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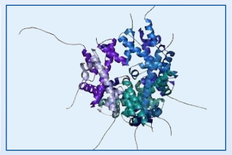
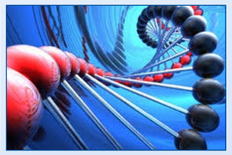
CHAMELI DEVI INSTITUTE OF PHARMACY

DBT Sponsored One Day National Conference

"PBGOLD 2K23"

"Pharmaceutical Biotechnology: Global Opportunities & Latest Developments"





DEPARTMENT OF BIOTECHNOLOGY, NEW DELHI

Sponsored One Day National Conference

"PBGOLD 2K23"

"Pharmaceutical Biotechnology: Global Opportunities & Latest Developments"

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The **Research Gate: Pharmaceutical Science** provides a resource content dealing with the pharmaceutical industry starting from drug discovery process to drug distribution system to patients. The **Research Gate: Pharmaceutical Science** aims to publish all the recent and exceptional research articles and reviews in all areas of modern pharmaceutical industry like drug discovery including *in-silico* drug design, combinatorial chemistry, new drug targets, Bioinformatics and chemoinformatics, Genomics and proteomics, medicinal chemistry, SAR, high-throughput screening, advances in ADME, drug delivery and Biopharmaceuticals, phytochemistry and pharmaconosy. **Research Gate: Pharmaceutical Science** is the international journal of published quarterly by Pharmbio Research Center. Authors should consult the latest instructions to authors before preparing their manuscripts. All contributions must be in English and should be submitted online. Conflict of interest may exist when an author or the author's institution has a financial or other relationship with other people or organizations that may inappropriately influence the author's work. A conflict can be actual or potential and full disclosure to the Journal is the safest course. All submissions to the Journal must include disclosure of all relationships that could be viewed as presenting a potential conflict of interest. The Journal may use such information as a basis for editorial decisions and may publish such disclosures if they are believed to be important to readers in judging the manuscript. A decision may be made by the Journal not to publish on the basis of the declared conflict.

Dear Professor\ Colleagues\ Friends,

I would like to invite you to submit your research/review papers for possible publication in "**Research Gate: Pharmaceutical Science**". It provides a rapid forum for the dissemination of original research articles as well as review articles related to Pharmaceutical Sciences. " **Research Gate: Pharmaceutical Science**" is published using an open access publication model, meaning that all interested readers are able to freely access the journal online at https://www.pharmbioresearch.com/Journal%202/index.php/HomeRG . It is a peer reviewed, open access Journal with an International editorial board. The distinguished editorial board with extensive academic qualifications, ensures that journal maintains high scientific standards and focus on the areas of Drug design, Discovery, Cellular and Molecular biology, QSAR, Development, Formulation, Drug Manufacturing Technologies, Pharmaceutical Regulations, Natural Product & Biotechnology

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The probable contributors may ensure that the manuscripts are formatted according to the Author's Instructions.

Best Regards

PROGRAMME SCHEDULE

Time	Activity	Venue
09:00 am -10:30 am	Registration, Kit distribution & Breakfast	Auditorium
10:30 am -11:30 am	Inaugural Function	Auditorium
PLENARY LECTURES		
11:30 am -12:30 pm	Scientific Session I	
12:30 pm -1:30 pm	Scientific Session II	
01:30-02:30 pm **LUNCH**		
02:30 pm – 03:00 pm	Motivational Talk	
03:00 pm – 04:00 pm	**E- Poster Presentation**	
4:00-04:20 pm	Award ceremony & Valedictory Function	Auditorium
04:20-04:40 pm **HIGH TEA**		

MESSAGES

Shri Vinod Kumar Agarwal
Chief Patron

MESSAGE

It gives me immense pleasure and satisfaction that **Chameli Devi Institute of Pharmacy** is organizing a **DBT sponsored** One Day National Conference on **"PBGOLD 2k23" Pharmaceutical Biotechnology: Global Opportunities & Latest Developments", 19th August 2023.**

I hope that the event will provide a highly stimulating and interactive platform for all the delegates, to explore and exchange the latest ideas and advancements in health care system. Conference is composed of lectures by distinguished speakers, plenary talk, keynote addresses and technical papers and presentations to address various challenges and innovations in the field of Pharmaceutical Biotechnology.

I am really delighted to send my best wishes to the organizers and participants of National Conference and wish all the success for the Conference.

Shri Vinod Kumar Agarwal
Chairman
Chameli Devi Group of Institutions
Indore (M.P.)

Shri Sanjay Kumar Agarwal
Patron

MESSAGE

I am very glad to know that **Chameli Devi Institute of Pharmacy** is organizing **DBT sponsored** One Day National Conference on **"PBGOLD 2k23" Pharmaceutical Biotechnology: Global Opportunities & Latest Developments", 19th August 2023** and releasing a souvenir to mark the event. Chameli Devi Institute of Pharmacy is one of the most vibrant departments and has been actively contributing to the needs and demands of the society at large in fostering academic research and developments.

Conference is meant essentially for scientific exchange and generation new ideas in the chosen field along with personal interaction. I hope that this Conference will disseminate innovative ideas in new and emerging technologies in Biotechnology field.

I congratulate the organizers for their initiative and attracting a wide range of papers from experts in their fields. I wish all the speakers and delegates a most informative and enjoyable Conference.

I extend my best wishes for the success of Conference and release of souvenir.

Shri Sanjay Kumar Agarwal
Vice-Chairman
Chameli Devi Group of Institutions
Indore (M.P.)

Dr Joy Banerjee
Group Director
Chameli Devi Group of Institutions, Indore

MESSAGE

I have immense pleasure in writing this message on the occasion of the National Conference on **"PBGOLD 2k23" Pharmaceutical Biotechnology: Global Opportunities & Latest Developments", 19th August 2023**. This Conference will provide a platform to groom young scientists from all over the country and to bridge the researchers working in academia and other professionals through current technological trends. It is a high time to create research activities among the budding professionals. May this Conference provide greater opportunities for every member of this specialty to learn more and let this learning be of immense help to the community at huge. I congratulate the organizers for their initiative and wish the Conference all success.

Dr. Joy Banerjee
Group Director
Chameli Devi Group of Institutions
Indore (M.P.)

Dr. Yusuf A. Jaliwala
Secretary IPA
MP Branch, Indore

MESSAGE

Biotechnology is very useful in Synthesis of Active Pharmaceutical Ingredients as well as Vitamins for the Healthcare of Human Being. This requires huge investment in Fermentation Technology to Produce Life saving Drugs. Its research can be conducted in Pharmaceutical Chemistry Lab to synthesise alternative route which will be cheaper n have good Conversion yield as Compared to Synthetic Route.

The Conference is putting its best efforts to conduct this event in a befitting manner, considering the importance of Biotechnology. The theme of the Conference seeks to not only strengthen our commitment towards the ideals of our specialty, but also to encourage us to look ahead and stay abreast of the latest developments in Biotechnology and academic research. I extent my warm welcome to the resource persons young researchers, budding Pharma professionals, eminent scientists, guests, faculties, and industrialists in this splendid conference and wish the conference a great success.

Dr. Yusuf A. Jaliwala
Secretary IPA
MP Branch, Indore

Dr. Arun Kumar Gupta
Principal
Chameli Devi Institute of Pharmacy, Indore

MESSAGE

"Learning gives creativity, creativity leads to thinking, thinking leads to knowledge and knowledge makes you competent."

Warm Greeting to All

It gives me an immense pleasure that **Chameli Devi Institute of Pharmacy** is organizing the National Conference with the theme of **"PBGOLD 2k23" Pharmaceutical Biotechnology: Global Opportunities & Latest Developments", 19th August 2023**. The conference is aimed to provide the platform for industrialists, educationists, researchers and students to debate and discuss on the Biotechnological Aspects that will improve nutritional status and health of animals and plants. The unique event will explore the significance of Biotechnology and their benefits. The Conference with your support is putting its best efforts to conduct this mega event in a befitting manner, considering the importance of Biotechnology. The theme of the Conference seeks to not only strengthen our commitment towards the ideals of our specialty, but also to encourage us to look ahead and stay abreast of the latest developments in Biotechnology and academic research. The entire Conference will be addressed by eminent scientists and professors as key note/invited speaker while it will also attract young researchers, faculties and students across the country, who will take part as poster presentations. I extent my warm welcome to the resource persons young researchers, budding Pharma professionals, eminent scientists, guests, faculties, and industrialists in this splendid conference and wish the conference a great success. I hope all the delegates will derive maximum benefit from this event and take back fond memories of the Indore experience!

Best wishes…

Jai Hind

Dr. Arun Kumar Gupta
Principal
Chameli Devi Institute of Pharmacy
Indore (M.P.)

Prof. (Dr.) Saurabh Gupta
Professor & Head Department of Pharmacology
Academic Head
Executive Member IPA, M.P.
Chameli Devi Institute of Pharmacy, Indore

MESSAGE

"Education is the passport to the future, for tomorrow belongs to those who prepare for his today"

The DBT sponsored One Day National Conference on**" "PBGOLD 2k23" Pharmaceutical Biotechnology: Global Opportunities & Latest Developments", 19th August 2023**. Indore Madhya Pradesh is a meeting place for leaders in the field to discuss the issues and challenges scientists and researchers face in all aspects of the proteomics and bioinformatics. National speakers from academia and industry will discuss various aspects and developments in the area of biomarker importance in disease prognosis and the role of proteomics. Through scientific presentations, case studies and panel discussions, these areas will be addressed in an intimate and highly interactive environment with perspectives from industry, academia and the public sector. These international events are authoritative in guiding pharmacy students, scientists, research scholars, medical practitioners, clinical pharmacists, leading pharmaceutical industries to champion professional and social relationship with sister organizations and actively concur within the analysis and safe utilization of the pharmacy drugs with honor and ethics. The scientific sessions will include online and poster presentations and seminars from the professionals working within the field of pharmaceutical sciences. The conference is supported by IPA Branch Indore. We sincerely acknowledge the efforts of the organizing team and student volunteers for successfully organizing and coordinating the assigned activities of the conference. On the behalf of organizing committee, we welcome all the delegates, dignitaries and participants to **PBGOLD 2K23.**

Best wishes…

Dr. Saurabh Gupta
Professor & Head Department of Pharmacology
Academic Head
Executive Member IPA, M.P.
Chameli Devi Institute of Pharmacy, Indore (M.P.)

Mr. Saurabh D Jain
Associate Professor
Department of Pharmaceutical Chemistry
Chameli Devi Institute of Pharmacy, Indore

MESSAGE

"Education is more than being literate."

With these words, I welcome you all in **"PBGOLD 2k23" Pharmaceutical Biotechnology: Global Opportunities & Latest Developments that is a DBT sponsored One Day National Conference on 19th August 2023.**This conference focused on connecting the industry together with the researchers from the Universities and all Research Institutions. This is also planned to have the platform for sharing the research outcome and initiate the industrial collaborations for sustainable development. This forum will be growing up and expected to bring the possibility on technology transfer while providing an excellent platform for exploring the various opportunities in the Biotechnology Field.

I am thankful for the enormous and high-quality support of all authors, reviewers and session chairs. I wish that CDIP will keep on growing in coming years with more impact on the research community.

Wish you all a cordial greet and success for life!

Mr. Sourabh D Jain
Associate Professor
Chameli Devi Institute of Pharmacy
Indore (M.P.)

Mr. Ankit Agrawal
Associate Professor
Department of Pharmaceutics
Chameli Devi Institute of Pharmacy, Indore

MESSAGE

"Always laugh when you can. It is cheap Medicine."

It is my privilege and honor to welcome you all to the **"National Conference PBGOLD 2k23" sponsored by Department of Biotechnology, New Delhi.**

The main aim of organizing this conference is to share and enhance the knowledge of each and every individual in this fast-moving Biotechnology Era. We have given a good opportunity for those who have a thirst in knowing the present Biotechnological developments and also share their ideas. Additionally, this conference will also facilitate the participants to expose and share various novel ideas. The conference aims to bridge the researchers working in academia and other professionals through research presentations and keynote addresses in current Biotechnological trends

I wish that CDIP will keep on growing in coming years with more impact on the International research community. I want to thank in advance the conference committee for extending their valuable time in organizing the program and all the authors, reviewers, and other contributors for their sparkling efforts and their belief in the excellence of **PBGOLD 2k23.**

Mr. Ankit Agrawal
Associate Professor
Chameli Devi Institute of Pharmacy
Indore (M.P.)

Dr. Gaurav Jain
Professor & Head of Department of Pharmaceutics
Chameli Devi Institute of Pharmacy, Indore

MESSAGE

The DBT sponsored One Day National Conference on **"PBGOLD 2k23" Pharmaceutical Biotechnology: Global Opportunities & Latest Developments", 19th August 2023** at Chameli devi institute of pharmacy, Indore, is a meeting place for leaders in the field to discuss the issues and challenges scientists and researchers face in all aspects of the biotechnology and current trends national speakers from academia and industry will discuss various aspects and developments in the area of biotechnology biomarker importance in disease prognosis. Through scientific presentations, case studies and panel discussions, these areas will be addressed in an intimate and highly interactive environment with perspectives from industry, academia and the public sector. These national events are authoritative in guiding pharmacy students, scientists, research scholars, medical practitioners, clinical pharmacists, leading pharmaceutical industries to champion professional and social relationship with sister organizations and actively concur within the analysis and safe utilization of the pharmacy drugs with honor and ethics. The scientific sessions will include e-poster oral and e-poster presentations and seminars from the professionals working within the field of pharmaceutical sciences. On the behalf of committee member, we welcome all the delegates, dignitaries and participants to **"PBGOLD 2k23".**

I wish all the best for this conference.

Dr. Gaurav Jain
Professor & Head of Department of Pharmaceutics
Chameli Devi Institute of Pharmacy
Indore (M.P.)

Dr. Pankaj Kushwah
Professor & Head of Department of Pharmacognosy
Chameli Devi Institute of Pharmacy, Indore

MESSAGE

I am extremely pleased to know that Chameli devi institute of pharmacy is organizing one day DBT sponsored National Conference on "**PBGOLD 2k23" Pharmaceutical Biotechnology: Global Opportunities & Latest Developments", 19th August 2023**. Indeed many congratulations on this occasion for putting up such a wonderful conference. As always CDIP has been a place of innovative teaching. We are extremely happy to be associated with CDIP in terms of training of students in innovative and trained professionals. I am sure this conference will inspire many a scientists to bring drugs from bench to bedside. It is praiseworthy to note that this conference would give opportunity for young researchers to make presentations of their innovative ideas and research work. This will result in creation of necessary manpower in the areas of drug discovery and development.

We are at the cross roads of personal medicine taking over traditional medicine. In this context there is immense need to focus on Biomarkers for various indications. I am sure deliberations from this conference will result in recommendations for implementations so as to bring new drugs to bedside.

I wish all the best for this conference.

Dr. Pankaj Kushwah
Professor & Head of Department of Pharmacognosy
Chameli Devi Institute of Pharmacy
Indore (M.P.)

Mr. Arun Patidar
Head of Department (D. Pharm)
Chameli Devi Institute of Pharmacy, Indore

MESSAGE

The DBT sponsored One Day National Conference on **"PBGOLD 2k23" Pharmaceutical Biotechnology: Global Opportunities & Latest Developments", 19th August 2023** at Chameli Devi Institute of Pharmacy, Indore, is a meeting place for leaders in the field to discuss the issues and challenges scientists and researchers face in all aspects of the biotechnology and current trends national speakers from academia and industry will discuss various aspects and developments in the area of biotechnology biomarker importance in disease prognosis. Through scientific presentations, case studies and panel discussions, these areas will be addressed in an intimate and highly interactive environment with perspectives from industry, academia and the public sector. These national events are authoritative in guiding pharmacy students, scientists, research scholars, medical practitioners, clinical pharmacists, leading pharmaceutical industries to champion professional and social relationship with sister organizations and actively concur within the analysis and safe utilization of the pharmacy drugs with honor and ethics. The scientific sessions will include e-poster oral and e-poster presentations and seminars from the professionals working within the field of pharmaceutical sciences. On the behalf of committee member, we welcome all the delegates, dignitaries and participants to **"PBGOLD 2k23".**

Mr. Arun Patidar
Head of Department (D. Pharm)
Chameli Devi Institute of Pharmacy
Indore

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Chairman, CDGI, Indore

PATRON

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Vice- Chairman, CDGI, Indore

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Group Director CDGI, Indore

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List of Abstract

S.No	Abstract ID	Author Name	University/Institution Name	Abstract Title
1.	PBGOLD-001	Madhav Singla,	Chitkara College of Pharmacy, Chitkara University, Rajpura-140401	Repositioning technique based anti-Parkinson's therapy by Diltiazem in 6-OHDA rat model of Parkinson's disease.
2.	PBGOLD-002	Rajiv Saxena	Smriti College of Pharmaceutical Education, Indore, India	Investigation Of Dalbergia Sissoo Roxb Stem Bark Extract For Its Anti-obesity Activity
3.	PBGOLD-003	Neha Bonde	Chameli Devi Institute of Pharmacy, Indore	Empty Bottle Stimulation: An Alternative Method for Stress Induced Immunomodulation
4.	PBGOLD-004	Ankit Agrawal	Chameli Devi Institute of Pharmacy, Indore	Effectiveness of Jatropha curcas as Biodiesel and Antiviral: A Review
5.	PBGOLD-005	Anindya Goswami	Department of Pharmacy, Mandsaur University, Mandsaur	Fabrication And Assessment Of Hair Care Formulations Containing Selected Herbal Constituents
6.	PBGOLD-006	Saloni Chouhan	Chameli Devi Institute of Pharmacy, Indore	The Green Innovation: Bioplastics Saloni Chouhan, Vaishali Chachriya, Shivani Fotedar
7.	PBGOLD-007	Devansh Shriwastav	Chameli Devi Institute of Pharmacy, Indore	Recent Advancements In Genome Technolgy
8.	PBGOLD-008	Sonu Gathe	Smriti College of Pharmaceutical Education, Indore, India	"A Guide To Understand Cerebral Ischemia And Its Possible Role To Cure"
9.	PBGOLD-009	Tanish Golhani	Lakshmi Narayan college of pharmacy (RCP), Indore.	Biosensors: Pioneering Early Lung Cancer Diagnosis
10.	PBGOLD-010	Elma Khan	Amity Institute of Biotechnology, Amity University Uttar Pradesh, Lucknow Campus	Molecular Docking Study Of Coffee GST Protein With The Herbicide Safeners
11.	PBGOLD-011	Harshita Chawla	Amity Institute of Biotechnology, Amity University Uttar Pradesh, Lucknow Campus	Bioinformatics characterization of ABC transporter gene family in cucumber
12.	PBGOLD-012	Khushi Sharma	Amity Institute of Biotechnology, Amity University Uttar Pradesh, Lucknow Campus	In silico characterization of characterization of anti bacterial protein in Opium
13.	PBGOLD-013	Arun Patidar	Chameli Devi Institute of Pharmacy, Indore	Insilico Study of Triazole Derivatives as Antitubercular Agents
14.	PBGOLD-014	Pankaj Kumar Pandey	Lakshmi Narayan college of pharmacy (RCP), Indore.	Semi solid nano-carrier delivery system for the treatment of Rheumatoid Arthritis
15.	PBGOLD-015	V. Sri Venkateswara Rao	MB.School of Pharmaceutical Sciences, Mohan Babu University, Tirupati-517102 A.P	Over View on Mucoadhesive Buccal Films
16.	PBGOLD-016	Prerna Srivastava	Amity Institute of Biotechnology, Amity University Uttar Pradesh, Lucknow Campus	Study on Production and Recovery techniques of Lipase enzyme to increase yield
17.	PBGOLD-017	Urmila Kotwal	Chameli Devi Institute of Pharmacy, Indore	Harnessing Microbial Fermentation for Drug Production: "Industrial Applications of Pharmaceutical Biotechnology"
18.	PBGOLD-018	Megha Gupta	Chameli Devi Institute of Pharmacy, Indore	Architects of Therapeutic Innovation: "The Nexus of 3D Printing and Biopharmaceutical Biotechnology"

S.No	Abstract ID	Author Name	University/Institution Name	Abstract Title
19.	PBGOLD-019	Himani Singh	Smriti College of Pharmaceutical Education, Indore, India	Design And Characterization Of Polyherbal Hair Formulation
20.	PBGOLD-020	Dhanshree Chaudhari	Swami Vivekananda College Of Pharmacy, Indore	Role Of Biotechnology In Pharmaceutical
21.	PBGOLD-021	Audumbar Digambar Mali	School of Life Sciences, Punyashlok Ahilyadevi Holkar Solapur University, Solapur, Maharashtra, India.	Initial Screening And Optimization Of Carmustine Targeted Drug Delivery System.
22.	PBGOLD-022	Shivangi Singh	Amity Institute of Biotechnology, Amity University Uttar Pradesh, Lucknow Campus	Screening And Identification Of Microbes And Responsible Enzymes For Biodegradation Of Dyes
23.	PBGOLD-023	Shreesh Tiwari	Chameli Devi Institute of Pharmacy, Indore	"Molecular Docking Studies And Biological Evaluation Of Chalcone Derivatives As Anticancer Agents"
24.	PBGOLD-024	Amisha Soni	Chameli Devi Institute of Pharmacy, Indore	Bioreactor For Co2 Utilization
25.	PBGOLD-025	Deepika Bairagee	Department of Pharmacy, Acropolis Institute of Pharmaceutical Education and Research, Indore Madhya Pradesh, India	Bioavailability Enhancements Of Macromolecules By Using Alternative Routes
26.	PBGOLD-026	Maneesh Shakya	School Of Pharmacy Devi Ahilya Vishwavidyalaya, Indore, Madhya Pradesh, India	Repurposing Of Anti-Inflammatory Drugs On Trimethyltin Induced Neurodegeneration
27.	PBGOLD-027	Vashisht Sahu	Lakshmi Narayan college of pharmacy (RCP), Indore.	CRISPR-Cas9: Pioneering The Future Of Genome Editing
28.	PBGOLD-028	Apoorv Pathak	Amity Institute of Biotechnology, Amity University Uttar Pradesh, Lucknow Campus	The Role Of HEK293T Cells In Investigating Neurotoxicity
29.	PBGOLD-029	Anmol Mishra	Amity Institute of Biotechnology, Amity University Uttar Pradesh, Lucknow Campus	Docking And ADMET Studies For Examining The Diabetes Specific Gene Against Plant Derived Natural Bioactive Compounds
30.	PBGOLD-030	Nitish Ranjan	Amity Institute of Biotechnology, Amity University Uttar Pradesh, Lucknow Campus	Recent Research And Developments In Production Of Biofuels
31.	PBGOLD-031	Abdul Jalil Shah	Research Scholar, Department of Pharmaceutical Sciences, University of Kashmir, Srinagar-190006	Evaluation Of Multimodal Anti-Alzheimer Effects Of Rosa Brunonii Using Antioxidant Assays, GCMS Profiling, Molecular Docking Study And Network Pharmacology.
32.	PBGOLD-032	Kishor Danao	Oriental University, Indore, Madhya Pradesh	Extraction, Isolation And Evaluation Of Anti-Diabetic Activity Of Clitoria Ternatea Linn.
33.	PBGOLD-033	Anuja Awasthi	Chameli Devi Institute of Pharmacy, Indore	"Docking Studies of Triazole Derivatives as Indoleamine 2,3-Dioxygenase-1 Inhibitors"
34.	PBGOLD-034	Anuja Awasthi	Chameli Devi Institute of Pharmacy, Indore	"Role Of Biotechnology In Pharmaceutical Industry Recent Development, Trends And Advantages"
35.	PBGOLD-035	Abhimanyu. S. Rathore	Chameli Devi Institute of Pharmacy, Indore	Antiaging: The Way You Manage The Age
36.	PBGOLD-036	Shilpa Khambete	Chameli Devi Institute of Pharmacy, Indore	Solid Lipid Nano Particles As A Novel Drug Delivery System For Enhanced Therapeutics
37.	PBGOLD-037	Ashwin Sharma	Chameli Devi Institute of Pharmacy, Indore	Formulation And Characterization Of Topical Formulation Using Aloe Vera Gel
38.	PBGOLD-038	Dheeraj Gour	Chameli Devi Institute of Pharmacy, Indore	Formulation Development And Evaluation Of Bioadhesive Ofloxacin Tablets
39.	PBGOLD-039	Anshul Namdev	Chameli Devi Institute of Pharmacy, Indore	Progress Of Biotechnology In India

S.No	Abstract ID	Author Name	University/Institution Name	Abstract Title
40.	PBGOLD-040	Ayushi Kaushal	Chameli Devi Institute of Pharmacy, Indore	In Vitro Activity Of Chitosan Oligomers
41.	PBGOLD-041	Manisha N Veer	Krishna Institute of Pharmacy, Krishna Vishwa Vidyapeeth, Malkapur, Karad, Mharashtra, India	Biotechnology And Healthcare Sector: A Review
42.	PBGOLD-042	Jaya Bairagi	Chameli Devi Institute of Pharmacy, Indore	Bio-Compound An Octopus Ink
43.	PBGOLD-043	Mahendra Chouhan	Chameli Devi Institute of Pharmacy, Indore	Rutin Trihydrate: A Possible Innovative Therapeutic Approach For Management Of Helicobacter Pylori
44.	PBGOLD-044	Priyal Patel	[1]Ramanbhai Patel College of Pharmacy, Charotar University of Science and Technology (CHARUSAT), At and Post: Changa-388421, Dist. Anand, Gujarat, India	Roflumilast Alleviates Adenine-Induced Chronic Kidney Disease By Regulating Inflammatory Biomarkers
45.	PBGOLD-045	Arun Kumar Dwivedi	School of Pharmacy, Devi Ahilya Vishwavidyalaya, Takshashila Campus, Khandwa Road, Indore-452017, M.P., India	Molecular Docking Analysis Of Some Thiazole Hydrazine Derivatives As Antimicrobial Agents
46.	PBGOLD-046	Janhvi Yadav	Smriti College of Pharmaceutical Education, Indore, India	Review On Formulation Of Chewing Gum For The Effective Management Of Various Diseases.
47.	PBGOLD-047	Purva Kolte	School of Pharmacy, Devi Ahilya Vishwavidyalaya, Takshashila Campus, Khandwa Road, Indore-452017, M.P., India	Molecular Docking Studies Of Chalcone Derivatives As Antibacterial Agents
48.	PBGOLD-048	Tamanna Narsinghani	School of Pharmacy, Devi Ahilya Vishwavidyalaya, Takshashila Campus, Khandwa Road, Indore-452017, M.P., India	Molecular Docking Analysis of Some Nitrobenzothiazole Derivatives As Antimalarial Agents
49.	PBGOLD-049	Ms. Nikita Upadhyay	Chameli Devi Institute of Pharmacy, Indore	Drug Delivery in Biotechnology Ongoing And Upcoming
50.	PBGOLD-050	Jaydeep S Baghel	Chameli Devi Institute of Pharmacy, Indore	Formulation And Development Of Oxygen-Enhancing Pills For Targeting Cancer Cells
51.	PBGOLD-051	V.S. Venkateswa rao	Mohan Babu University, Tirupati, 517102, Andhra Pradesh	Marine Actinomycetes From Bay Of Bengal – Potential Source Of Novel Bioactive Compounds – An Overview
52.	PBGOLD-052	Vikas Kumar Jain	School of Pharmacy, Devi Ahilya Vishwavidyalaya, Takshashila Campus, Khandwa Road, Indore-452017, M.P., India	Qualitative And Quantitative Phyto-Analysis, Antioxidant, Hypoglycemic & Anti-Obesity Potentials Of The Ethanolic Extracts Of Saussurea Lappa (Costus) Roots On In Vitro And In Vivo Models.
53.	PBGOLD-053	Priyanka Singh	School of Pharmacy, Devi Ahilya Vishwavidyalaya, Takshashila Campus, Khandwa Road, Indore-452017, M.P., India	Molecular Docking Studies Of Some Trifluoromethylquinoline Hybrids As Antiplasmodial Agents
54.	PBGOLD-054	Ravikant Gupta	Oriental University, Indore, Madhya Pradesh	Market Opportunities And Challenges In Biopharmaceutical Industry
55.	PBGOLD-055	Sunayana Mali	IES Institute of Pharmacy, IES University, Bhopal, Madhya Pradesh, India	Microsopic Characterization Of Crinum Solapurense Leaf Powder
56.	PBGOLD-056	Samarth Singh Chouhan	NMT, Gujarati College of Pharmacy, Indore	Role Of Edible Vaccines In Disease Prevention

S.No	Abstract ID	Author Name	University/Institution Name	Abstract Title
57.	PBGOLD-057	Geetanjali Prajapati	Chameli Devi Institute of Pharmacy, Indore	Nanomaterial Used In Nanobiotechnology: An Applicable Approach For Rational Future
58.	PBGOLD-058	Mohini Patidar	Department of Pharmaceutical Chemistry, GRY Institute of Pharmacy, Borawan	Design, Synthesis And Evaluation Of 1, 3, 4 Oxadiazole Derivatives For Antidiabetic Activity
59.	PBGOLD-059	Mohd Faarooq khan	R.D. Memorial College of Pharmacy and Research Khandwa Road ,Indore-452020(M.P.)	Development And Evaluation Of Solid Dispersion Of Containing Furosemide
60.	PBGOLD-060	Sourabh D Jain	Chameli Devi Institute of Pharmacy, Indore	Fluoroquinolones For The Treatment Of Tuberculosis: An Overview
61.	PBGOLD-061	S. M. Rathod	Oriental University, Indore MP, India	Comparative Qualitative Analysis Of Marketed Yasad Bhasma With Classical And Modern Parameters
62.	PBGOLD-062	Tanishq Gupta	NMT, Gujarati College of Pharmacy, Indore	Green Synthesis Of Metal Nanoparticles: Methods And Its Biological Applications
63.	PBGOLD-063	Sumit Naroliya	Indore Institute of Pharmacy (IIP), Indore	"Revolutionizing Biotechnology" (Unleashing Proteolysis Targeting Chimeras-Protac's Targeted Power)
64.	PBGOLD-064	Shashwat Jain	Lakshmi Narayan college of pharmacy (RCP), Indore.	Telomere-Targeting Molecule Program
65.	PBGOLD-065	Lalita Dhakad	Smriti College of Pharmaceutical Education, Indore, India	Spectrophotometry Method For The Estimation Of Terazosin In Tablet Formulation
66.	PBGOLD-066	Samyak Jain	Smriti College of Pharmaceutical Education, Indore, India	Fibrinogen Concentrate: A Novel Approach To Accelerate Clot Formation
67.	PBGOLD-067	Vaishnavi Pandey	Smriti College of Pharmaceutical Education, Indore, India	Cancer Drug Targeting Using Monoclinal Antibodies
68.	PBGOLD-068	Pradeep Kumar M.R	Department of Pharmaceutical Chemistry, KLE College of Pharmacy, Vidyanagar, Hubli	Design, Synthesis, Characterization And Screening Of Novel Benzoxazole-Thiazolidinone Scaffolds As Potential Antimycobacterial Agents
69.	PBGOLD-069	Nikita Choudhary	Chameli Devi Institute of Pharmacy, Indore	An Overview On Gene Therapy: Recent Approach For Hypertension Management
70.	PBGOLD-070	Divya Barua	Faculty of Pharmacy, Medicaps university, Indore (M.P.)	Silver Sulfadiazine Containing Polymeric Nanocarriers For Burn Treatment
71.	PBGOLD-071	Lalit Dhakar	School of Pharmacy, Devi Ahilya Vishwavidyalaya, Takshashila Campus, Khandwa Road, Indore-452017, M.P., India	Molecular Docking Analysis Of Some Primaquine-Chloroquine Fumardiamides As Antiplasmodial Agents
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73.	PBGOLD-073	Vishal Parihar	Chameli Devi Institute of Pharmacy, Indore	Bio-Cosmetics
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76.	PBGOLD-076	Adwita Pandav	Smriti College of Pharmaceutical Education, Indore, India	A Review On Herbal Topical Applications For The Treatment Of Rheumatoid Arthritis
77.	PBGOLD-077	Prerna Jaiswal	Institute of Pharmaceutical Sciences, SAGE University, Indore	In Vitro Cellular Reprogramming And Antioxidant Potential Of Herbal Drug: Fumaria Officinalis
78.	PBGOLD-078	Raja Paul	Rituparna Chatterjee, Ankita	Purification And Characterization Of Protease

S.No	Abstract ID	Author Name	University/Institution Name	Abstract Title
			Acharya. JIS University	From Spice Spcies Of Amomum Subulatum (Badi Elachi)
79.	PBGOLD-079	Neeleshwari Parmar	Chameli Devi Institute of Pharmacy, Indore	Genesis And Advancement Of Ribonucleotide Reduction
80.	PBGOLD-080	Anees Ghosi	Chameli Devi Institute of Pharmacy, Indore	"Artificial Intelligence In Drug Development: Transforming Discovery, Design, And Optimization"
81.	PBGOLD-080	Samaptika Maity	Department of Pharmaceutical Technology, JIS University, 81, Nilgunj Road, Kolkata	Application Of Plant Proteases In Dairy Industry For Milk Coagulation
82.	PBGOLD-082	Aditya Parashar	Sri Aurobindo institute of Pharmacy, Indore	Role Of Clinical Pharmacist In Direct Patient Care With Biotechnology-Driven Treatments
83.	PBGOLD-083	Avneet Kaur Bagga	Chameli Devi Institute of Pharmacy, Indore	3D Bioprinting And Tissue Engineering: Advances, Challenges, And Applications
84.	PBGOLD-084	Shilpi Rathore	Mahakal Institute of Pharmaceutical Studies, Ujjain	Recent Advancements In Ocular Drug Delivery System
85.	PBGOLD-085	Ayushi Kaushal	Chameli Devi Institute of Pharmacy, Indore	Formulation, Development Nd Evaluation Of Sustained Release Matrix Tablet Of Ranitidine Hcl
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88.	PBGOLD-088	Nidhi Namdev	GRY Institute of Pharmacy, Borawan	Emerging Biotechnology Trends In Drug Delivery For Cancer
89.	PBGOLD-089	Geetanjali Prajapati	Chameli Devi Institute of Pharmacy, Indore	Nanomaterial Used In Nanobiotechnology: An Applicable Approach For Rational Future
90.	PBGOLD-090	Amit Bhattacharje e	Kota College of Pharmacy, Kota, Rajasthan	Producing Hypoallergic Milk From DNA Free Beta-Lactoglobulin Using Biotechnology
91.	PBGOLD-091	Sonam Kukloria	GRY Institute of Pharmacy, Borawan	A Review On Biomimetic Drug Delivery Carriers
92.	PBGOLD-092	Vikas Chouhan	Smriti College of Pharmaceutical Education, Indore, India	A Comprehensive Review On Herbal Remedies Used For The Treatment Of Acne
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95.	PBGOLD-095	Priyanka Soni	Chameli Devi Institute of Pharmacy, Indore	Molecular Docking Studies Of Some Rhodanine Derivative Against Diabetes
96.	PBGOLD-096	Antim Prajapat	Chameli Devi Institute of Pharmacy, Indore	Biotechnology- An Important Tool For Drug Discovery
97.	PBGOLD-097	Antim Prajapat	Chameli Devi Institute of Pharmacy, Indore	Importance Of Biotechnology In The Pharmaceutical Industry
98.	PBGOLD-098	Sumeet Dwivedi	Acropolis Institute of Pharmaceutical Education and Research, Indore, (M.P.) - India	Toxicological Study Of Various Leaves Extracts Of Cupressus Torulosa D. Don Ex Lamb. And Cupressus Vietnamensis (Farjon & Hiep) Q.P. Xiang & J. Li Extract
99.	PBGOLD-099	Diksha Joshi	Faculty of Pharmacy, Medicaps university, Indore (M.P.)	Herbal Drugs For Management Of Pcos-A Review
100.	PBGOLD-100	Payal Devda	Chameli Devi Institute of Pharmacy, Indore	Genetic Engineering Therapy For Diabetes Management
101.	PBGOLD-101	Jyoti Chaudhari	Indore Institute of Pharmacy (IIP), Indore	Nanobiotechnology: A Promising Approach For Cancer Therapy

S.No	Abstract ID	Author Name	University/Institution Name	Abstract Title
102.	PBGOLD-102	Apeksha Sarafa	School of Pharmacy, Devi Ahilya Vishwavidyalaya, Takshashila Campus, Khandwa Road, Indore-452017, M.P., India	Gastroretentive Microspheres Containing Antipsychotic Drug: Formulation, Optimization, And Evaluation Using A Factorial Design Approach
103.	PBGOLD-103	Bhargavi Chitte	School of Pharmacy, Devi Ahilya Vishwavidyalaya, Takshashila Campus, Khandwa Road, Indore-452017, M.P., India	Molecular Docking Studies Of Triazene Derivatives As Antioxidant Agents
104.	PBGOLD-104	Neelima Naneriya	Shivajirao Kadam Institute of Pharmaceutical Education and Research, Indore	The Potential Of Sirna Based Drug Delivery In Respiratory Disorders: Recent Advances And Progress
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106.	PBGOLD-106	Kavita Vishwakarma	Mahakal Institute of Pharmaceutical Studies, Ujjain	Exposing The Link Between Radiation And DNA Damage
107.	PBGOLD-107	Archana Patidar	Shivajirao Kadam Institute of Pharmaceutical Education and Research, Indore	Approaches Towards Crop Protection Using Rnai Based Biopesticide: A Boon For Healthy Food
108.	PBGOLD-108	Vijayshri Rokde	Oriental University, Indore, MP	Design, Microwave Assisted Synthesis And Characterization Of Benzopyrrole Derivatives For The Management Of Diabetes Mellitus
109.	PBGOLD-109	Simran Bajaj	Kota College of Pharmacy, Rajasthan	Review: Biotechnology For Cancer Treatment
110.	PBGOLD-110	Kamlesh R Dandagvhal	Sandip Foundation's Sandip Institute of Pharmaceutical Sciences, Nashik, Maharashtra	Computational Studies And Synthesis Of Ethyl 2/3-Carboxylate-4/5/6-Monosubstituted-1H-Indole Derivatives As GSK-3β Inhibitor
111.	PBGOLD-111	Rajasekhar Reddy Poonnuru	Department of Pharmaceutics, St. Peter's Institute of Pharmaceutical Sciences, Hanamkonda, T.S	SUBLINGUAL DELIVERY OF PROPRANOLOL HYDROCHLORIDE ACROSS ORAL MUCOSA UNDER THE INFLUENCE OF Ph USING BUFFERED TABLETS.
112.	PBGOLD-112	Raunak Mishra	Aditya College of Pharmacy, Satna	The Role Of Ai Softwares : Babm And Alphafold2 In Pharmaceutical Biotechnology
113.	PBGOLD-113	Vishnu Pratap Tiwari	Aditya College of Pharmacy, Satna	Microbial Co2 Fixation And Biotechnology In Reducing Industrial Co2 Fixation
114.	PBGOLD-114	Ashok Sahu	Aditya College of Pharmacy, Satna	Antifungal Activity Of Neem Leaf,Seed Andthe Neemol Against Some Important Human Pathogens
115.	PBGOLD-115	Vinitee Mahale	Gokhale education society's Sir Dr MS Gosavi College of Pharmaceutical Education and Research, Nashik, MS	Design And Molecular Docking Studies Of Substituted Benzamide Derivatives As Glucokinase Activators
116.	PBGOLD-116	Vishal Parihar	Chameli Devi Institute of Pharmacy, Indore	Dual Wavelength Spectrophotometric Method For Simultaneous Estimation Of Paracetamol And Lornoxicam In Combined Dosage Form
117.	PBGOLD-117	Naveen Kumar	Department of Pharmacology, SRM College of Pharmacy, SRM Institute of Science and Technology, Kattankulathur, Chengalpattu District, Tamil Nadu	Maackiain: A Multi-Target Phytolead Predicted From Mucuna Pruriens Against Alzheimer's Disease
118.	PBGOLD-118	Aditi Sinha	Aditya College of Pharmacy, Satna	Technological Application Of Algae In The Treatment Of Industrial Waste Water And Production Of Bioproducts.

S.No	Abstract ID	Author Name	University/Institution Name	Abstract Title
119.	PBGOLD-119	Ritu Sharma	Faculty of pharmacy, Medicap's University Indore	The Role Of Biotechnology For Health In Pharmaceutical Innovation
120.	PBGOLD-120	Dikshant Gupta	Lakshmi Narain College of Pharmacy (RCP), Indore.	Artificial Intelligence (Ai) To The Drug Design And Discovery
121.	PBGOLD-121	Kushagra Dubey	Smriti College of Pharmaceutical Education, Indore, India	Polyherbal Cookies For Prevention And Treatment Of Retinopathic Complication Of Diabetes
122.	PBGOLD-122	Arvind Athiya	Lakshmi Narain College of Pharmacy (RCP), Indore.	Bioweapons : Biological And Toxic Weapons
123.	PBGOLD-123	Arun Kumar Dwivedi	School of Pharmacy, Devi Ahilya Vishwavidyalaya, Indore	Molecular Docking Analysis Of Some Thiazole Hydrazine Derivatives As Antimicrobial Agents
124.	PBGOLD-124	Vaishali Raghuwanshi	Sri Aurobindo institute of Pharmacy, Indore	Quality By Design (Qbd) Approach In Biotechnology And Pharmaceutical Formulation Development
125.	PBGOLD-125	Anjali Soni	Chameli Devi Institute of Pharmacy, Indore	Biotechnological Advancements Towrds Food, Drink, And Medical Treatment
126.	PBGOLD-126	Ashmita Mishra	Chameli Devi Institute of Pharmacy, Indore	Assessing The Ability Of Human Menstrual Bl oodderived Stem Cells From In-Fertile Women To Differentiate Into Oocyte-Like Cell
127.	PBGOLD-127	Rajasekhar Reddy Poonnuru	Department of Pharmaceutics, St. Peter's Institute of Pharmaceutical Sciences, Hanamkonda Department of Pharmacy, BDNIIT, Lucknow, Uttar Pradesh	SUBLINGUAL DELIVERY OF PROPRANOLOL HYDROCHLORIDE ACROSS ORAL MUCOSA UNDER THE INFLUENCE OF Ph USING BUFFERED TABLETS.
128.	PBGOLD-128	Akanksha Dwivedi	School of Pharmacy, Devi Ahilya Vishwavidyalaya, Indore	Simultaneous Uv Spectroscopic Estimation Of Sitagliptin Phosphate And Empagliflozin In Bulk Form: Method Developmentand Validation
129.	PBGOLD-129	Shailesh Pathak	Shambhunath Institute of Pharmacy Jhalwa, Prayagraj, U.P	Neurological Disorder Epilepsy: A Review
130.	PBGOLD-130	Priyanka Singh	School of Pharmacy, Devi Ahilya Vishwavidyalaya, Indore	Molecular Docking Studies Of Some Trifluoromethylquinoline Hybrids As Antiplasmodial Agents
131.	PBGOLD-131	Manish K Jeengar	School of Pharmacy, School of Health and Allied Sciences, ARKA JAIN University, Gamharia	Therapeutic Effect Of Algal Oil Based Aloe Emodin Emulgel On DNCB-Induced Atopic Dermatitis In Balb/C Mice
132.	PBGOLD-131	Vidisha Barod	Lakshmi Narain College Of Pharmacy (RCP), Indore, India-452003	Stem Cell Therapy: An Insider Guide

Repositioning Technique Based Anti-parkinson's Therapy By Diltiazem In 6-OHDA Rat Model Of Parkinson's Disease

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Abstract

Parkinson's disease (PD), one of the major disorders of central nervous system (CNS), is caused due to decreased levels of dopamine and elevated calcium in the cytosol of neuronal cells. Enhanced calcium levels facilitate the (a) opening of mitochondrial permeability transition pore, thereby promote mitochondrial swelling and apoptosis; (b) activation of phospholipases, endonucleases and proteases, ultimately leading in to mitochondrial damage; (c) housing of dopamine in vesicles. Therefore, in this study we have made an attempt to reposition the calcium channel blocker Diltiazem, to inhibit 6-OHDA induced PD parameters in a rat model. The rats induced with 6-hydroxydopamine (6-OHDA) were treated with normal saline (control), L-DOPA, Diltiazem-10 mg and Diltiazem-20 mg/kg for 29 days. The animals were euthanized on 60th day and brain tissues isolated and stored for measuring the levels of Dopamine, Calcium (in brain and mitochondria), Iron, Complex-I activity, Cytochrome-C, Striatal caspase-3 and Bcl-2 gene expression. 6-OHDA treated animals showed a significant increase in the levels of calcium in whole brain homogenate, mitochondria, iron, cytochrome C, Striatal caspase-3 and significant decrease in levels of Dopamine, complex-I activity and Bcl-2 gene expression, which was significantly reversed in animals treated with Diltiazem at 10 mg/kg and 20 mg/kg progressively. L-DOPA treated animals have significantly regulated the levels of dopamine compared to 6-OHDA control but did not show any significant activity in other parameters. In conclusion, we suggest that Diltiazem treatment could possibly serve as a potential therapy for PD alone or as an adjuvant along with L-DOPA.

Keywords: Dopamine, Diltiazem, L-DOPA, 6-OHDA

Investigation Of *Dalbergia Sissoo* Roxb Stem Bark Extract For Its Anti-obesity Activity

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Abstract

Obesity is a foremost health problem not only in developed nations but also in developing countries. It increases the risk of other diseases like diabetes, cardiovascular ailments, fatty liver and some forms of cancer. Ayurvedic medicines are basically derived from the Vedic literature and plants of family Fabaceae have special importance in the Ayurvedic medicines. Plants of the family *Dalbergia sissoo* Roxb. have a long history of medical use in traditional medicine to treat or manage obesity. Present study was done to investigate the possible anti-obesity effect of hydroalcoholic extracts of Dalbergia sissoo Roxb. stem bark. By considering the potential of bark hydroalcoholic extracts of *Dalbergia sissoo* Roxb, it was further fractionated by ethyl acetate and n-butanol using solvent-solvent fractionation process to separate out stable polar compounds and again subjected to bioassay. Animals were fed initially with High Fat Diet (HFD) for 4 weeks to induce obesity. Induction of obesity by HFD was confirmed by significant increase in body weight, Lee index and increase in various other parameters including TG, TC, HDL and LDL. Results showed that ethyl acetate fraction of hydroalcoholic extracts of *Dalbergia sissoo* Roxb exhibited maximum potential to reduce TC, LDL, TG and increase the level of HDL. After administration of fractions of *Dalbergia sissoo* Roxb and Sibutramine (Standard drug) for 28 days, a fall in body weight was seen in animals of all groups, unlike HFD fed animals. The administration of ethyl acetate fraction of *Dalbergia sissoo* Roxb to obese rats caused significant reduction in AI, CRI and Lee index in treated rats when compared to the values recorded for the animal fed only on HFD throughout the study. Treatment with ethyl acetate fraction *Dalbergia sissoo* Roxb. at the dose of 200 mg/kg bw produced significant decrease in body fat depots and liver weight/body weight ratio (%) whereas, treatment with n-butanol fraction of *Dalbergia sissoo* Roxb also showed positive result but less significant as compared to the treatment with ethyl acetate fraction. Histopathology of liver showed that increased size of hepatocytes and the steatosis with micro and macro vesicles in the HFD groups were normalized by the administration of ethyl acetate fraction of *Dalbergia sissoo* Roxb. in dose dependent manner and came near to normal in case of n-butanol fraction of *Dalbergia sissoo* Roxb.

Keywords: Obesity, *Dalbergia sissoo* Roxb., High fat diet, ethyl acetate fraction.

Empty Bottle Stimulation: An Alternative Method for Stress Induced Immunomodulation

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Abstract
Stress, distress and a variety of psychiatric illnesses, notably the affective disorders, are increasingly reported to be associated with immunosuppression. Stress is an aversive stimulus which perturbs the physiological homeostasis and its impact is reflected on a variety of biological systems.. The hypothalamic-pituitary-adrenal (HPA) axis and adrenal glands are crucial for the regulation of stress physiology. The activation of the HPA system due to stress results in secretion of corticotrophin hormone, adrenocorticotropin hormone (ACTH), β-endorphin and glucocorticoids into the circulation. These results in change in behavioral, neuroendocrine and autonomic responses to environmental stimulation. There are several models for stress induced immune responses like restrained stress, Noise stress and warm water swim stress. Empty bottle stimulation is the innovative approach for the estimation of stress mediated behavioral changes. In this model rats are divided into four groups (n=6), control group, empty water stimulate group, no water bottle group and free drinking group. Rats were trained for drinking habits in a fix time period. After 14 days of training, first group of rats were subjected to empty water bottle, second group was deprived with water and free access of water has been given to third group. The rats are subjected to Open field test which is conducted in a quiet room for 5 min. Horizontal units of activity, rearing behavior, defecation, grooming activity were scored. The empty bottle stimulation model can induce behavioral changes and also lead to change in neuroendocrine hormone levels which are determining factors of HPA axis activation. The model can serve to mimic human stress situation.

Keywords: Stress, Immunomodulation, Empty bottle, Behavioral response, Neuroendocrine

Effectiveness of Jatropha curcas as Biodiesel and Antiviral: A Review

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Abstract

Jatropha curcas has emerged as a potential feedstock for biodiesel production due to its non-edible nature, high oil content, and adaptability to marginal lands. This review provides an overview of the advantages and challenges associated with Jatropha curcas as a biodiesel source. The non-edible nature of Jatropha curcas makes it an attractive option for biofuel production, as it does not compete with food crops, minimizing concerns about food security. The seeds of Jatropha curcas contain a significant amount of oil, ranging from 30% to 40%, making it a suitable feedstock for biodiesel production. Jatropha curcas exhibits adaptability to harsh environments and can grow on marginal lands unsuitable for food crops. It requires low water and nutrient inputs, making it a potential solution for areas where other crops struggle to thrive. Furthermore, the cultivation of Jatropha curcas can provide economic opportunities, especially in rural areas, contributing to rural development and income generation for farmers. However, there are challenges that need to be addressed for the successful commercialization of Jatropha curcas as a biodiesel feedstock.

Keywords: Jatropha curcas, Biodiesel, Euphorbiaceae,

Fabrication And Assessment Of Hair Care Formulations Containing Selected Herbal Constituents

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Abstract

Natural Cosmeceuticals is one intriguing region with regards to which the community is getting pulled in. Hair care beauty care products have predominantly been items planned at refinement the hair and scalp. Extending novel plans that stop balding and support hair growth is basic. The target of the current research work was to create polyherbal hair oil and hair gel with Black pepper (*Piper nigrum*) which is frequently utilized in Ayurvedic prescriptions and it invigorates hair follicles causing development, and with Hibiscus leaves separate which is known as a hair development promoter and a hair conditioner too. The formulations likewise contain *Ziziphus mauritiana* Lam. leaves extract, which has been accounted for having antimicrobial action which makes it advantageous against dandruff and scalp diseases. Alongside concentrates of Indian jujube leaves, Guava, Thuja and Hibiscus leaves with Black Pepper seeds the hair oil was advanced with the sustenance of Coconut oil, Castor oil and Olive oil which has been customarily utilized for keeping up with the strength and soundness of hair. The preparations were characterized for different physicochemical parameters and were steady under ordinary capacity conditions without any indications of any skin aggravation. The outcomes demonstrated about the details having a good exhibition level yet further examination is expected to distinguish their hair growth advancing movement.

Keywords: *Ziziphus mauritiana, Piper nigrum* , Hibiscus, Polyherbal, Hair Oil, Hair Gel.

The Green Innovation: Bioplastics

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Abstract

The environmental impact associated with fossil fuel-based polymers has paved the way to explore biopolymer-based plastics, their properties, and their applications. Bioplastics are polymeric materials that are greatly interesting due to their eco-friendlier and non-toxic nature. In recent years, exploring the different sources of bioplastics and their applications has become one of the active research areas. The success of oil-based plastics and the continued growth of production and utilisation can be attributed to their cost, durability, strength to weight ratio, and eight contributions to the ease of everyday life. However, their mainly single use, durability and recalcitrant nature have led to a substantial increase of plastics as a fraction of municipal solid waste. The need to substitute single use products that are not easy to collect has inspired a lot of research towards finding sustainable replacements for oil-based plastics. Biopolymer-based plastics have applications in food packaging, pharmaceuticals, electronics, agricultural, automotive, and cosmetic sectors. Bioplastics are considered safe, but there are several economic and legal challenges to implementing them. Hence, new development aims to outline the terminology associated with bioplastics, its global market, major sources, types and properties of bioplastics, discuss the major bioplastic waste management and recovery options, provide the major standards and certifications regarding bioplastics, explore the various country-wise regulations and restrictions associated with bioplastics, and enumerate the various challenges and limitations associated with bioplastics and future directions. Therefore, providing adequate knowledge about various bioplastics, their properties and regulatory aspects can be of great importance in the industrialization, commercialization, and globalization of bioplastics to replace petroleum-based products.

Keywords: Bioplastics, Biodegradable polymers, biodegradation, renewable sources.

Recent Advancements In Genome Technology

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Abstract

This abstract includes the different technologies associated with the editing of the gene at the molecular level, alteration of the DNA of interest can be executed with the implementation of different gene editing technologies which includes CRISPR/Cas9 (Clustered regularly interspaced short palindromic repeats which are associated with protein 9. This gene-editing tools are frequently used in the field of molecular biology that allows research and scientists to make changes in the gene to produce different precaution and treatment for different chronic health diseases. In recent years, the CRISPR-based genome editing toolbox has been greatly expanded, not only with emerging CRISPR-associated protein (Cas) nucleases, but also novel applications through combination with diverse effectors. Recently, transposon-associated programmable RNA-guided genome editing systems have been uncovered, adding myriads of potential new tools to the genome editing toolbox. CRISPR-based genome editing technology has also revolutionized cardiovascular research. This summarizes the advances involving newly identified Cas orthologs, engineered variants and novel genome editing systems, and then discuss the applications of the CRISPR-Cas systems in precise genome editing, such as base editing and prime editing. This also highlights the recent progress in cardiovascular research using CRISPR-based genome editing technologies, including the generation of genetically modified in vitro and animal models of cardiovascular diseases (CVD) as well as the applications in treating different types of CVD. This report includes the advantages and disadvantages associated with the use of such gene-editing tools. With the help of such tools and technologies, the genetic information of any virus and DNA of interest can be studied and all the relevant information has been provided in the latter part of this report.

Keywords: CRISPR/Cas9, Genome editing revolution, Genome engineering, Targeted transcription.

A Guide To Understand Cerebral Ischemia And Its Possible Role To Cure

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Abstract

Cerebral ischemia is substantial lessening in cerebral blood flow (CBF) foremost to neurological and operational brain mutilation that possibly will be mortal. The flow of cerebral ischemia in the main as of hemorrhage or thrombus, embolism. This primes to, energy failure, excitotoxicity, acidosis, intensification intracellular calcium level, oxidative stress, mitochondrial failure, inflammation, apoptosis, and to end with neurodegeneration. Clinical symptoms focal neurological sing and symptoms like paralysis, sensory loss, language disorder, reflex changes, confusion vertigo and dysarthria. Cerebral Stroke being foremost leading sources of disability in addition to fatality world-wide. Melatonin (N-acetyl 5-methoxytryptamine), secreted by pineal gland, acting on MT1/MT2 receptors, shown neuroprotection in several CNS disease models. Melatonin is reported to inhibit Matrix metalloproteinase (MMP-2 & 9) and furthermore Neuroprotective effects of melatonin on brain injury, down regulation of oxidative stress & inflammation up regulation of endogenous neurogenesis. This results in the preservation of Blood Brain Barrier (BBB) integrity and enhances endogenous neurogenesis by up-regulating neurodevelopmental gene/protein expression. Targeting of the melatonin receptor may show beneficial effects in decreasing the progression of cerebral stroke.

Key word: Neurological, Excitotoxicity, Hemorrhage, Oxidative Stress.

Biosensors: Pioneering Early Lung Cancer Diagnosis

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Abstract

Cancer remains a significant global cause of death, with lung cancer holding the highest mortality rates. Unfortunately, many people are still unaware of the importance of early screening for this deadly disease, resulting in persistently high death rates. It is crucial to find a way to lower these numbers, and one key focus is on diagnosing lung cancer at an early stage, as advances in medicine have extended the survival period. For years, medical professionals have heavily relied on screening methods like Magnetic Resonance Imaging (MRI), Computed Tomography Scans (CT scans), ultrasound machines, and Positron Emission Tomography (PET). When it comes to lung cancer, biosensors have been designed with two main goals: first, to detect specific biomarkers linked to cancer, and second, to interpret volatile metabolites. Let's break it down. Specific biosensors are like smart detectives, seeking out particular molecules that are associated with lung cancer. They are super accurate and sensitive, making them excellent tools for early detection. On the other hand, we have biosensors that act like keen interpreters, analysing volatile organic compounds (VOCs) emitted by cancer cells. These VOCs can be found in a person's breath or bodily fluids, offering a non-invasive and potentially speedy way to diagnose the disease. Of course, there are still some challenges to overcome, like making them even more sensitive and accurate. But scientists are working hard on improving these biosensors for widespread use in hospitals and clinics. By embracing this innovative diagnostic approach, we have a real chance to lower lung cancer mortality rates and improve healthcare globally. The sooner we raise awareness and adopt these biosensor technologies, the more lives we can save and the better patient outcomes we can achieve.

Keywords: Biosensors, lung cancer, early screening, mortality rate, Magnetic Resonance Imaging (MRI).

Molecular Docking Study Of Coffee GST Protein With The Herbicide Safeners

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Abstract

One of the key detoxifying enzymes, glutathione S-transferase (GST), is crucial for many plant pathways that control how much biotic and abiotic stress is present. An ancient protein superfamily known as plant glutathione S-transferases has antioxidant properties. These proteins play important roles in a variety of plant processes, including secondary metabolism, signalling pathways, and protection against biotic and abiotic stressors. In the current study, Homology modelling was applied to 71 CcGST proteins, and SAVES SERVER was used to validate them. The lowest binding energies of the 24 CcGST proteins that passed were determined by molecular docking with the herbicide glyphosate and the herbicide safeners benoxacor and fenclorim. There is a clear correlation between the proteins low binding energies and their high affinity for their substrates. To confirm their role in improving plant stress tolerance or the role of these genes in plant growth and development, the CcGSTs with the lowest binding energies can make great candidates for additional molecular characterisation under various stress settings. Out of 24 CcGST proteins, CcGSTU32 showed the lowest binding energy; -7.81 kcal/mol towards Glyphosate and also towards Benoxacor; -7.8kcal/mol meanwhile CcGSTU16 showed the lowest binding energy; -6.63kcal/mol towards Fenclorim. The lowest binding energies of the proteins and their high affinity for their substrates are directly connected. The results showed that CcGSTs had a high model quality. The findings of this work could have significant implications for understanding the structural and functional significance of the GST gene family in *Coffea canephora*.

Keywords: GST, *Caffea canephora*, Herbicide safeners, Molecular docking.

Bioinformatics characterization of ABC transporter gene family in cucumber

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Abstract

The ATP-binding cassette (ABC) transporter family, it is largest protein superfamily. This family is represented in all living organism. There are two domain in ABC protein NBDs and TMDs. Function of NBD is that it can bind to hydrolysed ATP. According to phylogenetic relationship and nucleotide binding domains, the ABC family was divided into 8 subfamilies: ABCA, ABCB, ABCC, ABCD, ABCE, ABCF, ABCG, ABCI subfamilies. ABCH subfamily not exist in mammals, plants and fungi. In Arabidopsis, only twenty two have been functionally analysed out of 130. ABC transporter are usually driven by ATP hydrolysis. In bacteria, ABC transporters catalyzes the importing of many metabolites, like maltose and polyols.The Arabidopsis Information Resource (TAIR)and NCBI databases, respectively, were used to get the well-characterized ABC protein sequences of Arabidopsis thaliana and Ananas comosus. The number of ABC genes in the cucumber genome was determined using the pBLAST search in the Cucumis sativus genome on the Cucurbita genomic database. The identified sequences were searched for using the InterPro database and the NCBI Batch Conserved Domain (CD) search. The ProtParam tool in Expasy was used to analyze the physiochemical properties of ABC, including molecular weight, isoelectric point, aliphatic index, protein length, and grand average average of hydropathicity (GRAVY). Two transmembrane domains (TMD) are entrenched in the membrane bilayer, while two nucleotide binding domains (NBD) are found in the cytoplasm, for a total of four domains in the ABC transporter gene family. The ExPASy Proteomics Server's proteome database and sequence analysis tools were used to determine each ABC transporter's protein size, molecular weight (MW), and theoretical isoelectric point (pI).The range of the isoelectric point from 9.61 (CsABCC1) to 5.62 (CsABCC13).The aliphatic index of CsABCs ranged from 86.45 (CsABCG29) to 113.89 (CsABCG13). The grand average of hydropathycity values of most the ABCs protein were positive, which were hydrophobic in nature, not having good interaction with water. The subcellular localization prediction results showed that ABCs were centrally localized in the plasma membrane. Although few genes namely ABC followed by cytoplasm, chloroplast and nucleus. The GSDS tool (Gene structure-Display Server) was used to analyze the gene structure.The CsABCA subfamily consists of six genes, CsABCA1 through CsABCA6, with CsABCA4 having the highest number of exons, 38. CsABCB20 having the most exons (18). CsABCC9, CsABCC10, and CsABCC7 having the highest exon counts of 27, 26, and 25, respectively.In the CsABCF subfamily, CsABCF2 had the most exons (18).

Keywords: Cytoplasm, Chloroplast, NCBI, Conserved Domain, genes

In Silico Characterization Of Characterization Of Anti Bacterial Protein In Opium

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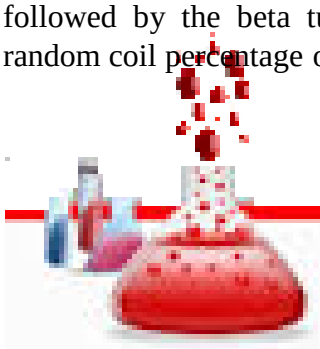
Abstract

The National Centre of Biotechnology Information was used to get the well-characterized AMP protein sequences of *Arabidopsis thaliana, Medicagotruncatula, and Corcohouscapsularis.* Papaversomniferum's genome was subjected to pBLAST using an e-value of 1e-5 at the Ensembl plant. To identify the essential characteristics of AMPs proteins, the discovered sequences were put through an NCBI Batch Conserved Domain (CD) search. Expasy Prot Param tool was used to assess the following parameters: molecular weight, isoelectric point, protein length, aliphatic index, instability index, and GRAVY (grand average of hydropathicity**)** as default parameters. The subcellular localization was anticipated through the tool WOLF PSORT: Advanced Protein Subcellular Localization Subcellular tool. The PsomAMPs exon/intron organization was examined using their respective CDS sequences and genomic sequences, received from NCBI, via the online program Gene Structure Display Server (GSDS) 2.0. The Multiple Em for Motif Elicitation (MEME) program was used to examine the amino acid sequences of PsomAMPS in order to explore conserved motifs and identify the conserved motifs of PsomAMPs. PlantCARE software was used to examine the promoter sequences that were taken from the Biomart of the Ensembl plant in order to discover various cis-acting regulatory elements. 22 PsomAMP genes were discovered using the pBLAST search for the P. somniferum genome in the Ensembl database. PsomAMPs are proteins with lengths ranging from 69 amino acids to 539 amino acids with molecular weights of 8.05 (PsomAMP17), respectively. Between 4.7 (PsomAMP7) and 9.63 (PsomAMP4) is the isoelectric point (pI). Seven of the 22 PsomAMPs were acidic and fifteen were basic in nature. Most PsomAMPs proteins had overall hydropathicity values that were negative, indicating that they are hydrophilic in nature and have favorable interactions with water. The aliphatic index of PsomAMPs ranged from 38.27 (PsomAMP1) to 95.23 (PsomAMP21).The findings of the subcellular localization prediction indicated that PsomAMPs was primarily localized in extracellular regions, followed by chloroplast, vacuoles, and the nucleus. The Gene Structure Display Server (GSDS) 2.0 tool's analysis of the gene architecture results shows that PsomAMP6, PsomAMP7, PsomAMP11 have total 4 exons. PsomAMP14 have 5 exons. PsomAMP21, PsomAMP22 have total of 6 exons. PsomAMP22 have 3 exons. PsomAMP1, PsomAMP17, PsomAMP18, have total 2 exons. The conserved motif was identified through MEME tool. A total of 10 motifs were analyzed of PsomAMP proteins. Motif1 was present in PsomAMP5, PsomAMP6, PsomAMP7, PsomAMP8. Motif2 was present twice in PsomAMP7, PsomAMP11, PsomAMP14. Motif3 was present in PsomAMP5, PsomAMP6, PsomAMP7, PsomAMP8. Cis-acting regulatory elements (CARE) are located in the target gene's promoter region. They are non-coding DNA that regulates transcription by binding to transcription factors. The alpha helix dominated the secondary structure of PsomAMPs, which was then followed by the beta turn, random coil, and prolonged strand. PsomAMP13, with a random coil percentage of 71.85%.



Insilico Study of Triazole Derivatives as Antitubercular Agents

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Abstract

Tuberculosis (TB) remains a global health concern, necessitating the development of novel antitubercular agents. In this study, an insilico approach was employed to investigate the potential of triazole derivatives as antitubercular agents. Molecular docking simulations were performed to predict the binding affinities and interaction modes of a series of triazole derivatives with target proteins involved in the tuberculosis infection pathway. Pharmacophore modeling was employed to identify common structural features among known antitubercular drugs and aid in the design of triazole derivatives with similar pharmacophoric features. Molecular dynamics simulations provided insights into the dynamic behavior and conformational changes of the triazole derivatives in complex biological environments. Additionally, ADMET prediction tools were utilized to estimate various pharmacokinetic properties, such as solubility, permeability, metabolic stability, and toxicity. Collectively, the insilico study revealed promising candidates among the triazole derivatives with potential antitubercular activity, providing valuable guidance for further experimental testing and the design of more effective and safe antitubercular agents. Future studies involving in vitro and in vivo validation are warranted to confirm the efficacy of the identified compounds and their potential as new antitubercular drugs.

Keyword- Triazole, MDR, MRSA, Tuberculosis.

Semi Solid Nano-carrier Delivery System For The Treatment Of Rheumatoid Arthritis

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Abstract

Rheumatoid arthritis (RA) is characterized by joint inflammation that brings on excruciating agony and early death. The prevalence ranges from 0.3% to 1% worldwide. The main objective of RA treatment is to reduce problems such as gastric irritation, dose frequency, permeability and others because there is presently no recognized cure for the condition. Frequent and high-dose NSAIDs such as indomethacin, diclofenac, ibuprofen, celecoxib, and etoricoxib are among the treatment options for RA. These potent medications frequently have adverse effects that can decrease patient adherence. NSAIDs also frequently pose several difficulties, including solubility and permeability, a lack of bioavailability, enzymatic gastrointestinal tract breakdown, dietary interactions, and toxicity. The current oral administration of medications has several limitations including first pass metabolism and gastrointestinal irritation. Researchers have turned to novel drug delivery techniques that closely watch the patient and avoid the first intervention encountered in oral delivery to get around these issues to enhance the drug's penetration into the skin layer and reach the affected area, nanoscale carriers such as liposomes. Liposomal hydrogel have great potential as lipid vehicles that are able to enhance permeation of drugs across the intact skin and can act as local depot for the drug to sustain and control its delivery. Lipid carrier and hydrogel combinations offer transdermal drug delivery of great potential to enhance systemic effects of both hydrophilic and lipophilic drugs. The study suggest available treatments for Rheumatoid Arthritis and how to overcome the side effects and other problems using novel delivery systems.

Keywords: Rheumatoid Arthritis, NSAIDs, nano-carriers, topical delivery

Over View On Mucoadhesive Buccal Films

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Abstract

Among the various routes of administration tried so far for novel drug delivery systems, localized delivery to tissues of the oral cavity has been investigated for a number of applications including the treatment of toothaches, periodontal diseases, bacterial and fungal infections. Buccal route is also an attractive route of administration for systemic drug delivery and it leads direct access to the systemic circulation through the internal jugular vein by-passes drugs from the hepatic first pass metabolism provides high bioavailability. Buccal bioadhesive films releasing topical drugs in the oral cavity at a slow and predetermined rate, provide distinct advantages over the traditional dosage forms for treatment of many diseases. The films are naturally exhibit controlled release over more than 6 hours. The purpose of the presentation is to review the recent developments ,basic principles and methods of evaluation of mucoadhesive buccal films which will be useful to the young researchers in the design and development of mucoadhesive buccal drug delivery systems and related formulation designs.

Key words: *Buccal film, Periodontal diseases, Biovailability, Bioadhesive, Mucoadhesive*

Study On Production And Recovery Techniques Of Lipase Enzyme To Increase Yield

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Abstract

Lipase enzymes are a class of enzymes that play an important role in the breakdown and metabolism of lipids. Lipases are widely used in various industrial applications due to their ability to catalyze the hydrolysis and synthesis of fats. Lipase enzymes have a wide range of applications in industries such as food, pharmaceuticals, detergents, biofuels, and more. The advancements in biotechnology can be applied to increase the yield of Lipase. The microorganism can be genetically modified or engineered to possess specific properties, making them suitable for the production of Lipase. Lipase enzymes can be produced from various microorganisms such as bacteria and fungi such as *Rhizopusoryzae, Candida rugosa*, *Pseudomonas aeruginosa*, *Aspergillus niger*. The Genetically Modified Organisms (GMOs) can have a great potential to produce Lipases with high yield. The recovery of enzyme also play very important role in increasing the final yield of the product. As majorly the yield of the product is lost at the various stages of recovery. It is a high need to do various alterations in recovery steps and techniques such as extraction, precipitation and purification. A microbial strain or organism that naturally produces a high amount of Lipase can be selected; Genetic engineering or strain improvement techniques can also enhance Lipase production. Culture Conditions, such as temperature, pH, aeration, and nutrient composition, helps to promote optimal enzyme production. Lipase production can also be increased by manipulating the culture conditions or adding specific inducers like fatty acids. Continuously monitoring the enzyme's characteristics and activity throughout the process will ensure its quality and yield. The application of above discussed various techniques in production and recovery can increase high yield of Lipsae enzyme and can also help in minimizing losses at each steps of enzyme recovery.

Keywords: Lipase, extraction, purification, bacteria, GMO, yield

Harnessing Microbial Fermentation For Drug Production: "Industrial Applications Of Pharmaceutical Biotechnology"

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Abstract

Microbial fermentation has emerged as a powerful tool for synthesizing a diverse array of therapeutic compounds, enzymes, and bioactive molecules. The synergy between biotechnological innovation and pharmaceutical advancement not only revolutionizes drug production but also contributes significantly to improving healthcare outcomes and patient well-being. This review highlights how microbial fermentation processes are harnessed to produce pharmaceuticals at a commercial scale, including antibiotics, biopharmaceuticals, and small molecule drugs. This abstract provides an overview of the industrial applications of microbial fermentation in pharmaceutical biotechnology for drug production. The key components for microbial fermentation are strain selection and optimization to downstream processing and purification. This involves tailoring growth conditions, nutritional requirements, and environmental factors to enhance microbial productivity and desired metabolite synthesis. It also underscores the significance of process control and optimization strategies in achieving high yields and product quality. The abstract also accentuates the paramount importance of process control and optimization strategies throughout the microbial fermentation journey. It underscores the meticulous monitoring and management of variables such as temperature, pH, aeration, and agitation, all of which influence microbial growth and metabolite production. By implementing precise control strategies, optimal yields, enhanced reproducibility, and consistent product quality are achieved. By examining the role of microbial fermentation in drug production, this abstract sheds light on the critical intersection of biotechnology and pharmaceuticals, ultimately contributing to advancements in healthcare and patient treatment.

Keywords: Microbial Fermentation, Drug Production, Pharmaceutical Biotechnology, Industrial Applications, Process Control.

Architects of Therapeutic Innovation: "The Nexus of 3D Printing and Biopharmaceutical Biotechnology"

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Abstract

This comprehensive review article explores the multifaceted role of 3D printing in advancing the field of biopharmaceutical biotechnology. By examining current applications, innovative approaches, and future prospects, the review provides a comprehensive analysis of how 3D printing is reshaping drug discovery, development, and personalized medicine. The review outlines the significant contributions of 3D printing to biopharmaceutical research and development. It discusses how 3D printing facilitates the creation of intricate drug delivery systems, enabling precise control over drug release profiles and enhancing therapeutic efficacy while minimizing adverse effects. In the context of personalized medicine, the review delves into how 3D printing is revolutionizing pharmaceutical production. It explores the fabrication of patient-specific dosage forms, tailored to individual genetic profiles and therapeutic needs, thereby optimizing treatment outcomes and patient adherence. Furthermore, the review discusses the role of 3D printing in creating customized medical devices, including implants and prosthetics that precisely match patient anatomies. It explores the synergy between 3D printing and biopharmaceutical biotechnology in accelerating the development of patient-specific drug delivery devices and medical implants. It also speculates on the future potential of 3D printing, envisioning advancements in combinatorial drug screening, continuous manufacturing, and the integration of artificial intelligence in drug design. In conclusion, this review encapsulates the transformative impact of 3D printing in biopharmaceutical biotechnology.

Keywords: 3D Printing, Biopharmaceuticals, Drug Delivery, Personalized Medicine, Biotechnology, Tissue Engineering, Regenerative Medicine, Medical Devices, Innovation.

Design And Characterization Of Polyherbal Hair Formulation

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ABSTRACT: However hair does not assist any criticalphysiological condition in human beings but it plays significant role in our social and mental life. Androgenic baldness and circular/spot baldness these are the most conventional type of hair loss. In market most of the synthetic active ingredients are available for the treatment of hair loss still with some limitation. These synthetic compounds are effective but having some side effect. In this study polyherbal hair was made using different herbs for general purposes. Crude drugs obtained from nearby regions. Crude drugs used for the making of herbal hair serum such as, Hibiscus rosa-sinesis flower, Glycyrrhizza glabra roots, Eclipta alba plant, Withania somnifera root and leaf of Bacopa monnieria were weighed specifically and each extract dispensed in water after boiled the mixture now allowed to cool, and then filtered. After getting filtrate added castor oil and vitamin E with homogenization. Now the prepared formulation was tested, and different criteria were determined, such as physical appearance, viscosity, pH, homogeneity etc.

Keywords: Herbal, Hair serum, Crude drugs, Viscosity

Role Of Biotechnology In Pharmaceutical

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Abstract

Biotechnology is a multidisciplinary scientific research field which uses living organisms or their parts to develop or modify products, or improve plants, animals and microorganisms. Biotechnology and the world of colors are always connected with each other through biotech applications. This has encouraged the requirement to construct a classification system based on colors. Advance technologies and products are developed within the areas include medicine (development of new medicines and therapies), agriculture (development of genetically modified plants, biofuels, biological treatment) or industrial biotechnology (production of chemicals, paper, textiles and food), environment (maintenance of biodiversity, bioremediation) etc. However, Biotechnology achieved considerable progress in the branch of healthcare sector. A majority of therapeutic drugs in the current market are bioformulations, such as antibodies, nucleic acid products and vaccines. Biotechnology helps the pharmaceutical industry to develop new products, new processes, methods and services and to improve existing ones. It also covers the impact of biotechnology in research and invention related to different aspects of medicine. There is a widespread list of biopharmaceutical products in healthcare management available for therapeutic use. In this review we are discussed about various classes of biotechnology-based products such as gene therapy, monoclonal antibody, DNA fingerprinting, vaccines, biopharmaceuticals, stem cell therapy, Pharmacogenomics along with their therapeutic applications.

Keywords: Biofuels, bioformulations, Pharmacogenomics, antibodies.

Initial Screening And Optimization Of Carmustine Targeted Drug Delivery System.

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Abstract

Alkylating agent carmustine is used to treat a variety of cancers, including brain tumours. Nasal drug delivery has a long history that begins with previous topical administrations of medications meant for local effects. Nasal therapy, also known as "Nasya karma," is a recognized kind of treatment in the Indian medicine system of Ayurveda. The nasal route was first introduced as a viable systemic delivery alternative to other traditional drug delivery routes in the early 1980s. The main objective is to formulate robust, stable formulation of Carmustine. One of the nitrosoureas, carmustine, is used to treat brain tumours as palliative therapy either alone or in a proven combination with other approved chemotherapeutic drugs. Studying the formulation method is crucial for choosing the right excipients to prepare flexible liposomes. Jain N. K. et al. ethanol injection-sonication method was used to create various trial batches of flexible liposomes. When the lipid concentration was between 1-5 % w/v and the ethanol concentration was between 10-50 % v/v, the formulations showed the desired vesicle size and entrapment effectiveness, according to the preliminary investigation that was conducted to choose the range of lipid and ethanol. It was discovered that the vesicle size grew as the percentage of the lipid climbed from 1 to 5%. The size of the vesicle expanded as the ethanol content was raised over 30% v/v. The amount of fat and ethanol did not significantly affect the effectiveness of trapping. The performance of the dosage form as a whole is affected by aspects including vesicle size, entrapment effectiveness, *in-vitro* release profile, etc., which must be taken into consideration while developing liposome formulations.

Keywords: Carmustine, Nasya karma, Glioma, i*n-vitro* drug release, vesicle size, dosage form.

Screening and Identification of Microbes and Responsible Enzymes for Biodegradation of Dyes

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ABSTRACT: Dyes are classified as anionic, cationic and nonionic dyes. These dyes are widely used in various industries such as textile, paper, food, cosmetic, leather etc. Every day the dyes released from these industries in water body are increasing pollution which is of global concern. The environment and its ecosystem is getting highly effected due to the industrial waste water containing dyes. It is a high need to treat the dyes causing pollution. There are various conventional physical and chemical methods for treating the dyes, but they are not always efficient for treating maximum of the dyes coming from industry. Hence it is a high need to explore other ways to treat these industrial effluent dyes. Biodegradation using various microorganisms is one of the potential techniques for the degradation of dyes. The various bacterial, fungus and yeast have been reported for the degradation of dyes. In current study we have used various *in silico* tool (such as BLAST tool) for the screening and identification of microbes for the degradation of dyes, further the phylogenetic analysis was done. The responsible enzymes and its protein were also identified for biodegradation of dyes. The current study was performed to screen various potential microbes and enzymes that can effectively help in degrading dyes. This microbial approach for the degradation of dyes can be more effective and cost effective.

Keywords: Dyes, Biodegradation, pollutants, textile, phylogenetic, BLAST

Molecular Docking Studies And Biological Evaluation Of Chalcone Derivatives As Anticancer Agents

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Abstract

In the pursuit of identifying novel and effective anticancer agents, this study delves into the molecular docking studies and subsequent biological evaluation of chalcone derivatives. Chalcones, a class of compounds known for their diverse pharmacological activities, have shown promise as potential anticancer candidates. In this research endeavor, a series of chalcone derivatives were subjected to thorough molecular docking analyses to assess their binding interactions with specific biological targets implicated in cancer pathways. The molecular docking studies unveiled the potential binding modes and affinities of the chalcone derivatives with critical biomolecular targets associated with cancer progression. Through computational simulations, insights were gained into the structural aspects of these derivatives that facilitate favorable interactions with the active sites of target proteins.Following the in silico investigations, the chalcone derivatives were subjected to comprehensive biological evaluations to ascertain their actual anticancer activities. This involved testing their effects on cancer cell proliferation, apoptosis induction, and other relevant cellular processes.

Keywords: Chalcones, Cancer, docking, molecular modelling.

Bioreactor For Co2 Utilization

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Abstract

The rising of greenhouse-gas emissions (GHG), during the last years, is associated to the well-known global warming phenomena. This abstract presents recent developments of algal bioreactors used for CO2 removal and the factors affecting the reactor performance. The focus of the study is on light intensity and photoperiods. The role of algae in CO2 removal, types of algal species used in bioreactors and conventional types of bioreactors including tubular bioreactor, vertical airlift reactor, bubble column reactor, flat panel, or plate reactor, stirred tank reactor and specific type bioreactors such as hollow fibre membrane and disk photobioreactors etc. are discussed in details with respect to utilization of light. The effects of light intensity, light incident, photoinhibition, light provision arrangements and photoperiod on the performance of algal bioreactors for CO2 removal are also discussed. Efficient operation of algal photobioreactors cannot be achieved without the improvement in the utilization of incident light intensity and photoperiods. Hence it has a much broader significance as algae is not only limited to removal or sequestration of CO2 but also it is used in several commercial applications including in energy (biofuel), nutritional and food sectors.

Keywords: Bioreactor, CO2 removal, greenhouse emissions, Algae, photoperiods.

Bioavailability Enhancements Of Macromolecules By Using Alternative Routes

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Abstract

High therapeutic potential is associated with the discovery of several novel chemical entities, yet many of these substances have unfavourable pharmacokinetic qualities because of inadequate solublity that's filled penetration characteristics. The latter is primarily brought about by the lipid-like barrier that epithelial mucosal layers impose and which medication molecules must get through in order to have a therapeutic impact. Pre-systemic metabolic breakdown of drug compounds, primarily by cytochrome P450 enzymes found in the liver hepatocytes and intestine enterocytes, is another barrier. Although the first-pass impact is avoided by the nasal, buccal, and pulmonary modes of administration, they still rely on drug molecules being absorbed through the mucosal surfaces to transport medication throughout the body. By modifying membrane permeability and/or pre-systemic metabolism, bioenhancers (drug absorption enhancers of natural origin) can increase the amount of unaltered medication that enters the systemic blood circulation. A review of natural bioenhancers and their primary modes of doing something for the nasal, buccal, pulmonary, and oral routes of drug administration is the goal of this study. Drugs with poor bioavailability, such as big, hydrophilic treatments, are frequently injected. By enabling systemic administration of these poorly bioavailable medications via different routes of administration (such as oral, nasal, buccal, or pulmonary routes of administration), bioenhancers may be used to benefit patients. They may also be used to decrease dosages of small-molecule medications, which would lower treatment costs. In this review article the bioenhancers like Aloe vera, Chitosan, Caraway, Curcumin, Gokhru extract, Grapefruit juice, Naringin, Piperine etc were used.

Keywords: Macromolecules, Bioenhancer, Bioavailability, Cytochrome P450, Routes of administration, Curcumin, Chitosan

Repurposing Of Anti-inflammatory Drugs On Trimethyltin Induced Neurodegeneration

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Abstract

In these studies, the non-steroidal anti-inflammatory drugs Etoricoxib and Mefenamic acid (5 mg/kg body weight) were selected based on the reduced neurodegeneration effect of Trimethyltin (0.0625 g/kg body weight) in normal female Swiss Albino mice. Material and Methods: Material was purchased from Leeford Healthcare Ltd and Krishgen bio systems, India. Twenty-four adult female Swiss Albino mice (weight: 25-35 g, age: 2-3 months) were selected. The mice were randomly divided into following four groups: Control group: The mice of control group received sterile saline only, Group-2: The mice of this group were administered Mefenamic acid intraperitoneally through 1ml syringe, after one hour of administration of Trimethyltin for seven days. The daily dose of Mefenamic acid and Trimethyltin was 5 mg/kg and 0.0625 µg /kg of body weight, Group-3: The mice of this group were administered Etoricoxib intraperitoneally through 1ml syringe, after one hour of administration of Trimethyltin for seven days. The daily dose Etoricoxib and Trimethyltin was 5 mg/kg and 0.0625 µg /kg of body weight. Group-4: Neurodegeneration condition was induced by Trimethyltin 0.0625 µg /kg of body weight which administered intraperitoneally through 1ml syringe for seven days. Results: The study found that non-steroidal anti-inflammatory drugs reduce the neurodegenerative effects of Trimethyltin. Which has been known on the basis of reducing the concentration of biochemical parameters and memory-based behavioural analysis. Conclusion: With the studied parameters showing beneficial effects, both drug Etoricoxib and Mefenamic acid regulate the inflammation pathway.

CRISPR-Cas9: Pioneering the Future of Genome Editing

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Abstract

The revolutionary **CRISPR-Cas9 technology** has sparked a transformative era in genome editing, poised to reshape the landscape of biological research and medical interventions. This paper delves into the multifaceted potential of **CRISPR-Cas9**, a versatile molecular tool enabling precise modifications to DNA sequences. The methodology's simplicity and cost-effectiveness have democratized genetic manipulation, fostering its integration into diverse scientific disciplines. A fundamental understanding of CRISPR's underlying mechanisms, including the guide RNA and **Cas9 nuclease**, underscores its proficiency in editing target genes. Beyond fundamental research, CRISPR's applications in medicine, agriculture, and biotechnology hold promises for personalized therapies, disease eradication, and enhanced crop yields. Ethical considerations surrounding off-target effects and germline modifications are pivotal for responsible utilization. As CRISPR continues to evolve, collaborative efforts among researchers, policymakers, and society will play a pivotal role in steering its course towards a future defined by improved human health and sustainable ecosystems. CRISPR-Cas system has emerged as the most widely used genome editing tool in molecular biology labs all over the world because of their benefits of simple design, low cost, high efficiency, strong reproducibility, and quick cycle

Keywords: CRISPR-Cas9, CRISPR-Cas system, genome editing, versatile, DNA sequences.

The Role of HEK293T Cells in Investigating Neurotoxicity

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Abstract: Neurotoxicity, the adverse effect of chemical substances on the nervous system, is a significant concern in drug development, environmental toxicology, and neurodegenerative disease research. Understanding the molecular mechanisms underlying neurotoxicity is crucial for identifying potential therapeutic targets and mitigating harmful effects. In this context, HEK293T cells have emerged as valuable tools in studying neurotoxicity due to their versatility and practical advantages in experimental settings. HEK293T cells, a human embryonic kidney cell line, have been extensively used as a model system to investigate various cellular processes, including neurotoxicity. This abstract aims to review the role of HEK293T cells in advancing our understanding of neurotoxicity mechanisms. Notably, HEK293T cells express relevant neurotransmitter receptors and signaling pathways that closely resemble those found in neuronal cells. This similarity allows researchers to explore the neurotoxic effects of diverse compounds, such as environmental pollutants, pharmaceuticals, and natural toxins. The abstract further discusses the utilization of HEK293T cells in assessing the impact of neurotoxicants on cellular viability, apoptosis, oxidative stress, and inflammation. Through gene editing and transfection techniques, researchers can introduce specific genetic modifications in HEK293T cells to better mimic neuronal conditions and investigate neurotoxicity with enhanced accuracy. Moreover, the implementation of high-throughput screening platforms using HEK293T cells enables rapid assessment of large chemical libraries for potential neurotoxicants. This capability facilitates the identification of novel toxic compounds and accelerates the development of safer therapeutic agents. The abstract concludes by highlighting the limitations of using HEK293T cells as a model system for neurotoxicity, such as their non-neuronal origin and the absence of certain neuronal characteristics. Nevertheless, HEK293T cells have proved to be invaluable in elucidating key molecular events in neurotoxicity, aiding in the development of preventive measures and promoting advancements in neurotoxicology research. Overall, the role of HEK293T cells in investigating neurotoxicity offers valuable insights into the cellular and molecular mechanisms underlying neurotoxicity and contributes to the broader goal of safeguarding human neurological health.

Keywords: Neurotoxicity, drug development, HEK293T, therapeutic, neurodegenerative

Docking And ADMET Studies For Examining The Diabetes Specific Gene Against Plant Derived Natural Bioactive Compounds

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Abstract
Diabetes is a condition that develops when your blood glucose changes. Glucose is the primary source of energy in your body. Although your body can produce glucose, it also obtains glucose from the food you consume. Diabetes is classified into two categories. Diabetes insipidus and Diabetes mellitus are two types of diabetes. Diabetes insipidus occurs when the body's insulin levels are low, causing your immune system to attack and destroy the insulin-producing cells in your pancreas. Type 1 diabetes is frequently studied in children and young adults, despite the fact that it can appear at any age. Individuals with type 1 diabetes must take insulin on a constant basis in order to live. Diabetes mellitus develops when vasopressin levels in the pancreas fall may be producing insulin, but perhaps not enough to keep your blood sugar levels within the usual range. The most prevalent type of diabetes is type 2. If you have risk factors for the disease, like being overweight or obese and a family history of the condition, you are more likely to acquire type 2 diabetes. Type 2 diabetes can strike at any age, even in infant..The ADMET analysis, which stands for adsorption- quercetion (131.26) Lipinski –Riboflavin (376.5g/mole) Physiochemical properties -Humulene (170 TSPA) and toxicity prediction is crucial as it helps with medication design and evaluates potential rivals when choosing bioactive substances. The pharmacokinetics and overall health of the diabetic patient are greatly impacted by the ADMET analysis, which is a significant component of the ADMET assessments and with the help of the bioactive compound we have done the Docking.

Keywords: Dockings, Diabetes, Admet Analysis, Insulin

Recent Research and Developments in Production of Biofuels

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Abstract

Biofuel are those products which extracted from all the living organism, plant, algae and dead organism in the form petroleum, ethanol and biodiesel these are biologically renewable sources. Today, the whole world needs basic necessities based on petroleum product, shortening of these biofuels were become very critical situation for whole world therefore, some parts of biofuels being renewed and extracted from plants and algae. Biofuels help us as major solution to wind, solar and other forms energy to reduce the shortage of biofuels. Production of high quantity of biofuels often regarded as high sources for sustainable development and major resources from plants such as soya bean, sugarcane and also some household product can be used as biofuels. Major challenge for biofuels production were mostly from plant product a as a sugarcane are more expensive and oxygen quantity is 60 % by weigh as hydrocarbons fuels have none. In India many biofuels product is very poisonous and harmful for producing plant product in which the biofertilizer transport their harmful chemical substance to plant in which water degradation takes place which cause major disturbances to the environment. Biofuel such as biogas mostly used in village side area these are very helpful for daily need and their requirements. Ethanol can be easily produced the plant as a renewable source. Liquid form of biofuels being produced from renewable sources like petroleum product such as biodiesel, gasoline and jet fuels. Presently in India biodiesel were produced from imported palm stearin oil. Microbes such as yeast (saccharomyces cerevisiae) is often used for fermentation of sugar to produced bioethanol and to reduce high ethanol concentration. current situation more critical to produce abundant form of biofuels therefore the utilizing of plant and microbes produced product were very much required large production of biofuels in the form of solid, liquid. Bacillus amyloquefaciens often used to produce 2-3 butanedol. Microbes generally used for producing biofuels basically their raw materials are converted to chemical energy than biomass to produced biofuels.

Evaluation Of Multimodal Anti-alzheimer Effects Of *Rosa Brunonii* Using Antioxidant Assays, GCMS Profiling, Molecular Docking Study And Network Pharmacology.

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Abstract
With the use of various antioxidant assays, Gas Chromatography-Mass Spectrometry (GC-MS) and molecular docking investigations, our work provides a thorough network pharmacological evaluation of *Rosa brunonii*. Different antioxidant tests were used to evaluate the antioxidant capacity, and the results showed that *Rosa brunonii* extracts significantly scavenged free radicals and reactive oxygen species. GC-MS and molecular docking were then used to determine the bioactive substances that were present in the plant. A variety of volatile chemicals, including terpenoids, phenolic compounds, and flavonoids, renowned for their antioxidant properties, were identified by the GC-MS study. Non-volatile substances including polyphenols, anthocyanins, and other derivatives of flavonoids were further described by molecular docking investigations for their diverse pharmacological effects. The findings of this research highlighted *Rosa brunonii's* strong antioxidant ability and connected it to its varied phytochemical makeup. These results support the use of *Rosa brunonii* in pharmaceutical and nutraceutical applications and provide light on the possible health advantages of intake. Additionally, the GC-MS results provide a thorough profile of the plant's bioactive compounds, assisting in the comprehension of its diverse chemical signature.

Keywords: *Rosa brunonii,* DPPH, ABTS, FRAP, GC-MS, Molecular docking, Network Pharmacology.

Extraction, Isolation And Evaluation Of Anti-diabetic Activity Of *Clitoria Ternatea* Linn.

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Abstract
Clitoria ternatea, often known as Butterfly pea, is a member of the Fabaceae family. From *Clitoria ternatea Linn*, several secondary metabolites, such as triterpenoids, flavonol glycosides, anthocyanins, and steroids, were identified. This work aims to assess the preliminary phytochemical screening and anti-diabetic potential of the *Clitoria Ternatea* bark extract in albino wistar rat models. The extract was concentrated after distillation. In alloxan-induced diabetic rats, the extract was administered orally once at doses of 200 and 400 mg/kg to test for anti-diabetic efficacy. At several time points, including acute and sub-acute, the blood glucose level was measured, and histological analyses were carried out to assess whether cells were regenerating. In both the acute phase (after 5 hours) and the subacute study (after 1 day), dosages of 200 and 400 mg/kg of the extract effectively reduced blood glucose levels in diabetic rats. The histopathological investigation revealed that both extract dosages resulted in greater regeneration of cells.

Keywords: *Clitoria Ternatea*, Bark, Extract, Antidiabetic, Glibenclamide, Alloxan.

Docking Studies of Triazole Derivatives as Indoleamine 2,3-Dioxygenase-1 Inhibitors

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Abstract

Lung cancer is the most common disease. Indoleamine 2,3-dioxygenase-1 is a heme containing enzyme that catalyzes the oxidation of L-tryptophan. It plays a vital role in cancer escape via catalyzing the initial step of kynurenine pathway, and overexpression of IDO-1 is associated with poor prognosis in various cancers. Triazole derivatives plays an important role in the inhibition of IDO1 over heme containing protein. The T-cell are suppressed due to the similar structure of tumor cell which are generated by kynurenine pathway resulting in the immunosuppressive activity of T-cell leading to the formation of tumor. The docking studies of triazole derivatives were performed using two different software MVD and Autodock. The docking studies were done using PDB-6R63, 7AH4, 5WN8.The correlation of docking results with reported anti-cancer activity was done and SAR was developed.

Role Of Biotechnology in Pharmaceutical Industry Recent Development, Trends and Advantages

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Abstract

Biotechnology merges biology, chemistry, genetics, and engineering to create advanced medical products that target specific diseases and improve patient outcomes. Here are some key roles that biotechnology plays in pharmaceuticals: Drug Discovery and Development: Biotechnology techniques enable the identification and validation of potential drug targets, which are specific molecules or processes involved in diseases. Researchers can use biotechnology tools to design and screen drug candidates, accelerating the drug discovery process. Genetic Engineering and Recombinant DNA Technology: Genetic engineering allows scientists to modify the DNA of organisms, such as bacteria or yeast, to produce valuable proteins like insulin, growth factors, hormones, and antibodies. This technique has revolutionized the production of biopharmaceuticals. Biopharmaceuticals: Biotechnology has enabled the production of biopharmaceuticals, which are drugs derived from biological sources such as living cells. These include monoclonal antibodies, vaccines, recombinant proteins, and gene therapies. Biopharmaceuticals often offer targeted and personalized treatments for various diseases. Vaccine Development: Biotechnology contributes to the development of vaccines by utilizing genetic engineering to create attenuated or inactivated pathogens, viral vectors, or nucleic acids that stimulate an immune response. Modern vaccine technologies, such as mRNA vaccines, are a testament to the impact of biotechnology in this field. Personalized Medicine: Biotechnology enables the analysis of an individual's genetic makeup and the identification of specific genetic variations associated with disease susceptibility and drug responses. This information is used to tailor treatment plans for patients, maximizing efficacy and minimizing side effects. Drug Delivery Systems: Biotechnology helps design innovative drug delivery systems that improve the efficiency and targeted delivery of drugs to specific cells or tissues. Nanotechnology, for example, allows for the development of nanoparticles that can encapsulate and release drugs at a controlled rate. Diagnostic Tools: Biotechnology contributes to the development of advanced diagnostic tools, such as molecular diagnostics, genetic testing, and biomarker detection. These tools aid in early disease detection, treatment monitoring, and patient stratification for clinical trials. Stem Cell Therapies and Regenerative Medicine: Biotechnology enables the manipulation and differentiation of stem cells for use in regenerative medicine. This includes generating tissues or organs for transplantation, as well as developing novel therapies for conditions like Parkinson's disease and spinal cord injuries. Gene Editing and CRISPR-Cas9: The revolutionary CRISPR-Cas9 technology allows precise editing of genetic material, holding immense potential for treating genetic disorders by correcting or modifying faulty genes. Bioinformatics: Biotechnology relies on bioinformatics for analysing large datasets of biological information. This helps in understanding disease mechanisms, predicting drug interactions, and optimizing drug development processes.

Antiaging: The Way You Manage The Age

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Abstract

There are many reasons our bodies change as we get older, including perceptual, physiological, and general age-related conditions. These changes all impact the performance of our bodies as a whole, in turn, impacting our eating, nutrition The benefits of proper nutrition for mental capacity and higher energy levels to a stronger resistance to illness and disease rational intake, and overall health. The topic that currently attracts maximum attention is ways to maintain healthy and delay aging. Skin is the primary barrier that protects the body from external aggressions. Skin aging is a complex biological process, categorized as chronological aging and photo-aging, and is affected by internal factors and external factors. With the rapid breakthrough of medicine in prolonging human life and the rapid deterioration of environmental conditions, it has become urgent to find safe and effective methods to treat skin aging. For diet, as the main way for the body to obtain energy and nutrients, people have gradually realized its importance to the skin.

Keyword: Anti aging , Nutrition, skin

Solid Lipid Nano Particles As A Novel Drug Delivery System For Enhanced Therapeutics

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Abstract

The limitations of traditional drug delivery systems, such as low bioavailability, non-specific biodistribution, and limited solubility, have directed researchers towards the development of innovative approaches to overcome these challenges. Solid lipid nanoparticles (SLNs) have emerged as one of the most promising strategies in recent years. Objective:- The abstract provide the overview of solid lipid nanoparticles, focusing on their potential enhancing drug delivery and the therapeutic outcomes. Methods:- SLNs are sub-micron colloidal carriers ranging from 50 to 1000 nm, composed predominantly of lipids that remain solid at room and body temperatures. These particles offer several benefits, such as improved drug protection from degradation, controlled drug release, increased solubility for poorly water-soluble drugs, and targeted delivery, thereby reducing systemic side effects. Result:- Multiple studies have indicated enhanced bioavailability and therapeutic efficacy when drugs are loaded into SLNs compared to their conventional counterparts. The biocompatible and biodegradable nature of the lipids used in SLNs minimizes toxicity concerns. Moreover, SLNs can be tailored for various routes of administration, including oral, topical, parenteral, and ocular. Their versatility extends to encapsulating hydrophilic, hydrophobic, and even protein and peptide drugs. Conclusion:- Solid lipid nanoparticles offer a multifaceted platform for drug delivery, presenting advantages such as improved drug stability, sustained and targeted release, and the potential to overcome biological barriers. Continued research and development in this area can pave the way for a new era of enhanced therapeutic modalities that can cater to a wide range of medical conditions.

Formulation And Characterization Of Topical Formulation Using Aloe Vera Gel

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Abstract

The goal of the present study is to formulate topical gel formulations of miconazole using natural aloe vera gel. A derivative of triazoles called miconazole is used to both treat and prevent candidiasis. Oral use of miconazole is not recommended due to its numerous adverse effects. This formulation was created to improve patient compliance, lower medicine dosage, prevent adverse effects such liver and kidney damage, and be safe during pregnancy. The synthetic polymer was modified to create the gel. Natural polymer aloe vera was used to create a number of compositions. Percentage yield, spreadability, extrudability, washability, viscosity, in vitro release research, skin irritation study, and stability testing were all assessed for the formulation. From all the formulations that have been created, F7 has improved drug diffusion, good rheological characteristics, and a pH that is sufficient to treat skin infections. The results showed that the aloe vera content had a substantial impact on the gel's rheological characteristics and medication release. According to calculations, formulation F7 was the most effective one of these formulations. Therefore, formulation F7 needs to be improved in order to be scaled up for industrial manufacturing.

Keywords: Miconazole, Topical formulation, Permeability, Anti-fungal activity.

Formulation Development And Evaluation Of Bioadhesive Ofloxacin Tablets

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Abstract

Oral sustained release gastroretentive dosage forms offer many advantages for drugs having absorption from upper gastrointestinal tract and improve the bioavailability of medications that are characterized by narrow absorption window. The aim of current study was to design sustained release bioadhesive gastroretentive dosage form of ofloxacin. Carbopol 934P and HPMC K100M were selected as the independent variables. Compatibility between drug and polymer was tested by fourier transform infrared (FTIR) and X-ray diffraction (XRD) techniques. Tablets were prepared by direct compression and were evaluated for tablet characteristics, swelling study, adhesion strength, percent drug released, radiographic imaging study and stability study. Tablets prepared showed good tablet characteristics, optimum swelling property, and good adhesion strength with high detachment force. Most of the formulations including the optimized formulation followed Higuchi kinetics and the drug release mechanism was found to be anomalous. Radiographic image proved that tablet remains intact in its structural integrity and shape in stomach up to 24 h. The short-term accelerated stability testing was carried out for the optimized formulation. Thus, the prepared bioadhesive gastroretentive ofloxacin tablet may prove to be a potential candidate which increases the bioavailability of ofloxacin for any intragastric condition.

Keywords: Bioadhesive, Ofloxacin, Tablet Formulation, Drug Delivery.

Progress of Biotechnology in India

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Abstract
India has launched an ambitious biotechnology programme in order to capitalise on its abundant people and natural resources. It has primarily been a government-sponsored endeavour, with relatively little private-sector investment. The Department of Biotechnology (DBT), created in 1986 under the Ministry of Science and Technology, was the primary instrument of action for bringing together the majority of skills, material resources, and financial requirements. It began to fund research in molecular biology, agricultural and medical sciences, plant and animal tissue culture, biofertilizers and biopesticides, the environment, human genetics, microbial technology, and bioprocess engineering, among other fields. The formation of a number of world-class bioscience research institutes, as well as the award of major research funding to several existing universities, aided in the development of specialised biotechnology facility. In addition to DBT, the Ministry of Science and Technology's Department of Science and Technology (DST) funds research at universities in basic biological sciences. In 1974, the Ministry of Education was instrumental in the establishment of the Biochemical Engineering Research Centre at IIT Delhi, with significant assistance from the Swiss Federal Institute of Technology, Zurich, Switzerland, to provide state-of-the-art infrastructure for education, training, and research in biochemical engineering and biotechnology. A few years later, this programme catalysed biotechnology training and research at other institutions. With a brief introduction, major thrust areas of biotechnology development in India, which include education and training, agricultural biotechnology, biofertilizers and biopesticides, tissue culture for tree and woody species, medicinal and aromatic plants, biodiversity conservation and environment, vaccine development, animal, aquaculture, Seri and food biotechnology, microbial technology, industrial biotechnology, and biochemical technology. The current state of intellectual property rights was also addressed. Except for a few exceptions, the industry's contribution to India's gains in biotechnology has been significantly below expectations.

Keywords: Biotechnology, Department of Biotechnology, Biofertilizers, Ministry of Science and Technology

In Vitro Activity of Chitosan Oligomers

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Abstract

Chitosan oligomers (COS) are polysaccharides obtained by the hydrolyzation of chitosan. They are water-soluble, biodegradable, and have a wide range of beneficial properties for human health. Studies have shown that COS and its derivatives possess antitumor, antibacterial, antifungal, and antiviral activities. The goal of the current study was to investigate the anti-human immunodeficiency virus-1 (HIV-1) potential of amino acid-conjugated COS compared to COS itself. The HIV-1 inhibitory effects of asparagine-conjugated (COS-N) and glutamine-conjugated (COS-Q) COS were evaluated by their ability to protect C8166 CD4+ human T cell lines from HIV-1 infection and infection-mediated death. The results show that the presence of COS-N and COS-Q was able to prevent cells from HIV-1-induced lysis. Additionally, p24 viral protein production was observed to be suppressed in COS conjugate-treated cells compared to COS-treated and untreated groups. However, the protective effect of COS conjugates diminished by delayed treatment indicated an early-stage inhibitory effect. COS-N and COS-Q did not show any inhibitory effect on the activities of HIV-1 reverse transcriptase and protease enzyme. The results suggest that COS-N and COS-Q possess an HIV-1 entry inhibition activity compared to COS and further studies to develop different peptide and amino acid conjugates containing N and Q amino acids might yield more effective compounds to battle HIV-1 infection.

Keywords: Chitosan oligomers, HIV, T-cell, immunodeficiency.

Biotechnology and Healthcare Sector: A Review

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Abstract

Biotechnology research covers a broad range of topics like genetic and molecular engineering, tissue, cell and pathway engineering, plant and animal biotechnology, food biotechnology, energy biotechnology, environmental biotechnology, analytical biotechnology, systems biology, nano biotechnology, chemical biotechnology, medicinal and pharmaceutical biotechnology. It is a rapidly growing field and has an extraordinary impact on science, health care, law, the regulatory environment, and business in last 30 years. The evolution of the biotech industry as it is known today began in the 1980s, with scientific innovations leading to the commercialization of biotech products. In last three decades more than 260 novel biotechnology products were approved for over 230 indications. There are more than 4,600 biotech companies worldwide and sales of these products exceeded $175 billion globally in 2013. Biotechnology Industry in India has been growing towards new heights. India is one among the global manufacturers of generic drugs; therefore biopharmaceuticals is the center of India's Biotechnology industry. In this review, we have focused on applications of biotechnology in healthcare sector for human welfare and its scope in today's scenario.

Keywords: Biotechnology, healthcare, industry, India, human welfare, Biopharmaceuticals, Drugs.

Bio-compound An Octopus Ink

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Abstract

Cancer is a noncommunicable disease of rising worldwide concern. Marine food products such as Octopus vulgaris ink (OI) could be sources of compounds addressing these concerns. This study aimed to evaluate the antimutagenic, cytoprotective, antiproliferative, proapoptotic, and antioxidant capacity of OI extracts on human cancer cell lines. The ARPE-19 cell line was used as a reference human cell line to evaluate the ink's cytotoxicity. The water extract exhibited the highest antimutagenic and cytoprotective effect, but the dichloromethane extract (DM) showed the lowest half lethal concentration against 22Rv1 cells. Structural elucidation of purified DM fractions identified an unreported compound, N-(2-ozoazepan-3-yl)-pyrrolidine-2-carboxamide (OPC). DM-F2 showed high antiproliferative effect (LC50 = 27.6 µg/mL), reactive species modulation, early-apoptosis induction (42.9%), and nuclei disruption in 22Rv1 cells. In silico analysis predicted high OPC affinity with Cyclin D1 (-6.70 kcal/mol), suggesting its potential impact on cell cycle arrest. These results highlight the antimutagenic, cytoprotective, and antiproliferative potential health benefits derived from underutilized marine food products such as OI. Further investigations at in vitro or in vivo levels are required to elucidate mechanisms and health benefits from OI. O. vulgaris ink is an underutilized marine natural product that could be a source of biological compounds with potential health benefits such as antioxidant activity and cancer prevention.

Keywords: antioxidant, apoptosis, bioactive compound, cytotoxicity

Rutin Trihydrate: A Possible Innovative Therapeutic Approach For Management Of *Helicobacter Pylori*

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Abstract
Helicobacter pylori (*H. pylori*) remain one of the most common worldwide human infections and are associated with a number of gastrointestinal (GI) conditions including chronic gastritis, peptic ulcer disease, and gastric malignancy. To remove *H. pylori*, a triple therapy over a period of two weeks is usually required. Conventional therapeutic approaches often face challenges such as antibiotic resistance and limited drug bioavailability at the infection site. In this study, we propose the development of rutin trihydrate-based nanocarrier as a novel strategy for the treatment of *H. pylori* infection. Rutin, a natural flavonoid with documented anti-inflammatory and antioxidant properties, exhibits potential therapeutic effects against *H. pylori*-associated gastritis and ulcers. Chitosan is a polycationic, nontoxic, mucoadhesive polymer, which has been proven to be safe. So there is a requirement of novel therapies for the treatment of *H. Pylori* infection. The novel way of using nanocarrier as pH sensitive polymers combined with rutin trihydrate for treatment of this infection. It also deals with the pros and cons of the present therapy and also the advantages of the novel therapy.

Keywords: *H. Pylori*, rutin trihydrate, chitosan, nanocarrier.

Roflumilast Alleviates Adenine-induced Chronic Kidney Disease By Regulating Inflammatory Biomarkers

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Abstract

The present investigation was carried out to explore the role of roflumilast, a PDE4 inhibitor, as a potential treatment option for chronic kidney disease. Forty-six male Wistar rats were divided into five groups: Control, Disease control (50 mg/kg Adenine p.o.), Adenine + Roflumilast (0.5, 1, and 1.5 mg/kg, p.o.). Various urinary and serum biomarkers, antioxidant status, histopathology, and protein expression of inflammatory markers were measured to investigate the effects of roflumilast on kidney functions. Adenine was found to elevate the levels of serum creatinine, urea, uric acid, sodium, potassium, chloride, magnesium, and phosphorus and reduce the level of serum calcium. Further, adenine significantly increased the serum TGF-β levels and reduced the anti-oxidant indices. Significant elevation was observed in protein expression of IL-1β, TNF-α, MCP-1, ICAM-1, and fibronectin. Histopathologically, adenine caused thickening of the glomerular basement membrane, inflammatory cell infiltration, atrophy, and glomeruli deterioration. However, roflumilast administration (1 mg/kg) remarkably decrease serum creatinine, urea, uric acid, sodium, potassium, chloride, magnesium, and phosphorus by 61%, 40%, 44%, 41%, 49%, 58%, 59%, and 42% respectively, and increase in calcium by 158%. Moreover, roflumilast (1 mg/kg) significantly reduced serum TGF-β levels by 50% and elevated anti-oxidant indices by 257%, 112%, and 60%, respectively. The protein expression was significantly reduced by 5.5-fold, 7-fold, 5.7-fold, 6.2-fold, and 5.1-fold individually. Roflumilast noticeably improved the structure of glomeruli, tubules, and cellular functioning. The findings manifested that roflumilast has the potential to ameliorate renal injury by reducing and regulating inflammatory responses.

Keywords: Chronic kidney disease, Roflumilast, Inflammation, Fibrosis

Molecular docking analysis of some thiazole hydrazine derivatives as antimicrobial agents

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Abstract
Infectious diseases always remainedsevere major health hazards and significant problems of the world population. The rapid development of microbial resistance to the existing antimicrobial drugs is the prime cause of the global issue. It is an important challenge for the researchers to develop some new antimicrobial agents having a different mode of action to combat the drug resistance issues. In the present study,already reported thiazole hydrazine derivatives synthesized from thiosemicarbazones were subjected to molecular docking on Gyrase & topoisomerase IV enzyme (PDB code: 4URO, resolution 2.59 Å) using Molegro Virtual Docker Version 6.0.Molecular docking studies shown that the active compounds TH-8, TH-9, TH-11,TH-12 docked well within the binding sites of topoisomerase IV drug target having binding energies ranging from -104.98 to -95.14. Hydrogen bond interactions were observed with Asn65, Gln21. while π-π interactions were seen with Lys207, Lev205,Asn65,Glu208.

Keywords: Microbial resistance, Antimicrobial, Thiazole, Hydrazine, Molecular Docking,

Review On Formulation Of Chewing Gum For The Effective Management Of Various Diseases.

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Abstract

Chewing gum, once a simple pleasure, has transformed into a multifunctional vehicle for drug delivery and therapeutic intervention. This comprehensive review delves into the intricate world of chewing gum formulation as a powerful tool for the effective management of a spectrum of diseases, ranging from cardiovascular diseases to obesity and diabetes, among others. Commencing with a detailed exploration of the constituents shaping chewing gum formulations, including gum base, sweeteners, flavours, and potential therapeutic agents, this review navigates the landscape of innovative strategies that optimize drug stability, release kinetics, and oral bioavailability. The core of this review lies in the synthesis of contemporary research and studies that showcase the successful harnessing of chewing gum formulations to combat a diverse array of diseases. From cardiovascular disorders to metabolic ailments like obesity and diabetes, the potential of chewing gum as a localized, non-invasive drug delivery system is unveiled, holding promise for enhanced treatment outcomes. Furthermore, this review unearths challenges that confront the development of medicated chewing gum, including taste-masking complexities, bio adhesive properties, and the intricate web of regulatory considerations. A nuanced exploration of clinical investigations and patient preferences sheds light on the real-world implications of chewing gum-based therapeutic interventions, illuminating avenues for improved patient compliance and therapeutic impact. In summation, this review paints an illuminating portrait of chewing gum as an innovative, patient-friendly approach to tackling diseases that impose significant health burdens. Keywords: Chewing gum, drug delivery, disease management, cardiovascular diseases, obesity, diabetes, therapeutic intervention.

Molecular Docking Studies Of Chalcone Derivatives As Antibacterial Agents

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Abstract

Increase in antibiotic resistance due to multiple factors has encouraged the search for new antibacterial agents, which are active against multidrug-resistance pathogens. In the present study, already reported chalcone derivatives comprising of s-triazine and acetamido group were subjected to molecular docking on DNA Gyrase enzyme (PDB code: 4DUH, resolution 1.50 Å & PDB code:1KZN, resolution 2.30 Å) using Molegro Virtual Docker Version 6.0. Molecular docking studies revealed that the active compounds CHAL-1, CHAL-3, CHAL-7 and CHAL-8 docked well within the binding sites of DNA Gyrase drug target having binding energies ranging from -160.3 to -145.5. Hydrogen bond interactions were observed with Val120, Asn46, Glu50, Gly77 and Arg136 while π-π interactions were seen with Val120 and Arg136. Some other derivatives also show good dock score but they have less binding affinity towards active site as compared to standard drug clorobiocin. The present study shows that strong binding of compounds with Gyrase inhibitor makes the molecule potent antibacterial agents.

Keywords: Chalcone, Antibacterial, Molecular Docking, DNA Gyrase, Antibiotic Resistance.

Molecular Docking Analysis Of Some Nitrobenzothiazole Derivatives As Antimalarial Agents

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Abstract
Malaria is still considered as the major parasitic disease and the development of resistance towards the available anti-malarial drugs does not improve this alarming situation. Therefore, it is essential to find new anti-malarial drugs that have a higher pharmacological activity than antimalarial drugs that are currently available. In the present study, molecular docking of a series of thirteen nitrobenzothiazole derivatives was carried out on *P. falciparum* Lactate Dehydrogenase enzyme (PDB code: 1CET, resolution 2.05 Å, co-crystallized ligand, chloroquine) utilizing Autodock tool versions 1.5.7. Analysis of molecular docking results reveal that the most active compounds NBT-7, NBT-9, NBT-12 & NBT-13 docked well within the binding sites of *P. falciparum* Lactate Dehydrogenase drug target with binding energies ranging from -8.11 to -6.11 kcal/ mol. Docking pose analysis displayed hydrogen bond interactions with Met30, Ile31, Gly32, Gly99, Thr97, whereas hydrophobic interactions were observed with Ile54 and Ala98. The docking analysis could aid in the designing of newer nitrobenzothiazole derivatives with enhanced anti-malarial activity and lower resistance problems.

Keywords: Malaria, *P. falciparum*, Nitrobenzothiazole, Molecular docking, *Plasmodium falciparum* lactate dehydrogenase.

Drug Delivery In Biotechnology Ongoing And Upcoming

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Abstract

Drug delivery is becoming a whole integrative and individualistic field of research and is gaining the attention of pharmaceutical makers, medical doctors and industry. The targeted and safe drug delivery could improve the performance of some Latin medicines already on the market and, moreover, will have implications for the development and success of new therapeutic strategies, such as peptide and protein delivery, glycoprotein administration, gene therapy and RNA interference, NDDS. Numerous innovative technologies for effective drug delivery have been developed, including implants, nanotechnology, cell and peptide encapsulation, micro fabrication, chemical modification and others. This long way from the clinic to market, however, several issues will have to be addressed, including suitable scientific development, specific financial support as a result of altered scientific policy, government regulations and market forces.

Keywords: Market**,** Development, Technology, Medicine, Financial.

Formulation and Development of Oxygen-Enhancing Pills for Targeting Cancer Cells

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Abstract

The development of innovative therapeutic approaches for cancer treatment continues to be a crucial focus in medical research. This study explores the formulation and potential application of oxygen-enhancing pills as a novel strategy for targeting cancer cells. The pills aim to exploit the differential oxygen sensitivity between cancer and normal cells, thereby exerting cytotoxic effects on cancer cells while minimizing harm to healthy tissues. The rationale behind oxygen-enhancing pills lies in the Warburg effect, which characterizes many cancer cells' heightened reliance on glycolysis, even in the presence of oxygen. By delivering increased levels of oxygen to tumor sites, these pills seek to create an environment that selectively induces oxidative stress and apoptosis in cancer cells. Moreover, the formulation takes into account the complexities of the tumor microenvironment, including regions of hypoxia and variations in blood supply. The development of such pills requires a comprehensive understanding of drug delivery systems, biocompatible materials, and oxygen release mechanisms. Encapsulation techniques utilizing oxygen-releasing nanoparticles, microspheres, or oxygen-carrying agents are being explored to ensure controlled and targeted oxygen delivery. The pills' formulation also considers the potential synergy between oxygen therapy and existing treatments like chemotherapy and radiation, aiming for enhanced therapeutic outcomes. Key challenges in formulation development include optimizing oxygen release kinetics, ensuring stability of the oxygen-releasing agents, and establishing efficient targeting mechanisms to deliver the pills specifically to tumor sites. Preclinical studies involving in vitro cell cultures and in vivo tumor models are essential to assess the pills' efficacy, safety, and potential side effects. This study proposes a step-by-step approach to the formulation development process, encompassing material selection, encapsulation techniques, oxygen release kinetics analysis, and in vitro/in vivo testing. Successful formulation and subsequent clinical trials could lead to a promising avenue for cancer treatment, offering a targeted, non-invasive, and potentially synergistic therapeutic option. In conclusion, the formulation of oxygen-enhancing pills represents an innovative strategy for targeting cancer cells based on their distinctive oxygen sensitivity. By exploiting this vulnerability, these pills could provide a valuable addition to the arsenal of cancer treatment modalities. However, extensive research, rigorous testing, and collaboration between experts in various fields are necessary to overcome challenges and ensure the translation of this concept into a clinically viable therapy.

Keywords: cancer treatment, oxygen-enhancing pills, drug delivery, formulation development, targeted therapy, Warburg effect, oxidative stress, nanoparticle encapsulation, tumor microenvironment.

Marine Actinomycetes from Bay of Bengal – Potential source of Novel bioactive compounds - An overview

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Abstract

Actinomycetes represent a ubiquitous group of microbes that are the most economically and biotechnologically valuable prokaryotes. Several ecologically significant properties of actinomycetes were reported in the literature while made the screening source expand into uncommon environments. Actinomycetes comprise 10% of the total bacteria colonizing marine aggregates. Most of the antibiotics in clinical use are direct natural products is semisynthetic derivatives from actinomycetes or fungi. Actinomycetes are the most economically and biotechnologically valuable prokaryotes and are responsible for the production of about half of the discovered secondary metabolites. More than 70% of our planet's surface is covered by oceans and life on earth originated from sea. In marine ecosystems, such as the deep sea floor and corals, reefs, experts estimate that the biological diversity in higher than in the tropical rain forests. As marine environmental conditions are extremely different from terrestrial ones, It is summarised that marine actinomycetes have different characteristics from those of terrestrial counterparts and therefore, might produce different types of bio active compounds In view of the importance and significance of marine environment ecosystem which provide a rich source of novel bioactive actinomycetes, the present study was aimed to overview the method of isolation of bioactive actinomycetes and their secondary metabolites from marine sediments of Bay of Bengal will be presented and discussed.

Keywords: Actinomycetes, Prokaryotes, Antibiotics, Secondary Metabolites, Marine Environment.

Qualitative And Quantitative Phyto-analysis, Antioxidant, Hypoglycemic & Anti-obesity Potentials Of The Ethanolic Extracts Of *Saussurea Lappa* (Costus) Roots On *In Vitro* And *In Vivo* Models.

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Abstract

The current study investigated characterize the phytochemical contents of ethanolic extracts of *Saussurea lappa* dried roots and evaluate its antioxidant, hypoglycemic and antiobesity potentials on *In-vitro* and *In-vivo* models. Obesity was induced experimentally in white albino Wistar rats by feeding them with prepared cafeteria diet and water ad libitum for a period of 12 weeks. The anti-obesity effects were determined by oral administration of ethanolic extracts of *S. lappa* at dosage levels of 100 and 200 mg/kg body weight from the 12th to 18th week of study. Qualitative and quantitative phytochemical analysis of ethanolic extract were conducted as per study protocol. We have also screened ethanolic extract for DPPH free radical scavenging, α-amylase, α-glucosidase and pancreatic lipase inhibition assay. Qualitative and quantitative phytochemical analysis revealed the presence of various phytocompounds that have shown to be associated with anti-obesity effects. Our results revealed that IC50 values were found to be 121.94 µg/mL, 54.66µg/mL, 55.10µg/mL and 97.34µg/mL for DPPH free radical scavenging, α-amylase inhibition, α-glucosidase inhibition and pancreatic lipase inhibition respectively. At end of the study, Ethanolic extract (200mg/kg) shown significant reduction ($P<0.05$) in body weight, food intake, anthropometrical measures, biochemical parameters, organ weights and TG content in obese rats compare to negative control group. The ethanolic extract also shown inhibition in process of adipogenesis on 3T3-L1 preadipocyte cell lines. Our findings suggest that ethanolic extract of *S. lappa* roots may be a potent therapeutic supplement for the treatment and prevention of obesity and associated metabolic abnormalities.

Keywords: Anti-obesity, *Saussurea lappa*, Quercetin, Cafeteria diet, Ethanolic extract

Molecular Docking Studies Of Some Trifluoromethylquinoline Hybrids As Antiplasmodial Agents

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Abstract

Widespread resistance of *Plasmodium falciparum* to currently available antimalarials, necessitate the discovery of new medicines. Pharmacophoric hyhridization has become an alternative way for drug resistance. In the present study, a series of already synthesized seventeen quinolines, that are structural analogs of mefloquine and amodiaquine were subjected to molecular docking on *P. falciparum* Lactate Dehydrogenase enzyme (PDB code: 1CET, resolution 2.05 Å) using Autodock tool versions 1.5.7. Molecular docking studies revealed that the active compounds TFQ-4, TFQ-6, TFQ-12,TFQ-13,TFQ-14 docked well within the binding sites of *P. falciparum* Lactate Dehydrogenase drug target having binding energies ranging from -8.67 to -7.20 kcal/ mol. Hydrogen bond interactions were observed with Asp53,Gly29,Gly 99. While π-π interactions were seen with Phe100 and Ala98. For all the designed compounds, the binding energies of molecular interaction into the active site of enzymes were found to be better than co-crystallized ligand, chloroquine (-6.00 kcal/mol).

Keywords: Malaria, *P. falciparum*, Drug resistance, Quinolines, Hybrids, Molecular docking.

Market Opportunities And Challenges In Biopharmaceutical Industry

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Abstract

The biopharmaceutical industry stands at the forefront of scientific innovation, bringing transformative therapies and treatments to patients worldwide. This paper explores the dynamic landscape of market opportunities and challenges within the biopharmaceutical industry. On one hand, rapid advancements in biotechnology have unlocked novel avenues for drug development, including biologics, biosimilars, gene therapies, and personalized medicine. These innovations present substantial growth prospects, fueled by increasing demand for targeted and effective therapies. On the other hand, the industry grapples with multifaceted challenges. Complex regulatory pathways, high research and development costs, and stringent quality standards necessitate strategic navigation. Additionally, pricing pressures, intellectual property concerns, and the evolving landscape of healthcare reimbursement pose significant obstacles. Balancing the imperative to deliver groundbreaking therapies with the need for sustainable business models is a delicate equilibrium that industry stakeholders must maintain. This paper delves into key aspects of market opportunities, including the rise of contract development and manufacturing organizations (CDMOs), expanding global markets, and the exploration of advanced drug delivery systems. It also delves into the challenges arising from market access barriers, competition, and the growing demand for transparency in pricing and clinical trial data. By dissecting the intertwined fabric of opportunities and challenges, this paper aims to provide insights into how biopharmaceutical companies, investors, regulators, and healthcare systems can collaboratively shape the industry's trajectory. Through strategic adaptation, innovative problem-solving, and a commitment to patient-centric approaches, the biopharmaceutical industry can harness its potential while addressing the complexities of a rapidly evolving healthcare landscape.

Keywords: Biopharmaceutical industry, market opportunities, challenges, biologics, biosimilars, gene therapies, personalized medicine, regulatory pathways.

Microsopic Characterization Of *Crinum Solapurense* Leaf Powder

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Abstract

The botanical plant *Crinum solapurense* originates to the Amaryllidadaceae family and has numerous therapeutic characteristics that play an essential role in the treatment of a variety of illnesses. In the current scenario, the entire globe will create a trend and challenge herbal and pharmaceutical technologies to focus on herbal treatments. The current study attempted to emphasize this folk herbal medication, which will aid in the identification and quality assurance of a specific drug. The current study includes addresses microscopic and other WHO-recommended methodologies for leaf powder standardization. These investigations will give reference data for proper identification and aid in the detection of counterfeiting in consumer samples used in the production of various herbal medications. These findings will also aid in distinguishing the leaves of this kind of plant from those of closely related species in the identical genera and family. Microscopic Studies was carried out by using leaves powder of *Crinum solapurense*. The leaves powder of *Crinum solapurense* was evaluated for various pharmacognostic evaluations. In the Microscopic studies different Powder microscopic characters like stomata, starch grains, crystals, and such type of various powder characters were studied. The herbal medicinal plant leaves of *Crinum solapurense* is the huge source of phytochemical and highly significant to herbal and pharmaceutical technology.

Keywords: Herbal Medicinal plant; *Crinum solapurense;* powder microscopy, pharmaceutical technology.

Role Of Edible Vaccines In Disease Prevention

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Abstract

An increasing global population and the appearance of new diseases have prompted the creation of more effective new vaccinations against a variety of diseases. Edible vaccines (EV) are composed of antigenic proteins and devoid of pathogenic genes which are going to play a vital role and have great promise for the development of the vaccines as a means of prophylactic control of future disease or disorders including metabolic disorders. Edible vaccines are produced by the process called "transformation" and the altered plants are called as "transgenic plants" which are composed of antigenic proteins and do not contain any pathogenic genes. Hence, they are safe, cost-effective, easy-to-administer and readily acceptable type of vaccine delivery system, especially for the developing countries. These vaccines are made by inserting the necessary genes into the plants, which result in the production of the requisite encoded proteins. This concept was introduced ten years ago, but now this has become a reality. Originally considered to be exclusively effective for avoiding illnesses that are infectious, it has been found utility in the avoidance of autoimmune disorders, preventing pregnancy, cancer therapy, and other areas. This review gives an overview of edible vaccines' role to give a full overview of the role of edible vaccines in disease prevention.

Keywords- Edible vaccines, transgenic plants, Antigenic proteins

Nanomaterial Used In Nanobiotechnology: An Applicable Approach For Rational Future

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Abstract

Nanotechnology is become evident fields of research within recent decades and is based upon the exploitation of nano-sized materials (e.g., nanoparticles, nanotubes, nanomembranes, nanowires, nanofibers etc..,) in various working fields. Nano sized particles exit in nature and can be synthesized from variety of product such as carbon or minerals like silver. Nanomaterials have multiple advantages, including high stability, target selectivity, increased strength, durability, enhanced catalytic activity and plasticity. Diverse biotic (e.g., Capsid of viruses and algae) and abiotic (e.g., Carbon, silver, gold etc.) materials can be bring into play in the synthesis process of nanomaterials. “Nanobiotechnology” is the combination of nanotechnology and biotechnology control. Nano-based approaches are developed to improve the conventional biotechnological methods and overcome their such as the side effects caused by traditional therapies. Several studies have reported that nanobiotechnology has remarkably enhanced the efficiency of various techniques, including drug delivery, water and soil remediation, energy production, reducing fuel consumption and enzymatic processes. In this review, techniques that benefit the bulk from nano-biotechnological approaches, are divided into four major fields: medical, industrial, agricultural, and environmental.

Keywords: Nano-biotechnology, Nanoparticles, Nano-therapies

Design, Synthesis and Evaluation of 1, 3, 4 Oxadiazole Derivatives for Antidiabetic Activity

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Abstract

Diabetes mellitus is a chronic metabolic disorder that leads to severe complications worldwide. 1,3,4oxadiazole is a very important five-member heterocyclic ring for designing potent bioactive agent. The aim of present work is to preformed In-silico study, synthesis and biological evaluation of 1, 3, 4oxadiazole derivatives as α-glucosidase inhibitors for diabetes mellitus. 32 novel compounds were design and ADMET studies were performed. On the basis of ADMET study 10 derivatives were selected for molecular docking studies on PDB 3A4A. Based on the docking results, it was found that the derivatives (A4, A11, A12, and A15) have high binding affinity with energy from -12.8327 to -8.70331 kcal/mol. The compounds show four hydrogen bond interactions with Arg 315, Thr310, Ser 241, Lys 156 amino acids, hydrophobic interaction with ASP242, and hydrophobic interaction with Pro 312, Glu411 His280, and pi-pi stacking with Tyr 158 amino acids. Four new 5-thio-1,3,4,-oxadiazole derivatives were synthesized by taken methyl 4-hydroxybenzoate as starting material and R-amine group (A4 L-Phenylalanine, A11- leucine, A12-Tyrosine, A15-2-Nitro Aniline) as a substitution. The structures of these compounds were confirmed by UV, IR, 1H, 13C NMR, and Mass spectra. The antidiabetic activity of the compounds (A12 and A15) was investigated by oral glucose tolerance test (OGTT) on rat with comparison to the standard Metformin. The results of OGTT confirmed that A12 and A15 have antidiabetic activity. Further more *In-vitro* study revealed these compounds also inhibits the release of free fatty acids and decreases the triglyceride and total cholesterol level. Hence, it was concluded that the compound A12 effectively act against the hyperglycaemic disorder, which could be translated into a new drug in future.

Keywords: Anti-diabetics, 1, 3, 4 oxadiazole, Molecular docking, In-silico study, β-inhibiter.

Development And Evaluation Of Solid Dispersion Of Containing Furosemide

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Abstract

This study aimed to develop and characterize a solid dispersion formulation of furosemide to address its solubility and dissolution rate limitations, thereby enhancing its oral bioavailability. Solid dispersions were prepared using the solvent evaporation method, with varying ratios of furosemide to polymer carriers (such as hydroxypropyl methylcellulose, polyvinylpyrrolidone, and Pluronic F127). The prepared solid dispersions were characterized using techniques such as differential scanning calorimetry (DSC), X-ray diffraction (XRD), Fourier-transform infrared spectroscopy (FTIR), and scanning electron microscopy (SEM) to assess changes in physicochemical properties and solid-state characteristics. In vitro dissolution studies were conducted to evaluate the dissolution profiles of the solid dispersion formulations in comparison to pure furosemide. DSC and XRD analyses indicated a reduction in the crystallinity of furosemide in the solid dispersion formulations, suggesting the conversion of the drug into an amorphous state. FTIR spectra showed no significant interactions between furosemide and the polymer carriers. SEM images displayed homogeneously dispersed drug particles within the polymer matrix. In vitro dissolution studies demonstrated a substantial improvement in dissolution rates for the solid dispersion formulations compared to pure furosemide, with some formulations achieving nearly complete drug release within a shorter time period. The formulation development of solid dispersions proved successful in enhancing the solubility and dissolution rate of furosemide. The amorphous state of the drug within the polymer matrix and improved dissolution profiles suggest a potential improvement in the oral bioavailability of furosemide. Further studies, including stability testing and in vivo bioavailability assessments, are warranted to validate the clinical potential of the developed solid dispersion formulations as a means of optimizing furosemide's therapeutic performance.

Keywords: Solid Dispersion, Furosemide, Formulation Development, Dissolution Enhancement, Solubility, Bioavailability

Fluoroquinolones for the Treatment of Tuberculosis: An Overview

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Abstract

According to the World Health Organization (WHO), tuberculosis (TB) remains one of the top 10 causes of death worldwide. Tuberculosis is a major global health threat. In 2022, an estimated 10 million people worldwide developed TB disease, and there were about 1.5 million TB-related deaths. TB primarily affects low- and middle-income countries, with the highest burden in Africa, Asia, and the Western Pacific regions. The WHO has launched the "End TB Strategy" with the aim of eliminating TB as a public health problem by 2035. Early diagnosis and prompt initiation of treatment are essential for effective TB control. WHO recommends a package of interventions known as "Directly Observed Treatment, Short-course" (DOTS) for TB control, which includes standardized diagnostic approaches, access to quality-assured drugs, and supportive treatment adherence measures. Tuberculosis (TB) remains a global health burden, necessitating the development of new therapeutic strategies. Fluoroquinolones (FQs) have emerged as promising agents in the treatment of TB due to their potent antimicrobial activity against *Mycobacterium tuberculosis* (Mtb) and their ability to penetrate intracellular compartments. This review aims to summarize the current knowledge on the use of FQs as antitubercular agents, highlighting their mechanisms of action, efficacy and limitations.

Keywords: World Health Organization (WHO), Directly Observed Treatment, Short-course" (DOTS), *Mycobacterium tuberculosis*, Multidrug-Resistant Tuberculosis (MDR-TB), Extensively Drug-Resistant Tuberculosis (XDR-TB)

Comparative Qualitative analysis of Marketed Yasad Bhasma with classical and Modern Parameters

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Abstract

Bhasma are the potent Ayurvedic preparations prepared by metals and minerals. These *Bhasma* possess wide range of therapeutic efficacy and are considered superior because of their qualities like small dose, quick action, palatability and longer shelf life. *Yashada bhasma* is important formulation mentioned in *Rasa shastra* texts. The present study was carried out to evaluate a *Yasad bhasma* with both modern and ancient parameters. The present work deals with the analysis of the two different brands and to compare and evaluate the quality of them.Physicochemical characterization like organoleptic characters, classical parameters of *Bhasma- Apunarbhava, Niruttha, Rekhapurnata, Varitaratva, Unama,* etc., Loss on Drying, Ash Value, Acid Insoluble Ash, Nimburi Phased Spot Test along with sophisticated analysis namely Fourier transform Infra-Red Spectroscopy, X ray diffraction and ICP-OES method. Both the sample produces the better results for the classical parameters therefore the analytical study continued on the both the samples. XRD analysis shows both samples have the hexagonal Ze crystalline phase. ICP-OES method shows the presence of Fe, Pb, Cu, S Mg in both samples. The FTIR analysis showed the presence of ZnO, C-C, OH functional groups in both samples. By analytical method of examination along with the classical method this is revealed that BYB is better than DYB for therapeutic efficacy and establishing scientific reason behind the safety and efficacy of this ancient system of medicine.

Keywords: Yashada bhasmaa; X ray diffraction of yashada bhasma; Shodhana; Jarana; Marana

Green Synthesis Of Metal Nanoparticles: Methods And Its Biological Applications

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Abstract: Nanoparticles are usually created using a variety of processes that have a detrimental effect on the environment. Incorporating plant extracts with nanoparticles is an alternative, conservative method. Green nanotechnology is an emerging field of science that focuses on the production of nanoparticles by living cells through biological pathways. Biological processes by green synthesis tools are more suitable to develop nanoparticles ranging from 1 to 100 nm compared to other related methods, owing to their safety, eco-friendliness, non-toxicity, and costeffectiveness. In this review, we provide especially information on green synthesized metal nanoparticles, which are helpful to improve biomedical and environmental applications. In particular, the methods and conditions of plant-based synthesis, characterization techniques, and applications of green silver, gold, iron, selenium, and copper nanoparticles are overviewed. This review discusses types of nanoparticles, and green synthesis methods along with their reduction mechanisms involving economically viable reducing materials like algae, seaweeds and flowers. Phytoconstituents present in plant extracts responsible for reduction of metal salt solution are mentioned in this work. Applications of these Metal Nanoparticles like photocatalyst, industrial catalyst, and therapeutic uses are highlighted.

Keywords: Nanoparticles, Phytoconstituents, Green Nanotechnology

“Revolutionizing Biotechnology”
(Unleashing Proteolysis Targeting Chimeras- Protac’s Targeted Power)

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Abstract
Specific Target Protein Degradation by Proteolysis Targeting Chimeras Technology ‘PROTAC’. Proteolysis-targeting chimera (PROTAC) has been emerging technology for targeted protein degradation. PROTAC is a heterobifunctional molecule comprised of ligand- mostly a small molecule inhibitor of the targeted protein linked to another ligand of E3 ligase via flexible linkers. It promotes the degradation of Protein of Interest (POI) by forming a Ternary complex with E3 ligase. E3 ubiquitin ligase induces the ubiquitination of POI which is further degraded by endogenous 26s proteasomes known as a ubiquitin-proteasome system (UPS) which helps in the degradation of misfolded/unused proteins. PROTAC regulates the protein function via degrading protein instead of inhibiting them, developing sensitivity to drug-resistant targets and the possibility of affecting non-enzymatic functions. Target Proteins- Nuclear receptors (ER, AR, RAR) , Protein kinase, Regulatory proteins, Neuro degenerative related proteins. Ligand for Target- Natural products (DHT, Estradiol) ,Inhibitors (AB3), Peptides. Ligands for E3- Peptides, Pomalidomide, Thalidomide, Bestatin, VHL1. E3 Ubiquitin Ligase- CMA, VHL, MDM2, CEREBLON, CLAP1, KEAP1. PROTAC molecules which are in current pipeline- ARV-110, ARV-471, ARV-825. PROTAC technology is an area of active research and development, and several PROTACs are currently in clinical trials for the treatment of various diseases, including cancer, immunological disorders, viral infections, and neurological diseases.

Keywords- Ligand, Linkers, E3 Ligase, Ubiquitination.

Telomere-Targeting Molecule Program

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Abstract

The objective of this poster presentation is to analyse Telomere function and the technology that recently showed advancements in its ability to re-modulate telomerase activity and modify the telomeric structures to downregulate cell division. The development of this technology is being done with the targeted treatment of neoplastic cells and probable improvement in the longevity of the human lifespan. The studies, conducted in vitro in multiple cancer cell lines and in vivo in several pre-clinical cancer models, demonstrated the mechanism of action and anti-cancer activity for these new molecules. The compounds belong to a new chemical class of molecules called telomere targeting divalent dinucleotides. THIO (6-thio-dG or 6-thio-2'-deoxyguanosine) is a telomere-targeting agent currently in clinical development to evaluate its activity in non-small cell lung cancer (NSCLC), in sequential administration with Cemiplimab, an anti-PD1 therapy, developed and commercialised by Regeneron. Telomeres play a fundamental role in the survival of cancer cells and their resistance to current therapies. THIO is being developed as a second or higher line of treatment for NSCLC, for patients that have progressed beyond the standard-of-care regimen of existing checkpoint inhibitors.

Keywords: Telomeres, THIO, Telomerase, NSCLC, Divalent Dinucleotides.

Spectrophotometry Method For The Estimation Of Terazosin In Tablet Formulation

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Abstract

Terazosin (TRZ) is indicated in the symptomatic relief of benign prostatic hyperplasia. The presented study is simple, accurate, rapid and precise spectrophotometric acid dye method for the determination of terazosin in tablet dosage forms. The method was based on the formation of chloroform extractable complex of Terazosin with Bromophenol blue. Bromophenol blue was used for ion pair complex with the drug in 1:1 ratio. The absorbance of the extractable ion pair complex is measured at the wavelength of maximum absorbance 415 nm against the reagent blank. The linear range, limit of detection (LOD) and limit of quantitation (LOQ) were found to be 1-10, 0.001 and 0.012 µg/ml respectively. Linearity is accessed by visualizing method. With r^2 value is 0.996 shows calibration curve in linear. The regression equation found was Y = 0.105x + 0.172. The method was found to be specific when applied with some excipients and accurate enough to be applied in tablet formulation.

Keywords: Terazosin, Spectrophotometry, method validation, ICH guidelines, Bromophenol blue

Fibrinogen Concentrate: A Novel Approach To Accelerate Clot Formation

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Abstarct

Fibrinogen concentrate is an innovative medical product that represents a significant advancement in hemostatic agents and tissue sealants. This abstract provides an overview of Fibrinogen concentrate key attributes, mechanisms of action, and potential applications in the medical field. Fibrinogen concentrate is designed to efficiently control bleeding and promote wound healing across various surgical procedures and trauma cases. It is composed of a proprietary blend of bioactive compounds that rapidly interact with fibrin, a vital protein involved in blood clot formation. Upon application, Fibrinogen concentrate accelerates the clotting process by enhancing fibrin mesh formation, thereby effectively stopping bleeding and reducing the risk of complications associated with excessive blood loss. Beyond its hemostatic capabilities, Fibrinogen concentrate also serves as a tissue sealant. By forming a secure and biocompatible seal over wounds and incisions, Fibrinogen concentrate minimizes the risk of infection, accelerates tissue regeneration, and supports faster recovery times. Its unique formulation allows for easy application, adhering well to both wet and dry surfaces, making it adaptable to a wide range of surgical scenarios. Fibrinogen concentrate emerges as a revolutionary medical solution with dual functionality—providing rapid and effective hemostasis while simultaneously promoting tissue sealing and healing. As a result, Fibrinogen concentrate holds the potential to transform surgical practices, enhance patient outcomes, and advance medical care in various clinical settings. Further research and clinical trials will undoubtedly shed light on its full range of applications and benefits."

Keywords: Fibrinogen concentrate, blood clot, bleeding, clotting, innovation.

Cancer Drug Targeting Using Monoclinal Antibodies

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Abstarct

The advent of monoclonal antibody (mAb) technology has revolutionized the field of cancer therapy by providing a precision-driven approach for targeting malignant cells. This abstract highlights the significance of cancer drug targeting using monoclonal antibodies, discussing their mechanisms of action, therapeutic applications, and current challenges. Monoclonal antibodies are engineered to specifically recognize and bind to unique cell surface antigens overexpressed or aberrantly expressed on cancer cells. By exploiting these distinct markers, mAbs can selectively deliver therapeutic payloads, thereby minimizing damage to healthy tissues and reducing off-target effects often associated with traditional chemotherapy. The success of mAbs, such as trastuzumab and rituximab, in treating various cancer types has led to increased interest in developing novel mAbs for personalized and targeted cancer therapy. However, challenges persist in the clinical implementation of mAbs. Resistance mechanisms, limited penetration into solid tumors, and potential immunogenicity are among the obstacles that researchers are actively addressing. Moreover, high costs associated with mAb development and production pose economic barriers to widespread accessibility. cancer drug targeting using monoclonal antibodies holds immense promise as a targeted and personalized therapeutic strategy. As ongoing research continues to unravel the intricacies of tumor biology and immune interactions, novel mAbs and innovative combination therapies are expected to emerge, further optimizing treatment outcomes for cancer patients. Addressing current challenges through collaborative efforts between researchers, clinicians, and pharmaceutical companies will be pivotal in harnessing the full potential of monoclonal antibodies for precision cancer therapy.

Keywords: Cancer, Mabs, drug targeting, solid tumours.

Design, Synthesis, Characterization and Screening of Novel Benzoxazole-Thiazolidinone Scaffolds as Potential Antimycobacterial Agents

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Abstract

With an objective of developing novel potent anti-tubercular agents in this research work we have reported novel benzoxazole fused thiazolidinone deivatives. *N*-(2-(substituted)-4-oxothiazolidin-3-yl) benzo[*d*]oxazole-5-carboxamide derivatives (IIIa-o) were synthesized by the reaction between Schiff bases of benzoxazole (IIa-o) with thioglycollic acid. Structure of the synthesized compounds were confirmed on the basis of physico-chemical and spectral data (IR, ^{1}H-NMR, ^{13}C-NMR and Mass). *In-vitro* anti-tubercular studies of newly synthesised molecules against *Mycobacterium tuberculosis* H_{37}Rv strain using MABA method have shown substantial MIC values. The fit of these compounds within the active sites of the enoyl ACP reductase was evaluated using Molecular docking techniques. The findings of the *in-silico* investigation showed that the synthesized compounds have drug-like characteristics. Among the synthesized compounds III d, III e, III g, III m, and III o exhibited good anti-tubercular activity. Therefore, depending on the resultant outcomes, the optimization of benzoxazole-thiazolidinone derivatives III d, III e, III g, III m, and III o may afford suitable lead molecule for further scientific exploration which may result in the development of the new compounds with significant antitubercular activity in future.

An Overview on Gene Therapy: Recent Approach for Hypertension Management

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Abstract
Hypertension, also known as high blood pressure, is a chronic medical condition that affects millions of people worldwide. Blood pressure is usually noted in combination with other cardiovascular risk factors. Several genes have been identified as potential targets for gene therapy for hypertension. These include the renin-angiotensin system (RAS), which plays a crucial role in regulating blood pressure through the production of angiotensin II; the endothelin system, The potential benefits of gene therapy in treating hypertension are promising, with the ability to address underlying molecular mechanisms that contribute to blood pressure regulation.

Keywords: High blood pressure, RAS, Gene Therapy.

Silver Sulfadiazine Containing Polymeric Nanocarriers For Burn TreatmeNT

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Abstract

Burns are highly traumatized injuries leading to mortality and morbidity. According to WHO estimates about 265 000 deaths occur each year from fires alone globally, with more deaths from scalds, electrical burns, and other forms of burns. In India around 7 million people suffer from burn injuries each year with 1.4 lakh deaths and 2.4 lakh people suffer with disability. The eventual goal of burn therapy is to prevent microbial infection and rapid wound healing. Silver sulfadiazine is commonly employed as an antibacterial agent for surface burn management. Recent advance in nanotechnology have had vast effect on drug delivery system mainly in burn healing. Nanotechnology have promising approach, which able to address issues such as the permeability and bioavailability of drugs with reduced stability or low water solubility. Various polymeric nanocarriers have been considered as competent drug delivery system for burn treatment. This review presents a complete overview of silver sulfadiazine based polymeric nanocarriers in the conservative healing of burn wounds.

Molecular Docking Analysis Of Some Primaquine-chloroquine Fumardiamides As Antiplasmodial Agents

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Abstract

Malaria is still a serious threat to humans all round the world. This alarming situation calls for the development of novel antimalarials effective against resistance strain. This research describes a revision of hunt for new antiplasmodial drugs with enhanced potencies against the erythrocytic and hepatic stages of *Plasmodium*. In the present study a set of reported eleven Primaquine-chloroquine fumardiamide derivatives were subjected to molecular docking on *P. falciparum* Lactate Dehydrogenase enzyme complex with NADH (PDB code: 1LDG, resolution 1.74 Å) by working on Autodock tool versions 1.5.7. Molecular docking analysis results reveal that the active compounds PC-4, PC-5, PC-12, PC-14 docked well within the binding sites of *P. falciparum* Lactate Dehydrogenase drug target with strong affinity ranging from -8.67 to -7.20 kcal/ mol. Best docked poses showed hydrogen bond interactions with Met30, The97, Gly29,Gly 99, whereas electrostatic interactions were seen with Ala98 and Ile3. For all the reported compounds, the binding energies of molecular interaction into the active site cleft were found to be better than co-crystallized ligand, 1,4-dihydronicotinamide adenine dinucleotide (-6.00 kcal/mol).

Keywords: Malaria, *P. falciparum*, Chloroquine, Primaquine, Hybrids, Molecular docking.

Understanding On Protective Response And Recent Advances And Development Of Tuberculosis.

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Abstract

Tuberculosis, a very old disease, was present in Egypt as early as 3000 BC. Because of international efforts to eradicate TB, 74 million lives have been spared since 2000. Tuberculosis is a treatable and curable disease. 10.6 million individuals contracted TB in 2021. In 2021, 1.6 million people perished from Tb. By 2030, the WHO wants the TB pandemic to be over. By 2025, India is expected to report no more than 44 new cases of TB or 65 total cases per lakh people, according to the national strategy plan 2017–2025. A vaccine (bacille Calmette Guerin, or BCG) and modern diagnostics. The End TB Strategy of the World Health Organization mainly relies on recent, effective vaccinations. A number of factors, including a new strategy that prioritizes preventing pulmonary TB in adults and adolescents, who are the main sources of transmission, and encouraging assessments of novel effectiveness endpoints, have contributed to recent advancements in the field of TB vaccine research and development. A resurgence in interest in the investigation of TB vaccinations has also been prompted by recent preclinical and clinical discoveries. To achieve the WHO End Tuberculosis Goal, vaccine potential and continued improvements in tuberculosis detection and treatment are essential. By 2030, there will be 80% fewer new infections because to the TB Strategy. 90% fewer people will die from TB.WHO revealed plans to create a TB Vaccine Accelerator committee in January 2023, which will expedite the licensing and usage of efficient, cutting-edge tuberculosis vaccines.

Keywords: Tuberculosis; Vaccine; Global; WHO; BCG.

Bio-cosmetics

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Abstract

This abstract presents a biotechnological technique that harnesses the DNA sequences of plants, animals, and microbes for the production of cosmetic products and essences. This technique includes interdisciplinary approach that merges biotechnology, genetics, and cosmetic science, enabling the creation of innovative products that cater to consumer preferences for natural and effective cosmetics. The technique involves the extraction and analysis of DNA sequences from a wide range of sources, including plants, animals, and microbes. These genetic codes are then dissected to identify genes responsible for synthesizing compounds with potential skincare benefits, bioactive properties, and desirable fragrances. Using advanced genetic engineering methods, these genes are inserted into host organisms, such as yeast or bacteria, to enable large-scale production of the desired compounds. This technique has successfully utilized plant genes for botanical extracts with skincare benefits, animal DNA for bioactive compounds, and microbial genes for fragrance-enhancing enzymes and metabolites. Case studies highlight the development of cosmetics enriched with these genetically-derived components. By integrating DNA sequences from diverse organisms, this technique is reshaping cosmetic manufacturing. Its multidisciplinary approach paves the way for innovative, effective, and natural cosmetic products.

Keywords: Biotechnology, Genetics and Cosmetic science.

Pharmaceutical Technology: Cloned Animal

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Abstract

Animal cloning is a technique for the production of genetically indistinguishable copies of the desired animal. Animals can be cloned using techniques such as embryo splitting and nuclear transfer to produce genetically identical individuals. Although embryo splitting is limited to the production of only a few identical individuals, nuclear transfer of donor nuclei into recipient oocytes, whose own nuclear DNA has been removed, can result in large numbers of identical individuals. Moreover, clones can be produced using donor cells from sterile animals, such as steers and geldings, and, unlike their genetic source, these clones are fertile. In reality, due to low efficiencies and the high costs of cloning domestic species, only a limited number of identical individuals are generally produced, and these clones are primarily used as breed stock. In addition to providing a means of rescuing and propagating valuable genetics, somatic cell nuclear transfer (SCNT) research has contributed knowledge that has led to the direct reprogramming of cells (e.g., to induce pluripotent stem cells) and a better understanding of epigenetic regulation during embryonic development. In this review, I provide a broad overview of the historical development of cloning in domestic animals, of its application to the propagation of livestock and transgenic animal production, and of its scientific promise for advancing basic research. Owing to its benefits for farmers, animal conservationists, the pharmaceutical industry, and genetic engineering to meet the production demand of the world, in the future animal cloning could become a common technology.

Keywords: SCNT, cloning, nuclear transfer, embryo, livestock, ESC, Multiple cell

Recent Development, Trends & Implications in Biotechnology

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Abstract

Nanotechnology is become evident fields of research within recent decades and is based upon Biotechnology utilizes biological systems or living organisms to create, develop, or make products. The objective of this abstract is to overview the current state of biotechnology and to examine its future trend. Currently, biotechnology plays key roles in medicine, agriculture, and industry. In medicine, vaccines which still rely on biological systems to produce are the best tools to prevent infectious diseases; antibodies and RNA/DNA probes have been essential in detecting diseases and treating some diseases; gene editing and gene therapy make it possible to treat hereditary diseases. In agriculture, biotechnology may generate crops that produce high yields and need fewer inputs; crops that need fewer applications of pesticides; and crops with enhanced nutrition profiles. In industry, biotechnology has been utilized in food processing, metal ore processing, production of chemicals, and reducing energy consumption and pollution.

Keywords: Bioinformatics, Biosensor, Genetically Modified (GM), Molecular Cloning, Monoclonal Antibody, Personalized Medicine.

A Review On Herbal Topical Applications For The Treatment Of Rheumatoid Arthritis

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Abstract

Rheumatoid arthritis is an autoimmune disease in which there is joint inflammation, synovial proliferation and destruction of articular cartilage. It is a disabling and painful inflammatory condition, which can lead to substantial loss of mobility due to pain and joint destruction.The disease affects 2–6% of the global population, and its prevalence increases with age, reaching 40% in people over the age of 70.Scientists from around the world are working to develop an alternative solution to the problem of drug resistance by exploring complementary and alternative medicines that may be obtained from natural sources. poly-herbal Creams are semisolid dosage forms containing one or more substances dissolved or dispersed in a suitable base use as emollient.The natural content in the herbs does not have any side effects on the human body.Herbal gels formulation of the herbs/extracts using different polymers as the gelling agents and different evaluation parameters provides the effective anti-inflammatory activity to treatment of the inflammation, pain, arthritis. Emulgel are a mixture of an emulsion and a gel, where drugs are incorporated into globules and solubilize, enhancing drug absorption from the skin. They are easily spread over the skin, easily removed from the skin, possess emollient properties, are non-greasy, cosmetically appealing and have good penetrating abilities. Hence the review aims to comprehensively report on the different topical applications obtained from the natural resources for the treatment of rheumatoid arthritis.

Keywords: rheumatoid arthritis, topical drug delivery system, poly-herbal cream, topical gel, emulgel, anti-inflammatory.

In Vitro Cellular Reprogramming And Antioxidant Potential Of Herbal Drug: Fumaria Officinalis

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Abstract

To investigate the *in-vitro* antioxidant and antiaging potential of MeOH extract of *Fumaria officinalis* by various enzymatic models. *Fumaria officinalis* (common fumitory, drug fumitory or earth smoke) of family Papaveraceae is the most common species of Western and Central Europe. Extracts of *Fumaria officinalis* have been traditionally used for treatment of some skin diseases (rashes or conjunctivitis), rheumatism, stomach ache, abdominal cramps, fever, diarrhea, syphilis and leprosy. Powdered crude drug 100 g were successively extracted in a soxhlet apparatus with petroleum ether (60-80ºC), chloroform and methanol. After successive solvents extraction methanolic extract was used for testing of antioxidant potential using DPPH assay. Further, antiaging potential of extract was investigated by inhibitory effect of various enzymatic estimations i.e. Col-I, Ela-I and Hya-I inhibitory assays on early aging human skin fibroblasts. Phytochemical analysis showed the presence of glycosids, alkaloids flavonoids, and triterpenoids and phenolic compounds in high level. Extract showed inhibitory concentration (IC50 =35.33) and ascorbic acid the standard showed inhibitory concentration (IC50 = 20.10). In enzymatic estimations assay, the Col-I, Ela-I and Hya-I of extract were assessed showing inhibitory concentration as Col-I (IC50: 41.25), Ela-I (IC50:35.05) and Hya-I (IC50: 30.55) respectively. Thus, MEOH extract of *Fumaria officinalis* able to inhibit 50% of the activity of aging related enzymes Col-I, Ela-I and Hya-I. This study concluded that MEOH extract of *Fumaria officinalis* has confirmed the high antioxidant potential and *in vitro* inhibitory potential of antiaging enzymes assessed, thus they could be used for further development of anti-aging products and nutraceuticals.

Keywords: *Fumaria officinalis*, soxhlet apparatus, flavonoids, *in vitro anti-aging assays, antioxidant activity, Elastase Inhibitory Activity.*

Purification And Characterization Of Protease From Spice Spcies Of Amomum Subulatum (Badi Elachi)

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Abstract

Protease is an enzyme that catalyses proteolysis process. It breaks proteins into smaller peptides or amino acids. This enzyme is used widely in the field of medicine and industry invarious potential and economical applications. The aim of the current investigation was topurify and characterize proteases from seeds of spice plant black cardamomAmomum subulatum,colloquially known as Badi elaichi. The extraction process was carried out using ammoniumsulphate precipitation method at 60% saturation, followed by ion-exchange chromatographytechnique for purification using (DEAE-Cellulose resin) i.e., Diethyl amino ethyl cellulose(DEAE cellulose) which is a positively charged resin. Proteins were eluted from ion-exchange chromatography using NaCl concentration of 0.2M and 0.4M. We showedconfirmed protease action on gelatine zymography where gelatine is embedded in acrylamidegel. In this study the identification and purification of a protease enzyme and the molecular weight determination of a the type of protease.

Keyword : Protease, phenylmethylsulfonyl fluoride, Diethyl amino ethyl cellulose

Genesis and Advancement of Ribonucleotide Reduction

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Abstract

DNA is genetic material of all living organisms, including many organisms. Deoxyribonucleotides (dNTPs), building blocks of DNA, are always produced by reduction of ribonucleotides (NTPs or NDPs), the building blocks of RNA. The reaction is catalyzed by RNRs through chemically required mechanism that activates substrate by removing H atom at 3' position by protein-derived cysteine radical. Ribonucleotide reduction is the only route for deoxyribonucleotide de novo synthesis in existing organisms. This necessary reaction is caused by carbon-centered free radicals and is catalyzed by ribonucleotide reductase (RNR). Although it is possible to do it in a completely different way after being modified by the modern process, here we explore the evolutions and biochemical limits of the origin of the process in the RNA protein world and propose a model for protoRNR. The progenitor of the modern RNR, urRNR, evolved from the original RNR and split into three modern types. It is difficult to ascertain how it formed in urRNR, as first radical generation was different from our present group. Here we present a model similar to the B12-dependent mechanism in state-of-the-art class II RNRs. Hypothetical protein with metal center, protoRNR, is suggested as the first enzyme capable of ribonucleotide reduction via a general, unspecific H-atom abstraction mechanism. The enzyme was likely not very effective, but given the ubiquitousness of substrates—ribonucleotides—in an RNP world, the yield may not have been negligible. From the protoRNR the common ancestor of modern RNRs, the urRNR, evolved driven by selection for reliable source of deoxyribonucleotides. The urRNR was likely an enzyme without dependence on external enzymes for radical generation, i.e., similar to modern B12-dependent class II RNRs. The urRNR was dimer, which today forms basis for allosteric substrate specificity regulation, but it was most likely not allosterically activity regulated by means of an ATP-cone.

Keywords: Ribonucleotide reductase, deoxyribonucleotide, protoRNR, ribozymes, cysteine, urRNR.

Artificial Intelligence in Drug Development: Transforming Discovery, Design, and Optimization

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Abstract

The integration of artificial intelligence (AI) in drug development has catalyzed a paradigm shift in the pharmaceutical industry. This comprehensive review article explores the multifaceted role of AI across various stages of drug discovery, design, and optimization. It delves into AI-driven approaches for compound screening, target identification, and predictive modeling of compound interactions, streamlining the early phases of drug development. Furthermore, the article investigates the use of machine learning and deep learning in deciphering complex biological data, accelerating target validation, and enhancing hit-to-lead optimization. The review extends its focus to the innovative ways AI is employed in rational drug design, where algorithms assist in generating novel molecules with desired properties. It also examines AI's potential in clinical trial optimization, patient stratification, and adverse event prediction, thereby enhancing the efficiency and success rate of clinical studies. Ethical considerations and regulatory challenges associated with AI-driven drug development are also addressed, highlighting the need for transparent and robust AI-driven decision-making processes. By synthesizing the latest advancements and case studies, this article provides valuable insights into the transformative impact of AI on the pharmaceutical landscape. It underscores the collaborative efforts between AI technologies and human expertise, shaping a future where drug development becomes more efficient, cost-effective, and tailored to the intricate needs of patients. The emergence of artificial intelligence (AI) in drug development has reshaped the traditional approaches to discovering and designing new medications. This review article offers a comprehensive exploration of AI's role in multiple aspects of drug development. It starts by detailing how AI revolutionizes early drug discovery through techniques like compound screening and target identification. AI's proficiency in interpreting complex biological data and expediting target validation is also discussed, highlighting its utility in accelerating the initial stages of drug development.

Keywords: Drug development pipeline, Data analysis, Drug candidate selection, Cheminformatics, Target identification, Drug discovery.

Application Of Plant Proteases In Dairy Industry For Milk Coagulation

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Abstract

Proteases are required by plants for proteolysis in all aspects of their life cycle. Plant proteases are used as milk coagulants, obtained from their natural source or through in vitro culture to ensure a continuous supply of plant proteases. The reduced availability and the increasing prices of calf rennet, coupled to the growing global demand of cheese has led, worldwide, to explore alternative clotting enzymes, capable to replace traditional rennet, during the cheesemaking. Enzymatic coagulation of milk is a key step in the cheesemaking. Plant Proteases can be isolated from leaves, flowers, germinating seeds can be used as a conventional source for milk clotting process. Some Spanish, Portuguese, French, and Italian varieties of cheeses were produced with aqueous extracts of dried wild thistle flowers, of various species of the genus *Cynara*. The widely used milk-clotting enzyme is *Cynara cardunculus* an aspartic protease, protease isolated from the seeds of coriander are also reported to have milk coagulation capacity. In this study the milk clotting activity of coriander seeds has been studied in respect to other spices like chick pea, fenugreek, green gram, turmeric and ginger which are already reported and the key enzyme for milk coagulation is also been identified. Further investigation needed to find out the gene sequence of the key protease.

Keywords: Protease; Enzymatic Coagulation; Milk Clotting Enzyme; Aspertic Protease.

Role of Clinical Pharmacist In Direct Patient Care With Biotechnology-Driven Treatments

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Abstract

Clinical pharmacists play a pivotal role in direct patient care, especially in the context of biotechnology-driven treatments. Their specialized expertise in medications, drug interactions, and patient-specific factors ensures safe and effective utilization of biotechnological interventions. They design tailored treatment plans by considering patients' medical histories, genetics, and potential drug interactions. Monitoring treatment progress closely, they make necessary dosage adjustments to optimize outcomes. Crucially, clinical pharmacists assess complex drug-drug and drug-gene interactions inherent in biotechnological drugs, enhancing treatment safety and efficacy. They navigate adverse event management, educating patients about therapy objectives, administration guidelines, potential side effects, and necessary actions in case of complications. Their role extends to vigilant therapeutic monitoring, incorporating regular assessments, laboratory scrutiny, and adapting approaches based on individual responses. Clinical pharmacists also provide vital support to ensure patient adherence to biotechnological therapies, guiding through intricate dosing and administration. They stay updated with the evolving biotechnology landscape to offer the latest guidance. Overall, their presence stands as a testament to their indispensable contribution in delivering optimal patient care within the dynamic realm of biotech therapies. In summary, clinical pharmacists play an integral role in the direct patient care involving biotechnology by ensuring safe, effective, and personalized use of biotechnological therapies. Their expertise in medication management, drug interactions, and patient education contributes to improved patient outcomes and quality of care.

Keywords- Clinical Pharmacist, Tailored Treatment Plans, Optimal Patient Care, Biotechnological Drugs

3D Bioprinting and Tissue Engineering: Advances, Challenges, and Applications

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Abstract

3D bioprinting and tissue engineering have emerged as transformative technologies in the field of regenerative medicine and biomedical research. This review article provides an in-depth exploration of the progress made in 3D bioprinting techniques and their applications in tissue engineering. The article discusses fundamental principles of bioprinting, the various bioinks and biomaterials used, and the integration of cells and growth factors to create functional tissues and organs. Challenges related to bioprinting precision, vascularization, and long-term functionality is also examined. Moreover, the review highlights current and potential clinical applications of 3D bioprinted tissues, ranging from drug testing and disease modeling to transplantation and personalized medicine. Ethical considerations, regulatory aspects, and sustainability of bioprinting processes are also addressed. By synthesizing recent advancements and identifying future directions, this article offers valuable insights into transformative potential of 3D bioprinting and tissue engineering in reshaping the landscape of healthcare and regenerative medicine. The field of 3D bioprinting and tissue engineering has made remarkable strides in revolutionizing regenerative medicine and biomedical research. This review article delves into the intricacies of 3D bioprinting, where cells, biomaterials, and growth factors are precisely layered to craft functional tissues and even organs. The review comprehensively covers the underlying principles of bioprinting, the diverse range of bioinks and biomaterials utilized, and the critical integration of cellular components to develop tissues with genuine biological relevance. Within this landscape, the review addresses challenges that researchers encounter, including need for enhanced precision in bioprinting, strategies for creating vascular networks within printed tissues, and ensuring long-term functionality of bioprinted constructs. While exploring the technological aspects, the article also emphasizes the broad spectrum of potential clinical applications for 3D bioprinted tissues. These applications encompass drug testing and disease modeling in controlled environment, progress towards transplantable tissues and organs, and exciting realm of personalized medicine.

Keywords: 3D bioprinting, bioinks, vascularization, cellular components, bioprinted tissues.

Recent Advancements In Ocular Drug Delivery System

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Abstract

Delivery of drugs are sometimes are restricted by various barrier, hence where localized action is needed, target specific drug delivery system comes into account. In the recent era apart from the conventional drug systems like eye drops, nanoformulations have also been introduced for better efficacy of medicament to the target organ. Anterior system of drug advancements takes into account the modulation of conventional systems with permeation and viscosity enhancers. Current scenario includes nantotechnology based formulations for ocular delivery employing in situ gels, implants, microneedles. Some advancements include intravitreal implants using biodegradable and non biodegradable polymer technology. Developments in ocular implants gives a means to overcome the physical barriers that traditionally prevented effective treatment. Implant technologies are under development allowing long term drug delivery from a single procedure. These are henceforth effective to treat diseases of posterior chamber. Future developments could bring artificial corneas to eliminate the need for donor tissue and one-off implantable drug depots lasting the patient's lifetime. The poster shows the recent advancements like transplants, nanofiormulations, intravitreal implants micronnedles to a greater depth for better understanding.

Keywords: Ocular patches, Microneedles, Nanoformulations, Implants, Intravitreal Implants

Formulation, Development Nd Evaluation Of Sustained Release Matrix Tablet Of Ranitidine HCL

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Abstract

The main objective of the present work was to develop sustained release matrix tablets of Ranitidin HCl using different polymers viz. Hydroxy propyl methyl cellulose (HPMC) and natural gums like guar gum and Carrageenan. After the development of nine formulations, the pertinent parameters were assessed. Different medicine and polymer ratios, like 1:1 and 1:2, were chosen for the experiment. After the ratio of drug to polymer was fixed, the release rates were controlled by mixing two distinct rate-controlling materials and a triple mixture of three independent rate-controlling materials to control the drug release up to the required time. According to studies, all physicochemical parameters meet the required norms. The in vitro release studies show a release of up to 90% over an extended period of time, which supports the formulation's extended release profile, which has superior bioavailability and requires fewer doses to get the same effect. From the release study it was found that the polymer concentration in Formulation F4 to F6 was sufficient to sustain the drug release up to 12 hrs. The sustained release matrix tablets of ranitidine hcl shown better bioavailability, efficacy and potency, when compared with official standards. The formulation minimizes the blood level oscillations, dose related adverse effects and cost and ultimately improve the patient compliance and drug efficiency.

Keywords: Bioavailability, Matrix tablet, sustained release, In-vitro evaluation, Stability studies.

A Review On Topical Application Of Non Steroidal Anti-inflammatory Drug

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Abstract

Topical spray offers huge advantages when compared to other conventional topical dosage form such as flexibility in dosage design, less irritation, ease of availability for application, faster rate of drying due to the volatile solvent in formulation from the site of application. The use of these delivery can overcome associated drawbacks of other delivery routes, such as oral and parenteral. Topical delivery of NSAID has its therapeutic applications in management of pain and inflammation in Rheumatoid arthritis patients. Topical administration of NSAIDs offers the advantage of local, enhanced drug delivery to affected tissues with a reduced incidence of systemic adverse effects, such as peptic ulcer disease and GI hemorrhage. Product formulation may have a dramatic impact, not only on absorption rates but also on penetration depth, compared with oral administration, topical application leads to relatively high NSAID concentrations in the dermis. In this review article, we focused on the enhancement of topical spray as compared to any other conventional topical drug delivery.

Keywords: Topical drug delivery, Topical spray, NSAID,

Formulation And Evaluation Of Sitagliptin Loaded Mucoadhesive Microspheres

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Abstract

The goal of the current effort is to create mucoadhesive microspheres loaded with sitagliptin utilizing two distinct natural gums in order to prolong GI retention time, increase bioavailability in the stomach and upper GIT, and reduce GI side effects. Ionic gelation was used to create sitagliptin mucoadhesive microspheres from sodium alginate, various Xanthan gum concentrations, and guar gum. Method: Six formulations were created, and the pertinent parameters were assessed. In all formulations, the percentage yield ranges from 52.34 0.58% to 84.21 0.21%. SEM was used to describe the surface morphology of microspheres; it was discrete, spherical in shape, and displayed free-flowing characteristics. Result: The range of the mean particle size of microspheres, which was between 37.05 0.05 m and 45.29 0.06 m, increases dramatically. The formulation F2 had the highest percentage of sorption in distilled water out of all the formulations with an entrapment efficiency of 94.80 0.54%. Conclusion: According to in-vitro drug release experiments, F2 is under control and was 77.04 0.22% at the conclusion of the dissolution trials. It might also be inferred that all of the formulations had positive outcomes and were appropriate for prospective medicinal applications.

Keywords: Sitagliptin, Mucoadhesive microspheres, Xanthan gum, In-vitro evaluation, Stability studies.

Emerging Biotechnology Trends In Drug Delivery For Cancer

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Abstract

Recent advances in medical biotechnology have increased researcher's knowledge of molecular events of Cancer and have created new hopes in early diagnosis and treatment of cancer. Drug delivery is an important part of pharmacotherapy of cancer. Merely developing an effective anticancer agent is not enough unless it is delivered to the site of action. Traditional drug development considered formulations for different routes of administration, mostly oral or injectable. The newer approaches to cancer treatment not only supplement the conventional chemotherapy and radiotherapy but also aim to prevent damage to the normal tissues and overcome drug resistance. Innovative methods of cancer treatment, e.g., cell and gene therapies, require new concepts of drug delivery in cancer. New biotechnologies have contributed considerably to drug delivery that may have application in improving cancer therapies. In this Review we have focused on different biotechnology techniques For cancer control like Immunotherapy, Cell Therapy, Gene Therapy & nanobiotechnology/Nano-oncology.

Keywords: Anticancer, Chemotherapy, Immunotherapy, Gene, Nano-oncology.

Nanomaterial used in Nanobiotechnology: An Applicable Approach for Rational Future

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Abstract

Nanotechnology is become evident fields of research within recent decades and is based upon the exploitation of nano-sized materials (e.g., nanoparticles, nanotubes, nanomembranes, nanowires, nanofibers etc..,) in various working fields. Nano sized particles exit in nature and can be synthesized from variety of product such as carbon or minerals like silver. Nanomaterials have multiple advantages, including high stability, target selectivity, increased strength, durability, enhanced catalytic activity and plasticity. Diverse biotic (e.g., Capsid of viruses and algae) and abiotic (e.g., Carbon, silver, gold etc.) materials can be bring into play in the synthesis process of nanomaterials. “Nanobiotechnology” is the combination of nanotechnology and biotechnology control. Nano-based approaches are developed to improve the conventional biotechnological methods and overcome their such as the side effects caused by traditional therapies. Several studies have reported that nanobiotechnology has remarkably enhanced the efficiency of various techniques, including drug delivery, water and soil remediation, energy production, reducing fuel consumption and enzymatic processes. In this review, techniques that benefit the bulk from nano-biotechnological approaches, are divided into four major fields: medical, industrial, agricultural, and environmental.

Keywords: Nano-biotechnology, Nanoparticles, Nano-therapies

Producing Hypoallergic Milk From DNA Free Beta-lactoglobulin Using Biotechnology

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Abstract
Protein β-lactoglobulin (BLG) is a major milk allergen. This allergen is not present in humans. A DNA-free BLG bi-allelic knockout cow is designed by zinc-finger nuclease (ZFNs) mRNA to produce BLG-free milk. BLG in control milk was still not completely digested after 60 min, and the binding of IgE from cow's milk allergy (CMA) patients to BLG free-milk was significantly lower than that to the control milk. Meanwhile, the genome sequencing revealed that the animal(cow) is free of off-target events. Importantly, editing animal genomes without introducing foreign DNA into cells may alleviate regulatory concerns related to foods produced by genome edited animals.

Keywords: β-lactoglobulin (BLG), milk allergen, DNA, zinc-finger nuclease (ZFNs), mRNA, cow's, regulatory concerns

A Review On Biomimetic Drug Delivery Carriers

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Abstract

Non targeted drugs affect to normal cell or organs instead of disease location. Today, the advanced drug delivery system have been focused on targeted drug delivery field. The novel drug delivery system is involved with improvement of capacity of drug loading in drug carriers, cellular uptake of drugs carriers and sustained release of drug with in target cells. Nanoscale drug carriers have advantage of good penetrability, strong targeting and long time. Therapeutics drug carriers including biomimetic Hydrogels,biomimetic polymeric carriers,biomimetic nanostructure. They are used in cardiovascular diseases, Cerebrovascular stroke disease, cancer.

A Comprehensive Review On Herbal Remedies Used For The Treatment Of Acne

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Abstract

Acne is a chronic skin condition that affects most people at some point during their life. It causes spots to develop on the skin, usually on the face, back and chest. The symptoms of acne can be mild, moderate or severe. Treatments applied directly to the affected skin, such as azelaic acid, benzoyl peroxide, and salicylic acid, are commonly used. Topical dosage forms are then classified further according to their physical state, i.e., solid, liquid, and semisolid. Most allopathy medicines cause hazardeous effect on skin. Herbal Treatments for acne are available by many herbs like Rosemarinus Officinalis, Leptadenia lancifolia, Aegle marmelos Corr, Ocimum sanctum, Syzygium jambolanum, Saprosma fragrans, Cassia fistula, Azadirachta indica, Allium sativum, Abutilon indicum, Artemisia annua, Sphaeranthus indicus, Euphorbia fusiformis, Solanum trilobatum, Coccinia indica, Datura metel, Adhatoda vasica, Ballota Undulate, Mentha spicata, Foeniculum vulgare, Yucca gloriosa, Melaleuca alternifolia, Calendula officinali, Matricaria chamomilla. This review aims to focus on different herbal remedies and their application for the treatment of acne.

Key words: Acne, Fungal infection, Herbal Remedies, Topical Application.

Development Of A Stability Indicating Analytical Method For Determination Of Carteolol

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Abstract
Carteolol (CRT) is currently under development as a potential therapeutic agent for the treatment of open angle glaucoma. The aim was to develop simple RP-HPLC method which can be used to analyze drug in process of product development. The Objective of the present work is to develop and validate a stability indicating assay method. The method development was carried out according to literature survey. Different trials were carried out by using different combinations of citric acid monohydrate buffer (pH 3.5) and methanol. λmax of carteolol was found to be 229 nm. The linearity was established in the concentration range of 40 to 80 µg/ml. An r^2 (correlation coefficient) was found to be 0.995. Accuracy was found to be within the limit of 98-102 %. Intraday precision and interday precision study showed in table, % RSD was found to be less than 2%. Limit of detection of CRT was found to be 1.477 µg/ml. Limit of quantification of CRT was found to be 4.476 µg/ml. The selectivity, sensitivity, linearity, accuracy, precision, extraction recovery, and stability were within the acceptable ranges. Developed chromatographic method was simple, specific, accurate, precise, and stable for CRT which is used for accurate quantitative estimation of CRT for routine analysis of individual and in dosage form.

Keywords: Carteolol, RP-HPLC, UV-Spectroscopy, Glaucoma

A Review On Brain Stroke

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Abstract

Stroke is a major cause of death and long-term disability worldwide and is associated with significant clinical and socioeconomically implications, emphasizing the need for effective therapies. Stroke is a medical emergency. An ischemic stroke occurs when the blood supply to part of the brain is interrupted or reduced, preventing brain tissue from getting oxygen and nutrients. Brain cells begin to die in minutes. This can cause lasting brain damage, long-term disability, or even death. Ischemic stroke can be either thrombotic or embolic. The knowledge of the risk factors for Stroke among people is very low and mostly depending on the level of education. The main risk factors for Stroke are Hypertension, Diabetes Mellitus, alcohol abuse etc. Stroke therapy primarily focuses on restoring blood flow to the brain and treating stroke-induced neural or neurological damage. The term F.A.S.T. (Facial drooping, Arm weakness, Speech difficulties, Time for call) is used to recognize the signs and symptoms of Stroke. Improvements in clinical care are likely to underpin successful stroke treatment, recovery, rehabilitation and prevention. In this article, we have focused on epidemiology, patho-physiology, prevention, and rehabilitation of Brain Stroke.

Keywords: Stroke, Ischemic, rehabilitation, thrombolic, embolic.

Molecular Docking Studies Of Some Rhodanine Derivative Against Diabetes

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Abstract

Diabetes mellitus is a cluster of chronic disorders categorized by hyperglycaemia resulting from the defects in discharge of insulin, action of insulin or both. Docking is a technique that is widely used to make predictions about the orientation in which small molecule drug candidates would attach to the proteins that serve as their targets. These predictions may then be used to make estimates about the affinity and activity of the small molecule. Docking is a key part of the rational design process in the pharmaceutical industry. So the present work is basically emphasizing on the docking study of the some designed molecules and sees their interaction with the target protein so as to guess the lead potential of the docked molecules. The docking study was performed using Molegro Virtual Docker software. The details of their binding pattern at the active site of receptor (PDB ID- 3TOP) were successfully visualized with the help of software. The interaction pattern shows the interaction of our designed molecule with the protein in the same pocket with making hydrogen bond interaction with the amino acids viz Arg1377, Gln1372 and Thr1586 as well as the molecule has shown the electrostatic interactions and steric interactions with amino acid Phe1559. The binding pattern of the proposed structures was studied and it was found to be the same as previously reported for the known glucosidase inhibitors and also these compounds were bind to the same active site of the receptor, which was expected as per the literature survey. The designed molecules are having more good docking scores as compared to co-crystallized ligand. This shows more promising lead potential of our designed molecules.

Keywords: Docking, Diabetes, α- glucosidase inhibitors.

Biotechnology- An Important Tool for Drug Discovery

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Abstract
Biotechnology has profoundly impacted drug discovery by providing advanced tools and techniques that expedite the identification, development, and optimization of potential drug candidates. Its integration into the drug discovery process has led to more targeted therapies, reduced costs, and increased success rates in bringing innovative medicines to market. Biotechnology has significantly revolutionized the process of drug discovery, making it more efficient, targeted, and innovative. Here's how biotechnology influences and enhances various stages of drug discovery: Target Identification and Validation: Biotechnology allows researchers to identify and validate potential drug targets with greater precision. Through techniques like genomics, transcriptomics, and proteomics, scientists can analyze large datasets to pinpoint specific genes, proteins, or pathways associated with diseases. High-Throughput Screening: Biotechnology enables high-throughput screening of large compound libraries to identify molecules that interact with a chosen target. Automated systems and robotic technologies accelerate this process, testing thousands of compounds for potential therapeutic effects. Rational Drug Design: With insights from structural biology and computational modeling, biotechnology helps design drugs with a rational understanding of their interaction with the target molecule. This approach reduces trial and error, leading to more successful drug candidates. Lead Optimization: Biotechnology aids in optimizing lead compounds by modifying their chemical structures for improved potency, selectivity, and pharmacokinetics. This can involve techniques like combinatorial chemistry and structure-activity relationship studies. Biologics Development: Biotechnology has facilitated the development of biologics, such as monoclonal antibodies, recombinant proteins, and cell therapies. These complex molecules offer novel mechanisms of action and target a wide range of diseases.

Keywords- Biotechnology, Drug Discovery, Drug Development, Rational Drug design, Target, Validation.

Importance Of Biotechnology In The Pharmaceutical Industry

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Abstract

Biotechnology plays a crucial and transformative role in the pharmaceutical field. It has revolutionized drug discovery, development, production, and even patient care. There are some key reasons highlighting the importance of biotechnology in the pharmaceutical industry: Targeted Drug Discovery: Biotechnology allows for a deeper understanding of disease mechanisms at the molecular level. This enables the identification of specific molecular targets for drug intervention, leading to the development of more targeted and effective therapies. Biological Drug Development: Biotechnology has enabled the development of biologics, which are drugs derived from living organisms such as proteins, antibodies, and nucleic acids. These drugs can target complex diseases, including cancer and autoimmune disorders that were traditionally challenging to treat with small molecules. Personalized Medicine: Biotechnology facilitates the development of personalized medicine by analyzing an individual's genetic makeup, enabling healthcare providers to tailor treatments based on a patient's specific genetic profile. This approach increases treatment efficacy and reduces adverse effects. Genetic Engineering and Gene Therapy: Biotechnology has paved the way for genetic engineering techniques and gene therapies. These approaches involve modifying genes to correct genetic disorders, replace malfunctioning genes, or enhance specific cellular functions. Vaccine Development: Biotechnology has been instrumental in developing vaccines against various diseases. Modern vaccine technologies, such as mRNA vaccines, have been developed using biotechnological approaches and have shown remarkable effectiveness and rapid development timelines. Biomarkers and Diagnostics: Biotechnology has led to the discovery of biomarkers—molecules that indicate the presence of a disease. These biomarkers are used for early disease detection, disease progression monitoring, and assessing treatment efficacy. Drug Delivery Systems: Biotechnology contributes to the development of advanced drug delivery systems that improve drug targeting, bioavailability, and patient compliance. This includes nanoparticles, liposomes, and other innovative delivery methods. Data Analysis and Bioinformatics: Biotechnology generates massive amounts of biological data. Bioinformatics, a field that combines biology, computer science, and statistics, plays a crucial role in deciphering and analyzing this data, leading to insights into disease mechanisms and drug interactions. Regenerative Medicine: Biotechnology is advancing regenerative medicine, which focuses on repairing or replacing damaged tissues and organs using techniques such as stem cell therapy and tissue engineering. Drug Safety and Toxicity Testing: Biotechnology methods are used to assess the safety and potential toxicity of new drug candidates, reducing the risk of adverse effects during clinical trials and post-market use.

Keywords- Biotechnology, RDNA Technology, Emerging Field, Safety, Toxicity Testing.

Toxicological study of various Leaves Extracts of *Cupressus torulosa* D. Don ex Lamb. and *Cupressus vietnamensis* (Farjon & Hiep) Q.P. Xiang & J. Li Extract

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Abstract
Ayurveda deals with the study of India medicinal plants and usually it is considered as herbal drugs are less toxic or don't have any toxicity[1-2]. But the better use of these drugs there scientific validation need to be established. The present study was designed to evaluate the two Indian medicinal plants widely used to treat the various disorders as mentioned in traditional system of medicine. *Cupressus torulosa* D. Don ex Lamb. (Himalayan cypress or Bhutan cypress), is native to the mountainous northern regions of the Indian Subcontinent, primarily the Himalayas. It is a large tree, growing up to 45 m (150 ft) in height. *Cupressus vietnamensis* (Farjon & Hiep) Q.P. Xiang & J. Li. (Vietnamese golden cypress), is native to the Vietnam, also found in Himalaya regions. The tree is 10-15 m tall in height. The present work aims to investigate the acute toxicity profile of selected medicinal plants. In the present study petroleum ether, chloroform, ethanolic and aqueous extract of *Cupressus torulosa* D. Don ex Lamb. (Leaves) and *Cupressus vietnamensis* (Farjon & Hiep) Q.P. Xiang & J. Li (Leaves) were evaluated for acute toxicity studies using OECD guidelines 423. The results indicate that all the extract at the dose of 2000 mg/kg b.w. are considered as safe.

Keywords: *Cupressus* species, Acute Toxicity Studies, Dose

Herbal Drugs For Management Of Pcos-a Review

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Abstract

The polycystic ovary syndrome is a hyper-androgenic disorder associated with chronic oligo-anovulation. By using ultrasound or other pelvic imaging techniques, polycystic ovaries are frequently identified. The prevalence of this condition is thought to be between 20 and 33% in the general population. But not all women with polycystic ovaries exhibit the clinical and biochemical characteristics that characterize the PCO condition. Menstrual cycle irregularities, obesity, hirsutism, acne, and aberrant biochemical profiles, including higher serum concentrations of LH, testosterone, androstenedione, and insulin, are some of these characteristics. So, there is more need for study as well as awareness of PCOS. On the basis of above factors there is need to develop polyherbal formulation to reduce the cost, duration and side effects of existed treatments. Now a day's herbal drugs are used to overcome polycystic ovary syndrome and its complications, associated sign and symptoms like obesity, irregulation of menstrual cycle, excessive hair growth etc. Some herbs are used to manage the symptoms of PCOS like Ashoka, Shatavari, Lodhra, Flax seeds, Aloe, Chaste berry, Amla, Curcumin, Cinnamon etc. the herbs help other treatments to work better and sometimes these herbs are so effective that they manage the symptoms of PCOS.

Keywords: Polycystic ovary syndrome (PCOS), Herbal drugs, prevalence, polyherbal, infertility, obesity

Genetic Engineering Therapy for Diabetes Management

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Abstract

Diabetes mellitus (DM) is a chronic metabolic disease character as hyperglycemia due to insufficient insulin secretion or insulin resistance in patients. Insulin is a hormone released by β cells and able to quickly respond to elevated levels of nutrients such as glucose blood. CRISPR/Cas9 technology is useful for developing suitable models for drug testing, identifying genetic defects underlying disease pathogenesis, correcting genetic mutations to restore normal gene function, and developing or optimizing diabetes treatments. It is essential to choose an appropriate delivery technique for carrying the CRISPR system into cells and to target the right sequences within the nucleus, especially in vivo. Different methods of delivering CRISPR/Cas9CRISPR/Cas9 gene editing technology, it will be possible to target specific DNA sequences and modify specific regions of the genome with pinpoint precision. The CRISPR/Cas9 technology holds great promise for the development of novel and effective therapies for diabetes mellitus. Globally, millions of people suffer from this disease, which is associated with severe complications such as kidney damage, blindness, and nerve damage. A novel and powerful treatment approach to diabetes and other diseases can be found with CRISPR/Cas9 technology, and further research should be carried out in this field.

Keywords: CRISPR/Cas9 technology, genetic, genome.

Nanobiotechnology:
A Promising Approach For Cancer Therapy

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Abstract

Cancer treatments have significantly progressed, but the need to increase specificity and decrease systemic toxicities remains. Early diagnosis holds a key to improving prognostic outlook and patient quality of life, and diagnostic tools are on the cusp of a technological revolution. Nanobiotechnology has steadily expanded into the reaches of cancer chemotherapy, radiotherapy, diagnostics, and imaging, demonstrating the capacity to augment each and advance patient care. Nanomaterials provide an abundance of versatility, functionality, and applications to engineer specifically targeted cancer medicine, accurate early-detection devices, robust imaging modalities, and enhanced radiotherapy adjuvants. The future of nanomedicine is certainly auspicious, with highly developed technologies improving treatments and diagnostics, and machine learning applications augmenting to save significant time and resources. There are multitudes of clinical and preclinical studies demonstrating the benefits of nanobiotechnology in cancer treatment, imaging, and diagnostics. Nanotechnology for cancer diagnostics, chemo- and radiotherapies stands to gain huge ground in the near future, creating a highly manageable cancer landscape for patients and oncologists.

Keywords: Nanobiotechnology, Nanomaterials, Nanomedicine.

Gastroretentive Microspheres Containing Antipsychotic Drug: Formulation, Optimization, and Evaluation Using a Factorial Design Approach

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Abstract

This research focuses on enhancing the delivery of the antipsychotic drug paliperidone through gastroretentive microspheres, with emphasis on controlled drug release. Gastroretentive systems offer a solution to consistent drug levels and patient compliance challenges. We aimed to formulate, optimize, and assess microspheres for sustained paliperidone release. Using a 32 factorial design, we examined formulation variables' impact on microsphere properties and drug release. Microspheres were developed by encapsulating paliperidone in biocompatible PLGA polymer via solvent evaporation and emulsion methods, known for controlled release and gastroretention. Results showcased successful optimization of formulation parameters—polymer type, drug-to-polymer ratio, and crosslinking agent concentration. Microspheres demonstrated uniform size, high drug loading, and desired attributes. In vitro release studies indicated optimized microspheres achieved sustained drug release at therapeutic levels, minimizing concentration fluctuations and potentially improving outcomes. This study achieved successful formulation, optimization, and evaluation of paliperidone-loaded gastroretentive microspheres, highlighting their potential to enhance psychiatric treatment. Factorial design systematically explored formulation variables and their impact on microsphere properties and release profiles. This research advances drug delivery and promises enhanced patient care through sustained, controlled drug release.

Keywords: Gastroretentive drug delivery, Paliperidone, Microspheres, Controlled release, Factorial design

Molecular Docking Studies Of Triazene Derivatives As Antioxidant Agents

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Abstract

The present study is aimed to investigate the antioxidant activities of triazene derivatives. Antioxidants play a vital role in inhibiting oxidation reactions in a biological system by acting as free radical scavengers. Increased concentrations of reactive oxygen species interact with proteins, nucleic acids, and lipids to cause permanent tissue and organ damage, leading to cell death. Many diseases come from oxidative stress on the cells, which triggers the release of free radicals. Free radical damage to cells is linked to several chronic disorders, including cancer, arthritis, atherosclerosis, wound healing, neurological diseases, and diabetes mellitus. Antioxidants can defend the human body from reactive oxygen species. Triazene derivatives with the distinctive diazoamino group have gained a lot of interest because of their numerous structural diversities, bonding interactions, and potentially beneficial biological activities, triazene, and its derivatives have shown significant potent activity as antioxidant agents, hence widely useful as antidiabetic agents. A novel series of triazene derivatives using computational docking studies were designed and performed using molegro virtual docker to compare the binding efficiency to the target protein. The designed compounds were docked with 2CDU due to their better scavenging activities when compared with standard drug ascorbic acid. The interactions were found to be effective as compared to standard. The virtual docking investigation of the most active candidate, in the active site of protein showed that compound implied interaction and higher binding affinity and can be a potent antioxidant agent.

Keywords: molegro virtual docker, ascorbic acid.

The Potential Of Sirna Based Drug Delivery In Respiratory Disorders: Recent Advances And Progress

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Abstract

Lung diseases are the leading cause of mortality worldwide. The currently available therapies are not sufficient, leading to the urgent need for new therapies with sustained anti-inflammatory effects. Small/short or silencing interfering RNA (siRNA) has potential therapeutic implications through post-transcriptional downregulation of the target gene expression. siRNA is essential in gene regulation, so is more favorable over other gene therapies due to its small size, high specificity, potency, and no or low immune response. In chronic respiratory diseases, local and targeted delivery of siRNA is achieved via inhalation. The effectual delivery can be attained by the generation of aerosols via inhalers and nebulizers, which overcomes anatomical barriers, alveolar macrophage clearance and mucociliary clearance. In this review, we discuss the different siRNA nanocarrier systems for chronic respiratory diseases, for safe and effective delivery. Conclusion: siRNA mediated pro-inflammatory gene or miRNA targeting approach can be a useful approach in combating chronic respiratory inflammatory conditions and thus providing sustained drug delivery, reduced therapeutic dose, and improved patient compliance. This review will be of high relevance to the formulation, biological and translational scientists working in the area of respiratory diseases.

Biomarker Of MS - Like Autoimmune Disease Identified

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Abstract

Multiple sclerosis (MS) is a complex disease. MS is an autoimmune condition caused by chronic inflammation of central nervous system (CNS) and demyelination of neurons ,and this can lead to some neurological dysfunction that would disrupt person's activities.At present microRNAs (miRNAs) are recognised as a diagnostic and prognostic indicator of disease.MiRNA may act as precious biomarkers.They are also a new and innovative goal in gene therapy. Now a days, most important challenge is to identifying biomarker that can help to diagnose and to predict MS. Identification of marker such as specific cytokines, growth factors or characteristic antibodies. Etiology is still undefined, myelin damage is mainly due to an aberrant immune response of lymphocyte cells against myelin components.

Exposing The Link Between Radiation And DNA Damage

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Abstract: In the complex and dynamic processes of replication, transcription translation of DNA molecule, a large number of replication error or damage can occur which leads to obstacles in the development process of germ cells and result in a decreased reproduction rate. Radiotherapy is an important cancer treatment strategies that causes DNA damage in tumor cells either directly or indirectly, DNA damage is closely semble to tumor cells. Autophagy is a physiological process linked to DNA damage. Mitophagy is a form of autophagy Which causes degradation of protein and organelles. Autophagy is a term used to describe lysosomal - mediated degradation of protein, lipid and organ.

Approaches Towards Crop Protection Using Rnai Based Biopesticide: A Boon For Healthy Food

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Abstract

Now a day's world surrounded by lots of troubles and among them safety and hygiene of food is very tremendous issue. Current pest control techniques are not sufficient and not completely successful in limiting the numerous pests. Thus to achieve the required satisfaction in crop protection the use of sequence-specific gene silencing via RNA interference (RNAi) could be promising tool for the efficient management of crop pests. RNAi, is a eukaryotic process in which Double-stranded RNA (dsRNA), the key trigger molecule of RNAi has been shown to provide protection without the need for integration of dsRNA-expressing constructs as transgenes in sequence specific manner to control plant pests and disease causing pathogens via topical application. The efficacy of RNAi varies among different insect orders and also depends upon various factors, including the target gene selection, method of dsRNAs delivery, expression of dsRNAs and presence of off-target effects. These measures will provide the crop protection industry with the certainty necessary to expend resources on the development of innovative dsRNA-based products. Readily evident risks to human health appear minimal, with multiple barriers to uptake and a long history of consumption of dsRNA from plant material. We then review the recent progress of its utilization in crops, particular wheat. Finally, we discuss the existing challenges and prospect future development of this technology in crop protection.

Keywords: Biopesticide, RNAi, dsRNA, Crop protection

Design, Microwave Assisted Synthesis and Characterization of Benzopyrrole Derivatives for the Management of Diabetes Mellitus

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Abstract

In this investigation, we investigated the inhibitory effects of several indole-based compounds on the activity of intestinal and pancreatic -glucosidase. It appears that antidiabetic medications must contain enzyme inhibitors that block the breakdown of carbohydrates. All analogues had good to moderate inhibitory interactions with -amylase (IC50 = 4.81 to 48.51 M) and -glucosidase (IC50 = 4.11-53.21 M) compared to conventional acarbose (IC50 = 13.29 and 12.30 M). The activity potential for both enzyme inhibitory interactions and the analogues 4, 11, 12, 15, 14 and 17 was good. In order to suggest the impact of substituents on the inhibitory potential of analogues, structure activity relationships were carefully considered. Additional possible analogues and the enzyme active site interacted, according to docking studies. We also looked at their most active compounds' kinetic studies, which revealed that compounds 11, 12, 14, 15 and 17 are competitive for -amylase but non-competitive for -glucosidase.

Keywords: Pancreatic α-amylase, Diabetic, Indole, Benzopyrrole

Review: Biotechnology For Cancer Treatment

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Abstract

Every year, 9.6 million people around the world lose their lives to cancer, and countless more have their lives turned upside down.Biotechnology as a modern science with high accuracy, more efficiency power and analysis ability at bimolecular level provided researchers with detailed information about causes , biomarkers, related pathways, genes, factors , targets and anticancer ligands for control of different types of cancers to provide individualized therapy for compensation of disadvantages, incomplete ability of treatment and side effects of conventional methods of cancer therapy such as chemotherapy and radiotherapy. With an incredible need and drive for innovation in oncology, biotech researchers around the world painstakingly investigate new potential treatment modalities,from immunotherapies and small molecules that target specific mutations in tumor DNA, to genetically modified viruses that deliver cancer-fighting agents into cancer cells, and the development of flexible treatment platforms that can evolve to meet the needs of individual patients. Cell-therapy, immuno-therapy, targated therapy, gene-therapy, biological therapy, pharmacogenomics, vaccines, nano-biotechnology are examples of successful biotechnology development in cancer treatment. The analysis has provided an overview of new alternatives for use in cancer treatment, showing potential avenues for years to come.

Keywords: Biotechnology, cancer, oncology, biological therapy, etc.

Computational Studies and Synthesis of Ethyl 2/3-carboxylate-4/5/6-monosubstituted-1H-indole Derivatives as GSK-3β Inhibitor

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Abstract
GSK-3β is a serine/threonine kinase that phosphorylates, and thereby, regulates the function of many metabolic, signaling and structural proteins. Recently, GSK-3β inhibitors have been reported with potential to treat Diabetes mellitus, and several such molecules are currently under in clinical trials. In the present studies, Ethyl 2/3-carboxylate-4/5/6-monosubstituted-1H-indole derivatives were designed with the aim to search new lead molecules, wherein molecular docking studies were performed by using AutoDock 1.5.6 software. Few in silico properties such as Log P and toxicity profile were predicted online using SwissADME and PreADMET, respectively. Amongst all the designed molecules, few derivatives showed maximum binding affinity in LBD of 6V6L protein. The lipophilic character of the molecules was predicted through their individual Log P Values; molecules with better binding affinities in LBD displayed Log P values of 2.25-3.13. Additionally, some of the designed molecules were subjected to PreADMET and few were predicted to induce toxic reactions, where as others were predicted to be safe in the models that were selected for the prediction. Selected indole derivatives were synthesized using Japp Klingemann reaction and their structures were confirmed using FTIR, 1H NMR, 13C NMR and GCHRMS. These synthesized molecule were tested for in vitro GSK-3β assay using luminescence assay technique and activities are expressed in terms of IC50. All the screened compounds exhibited inhibitory action on GSK3β enzyme. However, Staurosporine, exhibited potent action, IC50 being 5.258±0.214 nM. Of the tested compounds Aii2, Aii1, Aii3 presented promising GSK-3β inhibitory activity, the compound Aii11 with fluoro substitution inhibited with IC50 1.3 µM. Hence it can be stated that this compound required further research to improve its GSK3β inhibitory action.

Keywords: Diabetes mellitus, Indole, in silico, GSK3β, in vivo studies

Sublingual Delivery Of Propranolol Hydrochloride Across Oral Mucosa Under The Influence Of Ph Using Buffered Tablets.

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Abstract

Drug's lipophilicity, drug solubility in saliva, saliva pH and drug pKa are the prime parameters that influence the speed and extent at which the drug enters the systemic circulation when administered sublingually. The absorption of drugs is favoured if the drug remains unionized at the oral pH. To achieve enhanced permeability of Propranolol hydrochloride, a weakly basic drug with poor oral bioavailability using sublingual route, promoting the rapid release and immediate action of Propranolol hydrochloride. A study was designed using pH max technique. Results: Disintegration time of buffered tablets was less when compared to the lipid matrix formulations. Buffered tablets without carbopol showed 49% and 84% at 15 minutes and 1hour respectively. Marketed formulation (Inderal) showed 38% and 82% drug release in 15 and 60 minutes respectively. Pure drug showed drug release of 34% in 15 minutes and 65% at the end of 1hour. In ex vivo sublingual mucosa permeation studies pure drug permeated 28%, Inderal 22%, drug from pH max method permeated 39% and 38% at the end of the 1hour. Sublingual Propranolol HCl buffered tablets without carbopol showed immediate release within 5 min with increased sublingual permeation.

Keywords: Buffered tablets, Sublingual, flux and pH max technique.

The Role Of Ai Softwares : Babm And Alphafold2 In Pharmaceutical Biotechnology

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Abstract

The present era is of biological sciences the era of big (biological) data, the modern technology and algorithms have been used for progress for the progress of experimental science. Artificial Intelligence (AI) is a branch of computer science developed to building machines that are able to perform tasks that typically require human intelligence. In past few years, the newly developed algorithms have been replacing statistical modeling components by using deep learn model to increase their limits. A novelty of this approach, called biological activity-based modeling (BABM), is that it builds on the hypothesis that compounds that show similar activity patterns tend to share similar targets or mechanisms of actionBABM can be applied to any substance with available biological profiling, including macromolecules and natural products. Another example of such software is Alphafold2 developed by Google's DeepMindTechnologies; it holds the record in protein structure prediction with highest level of accuracy in latest CASP14 assessment that took place in November 2020.The ability to predict accurate protein structures from their amino acid sequence would be incredibly valuable for drug discovery, but it could even have a greater impact in other areas of biochemical engineering. By the help of accurate protein structure prediction, we have infinite implementation and uses for the novel drug discoveries in modern day research. Some key limitations using AlphaFold2 as a lens to consider the broader implications of AI for microbial biotechnology for the next 15 years and beyond.

Keywods: BigData;BABM;Alphafold2; algorithms; Artificial Intelligence; protein structure; biotechnology.

Microbial Co2 Fixation And Biotechnology In Reducing Industrial Co2 Fixation

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Abstract

The rapid acceleration in emissions of inevitably generated CO2 due to numerous activities mainly anthropogenic have devastating environmental effects leading to climatic concerns Hence, significant, sustainable approaches should be developed for reduction of CO2 emission targets, balancing the existing needs of the current population. Carbon dioxide (CO2) is emitted into the atmosphere due to some anthropogenic activities, such as the combustion of fossil fuels and industrial output. Metabolic pathways and energy metabolism can be rewired to reduce microbial CO2 emissions and increase the carbon yield of value-added products. CO2 sequestration mechanism in bacteria through different carbon fixation pathways, involved enzymes, their role in calcite, and other environmentally friendly biomaterials such as biofuel, bioplastic, and biosurfactant.The article summarizes the biological route for the natural assimilation of CO2(g) into biomass at the expense of very less energy penalty, via photoautotrophy and chemolithotrophy. The chemo lithotrophs utilizes different concentrations of CO2 and thiosulfate salts as an energy source for the non-photosynthetic process. The identification of products using Fourier transform infrared spectroscopy (FTIR) and gas chromatography-mass spectroscopy (GCMS) studies is also entailed. The concept of material balance approach is explained to established the mechanism of CO2 (g) mitigation through bacterial route. The obtained results pave the way for further development of CO2 utilization technology at larger scales.

Keyword: Carbon capture utilization Algae Mitigation Bacterial strains . Chemolithotrophs

Antifungal Activity Of Neem Leaf,seed Andthe Neemol Against Some Important Human Pathogens

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Abstract

The study was conducted to evaluate the effect of aqueous,ethenolic and ethayl acetate extract from neem leaves on growth of some pathogens {aspergillus flavus,aspergillusfumigatus,aspergillus niger,aspergillus candilla albicans and microspoeum gypseum}) in vitro. Different concentrations (5, 10, 15 and 20%) prepared from these extracts inhibited the growth of the test pathogens and the effect gradually increased with concentration. The 20% ethyl acetate extract gave the strongest inhibition compared with the activity obtained by the same concentration of the other extracts.In this study neem, ajwain and clove oil was found most effective against all the test fungi (Aspergillus niger 101-6, A. flavus102-4, Paecilomyces variotii103-7, Penicillium sp.104-4, Trichoderma sp.106-1, Grifola sp.107-1 and Trichoderma viride 108-1). A perusal of the data showed that most of the essential oils tested here posses antifungal ingredients in them. In another experiment soil wood block test and dip state method, neem and clove oil also inhibited fungal growth on the wood surface after 16 week

Design and Molecular Docking Studies of Substituted Benzamide Derivatives as Glucokinase Activators

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Abstract

Diabetes mellitus especially type-2 a metabolic disorder often caused due to inadequate secretion of insulin by pancreas resulting in hyperglycaemia. Medicinal chemists are still en- gaged in the development of newer targets and scaffolds to ex-hibitantihyperglycaemic activity with minimum side effects. The enzyme glucokinase (GK) was identified as an outstanding drug receptor for developing anti-diabetic agents. Glucokinase activators not only lowers blood glucose concentrations by enhancing glucose uptake in the liver but also increases insulin secretion from pancreatic beta cells which makes it a promising molecular target for antidiabetic therapy. Acquisition of the facts of GK enzyme and other parameters, several small molecules were designed and explored targeting GK to activate the allosteric site of protein.Despite of the several scaffold reported, the main focus is on the Benzamide motif owing to its orientation, structural binding, and interactions in the allosteric site. Herein, we report the design and molecular docking of N-substituted Benzamide derivatives. Ligands b21,b22,b23 and b24 shows better interaction with protein 1V4S. It is suggested that these structures needs to synthesize and evaluate for GK activation.

Key words: Glucokinase, Molecular Docking, Benzamide

Dual Wavelength Spectrophotometric Method For Simultaneous Estimation Of Paracetamol And Lornoxicam In Combined Dosage Form.

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Abstract

A simple, accurate and precise dual wavelength spectrophotometric method was developed for the simultaneous spectroscopic estimation of LOX and PCM in commercially available tablet dosage form using 0.1 N NaOH. The principle for dual wavelength method is "the absorbance difference between two points on the mixture spectra which is directly proportional to the concentration of the component of interest". Linear regression data showed a good linear relationship over the concentration range, 6-18 µg/ml & 9-24µg/ml for PARA and LOX respectively. The wavelengths selected for determination of PCM were 274.6 nm and 239.7 nm, whereas, the wavelengths selected for determination of LOX were 267.4 nm and 247.3 nm. Accuracy of method was found between 97.33-103.5percent. The precision (intra-day, inter-day and repeatability) of method was found within limits. Since no any method is available for determining paracetamol and lornoxicam in combined dosage form using 0.1N NaOH, this method is very useful for those who want to study release pattern of the formulation containing both the drugs. Moreover the method is economic, simple and rapid, hence can be employed for routine analysis in quality control laboratories. Thus these can be used for routine simultaneous determination of LOX and PCM in bulk drug and tablet dosage form instead of processing and analyzing each drug separately.

Keywords: Paracetamol (PCM), Lornoxicam (LOX), Dual Wavelength Spectrophotometric estimation. UV Spectroscopy.

Maackiain: A Multi-target Phytolead Predicted From Mucuna Pruriens Against Alzheimer's Disease

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Abstract

Alzheimer's disease is a neurodegenerative brain disorder resulting in deterioration of cognitive functions and gradual memory loss. The disease is characterized by amyloid plague formation, neurofibrillary tangles and is accompanied by cholinergic shortfall. In-silico docking exhibits the binding affinity between target protein and ligand. This study is a novel approach on drug discovery which emphasizes on molecular docking of phytoconstituents from Mucuna pruriens in the management of AD. Methods: After literature review, 16 phytoconstituents from Mucuna pruriens were chosen as ligands for docking studies. The selected ligands were assessed for drug likeness properties using Molinspiration tool. The targets were selected based on various mechanisms that occur in AD. Preliminary docking analysis was carried out by using AutoDock Vina in PyRx software. Further docking analysis was accomplished through AutoDock 4.2 software for the selected compounds. Pharmacokinetic parameters of the selected ligands were analyzed by SwissADME tool. The selected ligands were enlisted and the results of the Lipinski's rule analysis were tabulated. AutoDock Vina shortlists phytoconstituents based on binding affinity. Furthermore, the shortlisted candidates are subjected to another stage of docking with the receptors using AutoDock 4.2 software. Conclusion: Therefore, binding interaction and interaction energy values were obtained and the results of pharmacokinetic analysis yields the best phytoconstituent. In the process of In-silico – docking analysis, phytoconstituents are screened and further identified that maackiain is an excellent candidate with multitarget potential from Mucuna pruriens in the management of AD.

Keywords: Mucuna pruriens, Molinspiration, PyRx, AutoDock 4.2, SwissADME

Technological Application Of Algae In The Treatment Of Industrial Waste Water And Production Of Bioproducts.

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Abstract

A fatten global population is causing unpredictable compounds to form at an increasingly rapid rate, calling for ecological action. Wastewater management and treatment is an extortionate process that requires indispensable appropriate unified technology to make it more feasible and cost-effective consideration despite having enormous potential. It shows many ascendancy that can fulfill the stricter demands for improved wastewater treatment therefore, Algae are of great interest as potential feedstocks for various applications like environmental sustainability, biofuel production and the manufacture of high-value products that can be used for health and other benefits and the Bioremediation with microalgae is potential approach to reduce wastewater pollution.The cultivation of the microalgae biomass provides the bioremediation of some targeted pollutants through uptake/digestion or bioabsorption, resulting in treated effluent and the production of biomass.Therefore, the primary objective of this review paper is to review the existing,microalgae production for industrial wastewater treatment,bioremediation,bioenergy production and potential high value of bioproducts. It also highlights the oppurtunities and current problems in the algae based section.

Keywords: Microalgal bio products; wastewater treatment; bioremediation; biodegradation.

The Role Of Biotechnology For Health In Pharmaceutical Innovation

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Abstract

Provide an overview of what biotechnology entails, including its use of living organism, cells and biological process to develop new drug and improve existing treatment in the field of pharmacy. Biotechnology refers to a field where the study of living organisms is done in order to make advancements in the field of science or give rise to new products. Pharmaceutical biotechnology is a relatively new and growing field it holds a lot of potentials in which the principles of biotechnology are applied to the development of drugs. A majority of therapeutic drugs in the current market are bio formulations, such as antibodies, nucleic acid products and vaccines. It refers to a field where the study of living organisms is done in order to make advancements in the field of science or give rise to new products. Its main purpose is to benefit society through medicine, environmental changes, and agricultural advancements, among many other possibilities. In conclusion, this presentation underscores the dynamic and transformative role of biotechnology in the field of pharmacy. As we understand the complexity of biotechnology, we are empowered to vision a future where science and medicine collaborate to create a healthier and more inclusive world. In summary, biotechnology is a driving force in the pharmaceutical industry, enabling the discovery, development, production, and improvement of a wide range of drugs and therapies. It empowers researchers and healthcare professionals to create more effective and personalized treatments, contributing to advancements in patient care and disease management.

Artificial Intelligence (Ai) To The Drug Design And Discovery.

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Abstract

Artificial intelligence (AI) has the implicit to change the drug discovery process, offering increased productivity, effectiveness and speed. The design of new drugs is precious, laborious and complicated, and the vast majority of new drug fail in clinical trials. Artificial intelligence machine learning and big data are tools that are now being applied to drug discovery. These tools aim to use various methods to identify molecules that are successful drugs. Owing to the development of machine learning theory and the accumulation of pharmacological data, the artificial intelligence (AI) technology, as a powerful data mining tool, has cut a figure in various fields of the drug design, such as virtual screening, activity scoring, quantitative structure-activity relationship (QSAR) analysis, de novo drug design, and in silico evaluation of absorption, distribution, metabolism, excretion and toxicity (ADME/T) properties.AI can be classified into diiferent categories such as reasoning and problem solving, representation of knowledge, planning and social intelligence, perception machine learning, robotics and natural language processing. Although it is still challenging to give a physical explanation of the AI-grounded models, it indeed has been acting as a great power to help manipulating the drug discovery through the versatile frameworks. likewise, we bandy the broader challenges assessed by AI in rephrasing theoretical practice to real-word drug design; including quantifying prediction uncertainty and explaining model behavior. Artificial intelligence- integrated drug discoverys and development has accelerated the growth of the pharmaceutical sector, leading to revolutionary change in the pharma industry. Here, we discuss areas of integration, tools and techniques employed in administrating AI, ongoing challenges, and ways to overcome them.

Keywords: AI, Machine learning, drug design, Drug discovery, QSAR, ADME.

Polyherbal Cookies for Prevention and Treatment of Retinopathic Complication of Diabetes

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Abstract

The objective of the present work is the formulation of effective polyherbal cookies for the prevention and treatment of diabetes and associated complications. The polyherbal cookies will be safe and effective medicine that can help in the prevention, management and treatment of blood sugar levels and helps in the management of diabetic complication, retinopathy. Cookies were prepared by adding buckwheat powder, aqueous extract of Betavulgaris root, *Terminalia bellerica* fruits, Tridax procumbens leaves, stevia rebaudiana, extract of pure citrus lemon Juice, Clarified Butter and q.s. of Milk. The standard recipe was designed and three different combinations were prepared, MC1, MC2 and MC3 respectively. Aldose reductase was isolated from goat eye lens. The in vitro assay was performed by using DL- glyceraldehyde as a substrate and NADPH as a starting material. The Ranirestat was used as standard and the percentage inhibition was calculated from the absorbance recorded at 340nm. The IC 50 was found to be 6.673±0.176 for MC1, 10.32±0.255 for MC2, 16.6±0.322 for MC3 and 09.261 ±0.107 for the standard drug. From the result it was concluded that the MC1 formulation is more potent inhibitor than MC2 and MC3 against the enzyme aldose reductase and help in the prevention and treatment of diabetic complication, retinopathy.

Keywords: polyherbal cookies, NADPH, Aldose reductase

Bioweapons : Biological And Toxic Weapons

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Abstract

In this century, it is widely predicted that advances in biology and biotechnology will transform society and life as we know it. At the same time, the 'black biology' of biotechnology which can be used to create biological weapons, will be one of the gravest threats we will face. When we talk about the history of warfare disease and non-battle injury have accounted for more deaths and loss of combat capability than from actual battle in war itself. For example the great influenza pandemic during World War I that killed 20 million people or more worldwide in 1918.As this is a naturally occurring event, if a country could create a biological agent that could yield the same causing sudden loss of life on the enemy will be a huge threat to everyone. The principle is the potential effect of applying genetic engineering for biological warfare or bioterrorism. In this review the awareness of real threat from terrorist activity, and bioterrorism in particular, has led to a number of consequences, many of them relevant to the pharmaceutical industry. Biotechnology is the ultimate two edged sword. Once knowledge is attained, there is no going back. As is the case with most powerful technologies, they can be employed for good or evil. We must proceed with caution when developing new life-forms. Biological warfare and bioterrorism are complicated problems that will require complicated solutions. We need our best critical thinkers and biological researchers to solve this constantly evolving problem. The same advances in genomic biotechnologies that can be used to create bioweapons can also be used to set up counter measures against them.

Keywords: Awareness, Biotechnology, Bioterrorism, Influenza, Solutions.

Molecular Docking Analysis Of Some Thiazole Hydrazine Derivatives As Antimicrobial Agents

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Abstract

Antimicrobials are those substances that either kill or stop the growth of microorganisms. Infectious diseases have continued to be serious health risks and substantial issues for the global population. The primary source of the global problem is the quick rise in bacteria resistance to the available antimicrobial medications. The presently applied future treatments for some serious infections may not be appropriate for strong antibiotics. Therefore, molecular docking analysis was performed in this context to identify effective antimicrobial drugs, which the researchers may find beneficial in the future. Thiazole hydrazine derivatives were taken out from the reported work of Vishnu et al. Protein (PDB code: 4URO, resolution 2.59 Å) was retrieved from protein databank in PDB format. 2D structure was prepared in Chem Draw Pro12.0, then save it into .mol file format. Further the 2D structures were converted in to 3D structure in ChemDraw 3D ultra and energy minimization was done using MM2 force field with RMS gradient 0.001 kcal/molÅ. All the necessary steps to prepare the protein and ligand molecule were carried out on MVD workstation. Validation was performed on the active site of protein and further designed ligands were docked. After docking completion, analysis was performed.The re-docking was done to analyse the docking method. The docked co-crystallized ligand bound similarly to the active site with interacting amino acids Asn65, Gln21 in topoisomerase IV. The Re-docked complex, then superimpose on to the native complex from PDB using MVD.

Quality By Design (QBD) Approach In Biotechnology And Pharmaceutical Formulation Development

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Abstract

Before the FDA introduced the current Good Manufacturing Practice, Quality by Test was the only technique to ensure the quality of pharmaceutical goods. FDA adapted Quality by Design (QbD), which is based on a full understanding of how materials and process factors impact the quality profile of final products, in the field of pharmacy to properly comprehend the production processes. In this paper the fundamentals of quality by design (QbD), its components, implementation procedures, and tools for the pharmaceutical industry, including risk assessment, experiment design, and process analytical technology. The rapid increase in interest in QbD and related tools suggests that the methodologies are not passing fads but are solutions to the requirements of contemporary production processes. However, there are significant complications and complexity involved with applying those ideas to the production of biotech products. This paper therefore, provides interpretation and guidance for implementing quality by design (QbD) for biopharmaceuticals, from early-phase development steps like identifying critical quality attributes and setting specifications to later stages like in corporating QbD into a regulatory filing and facilitating.

Keywords: Quality by Design, biotech product, process analytical technology, risk assessment biotechnology.

Biotechnological Advancements Towrds Food, Drink, And Medical Treatment

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Abstract

The accelerating rate of urbanisation, new lifestyles, climatic changes, and resource exploitation has a significant impact on the state of world health. A viable path to address serious concerns about sustainable development is provided by modern technologies. Here, we provide a thorough analysis of several well-known biotechnological developments with relation to the development made in the sectors of food, medicine, and water, which are the most important ones for public health. Conventional water treatment methods, anti- fouling strategies, anti-microbial agents, food processing, biosensors, medication delivery systems, and implants have been significantly improved as a result of the advent of novel organic/inorganic materials. On the other hand, it is crucial to create cutting-edge equipment for accurately tracking and managing diverse environmental and human health challenges. The future of environmental and biomedical research has been significantly changed by extraordinary advances in constructing ion-selective electrodes (ISEs), microelectromechanical systems (MEMs), and implanted medical devices.

Assessing The Ability Of Human Menstrual Bloodderived Stem Cells From In-fertile Women To Differentiate Into Oocyte-like Cell

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Abstract

In the realm of regenerative medicine, the exploration of diverse stem cell reservoirs ' differentiation potential, particularly within reproductive biology, has been a focal point. However, a noticeable research gap remains in comprehensively understanding the differentiation capacity of human menstrual blood-derived stem cells (MBSCs) isolated from infertile women, particularly concerning their potential to differentiate into oocyte-like cells. To bridge this gap, our study aims to illuminate the differentiation capacity of MBSCs toward an oocyte-like lineage, shedding light on their potential role in addressing infertility through assisted reproductive technologies. Employing an array of molecular, cellular, and developmental biology techniques, we systematically evaluated the MBSCs' differentiation potential. We undertook meticulous steps, encompassing the isolation and characterization of MBSCs, followed by the establishment of tailored culture conditions and induction protocols emulating oocyte development. Through rigorous molecular analyses, including comprehensive gene expression profiling and meticulous immunocytochemistry, we closely monitored the transition of MBSCs toward acquiring oocyte-like attributes. Initial findings unveil intriguing shifts in gene expression patterns and morphological traits throughout the differentiation journey.

Keywords: Menstrual blood derived stem cells, Oocytes,Infertility, Immunocytochemistry, Regenrative

Sublingual Delivery Of Propranolol Hydrochloride Across Oral Mucosa Under The Influence Of Ph Using Buffered Tablets.

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Abstract

Drug's lipophilicity, drug solubility in saliva, saliva pH and drug pKa are theprime parameters that influence the speed and extent at which the drug enters the systemic circulation when administered sublingually. The absorption of drugs is favoured if the drug remains unionized at the oral pH. To achieve enhanced permeability of Propranolol hydrochloride, a weakly basic drug with poor oral bioavailability using sublingual route, promoting the rapid release and immediate action of Propranolol hydrochloride. A study was designed using pH max technique. Disintegration time of buffered tablets was less when compared to the lipid matrix formulations. Buffered tablets without carbopol showed 49% and 84% at 15 minutes and 1hour respectively. Marketed formulation (Inderal) showed 38% and 82% drug release in 15 and 60 minutes respectively. Pure drug showed drug release of 34% in 15 minutes and 65% at the end of 1hour. In ex vivo sublingual mucosa permeation studies pure drug permeated 28%, Inderal 22%, drug from pH max method permeated 39% and 38% at the end of the 1hour. Sublingual Propranolol HCl buffered tablets without carbopol showed immediate release within 5 min with increased sublingual permeation.

Key words: Buffered tablets, Sublingual, flux and pH max technique.

Simultaneous Uv Spectroscopic Estimation Of Sitagliptin Phosphate And Empagliflozin In Bulk Form: Method Developmentand Validation

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Abstract

The captivating objective of this study is to achieve a precise and simultaneous quantitative estimation method for both drugs (SP and EMP) in their bulk form. The technique involves intricate simultaneous equation method using two wavelengths 267 nm and 276.2 nm, max of SP and EMP respectively. The isosbestic point was found at 274.5 nm for simultaneous estimation of both the drugs. Methanol:Water (5:5) has been employed as common solvent for the proposed method. The standardization plot was ranked to be linear between 50-250 µg/ml for SP and EMP with R 2 = 0.9957 and 0.9981 respectively. Process validation was accomplished as per ICH requirement for linearity, correctness, meticulousness, system appropriateness, sturdiness, sensitivity and specificity. The result of linearity showed R 2 value close to 1 and % RSD values (for intra-day and interday precision) were found < 2 indicating the method is precise. The percent recovery for the combination was found in the range of 102.87% to 108.35%, which is in accordance with ICH guideline. The LOD values of SP and EMP were 4.57µg/ml and 0.9075 µg/ml and LOQ values were found as 13.87µg/ml and 2.75µg/ml for SP and EMP respectively, which proves the sensitivity of the developed method.The proposed approach was modest, exact, delicate, precise, rapid and appropriate for repetitive quality scrutiny of SP and EMP in bulk and commercial formulations encompassing combination of these two drugs in the future.

Keywords: Sitagliptin phosphate, Empagliflozin, Simultaneous equation method, Isobestic point, ICH guidelines.

Neurological Disorder Epilepsy: A Review

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Abstract
there are approximately 50 million people in the world and more than 10 million people in India have epilepsy. It is one of the most common neurological diseases worldwide. Around 80% of people with epilepsy live in low- and middle-income group countries. There are large treatment gap from 50 to 70% among People with epilepsy. Mostly people with epilepsy continue to be adversely affected by gaps in poor education, knowledge, poverty, diagnosis, cultural beliefs, treatment, poor healthcare infrastructure advocacy, legislation, chronic epilepsy and research. To prevention, diagnose, treatment and cure epilepsy, researchers worldwide have made most exciting advances across all areas of epilepsy research. Those peoples suffering with chronic disorders often cannot be seen by a healthcare specialist due to their less availability or lack of a specialist within a reasonable proximity. Epilepsy represents such a disorder where most of the world's population limited the availability of specialists.

Keywords: Epilepsy, Seizure, antiepileptic drugs (AED), terminology.

Molecular Docking Studies Of Some Trifluoromethylquinoline Hybrids As Antiplasmodial Agents

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Abstract

Widespread resistance of Plasmodium falciparum to currently available antimalarials, necessitate the discovery of new medicines. Pharmacophoric hyhridization has become an alternative way to overcome the problem of drug resistance. In this regard, molecular docking studies provide fruitful information to studying the potencies of compounds. Seventeen already synthesized trifluoromethylquinoline hybrids were subjected to molecular docking on P. falciparum Lactate Dehydrogenase enzyme (PDB code: 1CET, resolution 2.05 Å) using Autodock tools version 1.5.7. The grid maps for both enzymes were set to 60 Å in all directions (X, Y, Z axes), with default grid space 0.375 Å. After completion of docking, the docked confirmation of the ligands was analyzed for their binding interactions using 2D & 3D visualizations by Biovia Discovery Studio Visualizer & protein plus software. Till today there is no permanent solution for malaria disease, research ongoing in developing lead molecules that could act as potential anti-malarial agents against the resistant strain. The motive of the present study was to discover some new compounds, which acted on some novel targets by neutralizing the activity of resistant strain developed towards malaria. Docking results displayed that best docked poses of compounds TFQ-4, 6, 12, 13, 14 with low binding energies were found to be potent among all derivatives.

Therapeutic Effect of Algal Oil Based Aloe Emodin Emulgel On DNCB-Induced Atopic Dermatitis in Balb/c mice

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Abstract

Atopic dermatitis (AD), an autoimmune disorder, causes itchy, inflammatory skin with scaling, excoriations, and pruritus. IgE hyperproduction and pro-inflammatory cytokines are linked to AD. Anthraquinone derivative aloe-emodin has anticancer, antiviral, and anti-inflammatory activities. This study tested topically administered algal oil-based aloe-emodin for DNCB-induced atopic dermatitis in mice. Tween 80 and span 80 were used to make emulsions. For topical administration, Polydispersity Index, pH, droplet size, and drug release were tested. Acute skin irritation testing began. The formulation was investigated for anti-inflammatory effects on DNCB- induced AD in Balb/c mice in four groups. 30-day therapy. Emulsions particle size was 297±1.No evidence of inflammation or toxicity were seen in skin histopathology reports. Skinfold thickening lessened, erythema and scaling scores improved, and the histological examination corroborated the clinical reports of effectiveness in the treatment groups. This study validates that nano-emulgel of aloe-emodin was successful as anti- inflammation therapy for AD.

Keywords: Aloe Emodin,Emulgel, DNCB, Atopic dermatitis.

Stem Cell Therapy: An Insider Guide

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Abstract

Stem cells have the ability to differentiate into specific cell types. The two defining characteristics of a stem cell are perpetual self-renewal and the ability to differentiate into a specialized adult cell type. Cell sources, characteristics, differentiation and therapeutic applications are discussed. Stem cells have great potential in tissue regeneration and repair "But much still needs to be learned about their biology, manipulation and safety before their full therapeutic potential can be achieved". In addition steam cells have expanded our understanding of development as well as pathogenesis of disease. Stem cell therapies offer great promise for a wide range of diseases and conditions. However, stem cell research particularly human embryonic stem cell research-has also been a source of ongoing ethical, religious, and political controversy. Ensuring the safety and efficacy of stem cell–based products is a major challenge, says the FDA. Cells manufactured in large quantities outside their natural environment in the human body can potentially become ineffective or dangerous and produce significant adverse effects. Stem cell-based therapies exert profound therapeutic potential for curing a broad spectrum of diseases .cancer is one of that disease which can be cure by the help of stem cell therapy. Traditionally, cancer treatments like chemotherapy, immunotherapy, radiation and surgery focus on killing cancer cells. Another type of treatment using stem cells called differentiation therapy, however, focuses on persuading cancer cells to become normal cells. In this we studied how stem cells, or immature cells that can develop into different types of cells, behave in states of health and disease. We believe that stem cells can provide potential treatments for cancer of all types in many different ways.

Keywords: Cancer cell, Differentiation ,Ethics, Safety

Novel Starch - Boon For Poorly Soluble Drugs

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ABSTRACT: The main objective of the current study is to enhance the solubility of Biopharmaceutical Classification System (BCS) Class-II drug starch as super disintegrant which increases drug release. Starch is the most abundant naturally occurring, biodegradable, inexpensive, and widely available polysaccharide and carbohydrate resource. Modified starch serves as a superdisintegrant in the production of tablet formulations for fast dissolving. There are many different types of starches, including those found in beans, sweet potatoes, potatoes, cassava, sorghum, wheat, and rice. Chemical and physical methods are used to prepare the modified starches. The modified starches' properties include faster disintegration, greater flowability, direct compressibility, and gelation in both cold and hot water. In the pharmaceutical and medical industries, modified starches are being employed more and more as excipients and in the production of drugs. By employing modified starches, which also boost the solubility of poorly soluble drugs, the disintegration time decreases up. The difference in compressibility between native and modified starches is greater. Modified starch is used as a superdisintegrant in fast dissolving tablets (FDTs), oral disintegrate tablets, and rapidly dissolving tablets to increase the solubility of poorly soluble drugs.

Key Words: Starch, modified starch, superdisintegrants, rapid dissolve, Novel

Design and Development of Phyto-Antigen Containing Nasal Vaccine for Defence Against Seasonal Allergies: Review

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ABSTRACT: Seasonal pollen allergies are considered a potential threat and an initial step in various severe respiratory conditions like sinusitis, allergy rhinitis, asthma, and many more. Some flowering plants, like sunflower, Xanthium and Argemone maxima, and grasses like Cynodon and Congress grass, are distributed throughout India and are considered allergy-causing pollens. Nasal Vaccine in which pollen of common allergy causing plants is thought of as a novel approach for seasonal pollen allergies. The formulation of the nasal vaccine considers the selection of suitable adjuvants, allergens, buffers, antioxidants, and preservatives so that the formulation can be optimized. For allergies and infections, the nasal route is reflected as the primary location. The combination of nasal mucosal immunity and systemic immunity will provide protection against pollen allergies.

Biodegradable Medical Waste

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ABSTRACT: The abstract discusses the concept of biodegradable medical waste, focusing on its significance in mitigating the environmental impact of healthcare activities. Biodegradable medical waste represents a promising solution to address the persistent challenges posed by conventional medical waste, which often contributes to pollution, resource consumption, and public health risks. The abstract also emphasizes the importance of regulatory compliance, proper disposal procedures, and collaboration between medical professionals and waste management experts. By introducing biodegradable medical waste into clinical and operational contexts, healthcare facilities can effectively reduce their ecological footprint while maintaining high standards of patient care and safety. Methods and techniques are used for making biodegradable product.

Polymeric Microparticles Containing Agomelatine Loaded Mesoporous Silica Nanoparticles For The Treatment Of Depression

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ABSTRACT: Depression is a mental disorder characterized by sadness, loss of interest and hopelessness in the daily activities of life. The first choice of drug therapy, such as tricyclic antidepressants, selective serotonin receptor inhibitors (SSRI), and monoamino oxidase inhibitors (MOAI), increases the chance of serious adverse effects, which is still an unresolved problem. Agomelatine a novel antidepressant administered orally to treat depression but its low bioavailability and poor dissolution affects their therapeutic activity. Here the mesoporous silica nanoparticles are used as a carrier to improve its properties with its unique characteristics. The current research work aims to formulate polymeric microparticles containing agomelatine loaded mesoporous silica nanoparticles to improve its bioavailability and controlled the release rate of drug which is beneficial in the longterm treatment of depression.

Key Words: Mesoporous Silica Nanoparticles, Agomelatine, Polymeric Microparticles and Depression

Comprehensive Study On Traditional Approaches For Atopic Dermatitis By Highlighting The Mechanism Of Action Of Herbal Medicines

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ABSTRACT: Dermatitis is a common skin condition with a wide range of causes and symptoms. Herbs are widely used in the treatment of atopic dermatitis (AD) in India as certain herbs shown to have anti-inflammatory properties that can help with AD.In the developed countries affecting up to 20% of children and 1% to 3% of adults.Type 2 cytokines as well as interleukin 17 and interleukin 22 contribute to skin barrier dysfunction and the development of AD. In recent years, there has been a resurgence of the use of herbs due to the following reasons the side effects of chemical drugs became apparent, there was a call to return to nature, natural remedies became a part of the green revolution, and there was a return to organic produce. Herbal remedies, including those for skin disorders, are currently gaining popularity among patients and to a lesser degree among physicians. This review concisely explains the pathophysiology and epidemiology of atopic dermatitis, as well as potential challenges facing its successful treatment. In this article, the main aspects of AD have been updated, with a focus on the pathogenetic and therapeutic aspects.The main herbs we can used for AtopicaDermetitis are laminaria Japonica, Cera Fava, Illicium Verum. The combination of herbs used in formulation (Navkarshik Churn) is very beneficial for the treatment of atopic dermatitis and in mentioned in Ayurvedic Pharmacopoeia therefore the formulation was selected. Newer therapeutic strategies focus on improving skin barrier function and targeting polarized immune pathways found in AD.

Keywords - Atopic Dermatitis, Pathophysiology, Cytokines, Epidemiology, Dysfunction Anti-inflammatory, Churn.

Repositioning Approved Drugs for Neuroprotection in Parkinson's Disease: A Multimodal Approach

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ABSTRACT: Parkinson's disease arises from a shortage of striatal dopamine and the buildup of aggregated α-synuclein in the substantia nigra pars compacta (SNpc). The convergence of neuroinflammation and oxidative stress is a pivotal element driving the demise of dopaminergic neurons within SNpc and the progression of Parkinson's disease. At the forefront of this inflammatory cascade are two key molecular entities: nuclear factor kappa-light-chain-enhancer (NF-kB) and α-synuclein. In light of this, compounds targeting these central neuroinflammatory mediators offer promising avenues in the battle against Parkinson's disease. In this study, we employed molecular docking and Connectivity Map (CMap)-based gene expression profiling to repurpose approved drugs as potential neuroprotective agents for Parkinson's disease. Through meticulous *in silico* screening, two compounds—namely theophylline and propylthiouracil—emerged as compelling candidates for assessing their anti-neuroinflammatory potential in chronic neuroinflammation *in vivo* models. To validate their efficacy, we quantified the expression of three pivotal neuroinflammatory mediators—IL-6, TNF-alpha, and IL-1 beta—in brain tissue using ELISA assays. The results of these experiments confirmed that both theophylline and propylthiouracil significantly suppressed the expression of these neuroinflammatory mediators. These findings underscore the potential of these compounds in managing neuroinflammation. Further insight was gained from the drug-disease interaction network encompassing the two identified drugs, neuroinflammation, and Parkinson's disease. This intricate network revealed potential interactions with diverse targets, including adenosine receptors, Poly [ADP-ribose] polymerase-1, myeloperoxidase (MPO), and thyroid peroxidase. These interactions extend through intricate pathways intricately associated with neuroinflammation and Parkinson's disease, hinting at the multi-pronged action of these compounds. While our computational findings suggest the promise of these drugs in managing Parkinson's disease intertwined with neuroinflammation, we recognize the need for further biological experimentation to validate these predictions. This study offers a comprehensive framework for repositioning approved drugs, leveraging computational tools and *in vivo* assessments, to combat the intricate web of neuroinflammation in Parkinson's disease.

Formulation and development of Eluxadoline-Loaded Chitosan Nanoparticles for Irritable Bowel Syndrome with Diarrhoea

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ABSTRACT: Irritable bowel syndrome cannot be controlled easily and the recurrence is the most of challenging issue for the physicians. There are several controlled and colon targeted drug delivery systems existing for the treatment with restricted success rate. Nanoparticles prepared by using the colon targeted polymers such as chitosan may improve the Irritable bowel syndrome due to their smaller size, unique physicochemical properties and targeting potential. The aim of this investigation was designed to formulate and develop a colon targeted polymeric nanoparticle of Eluxadoline by ionic gelation method for the improvement of Eluxadoline solubility, bioavailability overall therapeutic efficacy and disease targeting. The efficiency of drug release from prepared formulation was studied in vitro in the buffer solution mimicking stomach, intestine and colonic pH conditions. The drug release profile was controlled in the upper GI tract. The maximum amount of drug was released in the colonic conditions and shows 79% cumulative drug release within 12 hours. The developed formulation was based on the particle size below 300 nm. The particles were found to be spherical in shape and also demonstrated the uniform size range, they have high encapsulation efficiency and relatively high loading capacity and predetermined in vitro release profile.

Keywords: Inflammatory Bowel Disease, bioavailability, chitosan, nanoparticles.

Amino Acid Fused Hydroxybenzaldehyde Derivatives As A Potent Agent For Anti-Sickling Activity

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ABSTRACT: Irritable bowel syndrome cannot be controlled easily and the recurrence is the most of challenging issue for the physicians. There are several controlled and colon targeted drug delivery systems existing for the treatment with restricted success rate. Nanoparticles prepared by using the colon targeted polymers such as chitosan may improve the Irritable bowel syndrome due to their smaller size, unique physicochemical properties and targeting potential. The aim of this investigation was designed to formulate and develop a colon targeted polymeric nanoparticle of Eluxadoline by ionic gelation method for the improvement of Eluxadoline solubility, bioavailability overall therapeutic efficacy and disease targeting. The efficiency of drug release from prepared formulation was studied in vitro in the buffer solution mimicking stomach, intestine and colonic pH conditions. The drug release profile was controlled in the upper GI tract. The maximum amount of drug was released in the colonic conditions and shows 79% cumulative drug release within 12 hours. The developed formulation was based on the particle size below 300 nm. The particles were found to be spherical in shape and also demonstrated the uniform size range, they have high encapsulation efficiency and relatively high loading capacity and predetermined in vitro release profile.

Keywords: HFA, Docking studies, HbS , anti – polymerizing drug .

Impact of Biotechnology in Clinical Research

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ABSTRACT: For more than three decades the field of biotechnology has had an extraordinary impact on science, health care, law, the regulatory environment, and business. During this time more than 260 novel biotechnology products were approved for over 230 indications. Global sales of these products exceeded $175 billion in 2013 and have helped sustain a vibrant life sciences sector that includes more than 4,600 biotech companies worldwide. Many reports shows that evolution of biotechnology during the past three decades and the profound impact that it has had on health care through four interrelated and interdependent tracks: innovations in science, government activity, business development, and patient care. The future impact of biotechnology is promising, as long as the public and private sectors continue to foster policies and provide funds that lead to scientific breakthroughs; governments continue to offer incentives for private-sector biotech innovation; industry develops business models for cost-effective research and development; and all stakeholders establish policies to ensure that the therapeutic advances that mitigate or cure medical conditions that currently have inadequate or no available therapies are accessible to the public at a reasonable cost. To successfully develop biotechnology industries in developing nations, it is critical to understand and improve the system of health innovation, as well as the role of each innovative sector and the linkages between the sectors.

Keywords: Biotechnology, Genetic Engineering, DNA, Business of Health; History of Medicine/Health Care; Legal/Regulatory Issues; Medicine/Clinical Issues.

The Role of Artificial Intelligence in the PharmaceuticalIndustry: A Comprehensive Review

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Abstract

Artificial Intelligence (AI) has emerged as a game-changing technology across various industries, and the pharmaceutical sector is no exception. In recent years, the integration of AI in drug discovery, development, manufacturing, and personalized medicine has significantly transformed the landscape of the pharmaceutical industry. We examine AI's role in drug discovery, personalized medicine, clinical trials, pharmacovigilance, and drug repurposing, along with an exploration of ethical and regulatory considerations. By critically evaluating existing literature and recent developments, we highlight how AI has become an indispensable tool in advancing pharmaceutical research and healthcare. In Drug Discovery and Development AI- powered algorithms play a crucial role in identifying potential drug candidates, predicting their efficacy, and optimizing their properties. In Clinical Trials Clinical trials are a critical aspect of drug development, and AI assists in optimizing trial design, patient selection, and outcome prediction. In Pharmaceutical Manufacturing AI used in process optimization, predictive maintenance, and quality control has significantly improved manufacturing efficiency while reducing costs. This review paper aims to provide an in-depth analysis of the current state of AI in the pharmaceutical domain, exploring its applications, challenges, and future prospects.

Key words: AI, Drug Repurposing, Personalized Medicine, Pharmacovigilance, Drug Discovery