING PRESCRIPTION DRUGS

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Abstract:

Objectives: The objective of the study was to find the perceptions and attitudes of DTC advertising of prescription drugs among youths. The study aimed to find the students perception and their attitudes towards the advertisement of prescription drugs. **Methods:** Data was collected using a structured questionnaire. The questionnaire was prepared and validated. A total of 104 students responded to the questionnaire. Descriptive analysis was conducted to know the perceptions about direct-to-consumer advertising of prescription drugs. The results were analyzed, and conclusions were drawn. **Results:** Data on different parameters of perceptions and attitude was collected from students and analyzed using descriptive analysis. Students responded from different cities. The age of respondents ranges from 18 to 29. 31 respondents were of the age of 22. The study focusses on various aspects such as knowledge on DTCA advertising, patient confidence and so on. **Conclusions:** A survey examined Indian college students' attitudes towards DTCA for prescription drugs. Over the past few decades, direct-to-consumer pharmaceutical advertising (DTCPA) has expanded quickly and is currently the most common kind of health communication. DTCPA is governed by the FDA, although detractors claim that the regulations are too loose and not strictly enforced. According to research, DTCPA has both positive and negative effects on public health. There are arguments in favour of and against DTCPA, and more commonly recommended solutions aim to maximise the advantages while minimising the hazards.

PCTC759
THE LANDSCAPE OF NITROSAMINE CONTAMINATION, ITS SOURCES IN PHARMACEUTICAL SUBSTANCES AND MITIGATION STRATEGIES

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Abstract:

Objectives: The aim was to extensively compile all the reported and plausible sources of nitrosamine impurities in pharmaceutical products along with mitigation strategies. **Methods:** The reference data for this work were retrieved from the Google Scholar platform. The Search term/Topics "Nitrosamines" or "sources of nitrosamines" or "nitrosamine contamination of groundwater" or "amine sources in groundwater" or "nitrosamines in pharmaceutical products" or "nitrosamines in active pharmaceutical ingredients" or "nitrosamines in pharmaceutical excipients" or "nitrosamines in printing inks" or "nitrosamines and regulatory response" or "nitrosamines and mitigation strategies". The information published on regulatory agency websites, which includes public information, guidance documents, and recommendations, was also considered. **Results:** As nitrosamine impurities are deemed as a probable human carcinogen, the risk assessment of the formation of nitrosamines during synthesis, production, or stability is mandated by regulatory agencies. If there exist a significant risk of nitrosamine formation, then the risk mitigation plan must be put in place by pharmaceutical manufacturers. Regulatory agencies have published guidelines which aid pharmaceutical manufacturers (both manufacturers of pharmaceutical substances and products) in the minimization of nitrosamine contamination. The mitigation strategy always depends on the source of nitrosamine contamination. **Conclusions:** Nitrosamines are highly potent carcinogens whose exposure through food, beverages, and recently, medicines need to be monitored and reduced to the possible extent. In light of the discovery of nitrosamine contamination of pharmaceutical products, it is necessary to systematically identify the source of contamination to reduce the nitrosamine impurities in final finished products using possible mitigation strategies.

PCTC760
REVIEW OF INDIAN REGULATIONS ON BIOLOGICS

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Abstract:

Objectives: The investigation of this study was to evaluate the regulations and egistration procedures of biologics in India and suggest a developed system for the registration of biologics in India. **Methodology:** Indian laws governing biologics focus on administrative, quality, non-clinical, and clinical study requirements. Administrative requirements include Certificates for Pharmaceutical Product, Free Sale Certificate, etc. Quality requirements focus on finished product specification, drug product stability, etc. Non-clinical studies require PK-PD studies, toxicological studies, etc. uring clinical studies, the information needed are Phase I, II, III, and IV trials, bioanalytical method, etc. **Results:** A greater degree of understanding was developed regarding the Indian registration procedure of biologics. In our opinion, the Identity, Strength, Purity and Quality of every biologic is very important. The safety and efficacy of every medicine must be tested to a great extent. Unless, we have a very strong and robust regulations governing the registration of biologics in India, the patients cannot have an access to the quality products.

Conclusions: The study concluded that the safety and efficacy of every biologic in India must be tested to a great extent. There is a greater degree of understanding about biologics regulations and how they can be strengthened to suit the needs of consumers in India.

PCTC761
EXPLORING THE POTENTIAL CHALLENGES FOR DEVELOPING THE GENERIC ORPHAN DRUGS TO RARE DISEASES: A SURVEY ON US AND EUROPEAN MARKETS

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Abstract:

Objectives: The US Food and Drug Administration (FDA) in 1983 and the EU's European Medical Agency (EMA) in 2000, implemented the Orphan drug development program for rare diseases. The study aims to find the potential challenges encountered by generic companies in developing generics for rare diseases.**Methods:** We performed a Thematic analysis, which consists of qualitative and quantitative research. For data analysis of approved orphan drugs, we used statistical methods, and for the industrial case study, we selected 14 generic companies and conducted semi-structured interviews related to ten critical areas of drug development. **Results:** The orphan drug approvals were classified into four categories they are; the number of orphan approvals, paediatric claims, formulation, and therapeutic areas. We analyzed the approvals from 2001 to 2021, FDA approved 815 drugs and EMA approved 258 drugs. The paediatric orphan approvals were analyzed from 2010 to 2021, the average percentage of orphan drugs claim paediatric exclusivity during this period was found to be 31.8%. In formulation, we found the highest percentage of drugs belong to small molecules 71%. In the therapeutic class, oncology drugs have a majority of approvals at 25%. The industrial case study responses revealed that the major challenge for drug development is the complexity of the disease 21%, followed by the limited market 17%. **Conclusions:** There is a high need for generic orphan drugs in the developing countries, the generic companies can utilize the opportunities provided by health authorities for the benefit of both the company and the patient perspective.

PCTC762
BOX-BEHNKEN DESIGN ASSISTED ULTRA-PERFORMANCE LIQUID CHROMATOGRAPHY- PDA DETECTION METHOD DEVELOPMENT, VALIDATION AND QUANTIFICATION OF LUNASIN PEPTIDE

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Abstract:

Objective: The present study aims to develop a simple, specific, accurate, precise and robust ultra-performance liquid chromatography- photodiode array detection method for quantifying lunasin peptide in pure form or in plant based vegan supplements. **Method:** Chromatographic separation was achieved on Accucore C18 column (50 mm×4.6 mm, 2.6 µm) with 0.1 % formic acid in water (A) and 0.1 % formic acid in acetonitrile (B) delivered isocratically (50:50 v/v) at a flow rate of 0.4 ml/min for 10 min and the detection was monitored at 216 nm. **Results:** Lunasin was eluted at a retention time of 4.94 min with a total runtime of less than 6 min. The chromatographic parameters were optimized using the Box-Behnken design with a sample set of 30 experimental runs. The developed ultra-performance liquid chromatography-photodiode array detection method was validated in accordance with the International Council for Harmonization Q2(R1) guideline and evaluated the parameters such as system suitability, linearity, sensitivity,

accuracy, precision, specificity and robustness. The method was found to be linear within the concentration range of 0.50-10.0 µg/ml. **Conclusion:** The developed method could be a viable candidate for routine quantification of lunasin peptide in nutraceutical formulations. Response surface methodology BBD, is a novel approach in lunasin peptide method development that had not previously been reported.

PCTC763

BRIDGING THE ACADEMIA-INDUSTRY GAP: DEVELOPING AND EVALUATING A SKILL ENHANCEMENT MODULE FOR PHARMACY STUDENTS

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Abstract:
Objectives: This study aimed to assess pharmacy students' knowledge of industry-required skills and develop a comprehensive skill enhancement module to bridge the gap between academic training and industry requirements in India's pharmaceutical sector. **Methods**: A mixed-method approach was employed, involving a cross-sectional study of 484 final-year pharmacy students from South Karnataka and focus group discussions with industry and academic experts. Based on these insights, a skill enhancement module was developed and validated using content validity index (CVI) methods. **Results**: The initial assessment revealed significant skill gaps among students, particularly in problem-solving, analytical thinking, and communication. Focus group discussions identified eight key themes for skill enhancement. The developed module incorporated Quality-by-Design principles, problem-based learning, and concept mapping, covering areas such as pharmaceutical calculations, dosage forms, preformulation studies, and regulatory guidelines. The module achieved strong content validity with an I-CVI above 0.875 and an S-CVI of 0.991. **Conclusions**: This study provides valuable insights into the skills gap in pharmacy education and presents a validated, comprehensive skill enhancement module. The module's strong content validity suggests its potential to address the identified gaps between pharmacy education and industry requirements. Further evaluation of this module could pave the way for curriculum enhancements in pharmacy education, potentially contributing to a more industry-ready workforce for India's growing pharmaceutical sector.

PCTC764

HEALTH RELATED QUALITY OF LIFE AMONG COLLEGE STUDENTS WITH POLYCYSTIC OVARIAN SYNDROME (PCOS): UNVEILING THE IMPACT OF PCOS ON DOMAINS OF HEALTH

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Abstract:
Objectives: The objective of this study was to assess the effect of PCOS on various health domains, providing valuable insights for tailored interventions and enhanced healthcare management for population with PCOS. **Methods:** Using a self-validated scale, an interventional Study was conducted among college students of Belagavi, India, study was for 9 months duration in females of age group above 15 years taking assent and consent for participation. and Health-related quality of life (HRQOL) of polycystic ovarian syndrome PCOS patients was evaluated using chi-square, Pearson correlation, and Anova statistics with SPSS software, version 22. **Results:** Among 91 respondents, 48.4% of them reported having poor mental and emotional health, which is a substantial percentage. The majority of respondents with 70.3% gave the low rating in terms of self-perception. Similar to this, a sizable percentage of 52.7% of

respondents said they had health consequences due to obesity and menstrual irregularities. Additionally, 53.8% of the respondents had hirsutism as one of the negative consequences on health. In contrast, 36.3% of the individuals thought their health was favorable in terms of fertility domain. **Conclusions:** In conclusion, this study focused on assessing the health-related quality of life in PCOS patients, with impact on different domains of HRQOL. The analysis helped to recognize the problems in specific domains of HRQOL that require improvement. It is crucial for healthcare professionals to adopt a holistic approach, considering not only the physical symptoms but also the psychological well-being of individuals, in order to improve their overall HRQOL in PCOS patients.

PCTC765

LEVERAGING SOCIAL MEDIA IN PHARMACY PRACTICE AND EDUCATION

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Abstract:

Objectives: In an era marked by rapid technological advancements, social media has emerged as a powerful tool that transcends personal connections and entertainment. Its potential extends to the field of pharmacy, where it plays a significant role in both practice and education. This work explores how social media is transforming pharmacy practice and education, highlighting its advantages, challenges, and future prospects. In today's fast-paced digital landscape, the influence of social media extends far beyond the realm of personal connections and entertainment. It has emerged as a dynamic force shaping various professional sectors, including the field of pharmacy. Social media's unique ability to connect, inform, and engage has led to its seamless integration into both pharmacy. **Method:** Virtual Learning Communities, Real-World Case Studies, Guest Lectures and Insights, Rapid Dissemination of Information, Improved Patient-Pharmacist Communication, Networking and Collaboration, Engagement and Behaviour Change **Results:** *Integration of Tele–health:* Social media can complement the growing trend of tele-health services, enabling pharmacists to provide virtual consultations and advice to patients. *Continuing Education Platforms:* Social media could evolve into a hub for continuous learning, with curated content, webinars, and discussions for pharmacy professionals seeking to expand their knowledge. *Advocacy and Policy Influence:* Pharmacist engagement on social media can raise awareness about policy issues and advocate for changes that positively impact patient care and the profession. **Conclusion:** Social media's integration into pharmacy practice and education has opened new doors for communication, collaboration, and patient care. While challenges exist, the benefits far outweigh them. Pharmacists who navigate the social media landscape thoughtfully can enhance patient outcomes, contribute to professional growth, and advance the field of pharmacy into a digitally connected future. Infiltrating various aspects of pharmacy practice and education.

PCTC766

ROLE OF PHARMACY EDUCATION IN REVIVAL, MODERNIZATION AND INTEGRATION OF INDIAN TRADITIONAL AS WELL AS COMPLEMENTARY MEDICINE INTO PRACTICE

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Abstract:

Objective: The work aims to emphasize on the training aspect of pharmacists, pharmacy students and other professionals with the aspects of Indian traditional medical systems and folk medicine so as

to put them into practice. **Methods**: Identifying the main gaps in the promotion of traditional herbal products or formulations include informational gaps, quality control issues, and stringent oversight on drug standardization. So, that a clear understanding of traditional and complementary medicines can be curated out thereby leading to advanced training and education of pharmacists in these systems of alternative medicine so as to have wide clinical applications of traditional medicine can be achieved. **Results**: A large portion of herbal mixtures and medicinal plants make up Indian traditional medical systems and folk medicine. The last several decades have seen a global surge in the popularity of herbal medicine and products, both as stand-alone treatments and as components of conventional treatment plans. This has created a growing global potential for the promotion of Indian traditional medicine. Traditional Indian herbal remedies have drawn interest recently from both industrialized and developing nations. Certain unmet medical requirements in the modern world can be addressed by Ayurveda and other ancient herbal remedies, and they can serve as a foundation for the development of new medications. Despite the fact that 80% of people worldwide use herbal products for healthcare, traditional and complementary medicines yet these systems find rare inclusion in any medical curriculum. After a through analysis and proper strategy planning, gaps present in current form of practice can be minimized and traditional-complementary medicines can be frequently used in conjunction with conventional therapy. This will lead to a wider clinical approach that can be implemented. **Conclusions**: The study concludes proper training focusing traditional and complementary medicines when imparted to pharmacy professional can assist modern allopathy system thereby enhancing health care management.

PCTC767

HOLISTIC EDUCATION IN PHARMACY: A BASIC REQUIREMENT IN SCULPTING BENEVOLENT PHARMACISTS FOR A QUALITY HEALTHCARE SYSTEM

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Abstract:

Objectives: This review highlights the reform of pharmacy education aimed at shaping students to address global health from a holistic perspective. Holistic education in pharmacy fosters greater awareness in students, developing them into not only proficient pharmacists but also responsible, compassionate,and socially conscious individuals. **Methods:** Strategies to achieve holistic pharmacy education encompass a multidisciplinary educational approach, experiential learning, factual knowledge acquisition, abstract conceptualization, and active experimentation. Wellness, physical education, and nutritional awareness are also key components,along with fostering cultural proficiency, multicultural literacy, and community and family involvement. Further strategies involve introspective practices such as journaling, dialogue, constructive thinking, and retrospective analysis. Building a supportive environment, promoting professional development, and emphasizing collaborative education with evaluation extending eyond academics are essential as well. **Results:** As times change, there arises a need to refine existing education system. The advancements in technology have influenced the students due their constant exposure to digital world. A perfect balance to manage technological advancements and course related subjects is possible only with a holistic education system. Holistic education encourages students to think appropriately and indulge in activities in reforming themselves in to a benevolent pharmacist. **Conclusions:** Thus, holistic education in pharmacy reflects an evolving understanding of the profession, recognizing the need for well-rounded pharmacists who can address the scientific, ethical, and human aspects of healthcare

PCTC768
TRANSFORMING PHARMACY TEACHING LEARNING PROCESS THROUGH ACTIVE LEARNING APPROACHES

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Abstract:

Objectives: This study examines how active learning techniques can be included into pharmacy courses and how this affects students' understanding, retention, and engagement with challenging material. It also discusses obstacles to and solutions for implementing active learning strategies, including as curriculum revision, faculty development, and evaluation techniques. **Method:** Active learning strategies, like problem-based learning, case studies, peer teaching, and interactive simulations, enable students to apply theoretical knowledge to real-world situations, which improves their critical thinking and clinical decision-making abilities. These strategies also create a participatory learning environment. Active learning techniques, as opposed to traditional lecture-based instruction, encourage critical thinking, improve students' memory of difficult ideas, and get them ready for real-world situations. This paper seeks to give educators practical insights into how to successfully integrate active learning into their teaching repertoire through participant interaction and real-world examples, ultimately equipping students to meet the dynamic demands of the pharmacy profession. **Results:** One key strategy for changing the landscape of traditional pharmacy education is implementing active learning. The importance of active learning methodologies, which prioritize student participation and real-world application of information, has grown in contemporary pharmacy education. It is necessary to talk about how different active learning approaches can be used, as evidenced by empirical studies showing that pharmacy students' academic performance and professional competencies have increased. **Conclusion:** Active learning's role in developing skilled and flexible pharmacy practitioners is very important. A greater thought for difficulties and best practices for incorporating it into pharmacy education is needed.

PCTC769
INDUSTRY-READY PHARMA PROFESSIONALS: A SYSTEMATIC EVALUATION OF EDUCATIONAL APPROACHES

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Abstract:

Objectives: This systematic review aims to explore and evaluate educational strategies and initiatives designed to produce industry-ready pharmaceutical professionals. The review focuses on aligning curriculum with industry needs, enhancing student skill development, fostering industry-academia collaboration, and providing opportunities for professional growth and networking. **Methods:** The study systematically reviews and synthesizes various educational approaches, including curriculum alignment, student exchange programs, industry-academia collaborations, skill development initiatives, and professional development programs. It also examines the role of networking opportunities, problem-based learning, continuous feedback, and ethical training in preparing students for the pharmaceutical industry. **Results:** Key findings highlight the importance of curriculum alignment with industry needs, emphasizing practical experiences through industry visits, internships, and expert

sessions. Student exchange programs and the selection of an area of interest significantly enhance learning and professional development. Alumni interactions and industry-academia collaborations further bridge the gap between academic knowledge and industry expectations. Skill development through certification courses, project work, and soft skills training is crucial for enhancing employability. Professional development programs focused on resume building, job interviews, and career planning are essential for career readiness. Technological proficiency and continuous learning are facilitated through workshops on industry-relevant software and tools. Networking opportunities, including career fairs, conferences, and seminars, play a vital role in building professional connections. Problem-based learning encourages critical thinking and practical application of knowledge, while continuous feedback and assessments help gauge student preparedness. **Conclusion:** The integration of these practices into the education system contributes to the holistic development of pharmaceutical graduates, making them well-prepared for the dynamic and demanding pharmaceutical industry. Incorporating participation in extracurricular activities, such as hackathons, poster presentations, and professional platforms like LinkedIn, further enhances student readiness. Exposure to global perspectives through exchange programs and visits to industry events, such as Pharma Lab Expos, broadens the understanding of international pharmaceutical practices. These comprehensive educational strategies ensure that graduates are not only technically proficient but also ethically responsible and globally aware, meeting the evolving needs of the pharmaceutical industry.

PCTC770
DEVELOPMENT OF MODIFIED RELEASE DELIVERY SYSTEMS OF ANTIINFLAMMATORY DRUG

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Abstract:

Objectives: The aim of this study was to develop and evaluate Pluronic Lecithin Organogel of Antiinflammatory drug Tolfenamic acid and to study its release assisted by solid microneedles technique which is technique for topical delivery of drug in the treatment of migraine. **Methods:** Nine formulations were prepared using varying concentrations of aqueous phase surfactant Pluronic F127 and oily phase surfactant lecithin. 3^2 factorization Study was applied to optimize the organogel formulation, dependant variables were viscosity, percent drug permeation after 2 hrs and after 8 hrs. The drug permeation of optimised batch through rat skin with and without microneedles was studied. **Results:** The Organogel was evaluated for various parameters including drug content, viscosity, pH, Microscopy, percent drug permeation after two hrs and after 8 hrs. QTPP study was performed during formulation study and high risk parameters were identified as addition of organic phase, speed of magnetic stirrer, and temperature of aqueous phase. The results indicated that the drug was uniformly distributed within the organogel matrix. The *in vitro* drug permeation followed zero order release kinetics up to 8 hrs. Permeation of drug was improved by 25% with the microneedle's technique. **Conclusions:** The study concluded that application of microneedles is a viable technique for the improvement of permeation of drug through skin. The optimized formulation showed excellent physicochemical properties and sustained drug release. This shows that effective treatment of migraine will be possible topically with a non-invasive technique.

PCTC771
DESIGN AND EVALUATION OF OLANZAPINE *IN SITU* FORMING IMPLANT FOR THE MANAGEMENT OF SCHIZOPHRENIA

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Abstract:

Objectives: Medication non-adherence is a significant cause of medical treatment failure in schizophrenic patients, which worsens a patient's condition, and even results in death. Considering the mental state of the patients and the extensive period of therapy, the present study was aimed at designing a QbD based antipsychotic drug, olanzapine carrying *In Situ* Forming Implants (O-ISFI) for the management of schizophrenia. **Method:** In order to address the issue of initial burst release from ISFI, a combination of DMSO and benzyl benzoate (BB) were used as the solvent system with PLGA. Introducing the QbD approach, a design space was created using D-optimality with % polymer concentration (A), DMSO:BB ratio (B) and % Lactic acid concentration in PLGA (C) to study their effect on initial burst release (R_1) and % drug release on 30th day (R_2). The formulations were subjected to preliminary evaluations, which included pH determination, particulate matter testing, sterility assessment, and injectability studies. **Results:** The results revealed that 40% polymer concentration of PLGA containing 75% LA with DMSO:BB of 1:1.6693 with 7.1549% burst release and 25.7184% drug release at the 30th day was found to be the optimized formula. From phase inversion analysis, it was evident that the formulation followed Non solvent Induced Phase Separation (NIPS). **Conclusion:** We draw the firm conclusion that the developed antipsychotic ISFI can significantly contribute to better medication adherence and improve the treatment efficiency in psychotic patients. The research can be expanded to include *in vivo* evaluation in light of the promising *in vitro* outcomes to establish correlation and develop a safe and effective ISFI system.

PCTC772
DEVELOPMENT AND EVALUATION OF CAMPHOR SPRAY BANDAGES FOR TOPICAL TREATMENT

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Abstract:

Objectives: This study aimed to develop and evaluate camphor spray bandages for the treatment of topical bacterial infections and wound care, utilizing a solvent system of ethanol and acetone with the film-forming polymer Eudragit RS 100. **Methods:** Camphor was used as the model drug, and formulations were prepared with varying concentrations of the polymer and plasticizer. The physical properties of the film, including film formation, appearance, flexibility, drying time, stickiness, washability, and spreadability, were thoroughly evaluated. Drug release was assessed through UV spectrophotometry, and diffusion studies were conducted using a diffusion apparatus. **Results:** The study found that the camphor spray bandages exhibited desirable film formation and skin integrity criteria. The optimized formulation demonstrated a drying time of 7 seconds on skin and an effective spreadability of 49.33 gm.cm/second. The cumulative release of the drug from the bandage was significantly higher in the 90% formulation, achieving controlled drug release over an 8-hour period, indicative of sustained release kinetics. **Conclusions:** The research concluded that the developed camphor spray bandages are effective for controlled topical drug

delivery. The formulation's compatibility with the drug and the favorable physicochemical properties suggest its potential for clinical application in treating wounds, burns, and inflammatory conditions. The findings highlight the efficacy of the spray bandage system as a practical solution in wound care management.

PCTC773
FORMULATION AND DEVELOPMENT OF LIPOSOMES USING NATURAL PHOSPHOLIPIDS PRESENT IN PANCHGAVYA GHRITA

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Abstract:

Objectives: To formulate and develop liposomes using natural phospholipids present in Panchgavya Ghrita, evaluating their potential for improved drug delivery systems. The study aimed to formulate and develop liposomes using natural phospholipids present in Panchgavya Ghrita, evaluating their potential for improved drug delivery systems. The objectives included, developing liposomes using natural phospholipids in Panchgavya Ghrita and optimizing their formulation parameters, and evaluating the prepared liposomes for encapsulation efficiency, particle size, zeta potential, stability, and *in vitro* drug release profile. Additionally, the study explored the potential applications of the formulated liposomes in drug delivery systems, focusing on their efficacy and biocompatibility. **Methods:** Liposomes were prepared using the thin-film hydration method, followed by sonication for size reduction, with various formulation parameters, including lipid-to-drug ratio, hydration volume, and sonication time, optimized. The prepared liposomes were evaluated for encapsulation efficiency using UV-Vis spectroscopy or HPLC, particle size and zeta potential using dynamic light scattering (DLS), and stability by assessing physical stability over time and under different storage conditions. *In vitro* drug release was analyzed using the dialysis method. Preliminary *in vitro* biocompatibility and efficacy studies were conducted using suitable cell lines to assess the potential of liposomes for drug delivery applications. **Results:** The formulated liposomes demonstrated an encapsulation efficiency of 88.94%. The particle size was measured to be 388 micrometers with a polydispersity index of 0.2, indicating a relatively uniform size distribution. The zeta potential value was found to be -55.3 mV, suggesting good stability due to significant surface charge. Stability studies were conducted, confirming the physical stability of the liposomes over time and under various storage conditions.

PCTC774
DEVELOPMENT AND EVALUATION OF VAGINAL RING OF FLUCONAZOLE FOR THE TREATMENT OF CANDIDIASIS

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Abstract:

Objective: The research encompasses formulation of a sustained release vaginal ring containing fluconazole, an imidazole derivative, aimed at enhancing patient compliance and treatment efficacy. **Methods:** Study involved the fabrication of a vaginal ring that delivers fluconazole in a sustained manner. Different formulations were prepared using varying concentrations of polymers such as polyvinyl alcohol (PVA), polyvinyl pyrrolidone (PVP), poly-lactic co-glycolic acid (PLGA) and hydroxypropyl methylcellulose (HPMC). The optimized formulations underwent characterizations such as physical appearance, flexibility, texture, tensile strength, swelling index, assay, *in vitro* drug release, antifungal

activity against *Candida albicans*, and stability studies. **Results:** The excipients for designing fluconazole-loaded vaginal ring were selected based on their safety, biodegradability and capability of imparting plasticity and elasticity to the ring. Reverse-phase HPLC method was used to determine the drug content in the developed rings. The optimized ring was an opaque, smooth and flexible white ring. The swelling studies demonstrated the swelling capacity of the ring and its capability to form a matrix structure *in situ*, which would control the release of the drug. The *in-vitro* release studies demonstrated that the vaginal ring exhibited drug release up to 72 hours in a vaginal fluid simulant (pH 4.0). The antifungal studies also displayed a clear zone of inhibition exhibiting appreciable antifungal activity against *Candida albicans* up to 72 hours. **Conclusion:** This research culminated in the development of fluconazole-loaded vaginal ring, marking a significant leap forward in the management of vaginal infections. It embodies a patient-centric treatment model that is clinically effective and holds promise for elevating patient quality of life.

PCTC775

FORMULATION AND *IN-VITRO* CHARACTERIZATION OF VORICONAZOLE NANOCOCHLEATES DRY POWDER INHALER FOR INVASIVE PULMONARY ASPERGILLOSIS

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Abstract:

Objective: The objective of the research was to formulate and evaluate voriconazole loaded nanocochleates that were intended to be used as dry powder inhaler for invasive pulmonary aspergillosis. **Methods:** Nanocochleates are lipid based novel drug delivery systems that have the potential to increase permeability, solubility and stability of various drugs. Nanocochleates can be administered through all the possible routes essential for targeted drug delivery. In the current study, voriconazole loaded nanocochleates were prepared using trapping method. The developed nanocarrier was then transformed into a stable dry powder inhaler for sustained and targeted release to the fungus-infected site in the lungs. **Results:** *In vitro* characterization resulted in an optimized dry powder inhaler formulation with particle size < 500 nm, PdI closer to 0 and zeta potential of around -15mV, making it a highly stable preparation. The optimized formulation demonstrated sustained *in vitro* release for 24 h and significant anti-fungal potential at a small dose, making it a preferable formulation compared to the existing treatments for invasive pulmonary aspergillosis. The aerodynamic parameters and bypassing the first pass metabolism make it a promising delivery for pulmonary fungal infections. **Conclusion:** The study concluded that nanocochleates are viable drug carriers for the development of dry powder inhalers. The optimized formulation displayed desirable physicochemical properties and sustained drug release, making it a suitable system for the treatment of invasive pulmonary aspergillosis.

PCTC776

ENHANCING AVOBENZONE STABILITY AND EFFICACY THROUGH STEARIC ACID MICROSPHERES BASED SUNSCREEN FOR ENHANCED UV PROTECTION

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Abstract:

Objectives: The increasing awareness of the detrimental effects of UV radiation has significantly boosted sunscreen use, highlighting the need for effective and stable sunscreen agents. This study

focuses on enhancing the photostability and efficacy of Avobenzone, a UV-A filter, by encapsulating it in stearic acid microspheres. **Method:** Avobenzone is known for its broad-spectrum UV-A protection but suffers from instability under sunlight, reducing its effectiveness and potentially causing harmful byproducts. We employed a melt dispersion method to produce stearic acid microspheres loaded with Avobenzone. **Result:** The microspheres were characterized for size, morphology, and drug entrapment efficiency, with particle size increasing from 32.21µm to 41.99 µm as polymer concentration was raised. The optimum entrapment efficiency of 58.02% was achieved with 2 g of stearic acid. Scanning Electron Microscopy (SEM) confirmed spherical, smooth microspheres. Differential Scanning Calorimetry (DSC) indicated no significant drug-polymer interactions, ensuring compatibility. *In vitro* drug release studies demonstrated controlled release from the microspheres, with formulations showing cumulative release ranging from 3.73% to 58.05% over 4 hours. Sunscreen efficacy was evaluated using sodium nitroprusside degradation under UV exposure, showing that the formulation with Avobenzone-loaded microspheres (A5) offered superior protection compared to other formulations. Skin irritation tests confirmed no adverse reactions from the formulations. **Conclusion:** This study concludes that encapsulating Avobenzone in stearic acid microspheres effectively enhances its stability and sunscreen efficacy, making it a promising approach for improved UV protection. The microspheres not only stabilize Avobenzone but also integrate well into cosmetic formulations, providing efficient UV protection and minimizing skin irritation.

PCTC777
MESOPOROUS NANOPARTICLES: A NEW AVENUE FOR TARGETED DRUG DELIVERY SYSTEM

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Abstract:

Objective: Advanced nanotechnology has developed as the leading constituents of science in the present century. Over the years, diagnosis of diseases and its treatment is constantly leaping milestones due to the utilization of nanotechnology in the area of biomedicine. The aim of the work is to showcase the state of knowledge of silica-containing mesoporous nanoparticles and specific applications in various biomedical fields. **Methods:** An up to date(till July 2024) search was done in Google scholar, PubMed, Scopus, science directed database with several keywords to select all possible helpful and informative evidence to be reviewed in this paper. The search yields 47 articles. After exclusion, a total of 19 articles were finally selected to perform the study. **Results:** One of the significant challenges in the field of medicine is the successful and effective drug delivery to the defected cells or tumor cells with nominal toxic side effects. A high concentrated drug dose is required to achieve the expected therapeutic outcome for the treatment of different diseases, due to poor solubility of a drug molecule. To solve this problem several drug carriers are available in the pharmaceutical field, which improves in distributing the therapeutic drug to the target site. For this purpose, mesoporous silica nanoparticles (MSNs) are widely used. It is a biocompatible, chemically and thermally stable nanoparticle. **Conclusions:** Mesoporous silica nanoparticles (MSNs) referred to as silica nanoparticles with mesopores have achieved extensive acceptance over recent years. It has some exclusive inherent properties such as large pore size, high surface area, good biocompatibility and biodegradability, stable aqueous dispersion, etc. Its porous structures have a pore size ranging from 2 to 50 nm which represents them outstanding candidates for numerous biomedical applications. The loading of a small molecule as well as macromolecules such as proteins, RNA, DNA, etc has made it a versatile carrier.

PCTC778
OPTIMIZING MOLECULAR DOCKING TO CHOOSE CROSSLINKERS FOR CARBOXYMETHYL CHITOSAN-GELATIN SCAFFOLDS, PROMISING FOR IMPROVED WOUND HEALING

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Abstract:

Objectives: The study aims to evaluate the binding interactions of carboxymethyl chitosan (CmCh) and gelatin (Gel) with Farnesyl Diphosphate Synthetase (FDPS), assess the docking scores and binding energies of crosslinked polymer complexes, and determine the binding affinity and suitability of various crosslinkers such as glutaraldehyde (Glut), cinnamaldehyde (CnD), and genipin and vanillin for crosslinking the polymeric blend. **Methods:** Molecular docking was performed to evaluate the interaction of smaller representative polymeric strands of CmCh and Gel with FDPS. The co-crystallized protein structure involved in cell signaling pathways for wound healing FDPS was downloaded from PDB.org. Among the variety of crosslinkers Glut, CnD, Genipin and vanillin were selected for this study based on extensive literature analysis. Structures of strands and complexes were drawn and energy minimization was conducted using a universal force field. The protein was optimized by using AutoDock 4.2 and computational docking studies were conducted. The average of resultant docking scores was calculated for polymers and complexes. The 2-D and 3-D images highlight the interacting amino acids and ligands' position in the FDPS cavity. **Results:** The docking score for CmCh with FDPS was -8.13 Kcal/mol, while for gelatin it was approximately -8.4 Kcal/mol. The CmCh-Glut-Gel complex had a binding energy of -7.43 Kcal/mol. The CmCh-CnD complex exhibited a binding affinity of -8.8 Kcal/mol, and the Gel-CnD complex had a docking score of -8.4 Kcal/mol. The binding affinity of -6.23 Kcal/mol was demonstrated by the CmCh-Vanillin-Gel complex. Genipin showed high binding affinity with both CmCh and Gel independently, with docking scores of -8.6 Kcal/mol and -9.6 Kcal/mol, respectively. The ternary complex of CmCh-Genipin-Gel had a docking score of -7.17 Kcal/mol. **Conclusions:** The studies concluded that Genipin has the potential for functioning as a suitable crosslinker for scaffolding of gelatin and CmCh since it has a strong binding affinity for both polymers, indicating its potential for binding FDPS protein involved in wound healing.

PCTC779
DEVELOPMENT OF NOVEL DRUG DELIVERY SYSTEM OF LINEZOLID FOR ANTITUBERCULAR THERAPY

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Abstract:

Objective: The present study was aimed to develop and characterize novel linezolid (LNZ) loaded mannosylated gelatin nanoparticles (Mn-GNPs) using the Quality by Design (QbD) approach. **Methods:** The nanoparticulate formulation's quality target product profile (QTPP) was defined and critical quality attributes (CQAs) were identified. The risk assessment and factor screening were done by Taguchi orthogonal array design to find out the most impacted factors affecting CQAs. A 3^3 Box-Behnken Design

(BBD) was employed to optimize the identified variables further. The optimized LNZ-loaded gelatin nanoparticles (GNPs) were then surface-functionalized with mannose (Mn-GNPs) for selective targeting of alveolar macrophages. **Results:** The particle size of the GNPs and Mn-GNPs were found to be 235.3±11.3 nm with 0.127±0.02 polydispersity index (PDI) and 379 ± 21.7 nm with 0.148 ± 0.03 PDI, while the percent entrapment efficiency (%EE) was 56.8 ± 2.1% and 51.3 ± 3.6%, respectively. Moreover, an *in vitro* drug release study was performed and has shown the sustained drug release from both the formulations. This was further confirmed by kinetic studies. The formulations were also screened for ex-vivo hemolytic toxicity study to ensure *in vivo* safety. The formulation was capable of sustained drug release above the MIC for more than 3-5 days with a significant increase in mean residence time (MRT) and the half-life of the drug. **Conclusions:** The present system can reduce the dose, dosing frequency, and toxic adverse effects of the drug, which ultimately improves patient compliance and, therefore, is a promising approach for the effective management of tuberculosis.

PCTC780
DEVELOPMENT AND EVALUATION OF COLON TARGETED DRUG DELIVERY OF PROBIOTICS

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Abstract:
Objectives: The aim of this study was to develop and evaluate Colon Targeted Drug Delivery of Probiotics. **Methods:** Probiotic content was selected for the study. Different tablet formulations were prepared using varying concentrations of polymers such as Hydroxypropyl Methylcellulose (HPMC) and Microcrystalline Cellulose (MCC). The tablet formulations were coated with Eudragit S 100. By serial dilution method, dilution pattern of the *in vitro* release samples were finalized. **Results:** Uncoated tablets were evaluated for Uniformity of weight, Hardness, Friability and disintegration. Uncoated and Coated tablets were compared for *in vitro* release of probiotic content. The results indicated that the tablets complied with the standards for Uniformity of weight, Hardness, Friability and disintegration. The *in vitro* release studies demonstrated that the colon targeted drug delivery could improve the colonic release of probiotics significantly over conventional drug delivery. **Conclusions:** The study concluded that colon targeted drug delivery is a viable technique for the delivery of probiotics to the colonic site of activity. The colon targeted drug delivery could improve the colonic release of probiotics over conventional drug delivery.

PCTC781
SELECTION OF RESPONSE SURFACE DESIGN FOR THE OPTIMIZATION OF CONTROLLED RELEASE VERAPAMIL HCLTABLETS THROUGH FRACTION OF DESIGN SPACE ANALYSIS

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Abstract:
Objectives: The aim of this study was to find best RSM Design for the Optimization of Controlled Release Verapamil Hcl Tablets through Fraction of Design Space Analysis. **Methods:** This study compares three response surface technique designs, including the Central Composite Circumscribed and

Face-centered designs, as well as the Box-Behnken design, which is modeled using Design Expert software.These graphical approaches were thoroughly tested for comparing prediction quality throughout the design space. It is a valuable tool for assessing prediction performance and comparing experimental designs. The percentage of design space plot depicts the predictive quality of experimental design throughout the full region of interest. A single curve displays precise information on scaled prediction variance for an assumed model and a specified design region for the chosen design. Here, fraction of design space plots are used to evaluate designs for optimizing controlled release tablets of Verapamil Hcl to achieve the required *in-vitro* dissolution profile. **Results:** Response surface designs Central Composite Circumscribed (CCC), Face-centered central composite design (CCF), Box-Behnken design (BBD) were applied for the optimization of controlled release Verapamil Hcl Tablets. Comparison of SPV, FDS and G –efficiency value between CCC, CCF and BBD designs for quadratic model, linear and 2FI model were done.G-efficiency value was found to be 72.72%, 62.92% and 83.62% respectively for CCF linear, 2FI and quadratic model with maximum FDC 93%, 72% and 54%. **Conclusions:** Fraction of design space plots are easily implemented and enable the researcher to study the performance, prediction, and robustness of a different design. To decide the best design based FDS plot, the CCF design is best with a maximum fraction of design space where G-efficiency values were also found higher for various models. CCF design showed better prediction capabilities as compared to CCC and BBD. Thus, CCF model will be more effective for the optimization of controlled release tablets of Verapamil Hcl to get desired *in vitro* dissolution profile.

PCTC782

TARGETED DELIVERY OF PH-RESPONSIVE LENALIDOMIDE AND ERASTIN CO-EMBEDDED MESOPOROUS SILICA NANOPARTICLES FOR FERROPTOSIS-MEDIATED CHEMO-PHOTOTHERMAL THERAPY FOR BRAIN TUMOR

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Abstract

Objectives: This study aimed to develop and evaluate the targeted delivery of Mesoporous Silica Nanoparticles loaded with Lenalidomide and Erastin for the Synergistic treatment of Brain tumors. **Methods:** The MSNs were synthesized using the sol-gel method and then coated with PDA. Surface modification was done using hyaluronic acid. The nanoparticles were characterized for purity, size,and morphology. Drug loading and entrapment efficiency were evaluated using the HPLC system. **Results:** Pure drugs were characterized using XRD, FTIR, and DSC. MSNs were analyzed using a Malvern zeta sizer, with particle size determined to be approximately 187 nm, PDI of 0.254, and zeta potential of -26.7 mV. For the co-loaded MSNs, the particle size was found to be 224 nm, PDI of 0.313, and zeta potential of -24.7 mV. Following surface modification with PDA and HA conjugation, the particle size increased to 245 nm (PDI 0.244, zeta potential -17.8 mV) for PDA coating and 280 nm (PDI 0.398, zeta potential -28.2 mV) for HA conjugation. Further characterization by XRD, FTIR, DSC, and SEM microscopy revealed spherical nanoparticles with well-defined edges and consistent size distribution under 200 nm. BET analysis demonstrated an excellent surface area of 744.09 m^2/g and a pore volume of 0.99094 cm^3/g. HPLC method was developed at a wavelength of 219 nm, with an entrapment efficiency of 80%. **Conclusion:** The study successfully synthesized and characterized MSNs loaded with LND/ERT and modified with PDA coating and HA conjugation. Various characterization techniques confirmed the integrity and properties of the modified nanoparticles. The results suggest that the developed multifunctional MSN-based nanoparticles have the potential to enhance targeting and delivery in brain tumor treatment.

PCTC783
DESIGNING FORMULATION AND EVALUATION OF GASTRORETENTIVE MATRIX TABLETS OF FAMOTIDINE EMPLOYING NATURAL POLYMERS

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Abstract :

Objectives : The Aim of this study was to Formulate and Evaluate Gastroretentive matrix tablets using Natural polymers which offers prolonged gastric residence and increased bioavailability, targeting gastric ulcer treatment and efficient method for Drug delivery. **Methods :**A model drug Famotidine was selected for the study.Different formulations were prepared using varying concentrations of natural polymers Guar gum, Xanthan gum,Pectin and Tamarind seed powder and gas forming agent Sodium bicarbonate and Citric acid using Direct Compression technique. **Results :**The interaction between Drug and Excipients was characterized by FTIR and DSC studies.The powder blend was evaluated for Flow properties,Tapped density,Bulk density,Carr's compressibility index and Hausner's ratio.The prepared tablets were evaluated in terms of their General appearance, Thickness, Diameter, Hardness, Friability, Weight variation, Drug content uniformity, Swelling index,Buoyancy lag time,Duration of buoyancy and *in vitro* drug release.The results indicated that the drug was uniformly distributed within the polymer matrix.The *in vitro* release studies demonstrated that the formulations remain buoyant for more than 12 hours and Optimized formulation released 97 % of drug during the period.Xanthan gumas natural polymer in Optimized formulation exhibited maximum Swelling index of 160 %. Floating lag time was found to be 16 seconds. **Conclusion :** The study concluded that Natural polymers can be used ideally for the development of Gastroretentive Famotidine tablets. The Optimized formulation showed excellent physicochemical properties and buoyancy features making it a potential candidate for commercial application.

PCTC784
EMERGING TRENDS AND CHALLENGES IN BIO-ANALYTICAL METHOD DEVELOPMENT FOR ANTI-DIABETIC DRUGS

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Abstract:

Bio-analytical method development and validation are crucial in ensuring the accurate analysis of anti-diabetic drugs, which is vital for effective therapeutic monitoring and drug development. This comprehensive review focuses on the latest advancements and strategies in bio-analytical techniques for anti-diabetic drug analysis, with a particular emphasis on Liquid Chromatography-Mass Spectrometry (LC-MS/MS) as the preferred tool. We explore the classification and mechanisms of action of various anti-diabetic drugs, including biguanides, DPP-4 inhibitors, and SGLT2 inhibitors, and discuss the advantages of LC-MS/MS in overcoming the limitations of traditional methods. Key aspects such as sample preparation strategies, matrix effects, calibration, standardization, and regulatory requirements are addressed. The review also highlights emerging trends, including the integration of automation and artificial intelligence in method development, and identifies current challenges such as matrix complexity and analyte stability. Recommendations for future research focus on

impurity profiling, stress degradation studies, and quantification of anti-diabetic drugs in human plasma. This review provides a comprehensive overview for researchers and practitioners aiming to enhance bio-analytical methodologies in the field of anti-diabetic drug analysis

PCTC785

DEVELOPMENT AND *IN VITRO* EVALUATION OF HYDROGEL NETWORK-BASED MICROBEADS FOR PROLONG RELEASE OF ANTIVIRAL DRUG

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Abstract:

Objectives: The objective of the study was to prepare microbead formulations containing valacyclovir HCl (antiviral drug) using natural gum and polymer and to study the effects of drug release by changing the drug-polymer ratio and crosslinking agents. **Methods:** Microbeads containing an antiviral drug (Valacyclovir hydrochloride) are prepared by ionotropic gelation method, using sodium alginate with gellan gum where aluminium chloride is used as a crosslinking agent. The prepared microbeads were evaluated by Particle size analysis, swelling index, percentage yield, drug entrapment efficiency, *in vitro* release study, release kinetics. **Results:** All these ionotropically-gelled Valacyclovir-loaded alginate-gellan gum microbeads exhibited good percent yields and drug entrapment efficiencies (74.09 ± 1.38 to 95.16 ± 3.37%). Valacyclovir-loaded alginate-gellan gum microbeads have good swelling index.. A prolonged release pattern of valacyclovir microbeads was noticed over 300 minutes. Surface morphology analysis of the best microbeads formulation (on the basis of valacyclovir release data) was done by scanning electron microscopy (SEM). **Conclusions:** In this study we mainly focused on the effects of natural gums/polymers (ratio) in the preparation of microbeads as a nanocarrier of valacyclovir drug. So, we can identify the prepared microbeads are swellable matrix-type drug diffusion as a controlled drug delivery system. Maximum formulation batches showed the Higuchi model which demonstrated that drug release mainly occurs via diffusion through the vesicles and the drug loading in the matrix exceeds the solubility in the surrounding media which results the sink condition on the particle wall and allows the drug to diffuse in a constant and controlled manner.

PCTC786

FORMULATION AND DEVELOPMENT OF GASTRORETENTIVE FLOATING TABLETS OF LOVASTATIN

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Abstract:

Objectives: The Present study is Aimed to develop a novel gastro retentive drug delivery system based on direct compression method for sustained delivery of active agent to improve the bioavailability, reduce the number of doses and to increase patient compliance. **Methods:** Gastro retentive floating tablets of Lovastatin were prepared by direct compression method using altered concentrations of Eudragit RS 100, Kollidone SR, Sodium CMC as Polymers. **Results:** The prepared tablets of Lovastatin were evaluated for hardness, thickness, friability, weight variation, drug content uniformity, total

floating time, *in vitro* dissolution study, etc. *in-vitro* drug release of floating gastro retentive tablet of Lovastatin shown that the formulation F2 was found to be the best formulation as it releases 99% Lovastatin in a controlled manner for an extended period of time up to 12 hours.**Conclusions:** Prepared floating tablets of Lovastatin may prove to be a potential candidate for safe and effective controlled drug delivery over an extended period of time for gastro retentive drug delivery system.

PCTC787
HERBAL NANOPARTICLES – A TIM APPROACH

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Abstract:

Objectives: Traditional Indian Medicines (TIM) like Traditional Chinese Medicines (TCM) play a pivotal role in modern health care system prevailed in the country. TIM is the prime focus among scientists, researchers, drug discoverers of the country to enhance their acceptability in modern India's health care structure. Nanoparticles, the branch under novel drug delivery system has huge potential in drug design and drug discoveries. The concept of TIM when incorporated in nanoparticles will open up new era in herbal nanoparticles technology and will contribute a large in the country's economic and social development. **Methods:** Piperine, a principal alkaloid obtained from *Piper nigrum* L (TIM of Piperaceae family) was selected for preparing HNPs. Different Gelatin type B nanoparticles formulations were prepared using micro-emulsion crosslinking technique using PMMA as polymer and Glutaraldehyde was used as crosslinking agent. **Results:** The physical and chemical properties of the nanoparticles were characterized using FESEM, FTIR, differential scanning calorimetry (DSC) and X-ray powder diffraction (XRPD). The nanoparticles were evaluated for various parameters including average size of nanoparticles, drug content, *in vitro* drug release and stability testing. The average size of the nanoparticles was 50-80 nm. The result indicated that the results indicated that the drug was uniformly distributed within the gelatin nanopartilcles. The *in vitro* release studies demonstrated that the nanoparticles could sustain the drug release following first order rate kinetics. The prepared nanoparticles were also undergone *in vitro* antidiabetic activity (α-glucosidase Inhibitory Activity- Dose-dependent % inhibition of α-glucosidase enzyme). **Conclusions:** The study concluded that micro-emulsion crosslinking technique is a viable technique for the development of HNPs of piperine. The optimized formulation showed excellent physicochemical properties and sustained drug release, making it a potential antidiabetic HNPs for commercial application.

PCTC788
POLYMERIC MICELLES OF *CORIANDRUM SATIVUM* SEED OIL – PREPARATION AND EVALUATION

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Abstract:

Objective: Polymeric micelles are known for their advantages like enhancement of bioavailability of poorly soluble drugs and herbal drugs. The present research work was aimed to prepare polymeric micelles of *Coriandrum sativum* seed oil (CSSO) and to evaluate them for *in-vitro* properties and

antibacterial activity. **Methods**: Extraction of CSSO from *Coriandrum sativum* seed powder was performed by hydro distillation technique. Phytochemical evaluation of CSSO reveals the presence of tannins, alkaloids & saponins followed by the measurement of chemical indices and GC-MS analysis of CSSO. The polymeric micelles containing CSSO were prepared by solvent diffusion method using PEG 6000 as a polymer & Pluronic F127 as a stabilizer. The Box-Behenken design was employed considering drug & polymer concentration along with stirring time as independent variables and particle size, % entrapment efficiency and % cumulative drug release as the dependent variables. **Results**: The optimized formulation had shown low CMC value, which indicates that it was stable. The particle size & zeta potential values were 220.5±0.21nm and -0.5±0.2 mV & % entrapment efficiency of 55.34%, % cumulative drug release of polymeric micelles after 24 hours was found to be 70.86%. Drug-Excipient compatibility studies were carried out to find out the interactions between drug and other excipients. Phase contrast microscopy was employed to reveal the morphology. FT-IR analysis had shown that polymer & CSSO were compatible with each other & Morphology of the optimized formulation was spherical & well distributed. The *in-vitro* antibacterial studies had shown that the optimized polymeric micelles were found to be more effective against gram positive bacteria. **Conclusion**: The polymeric micelles of CSSO were found to be the promising dosage forms with the improved bioavailability and active against gram positive bacteria.

PCTC789
DESIGNAND FABRICATION OF BILAYER MATRIX TABLET BY 3D PRINTING TECHNOLOGY.

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Abstract:

Objectives: The main objectives of controlled drug delivery is the reduction of the dose frequency and improves the therapeutic efficacy of active pharmaceutical ingredient(s) as well as enhance the therapeutic drug monitory on the base of pharmacokinetic parameters. **Methods:** 3D printing technology offers a new paradigm for the direct manufacture of individual dosage forms and has the potential to allow for variations in size and geometry as well as control dose and release behaviour. The low cost and ease of use of 3D printing systems means that the possibility of manufacturing medicines and medical devices at the point of dispensing or at the point of use could become a reality. This special issue will address new developments in the area of 3D printing and bio printing for drug delivery applications, covering the recent advantages and future directions of additive manufacturing for pharmaceutical products. Bilayer tablets are the medicines which consist of two same or different drugs combined in a single dose for effective treatment of the disease. **Results:** The pharmacokinetic benefit depends on the fact that the immediate release of the drug fromthe first layer results in rising blood concentration suddenly for its immediate action and second layer that is sustained layer influences the pre-programmed and pulsatile manner of medicament(s) release for its delayed action. The result revelled that the concentration of drug molecule maintained steady state in plasma level and enhance the pharmacological action by avoiding toxicity of the drug molecule(s). **Conclusions:** According to these findings, a bilayer tablet has been proposed. One of its layers is made for ensuring the instant extraction of the drug and

aims to reach a high serum concentration in a brief time. Its second layer is a controlled release hydrophilic matrix that aims at maintaining an efficient plasma level for a long time.

PCTC790

FORMULATION AND *IN-VITRO* EVALUATION OF MOUTH DISSOLVING TABLETS OF PIROXICAM USING DIFFERENT SUPERDISINTEGRANTS

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Abstract:

Objectives: The basic objective of this work is to develop an mouth dissolving tablet of Piroxicam which is a potent non-steroidal anti-inflammatory drug, which preferentially inhibits COX-2. Successfully discriminates the ability of three superdisintegrants to promote drug dissolution and proposes a model formulation for disintegrant performance testing and quality control purposes. **Methods:** a)Direct compression: In this method, addition of superdisintegrants in optimum concentration so as to achieve rapid disintegration along with good mouth feels. Superdisintegrants like sodium starch glycollate, crosspovidone, croscarmallose sodium etc; will be used. b)Sublimation: In this method, mannitol is used as diluent and camphor as a volatile material to prepare highly porous compressed tablets. After compression tablets will be heated in hot air oven at 800 C until a constant weight is obtained to ensure that complete removal of volatilisable component. **Results:** Following Post-compression Parameters were studied: A)Hardness, B)Friability test, C)Weight variation test, D)Thickness, E)*In vitro* dispersion time, F)Wetting time, G)Water absorption ratio, H)Drug Content: *In vitro* dissolution studies: Dissolution rate was studied by using USP type-II apparatus (USP XXIII Dissolution Test Apparatus at 100 rmp) using 900ml of phosphate buffer pH (6.8) as dissolution medium. Temperature of the dissolution medium was maintained at 37±2°C, aliquot of dissolution medium was withdrawn at every 5 minute interval and filtered. The absorbance of filtered solution was measured by UV spectrophotometric method at 334nm and concentration of the drug was determined from standard calibration curve. **Conclusions:** All the tablets of Piroxicam were subjected to weight variation, hardness, friability, *in vitro* dispersion, drug polymer interaction, drug content uniformity, water absorption ratio, wetting time, and *in vitro* drug release. The *in vitro* dispersion time of Piroxicam prepared by direct compression and sublimation method were found to be in the range of 24 to 53 sec fulfilling the official requirements. Based on the *in vitro* disintegration time, formulation DCCS4 (8% CCS) and SBCSI4 (8% CCS) were found to be promising and showed a dispersion time of 33 and 24 sec, wetting time of 43 and 39 sec respectively, which facilitate the faster dispersion in the mouth. The formulation DCCS4 and SBCS4 have displayed good water absorption ratio of 79 and 85%, which indicate better and faster swelling ability of the disintegrants in presence of little amount of water.The drug content of tablets was uniform in all the batches and was between 96.91 to 100.63%. The drug release from mouth dissolving tablets of Piroxicam prepared by direct compression and sublimation methods were found to be in the range of 96.05 to 99.56% and the result of DCCS4 and SBCS4 showed 98.16% and 98.56% drug release within 30 minute. The stability study shows that no significant changes in tablets after six month study. Among the two methods used namely direct compression and sublimation, the sublimation method was found to be superior to direct compression method.

PCTC791
IMPLEMENTATION OF CENTRAL COMPOSITE DESIGN FOR OPTIMIZING A METHOD FOR THE VALIDATION OF EMPAGLIFLOZIN AND METFORMIN IN BULK AND PHARMACEUTICAL FORMULATION

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Abstract:
A new formulation containing Empagliflozin (EMPG) and Metformin HCl (METF) for the treatment of type 2 Diabetes was recently approved. The current study aimed to develop simple rapid RP-HPLC methods for determining EMPG and METF simultaneously in a combined dosage form in order to identify variables influencing method performance. Central Composite Design (CCD) was used for screening the variables and optimization of chromatographic conditions. ANOVA made for 2k Factorial outline shows that arch is significant for all the responses (K1, RS (1, 2) and S (1, 2), tR2) and the p-value was under 0.05. The effect of chromatographic parameters was shown by response surface models, FDS, and perturbation plots, and the final chromatographic condition was chosen from 67 solutions suggested by the desirability function. The Chromatographic separation was attained isocratically on a C-18 column by using Methanol, ACN, 0.01mM KH 2 PO 4 at pH 3± 0.5 (40:10:50 % v/v), Flow rate of 1.2 mL/min. The wavelength of the detector was set to 245 nm. Furthermore, for EMPG and METF, RP-HPLC procedures demonstrated good linearity in the ranges of 5-25 EMPG µg/mL and 20-60 µg /mL, respectively. The assay was found to be 99.6% and 100.04% for EMPG and METF respectively. The correlation coefficient was found to be 0.998. The proposed methods were simple, accurate, precise, and rapid. Therefore, the developed method can be used on a regular basis to analyze the fixed dose combination of Empagliflozin and Metformin HCl formulations.

PCTC792
DESIGN AND EVALUATION OF MICRONEEDLES PREPARED FROM ISOMALT FOR TRANSDERMAL DRUG DELIVERY

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Abstract:
Objectives: The aim of this study was to develop and evaluate micro needle patch with isomalt for transdermal drug delivery, which provide painless admistration of drugs, bypass first pass metabolism, to improve bioavailability. **Methods:** A model drug, Folic Acid, was selected for the study. Different formulations were prepared using varying concentrations of polymers such as Polyvinyl pyrrolidone K-30 (PVP K30) and Polyvinyl Alcohol (PVA). Isomalt and Carboxymethyl cellulose use for the matrix structure for the needles. Gelatin and Silicon dioxide were used for the preparation of mould. Micro needle were prepared by micro moulding and hot embossing. *In vitro* drug release for the preparation was performed. The micro needle

patch were evaluated for various parameters including weight variation, thickness, needle size, drug content, and *in vitro* drug release. **Results:** The physical and chemical properties of the drug excipents were characterized using ATIR and microscopic techniques. Prepared micro needles evaluation finds percentage drug content 72.84±1.61, weight variation of 153.27±1.38 mg. The diameter of the micro needle tip varied from 0.10 to 0.14mm, the thickness of the needle varied from 0.4mm to 0.45mm and the length of the micro needle varied from 1.20 mm to 1.26 mm. From the drug release study, we get 93.06% of drug release in 8 hrs which following a near zero-order release kinetics. The results indicated that the drug was uniformly distributed within the polymer matrix. **Conclusions:** This study demonstrates that micro molds can be made using cheaper materials without the usage of UV lithography and micro needles can be made out of biodegradable polymers and Isomalt. Sharp tips were achieved by adapting micro fabrication techniques to produce cylindrical micro needles. This fabrication method is expected to be suitable for rapid scale up for inexpensive, mass production. Characterization of polymeric micro needles has included testing of micro needle size, shape and also the *in vitro* penetration.

PCTC793
DEVELOPMENT AND EVALUATION OF SIMVASTATIN LOADED POLYMERIC MICROSPHERE FOR THE TREATMENT OF HYPERLIPIDEMIA IN ALBINO RATS

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Abstract:

Objectives: The aim of this study was to develop and evaluate of Simvastatin Loaded Polymeric Microsphere for the Treatment of Hyperlipidemia in Albino Rats using solvent evaporation method. **Methods:** Simvastatin was selected for the study. Different formulations were prepared using varying concentrations of polymers such as ethyl cellulose, Poly vinyl alcohol and Hydroxypropyl Methylcellulose (HPMC). The formulation were simvastatin-loaded microspheres by the solvent evaporation process. **Results:** The physical and chemical properties of the microsphere formulation were characterized using differential scanning calorimetry (DSC), X-ray diffraction (XRD) and Scanning electron microscopy (SEM) The microspheres were evaluated for various parameters including particle size, swelling index, drug content, and *in vitro* drug release and *in vivo* study. The results indicated that the drug was uniformly distributed within the polymer matrix. The *in vitro* release studies demonstrated that the microspheres could control the drug release for up to 12 hours. **Conclusions:** The study concluded that solvent evaporation method for the Development and Evaluation of Simvastatin Loaded Polymeric Microsphere for the Treatment of Hyperlipidemia in Albino Rats. The optimized formulation showed excellent physicochemical properties and control drug release, making it a potential candidate for commercial application.

PCTC794

GREEN SYNTHESIS OF ZINC OXIDE NANOPARTICLES USING *SARACA ASOCA* FOR ANTIMICROBIAL AND ANTIOXIDANT ACTIVITY

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Abstract

Objective: The growing emphasis on sustainable and eco-friendly nanotechnology has led to increased interest in the plant-mediated green synthesis of metal oxide nanoparticles. Zinc oxide nanoparticles (ZnO NPs) have emerged as a focal point in this research due to their uniquephysicochemical properties, including their potent antimicrobial and antioxidant activities. This study aimed to develop ZnO nanoparticles using Saraca asoca, a medicinally valuable plant known for its therapeutic properties, through an eco-friendly synthesis approach. This method eliminates the need for toxic chemicals and harsh conditions typically required in conventional synthesis; while leveraging the bioactive compounds present in Saraca asoca to enhance the functionality of the nanoparticles. Notably, ZnO and Saraca asoca exhibit a synergistic effect, further enhancing the antimicrobial and antioxidant potential of the synthesized nanoparticles. **Methods:** The synthesis of ZnO nanoparticles using Saraca asoca follows a bottom-up approach, which includes three key phases: 1. Activation Phase: In this initial phase, metal ions are reduced by the phytochemicals present in the Saraca asoca extract. This reduction process is followed by the nucleation of the reduced atoms, leading to the formation of small, stable nanoparticles. 2. Growth Phase: During this phase, smaller nanoparticles aggregate into larger particles spontaneously. As the reaction progresses, additional metal ions continue to be reduced. A critical process called Ostwald ripening occurs, where smaller particles dissolve and redeposit on to larger ones, providing thermodynamic stability and influencing the final particle size and morphology. 3. Termination Phase: This final phase determines the ultimate shape and size of the ZnO nanoparticles, marking the conclusion of the synthesis process. The synthesized ZnO nanoparticles were characterized using techniques such as UV-Vis spectroscopy, X-ray diffraction (XRD), Fourier-transform infrared (FTIR) spectroscopy, and transmission electron microscopy (TEM) to determine their size, shape, optical properties, and functional groups. Additionally, antimicrobial and antioxidant studies were performed to evaluate their biological efficacy. **Results:** The antimicrobial efficacy of the synthesized ZnO nanoparticles was evaluated againstEscherichia coli (ATCC 8739), Staphylococcus aureus (ATCC 6538), Bacillus subtilis (ATCC 19659), and Pseudomonas aeruginosa (ATCC 27853), demonstrating promising inhibitory effects on bacterial growth. Additionally, the antioxidant activity of the nanoparticles was assessed, revealing a dose-dependent increase in the inhibition percentage. At concentrations of 50, 150, and 300 µg/mL, the nanoparticles showed significant free radical scavenging potential, with the highest concentration (300 µg/mL) exhibiting an 80% inhibition rate. This antioxidant activity is crucial for reducing oxidative stress and promoting wound healing. The disappearance of the purple colour upon the addition of synthesized ZnO NPs may be attributed to the presence of antioxidants in the medium, linked to the functional groups derived from the Saraca asoca extract. The synergistic effect between ZnO and Saraca asoca further enhanced these biological activities. **Conclusions:** Zinc oxide nanoparticles (ZnO NPs) synthesized using Saraca asoca extract exhibited strong antimicrobial and

antioxidant activities, with up to 80% inhibition of free radicals at 300 µg/mL. The synergistic effect between ZnO and Saraca asoca enhances their potential as eco-friendly, cost-effective agents for controlling bacterial growth and reducing oxidative stress. These findings position Saraca asoca-mediated ZnO nanoparticles as promising candidates for novel treatments in biomedical applications, particularly for infections and conditions related to oxidative stress.

PCTC795

RECENT DEVELOPMENTS IN TANNIC ACID (GALLO TANNIN) ANTICANCER ACTIVITIES AND DRUG DELIVERY SYSTEMS FOR ENHANCED EFFICACY: A THOROUGH ANALYSIS

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Abstract:

Objective: The current review aims to explore and summarize the latest research on tannic acid (Gallo tannin) as a potential anticancer agent, provide a comprehensive overview of the existing knowledge on tannic acid, and investigate strategies for improving its efficacy through drug delivery systems that could contribute to its clinical translation. **Methods**: The molecular targets of Tannic acid (induction and inhibition) in different neoplastic diseases were identified. Pharmaceutical investigation the development, characterization, and evaluation of flexible pharmaceutical formulations based on TA are included in the research. This is achieved by employing both *in vivo* and *in vitro* assays. Combinational Approaches of TA and other anticancer agents were studied. **Results:** The findings suggest that tannic acid could be a potentially effective anticancer treatment. More research is needed to improve how it is administered, its safety, and how well it works when applied in medical settings. **Conclusion:** A naturally occurring polyphenol called tannic acid has gained attention as a possible anticancer treatment. The identification and suppression of various cancer cell lines have shown significant potential. Its mechanisms of action are multifaceted, but they seem to involve several pathways, such as the induction of apoptosis, cell cycle arrest, and inhibition of angiogenesis. However, drawbacks like low bioavailability and possible toxicity prevent its clinical application.

PCTC796

OPTIMIZED FORMULATION AND *IN VITRO* EVALUATION OF CLOPIDOGREL BISULFATE SUSTAINED RELEASE MATRIX TABLETS

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Abstract:

Objective: The main objective of the study is to design and develop sustained-release matrix tablets of Clopidogrel Bisulfate using various release-retarding polymers. The aim is to achieve a controlled drug release profile for 24 hours. **Methodology:** Polymers Used: Different polymers such as HPMC K4M, HPC, and combinations with Ethyl cellulose, uar gum, Xanthan gum, Karaya gum, and Sodium CMC were employed. Tablet Preparation: Thentablets were prepared using the direct compression technique on a 16-station rotary tablet punching machine. Evaluation Parameters: The formulations were assessed for thickness, weight variation, hardness, friability, and drug content, all of which were found to be within acceptable limits. ”’Compatibility Studies: Compatibility between the drug and excipients was evaluated using FTIR and DSC studies to ensure there were no physicochemical interactions. **Results:** The thickness, weight variation, hardness, friability and drug content of all the formulations were within the

limits. *In vitro* drug release studies demonstrated sustained drug release for 24 hours in all formulations. Among the formulations, F2, containing Clopidogrel bisulfate and HPMC K4M in a 1:3.5 ratio, showed the highest similarity factor with the theoretical drug release profile, indicating the most desirable release behaviour. The FTIR and DSC studies confirmed that no physicochemical interactions occurred between the drug and excipients. **Conclusion:** The study successfully formulated sustained-release matrix tablets of Clopidogrel bisulfate using various release-retarding polymers. Among the formulations, F2, with a drug-to-polymer ratio of 1:3.5 (Drug:K4M), provided the closest match to the theoretical 24-hour release profile, making it the most effective. All formulations met the required physical and chemical parameters, and FTIR and DSC studies confirmed no physicochemical interactions between the drug and excipients, ensuring stability and compatibility.

PCTC797

DESIGN AND EVALUATION OF NANOSPONGE-BASED FORMULATION FOR TREATMENT OF EPILEPTIC SEIZURE

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Abstract:

Objectives: The objective of the present research was to tailor the drug release profile by altering drug solubility. This was achieved by loading the drug into nanosponges. **Methods**: Carbamazepine (BCS-II) was selected as a model drug for research. Carbamazepine nanosponges were prepared by using solvent diffusion technique by using ethyl cellulose, polyvinyl alcohol, and pluronic F68 with as a rate retarding polymer and surfactant, respectively. having different ratios 2:1:2. The optimized drug-loaded nanosponges with excipients like Microcrystalline cellulose, Magnesium stearate, Talc were blended and compressed on the Cadmech Press 10-station Rotary R&D compression machine. Finally Nanosponges were then compressed into tablets. **Results**: The nanosponge was characterized using differential scanning Calorimetry and X-ray powder diffraction (XRPD). Reduced nanosponges where particle size (113.0 nm), Zeta potential (-9.03 mV), maximum solubility as compared to the pure drug.Nanosponge based compressed tablets were in the accepted limit. The *in vitro* dissolution studies were carried out by USP apparatus type II (Paddle Method) by using 900 ml of 0.1 N HCl, which was placed in the vessel and assembled. The medium was allowed to equilibrate to a temperature of 37°C to 0.5°C. at 50 rpm. The compressed tablets of the selected Nanosponge also gave higher dissolution rate i.e approx 85% drug release in 60 min when compared with pure drug which is only 22% drug release in 60 min .The % of drug release was found to be 99.9% at the end of 240 minutes. It follows zero-order kinetics and is best fit with the Higuchi Model. **Conclusions**: The research concluded that nanosponge-based formulations improve the solubility of dosage form .The optimized formulation help to provide a sustained dissolution profile for a longer period of time, which is to suit the needs of the patient.

PCTC798

DEVELOPING TRANSDERMAL PATCH USING NANOCOMPOSITE OF POLYMER/ CELLULOSE NANOFIBRILS DERIVED FROM WATER HYACINTH.

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Abstract:

Objectives: Nanocellulose, is an exceptional natural material acquired from cellulose, has received tremendous attention over the past decades for its natural properties. This is because of its unique

physical characteristics, surface chemistry, functional properties, and biocompatibility. Cellulose nanocrystals (CNCs) and cellulose nanofibers (CNFs) are two major types of nanocellulose that have been extracted from the water hyacinth and have received key interest so far. In this project we will focus on making transdermal patches using Cellulose nanofibrils obtained from water hyacinth and entrapping drugs within it, which will give it a prolonged release. **Methods:** Cellulose Nano fibrils has been extracted from Water hyacinth by alkali and acid hydrolysis process. Extracted cellulose fibrils are evaluated for conformity of nano-size range and then it was used along with polymer for preparation of drug loaded polymer/nanocomposite transdermal patch for checking the sustained drug release at different concentration of cellulose (3%, 6%, 9% and 12%). **Results:** The CNF extracted from Water Hyacinth has been evaluated for confirmation of nano size range using Field Emission Scanning Electron Microscope and Dynamic Light Scattering study. The results showed that the prepared Transdermal films with 9% CNF content gives better sustainable drug release. 12%CNF content forms a rigid film and drug release become slowed down due to rigid matrix formation. The Physical parameters of the films found satisfactory with 6,9and 12% CNF content but satisfactory sustainable drug release got optimized at 9% CNF concentration in Polymer/Cellulose Nano composite. Other evaluation parameters of Transdermal Patches bas been checked and reported. **Conclusion:** This project mainly aims to emphasize on identifying the true potential of Water hyacinth as a nanocellulose resource by critical evaluation of the isolation processes, affecting factors on nanocellulose properties, and the foundation of future research for producing sustainable materials and for treatment purpose by using it as a transdermal patch.

PCTC799
CO-CRYSTALLIZATION OF SIMVASTATINFOR ENHANCEMENT OF SOLUBILITY AND DISSOLUTION

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Abstract:

Objective: Simvastatin is Simvastatin is a lipid lowering agent, treatment of hypercholesterolemia. It is very poorly water soluble drug and with low bioavailability. Therefore objective of the study is to formulate and evaluate simvastatin tablet with increase the dissolution for possible improvement in bioavailability. **Method of preparation:** Co-crystal preparation by solid state solvent evaporation method.Drug and the co-former taken 1:1 molar ratio. The drug and co-former were mixed well by trituration with slow drop addition of the solvent to form a wet mass or slurry. The solvent was allowed to evaporate slowly from the wet mass until dry crystals formed. The dry crystalline substance was collected and stored in a container securely until characterized. **Results:** In melting point study significant decrease in melting point in cocrystal due to changes in intermolecular interaction between pure drug and coformers, thus confirming the formation of cocrystal. The IR bands were significantly changed in the cocrystal in comparison to pure drug and coformer indicating interaction between drug and coformer. The equilibrium solubilities of simvastatin as well as all these cocrystals were enhanced 26 to 41 fold with different coformers respectively compared to pure drug. Using the cocrystals of simvastatin with improved solubility tablets were formulated by direct compression method. Tablet formulations of simvastatin co-crystals have shown 91% and 83% drug release respectively in 45 minutes with benzoic acid and citric acid as co-formers. **Conclusion:** Co-crystals of simvastatin with co-formers in 1:1 molar ratio using various solvents were prepared by solid state grinding solvent evaporation

technique and characterized by DSC and FT-IR.More than 41 fold increase in solubility was obtained with benzoic acid and more than 26-29 folds increase was achieved with citric acid. Simvastatin tablet formulations incorporating co-crystals with benzoic acid and citric acid as co-formers demonstrated drug release rates of 91% and 83%, respectively, within 45 minutes, compared to just 47% release from the pure simvastatin drug in the same timeframe. It may be concluded that solubility and dissolution of simvastatin can be improved significantly by co-crystal technique, with possible enhancement bioavailability.

PCTC800

POTENTIAL OF TRANSDERMAL IBUPROFEN FILM FORMING POLYMERIC SOLUTION: FORMULATION, DIFFUSION AND *IN-VIVO* STUDY

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Abstract:

Objectives: The current study's objective was to produce and examine a film forming solution (FFS) that can deliver Ibuprofen and, upon quick evaporation of the solvent, yield a thin, transparent, adhering, non-sticky, and bendable films. **Methodology:** FFS were prepared with different grade of Eudragit polymers (L100, S100 and EPO). 3, 5 and 5% concentration for each polymer was used for the preparation of FFS. The Viscosity and pH of solutions, drying time, stickness and drug content of film was evaluated for desired properties. **Result:** IR and DSC study indicated about the compatibility of Ibuprofen with Eudragit polymers.Formulation containing 3% and 5% Eudragit S100 showed highest 90.92 and 80.85 % drug released over 420 minutes. Increasing concentration of Eudragit, decreasing the release rate. *In vivo* anti-inflammatory effect was studied on formulations containing 5 % concentration of all Eudragit grade. Statistical analysis showed that the edema inhibition of the Test-1, Test-2, Test-3, and standard group were significantly different from the control group. More significant anti-inflammatory effect was shown by 5% Eudragit S100. **Conclusion:** Consequently, we report the successful preparation of Film Forming Solution containing Ibuprofen with excellent mechanical properties, skin permeation and anti-inflammatory activity. The present study concludes that, poorly water-soluble drug & its local effect using polymeric film solution is most prominent way to gain effective sustained therapeutic effect.

PCTC801

FORMULATION DEVELOPMENT AND CHARACTERIZATION OF NANOSUSPENSION FOR UVEITIS

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Abstract:

Objectives: The objective is to design and develop a nepafenac nanosuspension for ocular administration to enhance corneal penetration, prolong ocular retention time, and improve corneal permeability. **Methods:** By solvent diffusion method:- Weighed quantity of Nepafenac was dissolved in 5 ml organic solvent (Ethanol). This solution was added drop by drop using syringe fitted with 24-guage needle to 25 ml aqueous phase of HPMC E-S and poloxamer 407 and homogenized using High speed homogenizer (Digital Ultra Turrax, Germany) [9] at 12,000-18,000 rpm for 10-20 by magnetic stirring for 2-3hrstoremoveresidualsolvent. **Results:** Researchers are developing nanosuspensions to address the issues of poor bioavailability associated with Nepafenac due to its low aqueous solubility. This study created

an ophthalmic nanosuspension of Nepafenac using the pluronic F-127 and HPMC E-5 solvent diffusion technique. The particle size of the nanosuspension was 278.3 nm. Mathematical relationships for response variables were established using multiple linear regression analysis. Optimization was performed using a factorial design with three levels and two components. The particle size increased with higher polymer content, reaching 278.3 nm. The zeta potential of the formulation was measured at -11.1 mV, indicating stability within an acceptable range. Ex-vivo transcorneal permeation studies showed that the optimized formulation of Nepafenac achieved higher penetration after 8 hours compared to the marketed preparation. Stability tests indicated no significant changes in pH or viscosity after 15 days and one month. **Conclusions:** To enhance the solubility of the medication, a solvent diffusion method was employed to create an ophthalmic nanosuspension of Nepafenac. The particle size of Nepafenac was influenced by the polymers and stabilizers used in the formulation. Field Emission Scanning Electron Microscopy (FESEM) analysis revealed that the particles were spherical in shape. Fourier Transform Infrared Spectroscopy (FTIR) showed no significant interactions between the drug and the polymers. Due to its small particle size, the ophthalmic nanosuspension is likely to be more acceptable than conventional suspensions, as it may reduce discomfort and blurriness. The developed nanosuspension exhibited long-term effectiveness. Viscosity studies indicated that the ophthalmic nanosuspension significantly improved ocular residence time when diluted with tear fluid. *In vitro* and ex vivo studies demonstrated that the ophthalmic nanosuspension enhanced the bioavailability of Nepafenac and provided a sustained release compared to commercial suspensions. Stability tests confirmed that the Nepafenac ophthalmic nanosuspension remained stable over time.

PCTC802

ANTICANCER DRUG LOADED INHALABLE CHEMOTHERAPY VIA SOLID-LIPID NANOPARTICLES FOR THERAPY OF LUNG CANCER: AN OVERVIEW

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Abstract:

Objective: To provide an updated information about pulmonary delivery of anticancer drug loaded aerosolized solid-lipid nanoparticles for the treatment of lung cancer. **Method:** The literature selection in this review was performed by manually searching the PubMed, Google Scholar, ScienceDirect, and Wiley Library databases for published literature on inhalable chemotherapy via lipid-based nanocarriers using various keywords such as [Inhaled/aerosolized/ nebulized/dry powder inhalers/ inhalable chemo-therapy for Lung Cancer (LC), aerosolized solid lipid nanoparticles (SLNs) for LC]. For SLNs, examples of the most recent (2010–2024) studies about inhalable anticancer drug-loaded solid lipid nanoparticles formulations that involved *in vivo* studies were included in this study. **Result:** Results from the recent studies on preclinical levels revealed that the drugs loaded in these inhalable nanocarriers will be concentrated in the lungs and then diffuse gradually into the blood circulation and the lymphatic system to target the cancerous cells. Among the currently available pulmonary devices, only nebulizers and DPIs are potentially suitable for the efficient delivery of these nanoparticles. The use of DPIs as devices for inhaled anticancer drugs loaded in lipid-based nanoparticles is quite promising as they have many advantages and could overcome the challenges associated with this route. **Conclusion:** So the pulmonary delivery of anticancer drugs can provide many advantages over conventional. The inhalation

route allows the direct delivery of chemotherapeutic agents to the target LC cells with high local concertation that may enhance the antitumor activity and lead to lower dosing and fewer systemic toxicities. Nevertheless, this route faces by many physiological barriers and technological challenges that may significantly affect the lung deposition, retention, and efficacy of anticancer drugs. The use of lipid-based nanocarriers could potentially overcome these problems owing to their unique characteristics, such as the ability to entrap drugs with various physicochemical properties, and their enhanced permeability and retention (EPR) effect for passive targeting. Besides, they can be functionalized with different targeting moieties for active targeting.

PCTC803

TARGETING COLORECTAL CANCER WITH BIO-ENHANCED FORMULATION STRATEGIES FOR BIOFLAVONOIDS

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Abstract

Objective: Colorectal cancer (CRC) ranks as second most ascending tumor of high morbidity worldwide with metastatic nature of spread and deficient prognosis. Although vital progress in current therapies comprehending rational combination of surgery, resection, palliative radiation etc. has been made but they cost expensive and lay serious side effects. Phyto-active bioflavonoids are highly intriguing molecules reportedly regulating multi-step process of carcinogenesis but their limited solubility is a challenge. Aim of this review is to elucidate diversified novel formulation strategies of bio-flavonoids targeting CRC. **Method:** The literature review is done by searching terms like "anti-carcinogenetic flavonoids", "polyphenols against cancer", "Colorectal cancer", "anti-cancer activity of flavonoids" in online databases and search engines like Scopus, Google Scholar, PubMed, Elsevier, Springer etc. Authors reviewed more than 50 research articles and review papers and reported the recent most findings. **Result:** Flavonoids inhibit molecular targets that stimulate cell proliferation and metastasis against CRC development, progression and prevention. Polyphenols possessing strong antitumor potential when aided with nanotechnology is an avenue for tumor targeting which combat their bioavailability issues. Various reported CRC targets of these novel formulations include Kras expression, ACF and MDF factors, iNOS suppression, NF-KB expression and nuclear factor erythroid 2-related factor 2 (Nrf2). **Conclusion:** Bioavailability enhancement strategies for polyphenols through novel drug delivery systemslike carbon nano-powder, nanofibres, pH sensitive nanorods, biomimetic NPs to combat poor absorption, deficient bioavailability and solubility promote precise uptake and drug release in tumor cells through biomimetic and TME-responsive pathways. The future researches aim at genetic and molecular basis of pharmacophore analysis and optimizations.

PCTC804

LEVERAGING RED BLOOD CELLS FOR TARGETED ANTIBACTERIAL THERAPY: A NOVEL STRATEGY AGAINST DRUG-RESISTANT INFECTIONS

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Abstract:

Blood cell-based drug delivery systems offer distinct advantages over traditional polymeric systems, particularly in antibacterial therapy. Blood cells, including red blood cells (RBCs), leukocytes, and

platelets, along with their membranes, have demonstrated potential as drug carriers. These cells can navigate physiological and pathological barriers that commonly hinder nanoparticle-based delivery systems, effectively delivering drugs to target sites. RBCs, as the primary component of blood with a lifespan of 100-120 days, are particularly advantageous as drug carriers due to their long circulation time, biocompatibility, and biodegradability. RBCs can encapsulate drugs, thereby preventing rapid drug clearance and enhancing therapeutic efficacy. Additionally, RBC membranes (RBCM) possess the ability to absorb bacterial toxins, contributing to the body's immune defense. Surface loading of drugs onto RBCs represents an emerging approach, primarily in preclinical stages, offering improved pharmacokinetics. Several methods, including electroporation, endocytosis, and osmotic techniques, have been developed to encapsulate drugs within RBCs. Clinical strategies for RBC-based delivery systems focus on targeted delivery to systemic circulation, the reticulo-endothelial system (RES), and localized delivery using RBC ghosts. Recent advancements include the modification of RBCs to create "smart" carriers capable of delivering potent antibiotics directly to bacteria, reducing off-target effects and mitigating antibiotic resistance. This innovation is crucial given the global rise in multi-drug-resistant (MDR) bacteria, which pose significant challenges to public health. MDR bacteria employ various mechanisms to resist antibiotics, exacerbating the difficulty of treating bacterial infections. Blood cell-based drug delivery systems thus hold significant promise for enhancing antibacterial therapies and addressing the growing threat of antibiotic resistance.

PCTC805

DEVELOPMENT OF THERMORESPONSIVE *IN-SITU* NASAL GEL OF LERCANIDIPINE HYDROCHLORIDE AND ITS *IN VITRO* EVALUATION

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Abstract:

Objectives: Typically, patients with mild to moderate hypertension can be treated with tablets containing Lercanidipine hydrochloride. This study attempt to create the Lercanidipine Hydrochloride *In Situ* Nasal Gel by utilizing the thermosensitive polymer pluronics F127 and the viscosity enhancer HPMC K4M which offers benefits like avoidance of first pass metabolism, and ability to delay incomplete absorption in the gastrointestinal tract. These benefits include improved bioavailability, decreased dose concentration and frequency, extended formulation residence time, rapid drug absorption, and quick onset of action. **Methodology:** Cold's technique was used to create aqueous nasal gel. The measured amount of HPMC K4M mucoadhesive polymer and the drug's methanolic solution were dissolved in distilled water. The weighed amount of Pluronics F127, was progressively added to the aforementioned formulations while being stirred continuously by a magnetic stirrer. The mixture was then left at 4°C overnight until it formed a clear gel. Citric acid was used to change the formulation's final pH such that it was between 4.5 and 5.5. **Results:** The formulated nasal gel when instilled as liquid showed rapid gelation based on sol to gel transformation. HPMC K4M enhanced the viscosity of the formulation. The formulations wee optimized using Central Composite deign HPMC K4M and Pluronics 127 were used as independent variables. Total 15 batches were prepared from which batch F6 showed optimal value for pH (6.49±0.10), viscosity (3282 ±0.24 cps), gelation time (37 sec.) and %drug released (71.30 %). Bioavailability of formulation can be correlated with improved drug release. **Conclusions:** In conclusion,

it can be said that a stable, effective *in situ* nasal gel of Lercanidipine Hydrochloride was formulated which will bypass the first-pass effect, improve the bioavailability, and give a sustained release for the drug at the site which gave possibility of lowering the dosing frequency.

PCTC806
COMPARATIVE ASSESSMENT OF NANO VESICULAR COLLOIDAL FORMS OF ANTIFUNGAL DRUG

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Abstract:

Objective: The objective of this study was to formulate and to check the comparative evaluation studies of transfersomal gel and liposomes-incorporated gel. **Methods:** The topically applicable transfersomal gel and comparing with that of liposomal gel for the treatment of fungal infections. Liposomes were formulated by using the thin-film evaporation method; Transfersomes was formulated by a reverse-phase evaporation method and optimized using 32 level factorial design using a Design of Experiment (DoE) approach for responses such as particle size and entrapment efficiency. The optimized liposomes and transfersomal suspension were then characterized for studies such as vesicle size, FTIR, DSC, entrapment efficiency and turbidity measurement and then it was incorporated into the poly aqueous gelling agent Carbopol 934. The transfersomal gel of ketoconazole was then compared with that of liposomal gel of ketoconazole for its evaluation parameters such as pH, viscosity, spreadability, drug content, flux study. In addition, stability studies as per ICH guidelines were carried out for the optimized liposomes, transfersomal suspension, liposomal gel and transfersomal gel. **Results:** The vesicle size was 155.3 nm, Entrapment efficiency 86.79 %, Drug content 97.01 %, PDI 0.331 for optimized liposomes, and for transfersomal suspension the size was 90.8 nm, EE 90.17 %, Drug content 98.65 %, PDI 0.445. Liposomal gel showed vesicle size 150.6 nm, Drug content 96.76 %, whereas the transfersomal gel from 89.9 nm, x DC 98.23 %. **Conclusion:** Transfersomes was found to be the better drug delivery systems for topical application as compared to the liposomes. They are known for their ultra-flexible bilayer membranes, which form highly elastic and deformable vesicles. As a result, transfersomes may escape from the narrow pores in the stratum corneum under non-occlusive conditions. Thus, the transfersomal gel of ketoconazole can enhance the drug's topical penetration and thus improves the good stability studies, which certainly adds quality to the treatment.

PCTC807
ADVANCEMENT IN PSORIASIS MANAGEMENT: EMERGING THERAPEUTIC TRENDS AND PERSONALIZED APPROACHES

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Abstract:

Objectives: The aim of this study was to new treatments for psoriasis, including biologics, small molecule drugs, and advanced delivery methods, and explore personalized care using biomarkers and multi-omics. **Methods:** This study will involve a comprehensive review of recent literature on psoriasis therapies, focusing on novel biologics, small molecule inhibitors, and innovative drug delivery systems. Data

will be collected from clinical trials, research papers, and reviews published in reputable medical and scientific databases. The study will also analyze advancements in personalized treatment approaches through the integration of biomarkers and multi-omics technologies. Comparative analysis of therapeutic efficacy, safety, and patient outcomes will be conducted to highlight emerging trends and potential improvements in psoriasis management. **Results:** Emerging treatments for psoriasis, including novel biologics like mirikizumab, small molecule inhibitors, and advanced drug delivery systems, have shown promising results in improving therapeutic efficacy and patient outcomes. Targeted therapies like spesolimab have been particularly effective in severe cases like generalized pustular psoriasis (GPP). Personalized approaches using biomarkers and multi -omics technologies are advancing treatment precision. **Conclusion:** New therapies and personalized treatment strategies are offering hope for better psoriasis management. Continued collaboration among researchers and clinicians is key to translating these advancements into clinical practice, improving outcomes for patients.

PCTC808

FEXOFENADINE ETHOSOMAL GEL AS A NOVEL VESICULAR CARRIER: PREPARATION AND EVALUATION FOR THE TREATMENT OF HIVES (URTICARIA)

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Abstract:

Objectives: Ethosomal gels are designed to overcome the limitations associated with conventional oral therapy by delivering drugs into deep skin layers, which can be particularly beneficial for conditions that require localized action, such as skin diseases or inflammation. They are also formulated to enhance patient compliance and stability when compared to other dosage forms **Methods:** The preparation involves formulating the ethosomes by the cold method, where necessary amounts of drug, soya lecithin, and ethanol are combined and stirred. The resulting mixture is refrigerated for storage. Additionally, a Carbopol 934 gel base was prepared by dispersing Carbopol 934 in hot distilled water that had previously contained glycerol, followed by the addition of propyl and methyl paraben. The ethosomal formulation was then gradually added to the Carbopol 934 gel base with gentle stirring. **Results:** The evaluation process includes organoleptic studies to assess the general appearance, colour, and odour of the gel. Solubility studies were conducted to determine the semi-quantitative solubility of the drug in a given solvent. In addition, various instrumental analyses such as pH meter, ultrasonic cleaner, UV-visible spectrophotometry, FTIR spectrophotometry, Franz diffusion were employed to evaluate the characteristics and performance of the fexofenadine ethosomal gel. The pH of the vesicles was fall within pH 4.0-5.0. The ratio of weight placed over the slide (135g) to spread area's diameter in centimeter for 0.25% carbopol ethosome was found to be 62.211:1 and showing a good spreadability.λmax was found to be at 250 nm for fexofenadine ethosomal gel and %Assay was 98.5 ± 0.055677644 %. *In vitro* drug release from ethosomes was carried out using Franz diffusion cell method and found 98.85 ± 0.08% in 6 hr. **Conclusions:** The preparation and evaluation process of the fexofenadine ethosomal gel involved a systematic approach to ensure the quality, stability, and effectiveness of the novel drug delivery system. The documented methods and procedures provide a comprehensive understanding of the formulation and assessment of the ethosomal gel, contributing to the advancement of drug delivery technologies for improving patient care and treatment efficacy.

PCTC809

DRUG LOADED LIPID NANOCARRIER AS A POTENTIAL REPURPOSING APPROACH TO TREAT GLIOMA: CHARACTERIZATION, PHARMACOKINETIC AND MOLECULAR SIMULATION STUDY

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Abstract:

Objective: The study explores anticancer potential of drug loaded lipid nanocarriers (LNs) in glioma cells as a potential repurposing nano-modality along with estimation of drug availability at rat brain. **Method:** Experimental LNs were produced by previously reported method and characterized. *In vitro* anticancer efficacy of experimental LNs was estimated by MTT, confocal microscopy, and FACs analysis in glioma cells. Plasma and brain pharmacokinetic (PK) parameters were also analysed by LCMS/MS. **Results:** Spherical, nanosized, homogenous, unilamellar, LNs were reported having desirable drug loading (9.5 ± 0.6 %), negative zeta potential and sustained drug release tendency. FITC-LNs were sufficiently internalized into U87MG cells line within 0.5 h incubation period. IC_{50} for LNs was considerably higher than free drug in the tested glioma cell lines. Further, LNs induced superior apoptotic effect in U87MG cells than drug. PK (plasma/brain) data depicted higher AUC, V_{ss}, MRT with lower Cl_t for LNs suggesting improved bioavailability, *in vivo* residence and sustained drug availability than free drug administration. Docking studies rationalized *in vitro*/ *in vivo* results as preferably higher binding affinity (docking score:12.4) was detected for drug with glioma proteins. **Conclusion:** The drug loaded LNs confirmed its anticancer potential in all the experimental analysis conducted for the study. Further, *in vivo* studies in glioma bearing xenograft model is underway for futuristic clinical validation of LNs.

PCTC810

ANTIOXIDANT, *IN SILICO* AND CYTOTOXICITY STUDY OF AQUEOUS EXTRACT OF *GARCINIA PEDUNCULATA*

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Abstract:

Objectives: *Garcinia pedunculata* fruit is mainly used by local people for their gastrointestinal treatment and also used for treatment of chronic catarrh. The aqueous extract of this plant lacks detailed molecular-level insights into the exact bioactive components responsile for targeted activity. So extracted pulp of Garcinia pedunculata was studied to test their GC-MS analysis, *in silico*, and cytotoxicity study. **Methods**: Sun dried fruit pulps were extracted using water by maceration process. For *in vitro* antioxidant activity, DPPH and ABTS radical scavenging activity studies were performed. The compounds were identified by using GC-MS analysis. Later *in silico* study was performed by taking selective compounds against receptor (PDB: 1FT4, 1TNF, 1VJY, 5HYK and 1IL-6) responsible for good binding afinity. **Results**: The % yield of aqueous extract was found to be 2.4%. The aqueous extract showed IC 50 values of 28 µg/mL and 12 µg/mL for DPPH and ABTS radical scavenging activity respectively. GC-MS analysis revealed a total number of 27 compounds in the sample and out of which 9 compounds possesses high antioxidant property (as per literature). *In silico* approach of 2-vinyl- 9-[beta-d-ribofuranosyl]

hypoxanthine shows maximum molecular docking scores at -6.6, -8.4, - 8.2, -7.9, and -6.5 kcal/mol. Conclusions: The study concluded that the aqueous extract of Garcinia pedunculata is having antioxidant activity. *In silico* approach showed the molecular docking of bioactive compounds of Garcinia pedunculata against various receptors which resultsthat the bioactive compounds shows better activity for targeted liver toxicity.

PCTC811

HEPATOPROTECTIVE ACTIVITY OF METHANOLIC EXTRACT OF *GARCINIA PEDUNCULATA*

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Abstract:

Objectives: *Garcinia pedunculata*, a medicinal plant found in northeastern regions of India, has been traditionally used for its therapeutic properties and also an integral part of Assamese cuisines. The aim of this study was to determine Hepatoprotective activity of methanolic extract of *Garcinia pedunculata*. **Methods**: The fruits were collected and extraction was performed by soxhlation method to get methanolic extract. The phytoconstituents were quantitatively analyzed for total phenolic and flavonoid content. For determination of *in vitro* antioxidant activity, DPPH and ABTS radical scavenging activity studies were performed. Hepatoprotective activity was determined on animal model using female albinorats Wistar rat, and *in vivo* antioxidant activity was estimated by SOD and MDA. **Results**: The % yield of methanolic extract of *Garcinia pedunculata* was found to be 3.29%. The quantitative estimation of phytoconstituents was characterized by TPC and TFC and was found to be 37 ± 2.1 mg GAE/g and 43.36 ± 2.2 mg QE/g respectively. The methanolic extract of *Garcinia pedunculata* showed IC 50 values of 28 µg/mL and 12 µg/mL for DPPH and ABTS scavenging activity respectively, and the antioxidant study (*in vivo*) was estimated by SOD and MDA and hepatoprotective study were carried out. **Conclusions**: The study concludes that the methanolic extract of *Garcinia pedunculata* possesses high polyphenolic content and also has high flavonoid content excluding alkaloids and some minor secondary metabolites and shows good antioxidant activity which further helps inestablishing hepatoprotective activity.