Sri Adichunchanagiri College of Pharmacy

ADICHUNCHANAGIRI UNIVERSITY

ASSOCIATION OF PHARMACEUTICAL RESEARCH

International Conference on

Innovation and Advances in Pharmaceutical Sciences

- CURRENT SCENARIO AND FUTURE PERSPECTIVES

"Pharmaceutical Sciences: A Radical Approach to Revitalizing the Modern Era"

FEBRUARY 10th & 11th 2023 | KARNATAKA, INDIA

Organised by :

Sri Adichunchanagiri College of Pharmacy, Adichunchanagiri University & Association of Pharmaceutical Research

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PREFACE

This book reports the Proceedings of the **"International Conference on Innovation and Advances in Pharmaceutical Sciences - Current Scenario and Future Perspectives"** held on **10th & 11th February 2023** organized by **Sri Adichunchanagiri College of Pharmacy, Adichunchanagiri University** and **Association of Pharmaceutical Research.**

The publishing department has received more than 360 abstracts. After an initial review of the submitted abstracts, 230 papers were presented at the conference and were accepted for publication in the Conference Proceedings Book. The topics that are covered in the conference include AI and CADD in Drug Discovery, Drug Delivery Systems, Modern Pharmacognosy, Drug Regulatory Affairs, Modern Pharmaceutical Chemistry, Modern Pharmacology and Pharmacovigilance & Risk Management etc. We would like to thank all the participants for their contributions to the conference and the proceedings.

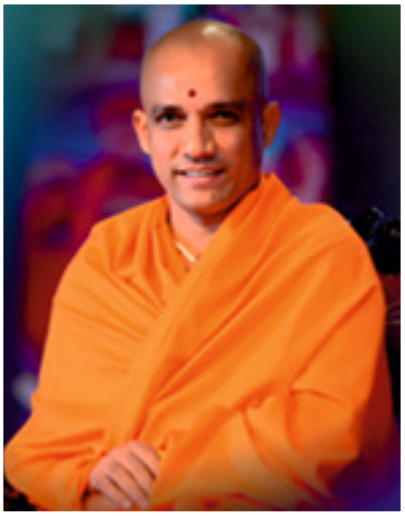
Reviewing abstracts of the **International Conference on Innovation and Advances in Pharmaceutical Sciences - Current Scenario and Future Perspectives** was a challenging process that relies on the good will of those people involved in the field. We invited more than 10 researchers from related fields to review abstracts for the presentation in the **International Conference on Innovation and Advances in Pharmaceutical Sciences - Current Scenario and Future Perspectives** Proceeding. We would like to thank all the reviewers for their time and effort in reviewing.

Finally, we would like to thank all the proceeding team members who with much dedication have given their constant support and priceless time to bring out the proceedings in a grand and successful manner. I am sure this **International Conference on Innovation and Advances in Pharmaceutical Sciences - Current Scenario and Future Perspectives** will be a credit to a large group of people, and each one of us should be proud of its successful outcome.

International Conference on Innovation and Advances in Pharmaceutical Sciences - Current Scenario and Future Perspectives

“Pharmaceutical Sciences: A Radical Approach to Revitalizing the Modern Era”

From Chancellor Desk



Sri, Sri, Sri Dr.Nirmalanandanatha Mahaswamiji
Chancellor
Adichunchanagiri University, B.G.Nagara,
Karnataka, India

I am happy to propel everyone my warmest greetings and best wishes.

Firstly, I would like to invite all the delegates to this conference. The first international conference on "Innovations and Advances in Pharmaceutical Sciences: Current Scenario and Future Perspectives" highlights in-depth numerous problems that the Pharmaceutical and Medical fields are facing today, as well as the challenges and opportunities brought about by new products, services, and applications. I fervently believe that this first International conference will boost the quality of the research and collaborations more in future.

I am confident that this International Conference is the best platform to discuss the research outcomes critically and come up with effective solutions as well as establish a good collaboration between universities and industrial firms located nationally and internationally to address the current issues.

My best wishes for the grand success of this event.

Sri Adichunchanagiri College of Pharmacy

ADICHUNCHANAGIRI UNIVERSITY

From Managing Director's Desk

Mr. A. Siddth Kumar Chhajer
Managing Director & Founder
APR & BioLEAGUES

On behalf of Association of Pharmaceutical Research, I am delighted to thank all the delegates and participants around the globe who joined in the **"International Conference on Innovation and Advances in Pharmaceutical Sciences - Current Scenario and Future Perspectives"** which was held on **10th & 11th February 2023.**

This conference focused around the theme **"Pharmaceutical Sciences: A Radical Approach to Revitalizing the Modern Era".**

It was a great pleasure to join with all Students (UG/PG), Ph.D. Scholars, Research Scholars, Scientists, Industry Persons from the field Drug Delivery Systems, Modern Pharmacognosy, Drug Regulatory Affairs, Modern Pharmaceutical Chemistry and Pharmacovigilance & Risk Management.

I congratulate the Chief Patron, Patron, Co-Patron, Organizing Committee Chairman, Organizing Committee Secretary and Convener, Organizing Committee Members, Coordinators of Sri Adichunchanagiri College of Pharmacy, Adichunchanagiri University and Association of Pharmaceutical Research all the people involved for their efforts in organizing the **International Conference on Innovation and Advances in Pharmaceutical Sciences - Current Scenario and Future Perspectives** and successfully conducting the International Conference and wish all the delegates and participants a very pleasant conference.

A. Siddth Kr

A. Siddth Kumar Chhajer
Managing Director & Founder
APR & BioLEAGUES

From Vice Chancellor Desk

ADICHUNCHANAGIRI UNIVERSITY
(Estd. under Karnataka Act No. 18 of 2013)
B.G. Nagara - 571448

Prof. Dr. M. A. Shekar
Vice Chancellor

February, 02, 2023

Greetings from Adichunchanagiri University, BG Nagara

I am very happy to note that Sri Adichunchanagiri College of Pharmacy, Adichunchanagiri University is organising an international conference on "Innovations and Advances in Pharmaceutical Sciences" (ICIAPS 2023). I am sure that this conference will explore, expound and provide recent and incisive vision of Pharmaceutical advancements in the country and abroad.

'ICIAPS – 2023' will be an apt, academic forum for discussions on the most recent developments in the pharmaceutical industry and provide the attendees with opportunities for insightful conversations and invigorating interaction.

I am sure the conference will have a significant role in supporting researchers from universities, national labs, and businesses across India with sophisticated innovations and critical applications in pharma sector.

I must congratulate the organising team for all of their work leading up to this significant event. They are creating a joyful and conducive atmosphere for forging friendship through scientific learning and interaction.

I wish the very best for the success of the conference.

Best Regards

(Dr. M.A. Shekar)

From Registrar Desk

ADICHUNCHANAGIRI
UNIVERSITY
(Estd. under Karnataka Act No. 18 of 2013)
B.G. Nagara - 571448

Message

As Sri Adichunchanagiri College of Pharmacy prepares for inaugural international conference, 'ICIAPS' it gives me immense pride and joy to be part of this mega event as it is organised by Adichunchanagiri University.

This conference's main focus is on broad spectrum of real-time system applications, conventional medicines to cutting-edge technologies in pharma industry via research, innovation and applications. This conference is intended to focus on real-time applications of pharmaceutical discoveries and advancements in the pharmaceutical industry. I wish that the conference would provide delegates and attendees an awareness of plethora of future opportunities the pharma industry would offer aspiring pharma graduates.

I extend my warm wishes for a fruitful and influential deliberations and wish the conference a grand success. I would like to extend my congratulations to the conference organising committee as well as to Sri Adichunchanagiri College of Pharmacy staff members for successfully hosting this International Conference. It is my hope that this conference would serve as a springboard for the development of fresh concepts for a better future.

Dr. C K Subbaraya
Registrar
Adichunchanagiri University

From Principal Desk

Sri Adichunchanagiri College of Pharmacy

Approved by PCI, New Delhi
NBA Accredited, ISO 9001 : 2015 Certified

ADICHUNCHANAGIRI UNIVERSITY

Welcome Message

On behalf of Hon'ble Chancellor, Vice Chancellor and Registrar, Adichunchanagiri University, B.G.Nagara, Karnataka and Organizing Committee of International Conference on the theme **"International conference on Innovation and Advances in Pharmaceutical Sciences: Current scenario and future perspectives"** we cordially welcome all the delegates and participants.

Sri Adichunchanagiri College of Pharmacy was established in the year 1981 and running D.Pharm, B.Pharm, M.Pharm, Pharm-D and Ph.D programs. It is approved by AICTE, PCI, New Delhi. Institution is NBA accredited (B.Pharm Program) and ISO 9001-2015 certified. Sri Adichunchanagiri College of Pharmacy is constituent college of Adichunchanagiri University which was established in the year 2018 as a state Private University under Karnataka Act No 18 of 2013. Adichunchanagiri University is a research-oriented, student-centric, multidisciplinary, not-for-profit state private university.

With Greetings and Best Wishes,

Dr. B. Ramesh

Dean and Principal

Sri Adichunchanagiri College of Pharmacy

Adichunchanagiri University

B.G.Nagara-571448

Karnataka, India

Principal
Sri Adichunchanagiri College of Pharmacy
Adichunchanagiri University
B.G. Nagara - 571448

Sri Adichunchanagiri College of Pharmacy ★ B.G. NAGARA PIN-571448

ADICHUNCHANAGIRI UNIVERSITY

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From CEO's Desk

Mr. Rudra Bhanu Satpathy
CEO & Founder
APR & BioLEAGUES

It is indeed a privilege to acknowledge and thank all the supporters and organizers of the **"International Conference on Innovation and Advances in Pharmaceutical Sciences - Current Scenario and Future Perspectives"**, who contributed greatly to organize the conference successfully.

I would like to acknowledge and thank the Chief Guest for his valuable contribution in the **International Conference on Innovation and Advances in Pharmaceutical Sciences - Current Scenario and Future Perspectives**. My special thanks to all our Guests who so graciously accepted our invitation to participate in the conference.

I would like to specially thank our Organizing Committee from Sri Adichunchanagiri College of Pharmacy, Adichunchanagiri University who continuously supported and helped us plan and execute the conference successfully.

I am highly indebted to the contribution given by all Students (UG/PG), Ph.D. Scholars, Research Scholars, Scientists, Industry Persons from the field of Drug Delivery Systems, Modern Pharmacognosy, Drug Regulatory Affairs, Modern Pharmaceutical Chemistry and Pharmacovigilance & Risk Management.

Rudra Bhanu Satpathy
CEO & Founder
APR & BioLEAGUES

From Convener Desk

Dr.Prakash Goudanavar
Professor and Head,
Dept. Of Pharmaceutics & Regulatory Affairs,
Sri Adichunchanagiri College of Pharmacy,
Adichunchanagiri University, B.G.Nagara, Karnataka, India

It is indeed a special privilege and a pleasure to welcome all the invited speakers and delegates to Sri Adichunchanagiri College of Pharmacy, Adichunchanagiri University for the International conference on "Innovation and Advances in Pharmaceutical Sciences: Current scenario and future perspectives" with a Theme: Pharmaceutical Sciences A radical approach to revitalizing the modern era from Feb 10-11, 2023 organized by Sri Adichunchanagiri College of Pharmacy and Association of Pharmaceutical Research.

The theme of the conference addresses the challenges faced by the pharmaceutical sector in discovery and development of new drugs and therapies. Pharmaceutical Sciences is a dynamic and interdisciplinary field that aims to integrate fundamental principles of physical and organic chemistry, engineering, biochemistry, and biology to understand how to optimize delivery of drugs to the body and translate this integrated understanding into new and improved therapies against human disease period.

This International conference will surely extend the opportunities to the academic scientist's, researchers, students and working professionals by providing a forum for sharing their knowledge, experiences, innovations and inventions.

I would like to extend my appreciation for the efforts of organizers to conduct this International Conference. I wish grand success for the conference and insist delegates to avail the opportunity to watch and interact with global Pharmaceutical leaders.

About Adichunchanagiri University & College

- Established in the year 2018, Adichunchanagiri University is a research-oriented, student- centric, multidisciplinary, not-for- profit state private university. Within a short period of its existence, it has emerged as a nationally renowned higher education university. The University has a host of institutes, departments and centres, including Medicine, Pharmacy, Nursing, Engineering, Management, Commerce and Education.
- Sri Adichunchanagiri College of Pharmacy, a constituent Institution of Adichunchanagiri University is one of the leading institutions in the country, offering Pharmaceutical Education at the undergraduate, postgraduate and doctoral level. Sri Adichunchanagiri College of Pharmacy was established in the year 1981 and running D. Pharm, B. Pharm, M. Pharm, Pharm-D and Ph.D programs. It is approved by AICTE and PCI, New Delhi. The college operates with a vision to produce globally competent pharmacists with skill, knowledge and attitude, while the institutes' mission is to impart quality education with training to excel in the pharmacy profession

Major Achievements Of College

- Institution is NBA accredited (B.Pharm Program) for second cycle.
- Institution is ISO 9001-2015 certified for second cycle
- Institution is listed in NIRF rankings of 2019, 2020, 2021 & 2022.
- Featured in ARIIA rankings-2021 with excellent grade
- Institution has received grants worth of four crores from different funding agencies like AICTE, VGST, RGUHS, ACU and Pharmaceutical Industries etc.
- Institution has well established Institution Innovation Council (IIC)
- Institution has incubation centre named as Adichunchanagiri Center for Entrepreneurs (ACE)

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ADICHUNCHANAGIRI UNIVERSITY

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ASSOCIATION OF PHARMACEUTICAL RESEARCH

ABSTRACTS

International Conference on
Innovation and Advances in Pharmaceutical Sciences
February 10th & 11th 2023 | karnataka, India

Virtual Anti-Diabetic Screening of Selected Phytoconstituents of Embelia Ribes Brum and Piper Nigrum Linn

[1]Inamdar A. A, [2]Palled M. S, [3] Suryawanshi S. S
[1][2][3] KLE College of Pharmacy, India.

Abstract:

Introduction:
Embelia Ribes Brum(ERB) and Piper Nigrum Linn(PNL) plants have various therapeutic effects like, anti-oxidant, anti-diabetic, anti-tumor, anti-inflammatory. Anti-diabetics are used to lower blood glucose levels in the body. There are numerous synthetic Anti-diabetic agents in the market today, with a potent Hypoglycemic activity along with some limitations and are overcome by polyherbal formulations. Drug-likeness and ADME parameters are used in drug design to optimize the drug-like properties chemical/phytochemicals in terms of oral-bioavailability, to convert lead candidates into safe and effective drugs for human use. Network-pharmacology exploits the pharmacological mechanism of drug action in the biological network by genes, targets and pathways via which chemical/phytoconstituents acts. Molecular-docking used for detecting "best-fit" orientation of a ligand that binds to a particular protein of interest.

Aim and Objectives:
To screen physicochemical-properties and pharmacokinetic parameters and construct biological network via network pharmacology approach and Molecular-docking against anti-diabetic targets for selected phytoconstituents from ERB and PNL by in-silico methods.

Methods:
In the current research work we have virtually screened hundred phytoconstituents from each of the plants, PubChem database for collecting canonical-smiles, Molsoft server for physicochemical-properties and Drug-likeness screening, Schrodinger's-Maestro software for ADME parameters and molecular-docking, Cytoscape for Network-pharmacology.

Results:
The results revealed that most of the phytoconstituents obeyed Lipinski's Rule of Five (RO5) and Jorgensen's Rule of Three (RO3) and fall within recommended ranges. Also, few compounds highly modulated certain anti-diabetic pathways via particular genes which was further confirmed by molecular-docking studies.

Conclusion:
Out of screened phytoconstituents, seventy-one from (ERB), eighty-seven from (PNL) obeyed Lipinski's-RO5 and seventy-nine from (ERB), ninety-five from (PNL) obeyed Jorgensen's-RO3. Hence, concluded that maximum of the screened phytoconstituents could be proven as potent-drug candidates with good membrane-permeability and oral-bioavailability.

Keywords:
Drug-Likeness, Physicochemical-Properties, Pharmacokinetic-Parameters, ADME, Antidiabetics, In-Silico, Lipinski's-RO5, Jorgensen's-RO3, Molecular-Docking, Network-Pharmacology.

ISBN : 978-93-92106-19-4

Network Pharmacological Approach and Evaluation of In-vitro Antioxidant Activity of Anthocephalous Cadamba against Oxidative Stress

[1]Sreya Kosanam, [2]Rajeshwari Pasupula
[1] KL College of Pharmacy, KLEF, Deemed to be University, India
[1] Nirmala College of Pharmacy, India
[2] KL College of Pharmacy, KLEF, Deemed to be University, India

Abstract:
The present focuses on network pharmacological approach and in-vitro antioxidant activity of chloroform and methanolic extract of leaf extracts of Anthocephalous cadamba. Preliminary phytochemical analyses revealed the presence of carbohydrates, tannins, saponins, flavonoids, and terpenoids. GCMS of leaves extracts confirmed the present of different bioactives and network pharmacological approach was used to identify the targets of plants against oxidative stress, followed by targets gene enrichment analysis and KEGG analysis selection criteria is a p-value < 0.05. Prediction of plant efficacy against oxidative stress is validated by screening potential antioxidant activity using DPPH and ABTS free radical-scavenging activities using ascorbic acid as the standard and positive control. Leaf extracts showed significant DPPH and ABTS radical scavenging activities compared to standard antioxidants. The results indicated that the extracts of Anthocephalous Cadamba are a having significant antioxidant effect.

Keywords:
Network Pharmacology, Leaf extract, GCMS, Anti-oxidant.

Novelty of this Topic:
This a part of my PhD study, we are currently working on targeted approach against oxidative stress using traditional plants.

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International Conference on
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February 10th & 11th 2023 | karnataka, India

Identification of Novel 2-mercaptobenzimidazole Derivatives for the Treatment of Tuberculosis: A Computational Approach

[1]Nayana J, [2]B V Suma
[1][2] M. S. Ramaiah University of Applied Sciences, India

Abstract:

Mycobacterium Tuberculosis (MTB) is the organism which usually affects the lungs, causing tuberculosis, among the most serious respiratory and infectious diseases throughout the globe (TB). Despite the fact that numerous new anti-tuberculosis medications have been launched, different side effects have been recorded, like changes in your eyesight, notably alterations in red or green color vision, and dark colored urine. To control TB, new medications must be developed.

Aim & Objective:

- To identify the ligands, correct binding geometry in the binding site.
- To predict the binding affinity of the ligands with active binding site.

Methods:

The predicted binding affinities of 2-mercapto benzimidazole analogues with Mycobacterium tuberculosis target were evaluated using molecular docking. The chemical structure of the compounds was precisely sketched using ChemDraw software, and the docking procedure was carried out using PyRx virtual screening Autodock vina software.

The top 5 ligands were submitted to in silico ADMET analyses in PKCSM Webserver depending upon binding energy and amino acid interactions. Compounds 6 and 7 have a high binding affinity (-10.6) (-10.9) for the target. Drugs with strong gastrointestinal absorption, orally bioavailability, and low toxicity were predicted using in-silico ADMET and drug-likeness prediction. The current investigation supports these compounds as potential lead prospects for the treatments of multidrug-resistant tuberculosis, which may help medicinal chemists and pharmaceutical specialists in the future design and synthesis of more effective medication options.

Keywords:

Autodock Vina, Binding Affinity, Chemdraw, Molecular Docking Pharmacokinetics, PKCSM, Pyrx

ISBN : 978-93-92106-19-4

Molecular Docking Studies of Novel Pyrimidine Hybrids as Promising SRC Inhibitors

[1]Knolin K Thachil, [2]Parasuraman P, [3]D R Harish Kumar
[1][2][3] Ramaiah University of Applied Sciences, India

Abstract:
Elevated Src expression has been frequently reported in breast cancer tissues. Src plays a role in multiple pathways leading to tumor survival, proliferation and metastasis. Inhibiting Src kinase would be a therapeutic benefit in Src dependent cancers. Most of the nitrogen containing heterocycles possess wide range of biological activities. Combination of heterocyclic nucleus proved to be a successful approach for augmenting biological activities. Derivatives of pyrimidine was reported to inhibit Src. In this study a series of ten novel hybrid molecules of pyrimidine were designed. Designed molecules were docked with human tyrosine kinase (PDB ID: 2SRC) using AutoDock vina. Docked poses were ranked based on their binding affinities Binding affinities were compared with a reference. The above studies revealed that docking of hybrid molecules with 2Src showed promising inhibitory activity. Hence these novel pyrimidine hybrids can be considered as lead molecules for developing drugs for breast cancer.

Keywords:
Pyrimidine, Molecular Docking, Src inhibitors

Novelty of the Topic:
Identification of Novel SRC inhibitors

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International Conference on
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Artificial Intelligence in Drug Development

[1]Mamatha.M, [2]Sucharitha.P
[1][2] Seven Hills College of Pharmacy (Autonomous), India

Abstract:
In drug development facing many obstacles to overcome these problems artificial intelligence is used. AI used in drug development, discovery and clinical trials. AI used in pharmaceutical industries to reduce the manual work, time to reach the targets in short period of time. In these involving advanced technology and tools which mimic the human intelligence to solve problems .AI applications continuously extended the drug development. ANN (Artificial Neural Networks) provides predicting abilities in drug development. ANN combined with fuzzy logic which is a potential tool have more capability to yield results. SVMs (Supportive Vector Machine) are supervised machine learning algorithms used in drug delivery to separate compounds based on their database and regression model. In drug discovery AI tool, Alpha fold which is based on DNN's was used to analyse the distance between adjacent amino acids and angles of peptides to predict 3D structures. AI based QSAR approaches such as discriminant analysis, SVM, random forest and decision trees used to speedup QSAR analysis. Many factors impact the successful integration of AI drug development , poly pharmacology, drug screening, drug design, and drug repurposing .Advances in technology and it tools required to reduce the time and money spent on research and development of drug to increase efficacy.AI can be more widely implemented and improved signaling the start of new for drug development.

Keywords:
Artificial Neural Networks, Fuzzy Logic, Supportive Vector Machine, AI Tool.

ISBN : 978-93-92106-19-4

Method Development and Validation for the Estimation of Ambroxol, Terbutaline in Pharmaceutical Dosage form by HPLC

[1]Jayasree Reddy.A, [2]Sateesh Kumar.G
[1][2] Seven Hills College of Pharmacy (Autonomus), India.

Abstract:
In the current work straightforward, touchy RP-HPLC technique have been created for the assessment of Ambroxol HCl, and Terbutaline sulfate in the drug measurements structure.
The current work portrays a switched stage elite execution fluid chromatographic technique that has been created and approved for synchronous assessment of Ambroxol HCl, also, Terbutaline sulfate in syrup. The assessment was completed on a RP-18 BDS section involving a combination of Ammonium acetic acid derivation and Methanol in the proportion 30:70 as a versatile stage at pH 5.0, at a stream pace of 1.0 ml/min. Bright (UV) recognition was performed at 223 nm. Complete run time was 10min. The strategy was approved according to ICH standards. From the approval concentrate on it was observed that the strategy is explicit, quick, exact and exact.

Keywords:
RP-HPLC, Ammonium Acetate, Methanol, Terbutaline, Ambroxol.

ISBN : 978-93-92106-19-4

Thiazolidinedione's as Magic Bullets: Synthesis and Insilco Approach as GLUT-4 Agonist

[1]Shriram D. Ranade, [2]Shankar G. Alegaon
[1][2] KLE College of Pharmacy, KLE Academy of Higher Education and Research (KAHER), India.

Abstract:

Objectives:
To Design, Synthesize, Characterize and Insilico evaluation of Thiazolidinedione's in GLUT-4 upregulation.

Methods:
1. Thiazolidinedione hybrids were designed based on literature search.
2. Designed molecule was considered for target identification based on network pharmacology approach.
3. Library was generated by Reaction based enumeration and Custom R group enumeration, Virtual screening work flow was applied to get HIT molecules. Top 50 ligands were identified based on their binding affinity and interaction in binding pocket of GLUT-4 protein, Selected compounds were Synthesized and characterized.

Results:
Synthesised compound were characterised by FTIR, NMR spectroscopy. Network Pharmacology predicted highly modulated genes like SLC2A, NR1C3 identified coding for proteins involving GLUT and PPAR gamma. Which could help in predicting molecular mechanism of the synthesised compounds. Further these compounds will be evaluated for their invitro glucose uptake activity.

Conclusion:
Present study identified Hit molecules based on Design, Reaction enumeration and virtual screening workflow. These HIT molecules were synthesized and its target were identified by network pharmacology approach. Further invitro and invivo results could support the present findings.

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International Conference on
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Computational Studies on Novel Purine Derivatives in Medicinal Chemistry Approaches for Targeting Aurora Kinase Protein in Breast Cancer

[1]Pooja Kumari, [2]Anandkumar Tengli
[1][2] JSS College of Pharmacy Mysuru, and JSS Academy of Higher Education & Research (JSS AHER), India.

Abstract:

In addition to several oncogenic proteins, the cancers could be caused by overexpression of proteins, such as Aurora Kinases (Ark) protein that leads to metastasis. While creating a target we consider to supress the growth of different cancers including colorectal, stomach, liver, prostate, lung, cervical, breast, thyroid and other cancers with the help of docking studies; proven that the purines has a high ability to crosslink with canonical purine bases which have a similar structure with guanine, adenine, thiamine etc.

The goal of the research is to reduce breast cancer by inhibiting the Aurora kinase enzyme while developing a tailored method. Purine molecules that are specifically designed to bind to amino acids in DNA and inhibit protein synthesis or stop the replication and metastasis brought on by the Ark enzyme. The proteins are selected through protein data bank while considering various parameters like X-ray crystallographic structure, presence of ligand, Ramachandran plot, resolution, etc., the selected protein are 6C2T, 2VGO, 48PN, 5NWH, 50S1, and 5IGW in which 2VGO protein gives a highest scoring in comparison to co-crystal ligand and standard drug that is cisplatin.

	Name	-CDOCKER_INTERACTION_ENERGY	-CDOCKER _ENERGY
1.	Compound 9	58.4727	28.3877
8.	Co-Crystal ligand	41.948	23.0928
11.	Standard drug	13.3952	-370.19

The docking study performed by using Biovia Drug Discovery perpetual software, many protein connected to the overexpression of the Aurora protein were docked with purine molecules. Various parameters like X-ray crystallographic structure, presence of ligand, Ramachandran plot, resolution, etc., were taken into considered for selecting the target protein. higher negative binding scoring molecule has been taken for simulation studies.

Keywords:

Novel Purine Derivatives, Aurora Protein (Enzyme), Computational Studies, Medicinal Chemistry

ISBN : 978-93-92106-19-4

Medication Adherence in Diabetic Patients in Teritiary Care Hospital using Morisky Medication Adherence Scale

[1]Mohammed Mustafa G, [2]Melvin Kurian Abraham
[1][2] Sree Siddaganga College of Pharmacy, Rajiv Gandhi University of Health Sciences, India

Abstract:

Introduction: Medication adherence is defined as the extent to of medication taking pattern coincides with intention of the physician, poor medication adherence in Type-2 diabetes is well documented to be very common & is very common & is associated with inadequate Glycaemic control; Increased morbidity, mortality, hospitalizations, and managing complications of diabetes.

Objective:

To assess the patient medication adherence in Type-2 diabetic patients in tertiary care hospitals using the MMAS scale

Method:

An observational study was conducted using the Morisky Medication Adherence scale to assess the medication adherence of patients from the age 18-90 years using pre- and post-questionnaires on 209 subjects for 6 months.

Result:

The MMAS consisted of 8 questions with Yes and No responses for the first 7 questions. Every response of Yes was valued at 0 and No response was 1 except for the 5th question which was scored inversely i.e., 1 for Yes and 0 for No response. The 8th question offers 5 options (rarely-1, once-0.75, sometimes-0.5, usually-0.25, and all the time 0). MMAS score ranged from 0-8, a value of equal to 8 indicates good adherence, a value of <8 and ≥6 indicates moderate adherence, and a value of <6 indicates poor adherence. In addition, 2 questions were included in the study regarding the cost and availability of medication

Combination of Medication	Good adherence	Moderate adherence	Poor adherence
OHA combination	30 (19.4%)	58 (37.6%)	66 (42.8%)
OHA and Insulin	9 (16.9%)	23 (43.3%)	21 (39.6%)
Insulin combination		1 (50%)	1 (50%)

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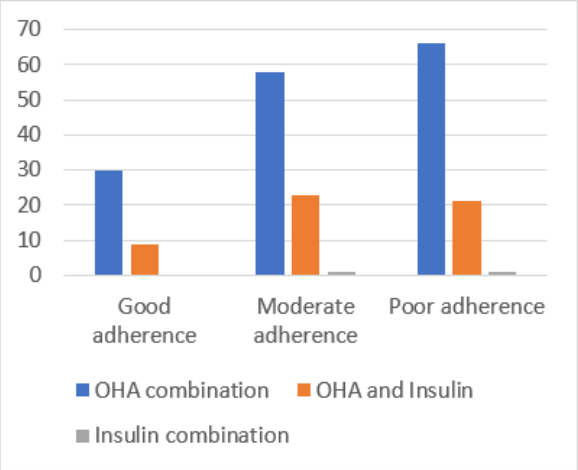

Conclusion:
Good adherence was not seen among patients treated with only insulin combination. Most adherence was seen in OHA combinations rather than insulin combinations or with OHA.

Keywords:
MMAS –Morisky medication adherence scale, OHA – oral hypoglycemic agent.

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International Conference on
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February 10th & 11th 2023 | karnataka, India

Study on Compliance of Antibiotics used as Prophylaxis During the Surgery in Teritiary Care Teaching Hospital using Hospital Antibiotic Policy

[1]Kavya H B, [2]Shameem Abdurahiman T
[1][2] Sree Siddaganga College of Pharmacy, Rajiv Gandhi University of Health Sciences, India

Abstract:

Introduction:
Infections that occur in the wound created by an invasive surgical procedure are generally referred to as surgical site infections. SSIs are one of the most important causes of healthcare-associated infections. The antibiotic guideline will be specific to its patients and type of population, and the diseases which are common in the area to ensure rational, reasonable, and effective use of antibiotics and to decrease the incidence of nosocomial infections, so it is very essential for surgeons to follow the guidelines. To achieve an overall reduction in morbidity and mortality, the appropriate use of surgical antibiotics must be carefully considered.

Objective:
Comparison and evaluation of the antibiotics used as prophylaxis in the surgical procedure as per the Hospital Antibiotic Policy by assessing the choice of antibiotic and timing of the administration.

Methodology:
A prospective observational study was conducted for the period of 6 months in SMCRI Tumakuru, Karnataka. A total of 203 patients from the hospital's inpatient department were included in the study. The data were collected, analyzed, and interpreted using descriptive statistics.

Result:
This study was conducted among 203 individuals in which 74% of the patients followed the guidelines for using the right antimicrobial agent. 72% of the patients, received the antibiotic timely before surgery as per the hospital antibiotic policy. 69%of the samples showed that the surgeons used prophylactic antibiotics during surgical procedures, while 31% did not, in accordance with the hospital's antibiotic policy.

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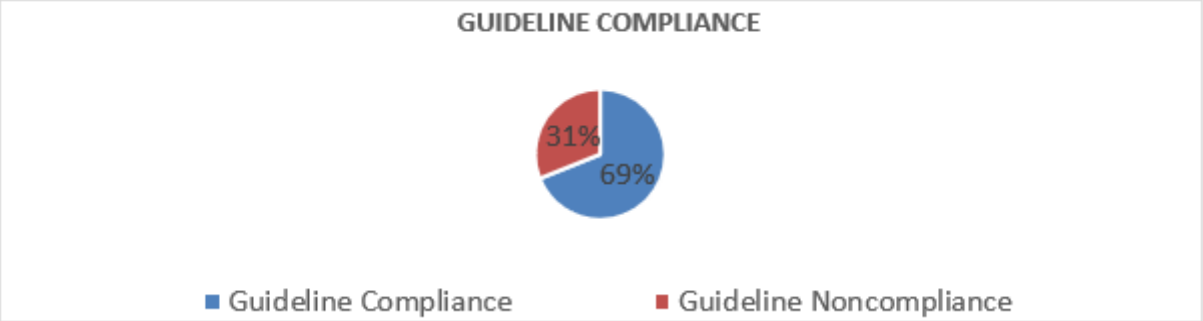

Conclusion:
Compliance of the surgeon with the hospital antibiotic policy was below the guideline recommendations. Implementing evidence-based guidelines and recommendations for antimicrobial surgical prophylaxis is necessary to encourage the rational use of antibiotics in surgical prophylaxis, and compliance with these recommendations needs to be monitored on a regular basis.

Keywords:
Prophylaxis, Hospital Antibiotic Policy, Compliance.

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Pyrrolidine Di-Carboxylic Acid Derivatized Fullerenes for Docetaxel Delivery in Breast Cancer

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Abstract:

According to the American Cancer Society reports 290,560 new cases of invasive breast cancer are expected to be diagnosed in the year 2022. Docetaxel (DTX), a BCS (Biopharmaceutical Classification System) class IV drug, has shown promising results in the management of breast cancer. The drug inhibits cellular events of cells by binding with β-subunit of tubulin, resulting in disruption of cell functions. Besides being highly potent drug, it exhibits various challenges like low solubility, high rate of hypersensitivity, peripheral neuropathy, poor drug permeation, rapid plasma clearance, and fluid retention.Thus, to overcome these challenges, we presented a novel approach where we synthesized and characterized di-carboxylic acid-derived hydrophilic ligand based fullerenes for delivery of DTX. The developed nano-conjugate was analyzed using NMR and mass spectroscopy. The analysis showed that the conjugated efficacy of the developed nanoconjugate was 76.7±0.14% while drug loading was 59.6± 0.23%. The developed formulation showed higher release rate of the drug in PBS at pH 5.6, with around 89.15% release in 48 h, than in the PBS, pH 7.4 31.50% in 48 h indicating a suitable candidate for targeting tumor microenvironment with sustained release profile of DTX. The in-vitro cell viability studies on MCF-7 cells revealed the cytotoxic nature of the developed nanoconjugate to that plain drug and marketed formulation. Hemolysis studies revealed the blood-compatible nature of the nanoconjugate, indicating safer intra-venous route. Pharmacokinetic studies showed the developed system offers higher bioavailability and decreased drug clearance from the system vis-à-vis plain drug. The antitumor studies reveal the enhanced efficacy of the developed system in consonance with the results obtained from the in-vitro studies. The better anti-tumor outcomes can be ascribed to the nano-architecture resulting in better permeation and inhibition of P-gp efflux by fullerenes resulting in better internalization.

Keywords:
Anti-cancer, Fullerenes, Drug Delivery, Pharmacokinetics

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Design, Development and Evaluation of Fluorometholone Loaded Cubosomal Eye Drop

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Abstract:

Fluorometholone is an effective potent glucocorticoid with anti-inflammatory activity and can be used in the treatment of macular edema. It is a hydrophilic drug with poor bioavailability hence needs frequent dosing which creates a problem to patient adherence to treatment. Hence to avoid frequent dosing Fluorometholone Loaded Cubosomes (FLU-CU) were obtained by Top-down, Bottom-up, and solvent precursor methods, by combining lipids and surfactants generally recognized as safe polymers with bio adhesive potential and sustain action. The comparative evaluation tests are carried out to find out the most effective method among present methods to optimize the cubosomal system to enhance the encapsulation and drug release rate of FLU-CU at nano size and stable zeta potential. The Ex-vivo ocular tolerance test and histopathology evaluation were carried out to evaluate ocular tolerance of all three methods. Ex- vivo ocular tolerance assays revealed that all three methods did not affect the viability of the animal corneal epithelial (HCE) cells. Mucoadhesive study confirms the mucoadhesive property of all formulations. Micrographs of the transmission electron microscope confirmed the cubic nanostructure of all three formulations. Among all three methods, top-down methods show the best result used for further optimization. Furthermore, a stable optimized FLU-CU formulation was obtained by using the Quality by Design (QbD) approach. 32 central composite design used to evaluate the effect of selected independent variables were concentration of glyceryl monooleate (X1), the concentration of poloxamer 407(X2), and time of sonication (X3) on independent variables like Particle Size (PS) (Y1), Zeta Potential (ZP) (Y2), Polydispersivity index (Y3), % Entrapment Efficiency (%EE), % Ex-vivo Drug Release (Y4) and Viscosity of Formulation (Y5). Optimized Formulation (CUB-opt) showed maximum desirability (0.905), with PS, ZP, PDI, %EE, and %CDR and viscosity. The CUB-opt formulation was found to be safe on the corneal tissues in the in vivo corneal tolerance study and demonstrated a superior corneal penetration power in the in vivo corneal uptake study.

Keywords:

Betamethasone, Cubosomes, Ocular Drug Delivery, Nanoparticles.

Novelty of the Topic:

1. Steroids instilled in to the eye as eye drops, suspensions or ointments shows local action but have poor bioavailability.
2. The poor bioavailability imparts need of frequent dosing or design nano-formulation which concentrates the steroid at the ocular site.
3. This demands for the various methods or approach that could overcomes the negative consequences of corticosteroid drug delivery system.

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4. So through the point of reasoning and significance it illustrates designing novel drug delivery such as steroid loaded cubosomal vesicles that concentrate corticosteroid at an ocular site.
5. Cubosomes are having a high drug entrapment because of their high interior surface area with cubic crystalline structures due to which complex structure molecules like corticosteroid are easily encapsulated.
6. Formulation of cubosomes involves simple method of formulation and requires simple apparatus for preparation (like Sonicator, Homogenizer and magnetic stirrer etc) so ocular formulation is becomes cost effective.
7. Lipid (Glyceryl mono oleate) used for the formulation of cubosomes is having biodegradable property hence non-irritating to eyes.
8. Cubosomes are having capability of encapsulating hydrophilic, hydrophobic and amphiphilic corticosteroid.
9. Targeted and controlled release dosage form of corticosteroid is important property for selection in to ocular drug delivery to avoid multiple dosing.
10. In short, Nanodelivery systems have potential to improvise ocular bioavailability of corticosteroid. Moreover nanoparticulate medicine directs it to the ocular cavity for prolong period of time. So such formulation approach could be promising to target the drug delivery specifically to ocular cavity as nanomedicine.
11. So strategy to improve solubility, bioavailability and reduction in systemic toxicity by implementation of novel lipid based nanocarriers could emerge as novel approach in ocular delivery of corticosteroid.

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Development and Characterisation of Magnetic Nanoparticles of Anti-Neoplastic Agents in the Treatment of Breast Cancer

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Abstract:
In experimental research on cancer treatments, which has emerged as one of the most challenging issues in medical science, Magnetic Nanoparticles (MNPs) are now being studied frequently. The fundamental objective of this research is to develop and characterize magnetic nanoparticles of anti-neoplastic agents in the treatment of breast cancer. Magnetic nanoparticles were formulated using co-precipitation technique and had particle size of 86.52 nm and was confirmed with SEM, PDI of 0.234, and entrapment efficiency of 77.03% for OF-1. Transdermal patches of MNPs were made by the evaporation casting method. P2 had thickness of 0.16±0.01 mm, weight (g) of 0.79±0.03, moisture content of 3.14±0.61 (%), tensile strength of 2.35±0.03 (N/mm2), elongation of 144±6 (%) and having folding endurance of 98.14±4.11. This research has shown a promising data for development of magnetic nanoparticles for potential anticancer agents and be used as drug carriers to overcome physiologic barriers.

Keywords:
Magnetic Nanoparticles, Breast Cancer, Imaging, Diagnosis.

Novelty of the Topic:
Targeted delivery by MNPs has been reported as a promising strategy for cancer therapy with the advantages ranging from visualisation of the targeting process, rapid targeting and accumulation of drug carriers at the tumour sites via magnetic forces.

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Design Expert Assisted Optimization of Synthesis of MPEG – Polystyrene Block Polymer for Formulation Development Dolutegravir: Cellular Uptake and Transport Studies

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Abstract:
The most recent antiviral drug with a licence to treat HIV-1 infection is dolutegravir. It is an inhibitor of HIV integrase strand transfer from the second generation. Dolutegravir may be a key component of prospective antiretroviral therapy regimens because of its strong efficacy, high barrier to resistance, acceptable tolerability, and inexpensive cost. Dolutegravir is marketed as an oral tablet to treat HIV-1 infection in all populations. Other formulations for treating HIV-1 infection, such as long-acting gastroretentive dosage form, long-acting injectables, in-situ forming implants, nasal, and vaginal formulations, have yielded positive results.Dolutegravir's adverse effects have the potential to be fatal. They include of severe allergic responses and rashes on the skin, liver issues, and drug interactions. Block copolymers of Polyethylene Glycol or PEG and Polystyrene or PS are important macromolecular compounds from both a fundamental scientific and several technological perspectives for a wide range of applications. Ring opening PS polymerization has been used to create the mPEG-PS copolymer. Design Expert has been used to optimise the synthesis of mPEG-PS. The mPEG-PS copolymer that has been optimised has been studied using gel permeation chromatography, FT-IR, and H1 NMR. The creation of nanocomposites containing dolutegravir (DTG) has made use of optimised copolymers. The synthesised DTG-mPEG-PS-NPs exhibited a polydispersity index of 0.090 0.02 and a mean particle size of 232 4.58 nm. SEM has been used to look into the morphological traits of DTG-mPEG-PS-NPs in the best formulation. According to in vitro release tests, encapsulated DTG releases in bursts at first, followed by persistent releases. DTG-mPEG-PS NPs were created and optimised for cellular absorption and transport in vitro. In comparison to free DTG, the Papp of DTG transported in the Apical (AP)-Basolateral (BL) direction was larger with the instance of DTG loaded in polymeric NPs.

Keywords:
Dolutegravir, Poly Ethylene Glycol, Polystyrene, Optimization, Nanoparticles.

Novelty of the Topic:
Synthesis of block polymer and application of design expert approach.

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A Review on Oral Disintegrating Tablets of Rizatriptan

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Abstract:
The main aim of the present study is to explain about the manufacturing technologies, method of preparation, stability and evaluation parameters of orally disintegrating tablet of Rizatriptan. It contains Rizatriptan, which is a selective 5-hydroxytryptamine 1B\1D (5-HT1B\1D) receptor agonist and chemically designated as (S)-4- [[3- [2-(dimethylamine) ethyl]-1H-indo-5-y]-2-oxazolidione. The therapeutic activity of Rizatriptan for the treatment of Migraine Headache can make likely be attributed to the agonist effect at the 5-HT1B\1D receptor on intracranial blood vessels and sensory nerves of the trigeminal system which results in the cranial vessel constriction and inhibition of pro-inflammatory neuropeptide release.

Keywords:
RIZATRIPTAN, Migraine, Disintegration.

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Robotics in Human Health Care

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Abstract:
This paper describes evolving role of robotics in healthcare and in maintenance of therapy, covid diseases, surgeries. Primeutlisation of robots to minimize person to person contact the highlights of the page cardiovascular diseases , covid ,oncology,surgeries . Doctors given radiographies and analysis to verify the patient had a tumor or arrthymia ,gave more accurate.Robots are designed for use in health care and medicine requirements robotics automation in health care increasing day by day. Robots in surgery-workflow efficient and reduce surgical time breast biopsy, prostate biopsy, standard diagnosis techniques robotic pills pain management reducing illness are two main objectives with lot of innovation this pills overcome toughest challenges and offer painless.Surgeries ROBODOC (surgical robots for hip and knee joint). ORTHODOC, DAVINCI perform invasive procedure. Robots are not only in operating room but also supports health care workers enhance patient care. Robots eliminate dangerous shocks for humans because they are capable of working in hazardous environment. In upcoming 10 years robotic development in surgical robots, rehabilitation robots , telemedicine robots, ambulance robots, nurse robots, cleaning robots with lot of innovation.

Keywords:
Medical Robot, Surgeries, Healthcare Digitization, Corana Virus

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Formulation Development of Chitosan-Based Rizatriptan Nanoparticles Loaded Buccal Films

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Abstract:
Ionic gelation was used in this investigation to create the chitosan nanoparticles. The Nanoparticles (NPs) were loaded with Rizatriptan during the preparation stage. The size, charge, shape, drug loading, and drug release of these NPs were all described. The optimal formulation's in-vitro drug release was discovered to be 81.01% after 12 hours. Buccal films were created separately, and their weight, surface pH, thickness, folding durability, and mucoadhesion qualities were all adjusted. The NPs were then mixed up in the films and their in-vitro drug release kinetics were studied. The thickness of buccal films ranged from 0.127 mm to 0.254 mm, and they had good folding endurance. The pH of the surface was found to range from 6.64 to 6.95. Rizatriptan was released from the buccal films of the RCNPs using first order kinetics and non-Fickian super case II diffusion. The findings imply that buccal films made by RCNPs might be a good option for achieving optimal medication release for migraine treatment.

Keywords:
Permeation Effeciency, Mucoadhesion, Diffusion Process, Zeta Potential.

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Preparation and Characterization of Tolperisone Hydrochloride Floating Drug Delivery System

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Abtract:
The objective of the present study was to increase Baclofen's bioavailability by gastro retentive mechanism from sustained-release matrix tablet formulation. The develop Baclofen and TolperisoneHCl (TH) floating tablets in the combination of synthetic and natural polymers in extending the release of Baclofen and TolperisoneHCl (TH) up to 24hrs and 12 hrs respectively. The wet granulation process was used to make the Baclofen Matrix tablets. The direct compression method was used to make the Tolperisone Hydrochloride tablets. The results, of the F4 formulation (75 mg of Cetyl alcohol, 75 mg of HPMC K4M, and 50 mg of carbopol) were identified as an optimized formulation that showed optimum floating lag time (6 min), drug content (89.57 ± 1.32%). The drug release followed Higuchi's model in all formulations, indicating that drug release the followed diffusion mechanism. The optimized formulation (F4) had FLT and TFT of 6min and 24 hours respectively with the highest drug release of 99.62±0.892% over 24 hours.The results, of the THFT11 formulation having HPMC K100M: sodium alginate (3:1) were selected as an optimized batch which showed floating lag time (58 Sec), drug content (99.32 ± 0.14%) at 12 hr. The drug release from all formulations followed Higuchi's square root of time kinetic treatment. The optimized formulation (THFT11) had FLT and TFT of 58 ± 0.71 sec and >12 hours respectively with the highest drug release of 98.7±0.947% over 12 hours.

Keywords:
TolperisoneHCl, HPMC K100M, Sodium alginate Gastro floating and Buoyancy.

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Novel Semi-Synthetic Heterolipid for Self-Micro Emulsifying Drug Delivery Systems of Poorly Soluble Drugs

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Abstract:

Lipid Based Drug Delivery System (LBDDS) address the problems of poor solubility and variable bioavailability. Self emulsification drug delivery system is one such approach to enhance the oral bioavailability. The LBBDS need lipids of varying properties to incorporate new drug molecules with diverse structural properties. Therefore, there is a need for newer lipid materials.

Aim and Objectives:

To synthesize and develop new heterolipid to be used as oil phase in formulating SMEDDS of low soluble active pharmaceutical ingredients.

Methods:

A solution of tert butyl acrylate in methanol is added to 3- amino -1-propanol to obtain di-tert-butyl amino propanol derivative. Reaction of di-tert-butyl aminopropanol derivative with oleoyl chloride in presence of p-dimethyl amino pyridine as a coupling agent gave the desired heterolipid. It was then characterized to confirm the structure.

Results: Lipid with modified structure can be synthesized using Michael addition reaction and was characterized to confirm the structure.

Summary and Conclusion:

Lipid based drug delivery systems need newer lipids with structural and property diversities. These heterolipid can be used to formulate SMEDDS for enhancing solubility and bioavailability.

Keywords:

Self Emulsifying Drug Delivery Systems, Heterolipid, Bioavailability Enhancement, Excipient

Novelty of the Topic:

Development of lipid as new excipient that can be used as emulsifier, solubiliser or permeation enhancer

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Formulation and Evaluation of Herbal Transdermal Patch Containing Garlic and Mustard Oil for Arthritis

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Abstract

Aim:
Arthritis is most common disease in human life hence to overcome this problem, the topic was chosen. Arthritis is currently not exclusively frequent within aged persons however as well within youngsters. A therapeutic plant take part a controlling task in supplying the crude outcomes for natural drug. Arthritis is cured with the assist of numerous natural herbs such as ginger, turmeric, Boswellia, cat's claw etc. Garlic is a pungent drug in the therapy of numerous vital infection such as cardiac diseases, cancer, high cholesterol, aging, arthritis, viral fevers such as dengue, etc.

Materials and Methods: In this study, garlic was extracted with mustard oil. Preliminary evaluation was done with the oil sample such as acid value, saponification value, density, refractive index etc. In the present study, optimized oil sample was incorporated in the transdermal delivery system. Oil sample was mixed with the bio adhesive i.e., DURO-TAK 387-2054. The mixture was spread on the hot plate allow for 15 min at 70°C. Backing membrane as scotch pak 9723 and liner as coparex was used.

Results: Before extraction process, the acid value, saponification value, density & refractive index of preliminary evaluation showed the results like 3.21, 171.80, 0.9492, 1.4717 and after extraction process, the values like 1.51, 162.18, 0.901, 1.4715 respectively. The results revealed that the transdermal patch showed the better physicochemical parameter such as weight variation, folding endurance, moisture content and in-vivo also showed a good result

Keywords:
Transdermal Patch, Garlic Extract, Mustard Oil, In-vivo Study, Arthritis.

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Preparation and Evaluation of Safinamide Mesylate - PLGA Nanoparticles for the Management of Parkinson's Disease.

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Abstract:

Introduction:
Safinamide is a BCS class II drug used in the treatment of Parkinson's disease with pH dependent solubility.

Aim and Objective:
Present work aims to develop and evaluate PLGA nanoparticles of Safinamide (PNS) to increase aqueous solubility of the drug.

Methods:
Nanoparticles was prepared by emulsion solvent evaporation method. Aqueous phase constituted of the drug, PVA as stabilizer and distilled water. While the organic phase consisted of PLGA in Di chloro methane. Emulsion was homogenized and sonicated to obtain particles in the nano size. Organic phase was evaporated by continuous stirring over magnetic stirrer. The obtained dispersion of nanoparticles was centrifuged. Supernatant was analyzed by UV -Visible Spectrophotometric method at λmax of 226.5nm to determine the free drug. Pellet of nanoparticle was collected to analyze the entrapped drug. Prepared nanoparticles were evaluated for particle size, zeta potential, Poly Dispersity Index (PDI), entrapment efficiency and drug loading.

Results:
Three different batches of PNS were prepared by varying the ratios of polymer. Batch PF1 had particle size of 606 nm, zeta potential of -30 mv, PDI of 0.224, entrapment efficiency of 22.69% and 11.35% of drug loading.

Summary:
Nanoparticles of Safinamide by emulsion solvent evaporation method was successfully developed with particle size in nano range with optimum entrapment using PLGA. Zeta potential was in the range of -30 mv ensuring stability. Entrapment efficiency and drug loading were optimum with minimum loss of drug.

Conclusion:
Prepared PLGA nanoparticles of Safinamide due to its inherent nano size will increase solubility of the drug and has the potential to decreasing the tmax and further improve bioavailability in management of Parkinson's disease.

Keywords:
PLGA Nanoparticle, Entrapment Efficiency, Particle Size, % Drug Loading, Zeta Potential.

Novelty of the Topic:
PLGA nanoparticle of Safinamide will increase the aqueous solubility and thus decrease the t_{max} of the drug

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Preparation and Evaluation of Nanoparticle-Based Gels from Fruit Peel Extraction

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Abstract:

The primary goal of this research was to create peel extract-based nanoparticles using the chemical complexation process. Using the Soxhlet equipment, orange and pomegranate peel ethanol extracts were made, and the phytochemical components of each extract were examined. Alkaloids, terpenoids, and saponins were found to be present in pomegranate peels in quantities that were positive, whereas alkaloids, tannins, and saponins were found to be present in orange peels. Pomegranate and orange moisture contents were 72.10% and 96.52%, respectively, of the total weight of the two fruits. Pomegranate and orange, respectively, have pH values of 3.5 and 3.9. Antimicrobial activity was tested in vitro on the fruit peel extract. The antibacterial and antifungal effects of both peel extracts against particular microorganism species were encouraging. For pomegranate extract, the produced nanoparticles' Zeta potential ranged from -24.5 mV to -35.1 mV (Pomegranate 20 & Pomegranate 50), while for orange extract, it ranged from -21.5 mV to -32.1 mV (Orange 20 & Orange 50). These nanoparticle values have a larger surface charge, which denotes that there is a lower likelihood of aggregation. Orange extract's particle size ranged from 178.7 nm to 191.5 nm (Orange 20 & Orange 50) and the pomegranate extract's ranged from 118.9 nm to 232.7 nm (Pomegranate20 & Pomegranate30), respectively. According to SEM findings, nanoparticle production was mostly spherical. Analysis using Energy Dispersive Spectrometry (EDS) demonstrates that AgNPs are present. Peel extract-based nanoparticles were dispersed in 1.1% carbopol 934LR to create nanoparticle-based gel formulations. Circular excision wound models were used to simulate wound healing. The animal groups that were exposed to the pomegranate nano-gel (F3) and orange nano-gel (F6) exhibited somewhat more wound shrinkage than the commercial formulation

Keywords:

Pomegranate Peel Extract, Qualitative Analysis, Qualitative Analysis, Orange Peel Extract, Nanoparticles, Wound Healing Activity, Zeta Potential.

Novelty of the Topic:

Prepared gels with nanoparticles made from the extraction of various fruit peels.

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pH Dependent Solubility and Dissolution Studies of Etodolac Succinic Acid Cocrystal

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Abstract:
Pharmaceutical co-crystals have remarkable impact in the field of pharmaceutical research by broadening the intrinsic activity of APIs due to their ability to alter the physico-chemical properties without affecting its pharmacological activity. Co-crystals are multi component crystals comprising neutral molecules of API and coformers with well-defined stoichiometries. Etodolac is a BCS class II drug having limited bioavailability due to poor aqueous solubility. Here an attempt is made to increase the aqueous solubility of Etodolac using co-crystallization with highly water soluble coformer Succinic acid. Cocrystal was prepared in the ratio 1:2 by Liquid assisted grinding. It was characterized using FTIR, DSC, PXRD and NMR spectroscopy. Aqueous solubility was determined using shake flask method. pH dependent solubility study was conducted in 0.1 M HCl (pH 1.2) and in phosphate buffer having PH 6.8 and 7.4. A fivefold increase in aqueous solubility was observed. Dissolution studies were conducted in different biorelevant media. The aqueous solubility, pH dependent solubility and dissolution rate were compared with parent drug and evaluated statistically using One way ANOVA followed by post hoc turkey's. The study shows that Co-Crystallization is a viable alternative for solubility enhancement of poorly water-soluble drugs.

Keywords:
Co-crystallization, Multicomponent Crystals, Dissolution

Novelty of the Topic:
Developed co-crystal is novel and is prepared by a green technique.

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Modification and Characterization of Natural Polymer using Microwave Assisted Technology

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Abstract:

Ketoprofen loaded microspheres by solvent evaporation method using grafted Tragacanth gum. Grafted Tragacanth gums were prepared by free radical induced method using acryl amide as initiator. Ketoprofenwas selected as model drug. It potently inhibits the enzyme cyclooxygenase resulting in prostaglandin synthesis inhibition. Ketoprofen causes an irritation in the gastrointestinal mucous membrane and possesses a bitter taste and aftertaste. The half-life in plasma is about 1-2hrs. This makes ketoprofen a very good candidate for the formulation of controlled release dosage forms. Microsphere formulations were prepared and optimized on the basis of particle size, percentage yield and drug entrapment efficiency. Optimized formulations were further analyzed by Scanning Electron Microscopy (SEM), In-vitro dissolution studies and kinetics model. Results of FTIR, SEM and XRD confirms the grafting of Tragacanth gum. The FTIR analysis showed the absence of any possible incompatibility between the drug and the polymer. The microspheres produced exhibited good encapsulation efficiencies and micromeritic properties. Encapsulation efficiency of microsphere is around 82.12-96.48%. The mean diameters of microspheres were found in required micrometer range. The results of optimized formulations showed a smooth surface. In-vitro release showed 87.12-97.94% drug release after 12 hours. Results of present study suggest that polymer loaded microspheres of Ketoprofen can be successfully designed to develop sustained drug delivery system. On the basis of release profile data formulation F8showed comparatively prolonged release (97.94% at the end of 12 hours) and at a particular lag time followed by non-Fickian (anomalous) diffusion mechanism and followed first order kinetics model. Finally, it was concluded that the grafted Tragacanth gum based Ketoprofen microsphere dosage form could be useful in the treatment of inflammation and pain.

Keywords:

Ketoprofen, Microspheres, Grafted Tragacanth, Solvent Evaporation.

Novelty of the Topic:

Modification of tragacanth gum and formulating a microspheres using solvent evapouration method.

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Preparation and Evaluation of Diclofenac Sodium Tablets using Taro Stolon Polysaccharide

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Abstract:

Taro (Colocasia esculenta) is a commonly used food worldwide. In this study, we have extracted Taro Stolon Polysaccharide (TSP) and evaluated it as a tablet binder. Wet granulation technique was employed using varying concentrations of TSP to develop tablet formulation using diclofenac sodium as a model drug. The developed TSP based tablets were compared with the formulations containing acacia in similar proportion as TSP. The FTIR study indicated the absence of incompatibility between drug and polymers. The disintegration time was reported to increase with TSP concentration. The tablet thickness, diameter, hardness and friability were found within the limits. The drug release study was performed using pH 7.5 phosphate buffer. The dissolution results exhibited a rapid release of diclofenac sodium comparable to acacia. The dissolution data was analyzed for drug release mechanism through curve fitting method which revealed Korsemeyer- Peppas mechanism as the proposed release kinetics from the tablet core. The value of release component, n was found to vary between 0.343 to 0.471 which indicates Fickian diffusion of the drug. The obtained data suggested the potential of TSP as a binding agent in tablet formulation.

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Development and Evaluation of Antipsoriatic Gel using Natural Excipients

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Abstract :

Psoriasis is an autoimmune disease associated with recurrent events of inflammation and hyperkeratosis. It is one of the incurable chronic skin diseases.

Objective:

To "Formulate and Evaluate Antipsoriatic Gel Using Natural Excipients" as a potential bioactive possessing different therapeutic properties of anti-psoriasis as per ICH guidelines.

Methods:

Psoralen gels were prepared using various natural excipients Curcuma longa, Azadirachta indica, and Nigella sativa with Carbopol-940 (1%) as the gelling agent. Powdered drugs were extracted using the soxhlet apparatus in ether and methanol, concentrated using distillation. The physicochemical compatibility among Psoralen and further additives was verified using Fourier transform infrared spectroscopy. Infrared spectra were noted via FTIR in the wavelength region between 4000 and 400 cm-1. All manufactured gel formulations were evaluated for drug content homogeneity, pH, viscosity, diffusivity and consistency, homogeneity, drug content, in vitro diffusion studies, stability studies, and biological evaluations, and the best formulation was heightened.

Results:

Extract shows the occurrence of saponin, alkaloids, carbohydrates, proteins, glycoloid, amino acids, and steroids with a homogeneous light green physical appearance. pH values ranged from 6-7, and spreadability and Extrudability were found to be acceptable The gel formulation maintained drug levels after 1 month of accelerated stability. This research needs to be done to prove the anti-psoriasis potential of the herb and to develop formulas so that patients receive the right medicine in a safe, affordable, and effective way.

keywords:

Psoriasis, Inflammation, Medicinal Plants, Topical Therapy, Oral Therapy, Natural, Herbal

Novelty of the Topic:

The current work intended to increase the stability of the gel and to rise the antipsoriatic activity of gel preparation with Carbopol 934. Study work has to be passed out to show the antipsoriatic potential of the herbs and preparations have to be established to reach the patients such that they get the precise medicine in an innocent, inexpensive, and active manner.

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Oral Sorafenib-Loaded Microemulsion for the Management of Breast Cancer: An Explorative Study

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Abstract

Sorafenib Tosylate (SFB) is a drug that inhibits the tumor growth and proliferation for the management of cancer. Besides its effectiveness, the drug also exhibits several challenges such as drug resistance, toxicity and compromised oral bioavailability. The current study focuses on the development and evaluation of Microemulsion (ME) for the delivery of SFB in order to treat breast cancer. The components of ME i.e., phospholipids, oil, surfactants, co-surfactants and distilled water were optimized using ternary phase diagrams. The optimized SFB-loaded ME was characterized for in-vitro and in-vivo studies. The particle size of the optimized formulation was found to be 58.8 ± 0.02 nm with a zeta potential of 0.05 ± 0.03 mV. The spherical shape and morphology of the SFB-loaded ME was confirmed using transmission electron microscopy. The optimized formulation offered entrapment efficiency and drug loading of 72.64 ± 0.84% and 72.64 ± 0.84%, respectively. The in-vitro drug release studies confirmed that the optimized SFB -loaded ME was able to sustain the drug release over 24 h. The cytotoxicity assay was performed on 4T1 breast cancer cell lines and the IC50 value of SFB-loaded ME was substantially improved compared to the free SFB at the concentration of about 0.75 µM. The data obtained from cellular uptake study inferred the higher cellular internalization of SFB from the optimized formulation compared to the free SFB and the marketed product. furthermore, the in-vivo pharmacokinetic studies were performed on the wistar rats and determined that the bioavailability of SFB had been increased by 1.5 folds after encapsulating in the ME system. The above results provided a future scope for SFB in its nano-form for safe and effective management of breast cancer via oral administration.

Keywords:

Oral Delivery, Pharmacokinetics, Sorafenib Tosylate, Nanocarrier

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Role of Natural Polymers on Microsponge Technology

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Abstract:

Introduction
The Microsponge Delivery System (MDS) is also known as solid phase porous microsphere and provide large porous surface for efficient drug loading. These particulates possess a porous network structure with a rich material source including natural organic materials (eg., agar, chitosan, algin) or synthetic organic polymeric complexes (eg.,PVA, Polylactic acid, PLGA).
Natural polymers are cheap, biodegradable and have been safe for pharmaceutical formulation. Gummy exudates of natural polymers such as protein, enzyme, muscle, fibre, polysaccharides have been used to formulate various pharmaceutical products. Due to the formation of polymeric network system, enzymes, hormones or other active moiety can be easily entrapped within the matrix and hydration and swelling of natural polymer controlled their release pattern. Such polymers have been used in various clinical applications due to their versatile characters like biocompatibility, biodegradability, ready availability and low immunogenicity. These polymers can effectively delivery the drug into the target site which provides better therapeutic effect leads to lesser side effects.

Aim and Objective
To formulate microsponges using natural polymers and perform In-vitro evaluation studies.

Methods
Methods of preparation include double emulsion solvent evaporation method ,quasi emulsion solvent diffusion method,liquid liquid suspension method, oil in oil emulsion solvent diffusion method.

Conclusion
Natural polymers can be used for formulating microparticulate drug delivery system which is biocompatible and biodegradable in nature.

Keywords:
Natural Polymers, Microsponge

Novelty of the Topic:
A number of polymeric materials have been developed as drug delivery carriers. Quantity, type of polymers, particle size, solubility, biodegradability and surface properties have important role in release of bioactive drugs.

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Development and Evaluation of Guar Gum and Ethyl Cellulose Nanoparticles Containing Capecitabine for the Management of Colorectal Cancer

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Abstract:

Introduction:
Nanoparticles represent the novel and most versatile class of the delivery systems which serve as a means to deliver the therapeutic agents to a specific targeted site in a controlled manner and also as diagnostic tools. Currently, most nanotechnology-mediated drug delivery system are targeted towards cancer therapy.

Aim and Objectives:
The purpose of this study was to develop Guar Gum (GG) and Ethyl Cellulose (EC) nanoparticles for the management of capecitabine (CAPC) to the colorectal cancer. Guar gum and Ethyl cellulose have selected as a polymer to formulate nanoparticles for targeting.

Methods:
Different batches of drug loaded GG-EC nanoparticles were prepared by emulsion solvent diffusion method.

Results:
Amongst the five batches, F1 was found to be ideal by considering its drug loading of (35.7% w/w) along with the yield of (96% w/v). The ideal batch showed particle size of 235.6 nm with the Polydispersity Index (PDI) of 0.153 and zeta potential of -23.4mV. The in-vitro drug release profile showed that the release of capecitabine was sustained to a time period of 24 h.

Summary and Conclusion:
The regression co-efficient r2 from was found to be higher at Higuchi model which indicated that drug release from GG-EC nanoparticles was diffusion controlled. The obtained 'n' values from the Korsmeyer Peppas equation were 0.829 from F1 formulation which indicated that the mechanism of drug release was non-Fickian mediated. Targeting efficiency of ideal formulation was determined by animal studies. Results indicated that the concentration of capecitabine was higher than the standard drug

Keywords:
Guar Gum and Ethyl Cellulose Nanoparticle, Capecitabine, Colorectal Cancer.

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Design and Characterization of Herbal Transdermal Patch Containing Capsaicin Extract and Mustard Oil for Arthritis

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Abstract

Aim:
Arthritis is most common disease in human life hence to overcome this problem, the topic was chosen. Arthritis is now not only prevalent in elderly people but also in younger generations. A remedial plant plays a dominant role in providing the crude products for natural medication. Arthritis is cured with the help of various natural herbs i.e., ginger, Boswellia, cat's claw etc. Among all capsaicin is a pungent drug in the treatment of various major diseases such as cardiac diseases, cancer, high cholesterol, aging, arthritis, viral fevers such as dengue, etc.

Materials and Methods:
In this study, capsaicin was extracted with mustard oil. Preliminary evaluation was done with the oil sample such as acid value, saponification value, density, refractive index etc. In the present study, optimized oil sample was incorporated in the transdermal delivery system. Oil sample was mixed with the bio adhesive i.e., DURO-TAK 387-2054. The mixture was spread on the hot plate allow for 15 min at 70°C. Backing membrane as scotch pak 9723 and liner as coparex was used.

Results:
The results revealed that the transdermal patch showed the better physicochemical parameter such as weight variation, folding endurance, moisture content and in-vivo also showed a good result.

Keywords:
Transdermal Patch, Capsaicin Extract, Mustard Oil, In-vivo Studies, Arthritis.

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Apigenin Nanoliposome Formulation and Quantitative Estimation of Apigenin by Validated HPTLC Method

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Abstract

Introduction:
Apigenin (4′, 5, 7-trihydroxyflavone) is a flavonoid with a wide range of biological activities, including anti-oxidant, anti-viral, anti-bacterial, anti-inflammatory and chemo preventive activity usually found in fruits and vegetables. The purpose of the current work was to construct, describe, and estimate apigenin nanoliposomes. The potentially compound apigenin has been demonstrated to have important biological properties, including the ability to induce apoptosis, signal receptors in human prostate cancer, anti-inflammatory, anti-estrogenic, anti-cancer, anti-angiogenic, antioxidant and Hepatoprotective properties.

Aim and Objectives:
To formulate apigenin nanoliposome via ethanol injection method technique.
To developed and validate High Performance Thin Layer Chromatography Technique (HP-TLC) to quantify Apigenin content.

Materials and Methods:
Apigenin loaded stealth were generated using mixture of lipid, cholesterol, ethanol, dissolution of drug by ethanol injection method. The ratio of mobile phase development for apigenin is Toluene, ethyl acetate, and acetic acid 6:3:1 v/v/v is used, with silica gel aluminium plate 60F254 serving as the stationary phase. The method was validated the linearity r2 was 0.9984, limit of detection, limit of quantification, precision, and robustness.

Results:
Apigenin loaded nanoliposomes were formulated, new techniques of HP-TLC was developed and validated as per ICH guidelines. And further utilized for quantification of apigenin content in Apigenin loaded nanoliposomes and it was found to be 96.84%.

Conclusion:
The new validated analytical method was straightforward, trustworthy, accurate, and robust. Apigenin in apigenin-loaded stealth liposomes was effectively quantified using the established High Performance Thin Layer Chromatography method.

Keywords:
Apigenin, HP-TLC, ICH Guidelines, Stealth Liposome.

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Network Biology Traced Bioactives from Prunus Armeniaca to Target Wound Healing Activity

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Abstract

Objectives
To identify phytocompounds having draggability and non-toxic profiles with potential activity against wound healing.

Methods
Prunus armeniaca reported constituents were collected from the literature. Phytocompounds targets were predicted by BindingDB ($p \geq 0.7$). Genes sets were executed for pathway enrichment analysis by STRING and KEGG pathways database. The network between (1) Phytocompound-Targets-Pathways was constructed by Cytoscape.

Results
12 phytocompounds targeting 54 proteins, enrichment analysis identified 14 molecular pathways related to wound healing. While 75 proteins molecules were found to involve in 66 pathways associated with hemostasis, inflammation, proliferation, and remodeling cellular pathways via., regulating EGFR, ALOX5, and PTPN1 protein targets within the network. PI3K-Akt, MAPK and Ras signaling pathways were predicted as major pathways modulated by phytocompounds.

Conclusion
The gene set, and network pharmacology analysis inferred Prunus armeniaca to combat and triggers the wound healing activity by multi-protein, multi-pathway mechanism.

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Herbal Drug use for Nephrotoxicity: An Exploratory Study

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Abstract:
Ancient history evidence that herbal medicine is use for the treatment of many types of diseases. This medicine has no side effects and is very effective. In Modern day time, these medicines are use for the treatment of disease. Renal toxicity is one the major problems now a day. Herbal based drugs are use now a day in worldwide for the cure of nephrotoxicity. There are thousands of plants are present which show nephrotoxicity activity in animal model. The present study, contains overall introduction of nephrotoxicity, mechanism, causes biomarkers and how to prevent from them. The herbal based drug (Calotropis gigantean) is use in this study. Calotropis gigantean show pharmacological activity in animal models and is a better herbal drug against nephrotoxicity.

Keywords:
Herbal Medicine, Nephrotoxicity, Toxic Components, Toxicity Mechanism, Prevention Strategies.

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Formulation and Evaluation of Multipurpose Herbal Soap

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Abstract:

Background:
In the present study, multipurpose herbal soap formed by using Aloe Vera gel(Aloe Barbadensis), Neem leaves extract (Azadirachta Indica), Turmeric powder (Curcuma longa L.), Beetroot extract (Beta Vulgaris), and Honey. The soap shows multipurpose effects such as antifungal, antimicrobial, antioxidant, anti-acne, anti-aging, anti-wrinkle, skin brightening, moisturization, smooth, and pink complexation.

Method:
Using the soap base and the herbal extract of neem leaves, aloe vera gel, turmeric powder, beetroot extract, and honey. And the soap was prepared. Glycerine, Sodium stearate, Sodium Laury sulphate, Sorbitol Propylene glycol, and sodium chloride were used to prepare the soap base. Individual cubes are prepared by using the soap bases and herbal extract, and that prepared cubes are dispersed together in a modified soap base. stand for 48-72 hrs.

Evaluation:
The multipurpose soap was evaluated by different parameters likes pH, Colour and clarity characterization, Foam height, Retention time of foam, Saponification value determination, moisture content, density, % free alkali, Alcohol insoluble matter, stability, surface erosion test, Antifungal activity. In the end, the formulated multipurpose soap was compared with the most popular marked soap.

Conclusion:
According to the results; formulated multipurpose herbal soap shows good comparative effects with marked soap.

Keywords:
Multipurpose Herbal Soap, Herbal Soap, Antimicrobial, Antifungal, Aloe Vera (Aloe Barbadensis), Neem (Azadirachta Indica), Turmeric (Curcuma Longa L.), Beetroot.

Novelty of the Topic:
Herbal soaps play a very vital role as medicinal cosmetics because it contains antibacterial & antifungal agents. While the formulation of soaps various parts of plants are used such as leaves, stem, roots and fruits and such medical herbal soaps were used for the treatment for a injury or disease or to achieve good health of healthy individual. Plants which are containing bioactive principles they are used for anti-infective agents and could be formulated as topical herbal remedies (as soap, ointment, cream, lotion, gel, or crude/solvent extract) for the care and treatment of skin infections, as alternative to using synthetic antimicrobial agent. Traditionally juice and extract from leaves of the plants are topically applied as antimicrobial, antifungal and anti-inflammatory agents in treatment of skin disease including eczemas, ringworm and pruritus. Now a day's organic medicines are become an attractive alternative of synthetic medicine to enhance the important biological characteristics of medicinal soaps. Herbal medicinal soap is in greater demand than the synthetic ones because of many reasons.

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Synergistic Antidiabetic Activity of Polyherbal and Allopolyherbal Formulation

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Abstract:

Background:
Polyherbal Formulations (PHF) boosts the therapeutic effect and also decreases undesirable side effects by reducing the dose of individual herbs. Allopolyherbal Formulation (APHF) is a combination of allopathic medication with polyherbal extract. The majority of allopathic medications have one or more side effects. As a result, combining Polyherbs with allopathic drugs helps to reduce the dose of allopathic drugs thereby eliminates or lowers adverse effects associated with it.

Objective:
To evaluate In—vitro and In-vivo antidiabetic activity of Polyherbal and Allopolyherbal formulation.

Materials and Methods:
Dried raw powder of Cassia auriculata leaf, Centella asiatica leaf and Zingiber officinale rhizome were extracted with hydroalcoholic solvent (Alcohol: Water ratio is 70:30) by cold maceration process. PHF was prepared by combining these extracts in three different ratios. APHF has been prepared by combining a potent ratio of PHF with metformin in three different ratios. In-vitro assays like alpha amylase as well as alpha glucosidase inhibition assay and glucose uptake by yeast cell assay have been performed. In-vivo activity was also evaluated in streptozotocin-induced diabetic albino rats. Acarbose and metformin are taken as standard drugs for comparison. PHF, APHF and metformin has been administered to albino rats for 21 consecutive days. Blood glucose level was estimated on 1st, 7th, 14th and 21st day of treatment. On 21st day blood was collected by cardiac puncture for the analysis of lipid profile. Liver and pancreas were isolated and subjected to histopathological analysis.

Results:
In-vitro and In-vivo studies revealed the potent antidiabetic activity of PHF and APHF. APHF showed most promising activity as compared to PHF.

Conclusion:
The current study demonstrated that PHF and APHF are safe and efficacious drugs in the treatment of diabetes mellitus as they help to replace or lower the dose of metformin, thereby decreasing the risks of metformin.

Keywords:
Allopolyherbal, Amylase, Diabetes, Glucosidase, Polyherbal, Streptozotocin, Yeast.

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In-vitro Antioxidant and Toxicity Study of Oxalis Corniculata Methanolic Extract and its Gel

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Abstract:

Introduction:
Oxalis corniculata (Family: Oxalidaceae) is a small and delicate appearing therapeutic herb found most frequently in warm temperate and tropical areas of India and Pakistan. Bioactive constituents include alkaloids, flavonoids, tannins, phenols, steroids, ascorbic acid, oxalate and many other compounds. It reveals various biological activities such as antifungal, anticancer, antibacterial, antioxidant and hepatoprotective. The purpose of current work was to emphasize antioxidant potential and toxicity study of Oxalis corniculata extract and its gel.

Aim and Objectives:
To prepare Oxalis corniculata methanolic extract and its gel.
To perform In-vitro antioxidant and toxicity study of extract and its gel.

Material and Method:
Plant material was dried at room temperature and powdered. About 125g powder was soaked in 500ml methanol for 72hrs and extracted by soxhlet extraction. Gel was prepared using Carbapol 1%. For DPPH scavenging activity, methanol solution of extract and gel at different concentrations (3.12-100 µg/ml) was used and DPPH (4mg in 100ml methanol) solution added. Absorbance of solution was measured at 517nm UV Visible Spectrophotometer. For toxicity study, L929 mouse fibroblast cell line was used. Ascorbic acid used as standard.

Result:
Plant extract and its gel showed potent antioxidant activity when compared with standard ascorbic acid. The toxicity study done by MTT assay, showed cell viability of 95% at higher concentration (100 µg/ml) confirming compound is non-toxic.

Conclusion:
Oxalis corniculata extract and its gel has potent antioxidant activity and showed no morphological changes in cells indicating compound to be non-toxic.

Keywords:
Oxalis Corniculata, Antioxidant Activity, DPPH Assay, Toxicity Study

Novelty of the Topic:
As per literature, no toxicity study of Oxalis corniculata has been done till now. This current work emphasizes the toxicity study of Oxalis corniculata extract and its herbal gel on L929 mouse fibroblast cell lines resulting in non-toxic effects.

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Synthesis of Zinc Oxide Nanoparticles using Centella Asiatica Leaf

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Abstract:
Zinc oxide nanoparticles have attracted a lot of attention because of their distinctive characteristics, including their small size, high surface area, optical capabilities, and shape. This phyto-mediated method, which makes use of plant components and extracts, is thought to be a new, simpler, and less expensive way to create metal nanoparticles. In the current work, we outline a simple, environmentally friendly, and cost effective method for creating zinc oxide nanoparticles using Centella asiatica leaf extract. Then, utilising UV-Visible spectroscopy, X-ray diffraction, scanning electron microscopy, energy dispersive X-ray analysis, and dynamic light scattering, the produced zinc oxide nanoparticles were examined. This demonstrated that the synthetic ZnO NPs come within the category of nanoparticles. The production of ZnO nanoparticles is shown by the absorption peak at 327 nm. Zeta potential and mean particle size were found to be and -12.8 mV and 173.2 respectively. The well-defined characteristic peak of the nanoparticles was clearly seen in the X-ray diffraction. Both the elemental compositions of oxygen and zinc are present in the sample, with atomic percentages of 64.74% and 35.26% and weight percentages of 69% and 31%, respectively. SEM was used to evaluate the surface morphology, and it was found that the particles are near spherical in shape.

Keywords:
Zinc Oxide Nanoparticles, Centella Asiatica, Green Synthesis.

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Review on Pharmacognostic, Phytochemical & Pharmacological Study of Vitex negundo Linn

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Abstract:

Vitex negundo Linn is large aromatic shrub commonly known as five- leaved chaste tree It belongs to family Verbenaceae. A large aromatic shrub with quadrangular, densely, whitish tomentose branchlets. It is distributed throughout India.found all over the world. This plant shows various actions against wide spectrum of the diseases in traditional medicine as well as folk medicine it is used to treat abundance of ailments ranging from headache to migraine, skin affections to wounds and swelling, asthmatic pain, male and female sexual reproductive problems. The plant posses various phytoconstituents like flavonoids, steroids, terpenoids lignan, glycosides. This plant have reported to posses enormous pharmacological activities like anti-inflammatory activity, Antitubercular activity, anti-arthritic, antipyretic, anti-HIV activity, Nephroprotective activity, anxiolytic activity, antioxidant activity.

The Aim of the present study is to review on ethnobotanical, phytochemical & pharmacological importance of vitex negundo. Plant is reviewed for pharmacognostic, phytochemical, & pharmacological study.

The objective of this study is that,

- To focuse on research conducted till date to describe phytochemical composition, and pharmacological activities of Vitex negundo medicinal plant.
- To report Pharmacognostic studies and pharmacological activities of different parts of the plant have been studied.
- To provide opportunities for future research and development of herbal products or formulations.

Keywords:

Phytoconstituents, Vitex negundo, Terpenoids, Traditional Medicine

Novelty of the Topic:

This review focuses on research conducted till date to provide comprehensive information on phytochemical composition, Pharmacognostic study and pharmacological activities of Vitex negundo medicinal plant

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Research on Powdered Film Coated Tablets and Thorough Investigation to Address Remedial Measures

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Abstract:

Introduction:
Pharmaceutical products must be free from manufacturing defects and stringent quality systems ensures this requirement. However, when there are deviations in the manufacturing set up or the product is not developed as per developmental procedures, there are chances for defective products reaching the patients.

Aim and Objectives:
The research aim was to identify quality issues in few marketed Cetirizine film coated tablets. The objectives of the study was to find out the probable root causes, remediation and to detail the clinical significance.

Methods:
The defective products (having quality issues) were traced using an inhouse procedure. During the study, powdered film coated tablets were found within intact alu-alu blister. The defective product was procured for thorough investigation against a good blister pack manufactured by same manufacturer.

Results:
The investigation revealed that Inadequate drying of tablets after targeted film coating weight build up, excess moisture in core tablets may cause tablet disintegration etc.

Summary and Conclusion:
It is suggested to increase the exhaust Cubic Feet per Minute (CFM), maintain proper negative pressure and increasing drying time during coating process. Additionally, replacing aqueous based film coating system with organic based coating system.

Keywords:
Manufacturing defects and alu-alu pack.

Novelty of the Topic:
A study on capturing real-life cases

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Benefit – risk Analysis of Emerging Digital Health Paradigm

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Abstract:

Deloitte Insights claims that the promise of more consumer-focused, preventive care depends on more than simply technologies and solutions. Digital health encompasses telehealth and telemedicine, wearable technology, electronic health records, mobile health apps, and personalized medicine. AI, big data, robots, and machine learning developments continue to significantly alter the digital healthcare industry. The goal of the digital paradigm is to develop personalized technologies that will help individuals with their work instead of requiring them to frequently visit hospitals or healthcare facilities. This will help the patients be guided in a simpler way than the traditional method. The Centre for Devices and Radiological Health's planned evolution includes the Digital Health Centre of Excellence. For the FDA's regulatory examination of digital health technology, the DHCoE offers regulatory guidance and assistance. Decisions regarding marketing authorization are not its responsibility. The FDA launched the Software Precertification Pilot Program. The pilot investigated cutting-edge technologies for the government to monitor medical device software. FDA has discovered that quickly developing technologies could profit from a new regulatory paradigm based on the pilot covered in this study. AI CAD is now used as recommended by WHO to detect tuberculosis, which acts as a crucial tool to detect millions of missed out tuberculosis cases. The commercial sector itself has challenges related to the complexity of the digital health market. Higher linked health solutions come with increased hazards owing to increased safety and security issues. Through data access, digital tools are providing clinicians with a more holistic perspective of patient health and allowing people greater control over their health. Digital health has the potential to improve medical outcomes while also increasing efficiency. A growing and ageing population requires economical, user-friendly healthcare solutions delivered through digital technology. The greater acquisition of private user-generated data is another shift in the nature of health data. Generalizing AI models with "limited" real-world data training sets can be challenging. As medicine progresses beyond traditional patient care, our perceptions of patient safety must evolve.

Keywords:

Artificial Intelligence, Machine Learning, Digital Health Technologies, Software Pre-cert Pilot Program.

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Synthesis and Pharmacological Evaluation of Novel 2 Substituted Benzimidazole Derivatives

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Abstract:

Aim and Objectives
The 2-substituted benzimidazole derivatives will be confirmed by using different analytical techniques.

Introduction
The derivatives of Benzimidazole play a prominent role in medicinal chemistry because of its therapeutic applications. Benzimidazole is having several biological actions such as anti-inflammatory, anti-diabetic, anti-ulcer, anti-fungal, anti-microbial, anthelmintic, anti-tubercular, anti-protozoal, analgesic, and anti-viral properties etc. The structural optimization of benzimidazole derivatives has led in a number of strong medications that are presently available in the market, including as omeprazole, albendazole and mebendazole etc. Because of the relevance of benzimidazole derivatives and in continuation of our existing project work on them, it was thought necessary to synthesis some novel substituted benzimidazole derivatives was screen for their anti-inflammatory and analgesic effects.

Materials and Methods
The Condensation of 2-(chloromethyl)-1H-benzimidazole derivatives with different substituted aromatic amines and potassium iodide in 50 mL of ethanol and it was heated under reflux for 6 hours. After 6 h the potassium hydroxide was added to the above mixture and continue the stirring for 2 hours. Then the reaction mixture was kept aside for few minutes and poured into the crushed ice. The solid products obtained in the above mixture were filtered and it was recrystallized from ethanol.

Results and Discussion
The above synthesized compounds were characterized by different spectral studies which includes IR, 1H NMR and Mass spectroscopy.

Conclusion
The synthesized compounds were characterized by spectral studies, which includes IR, NMR, Mass spectroscopy. The characteristic peak at 659.03-76.27 cm-1 of C-Cl of Curcumin-Oxadiazole derivatives, the characteristic peak at 3452.27-3543.96 cm-1 of OH group, the characteristic peak at 1528.37-1681.13 cm-1 of C=C, the characteristic peak at 3397.58-3454.17 of NH2 in IR confirm the formation of the targeted compounds.

Keywords:
Mechanism, Therapeutic Agents, Heterocyclic Compounds, Synthetic Products.

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Green Synthesis of Silver Nanoparticle using Leaf Extract of Samanea Saman and their Anti Tubercular Perspectives

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Abstract:
The present research work was aimed to carry out the green synthesis of silver nanoparticle of Samanea saman leaf extract and to investigate the antitubercular perspectives the extraction was carried out by using eco-friendly solvent such as water. The extractive values were calculated the silver nanoparticles were synthesized by using the leaf extract. It was further characterized by UV and IR spectroscopic studies. The UV absorption data analysis reveals the surface plasmon resonance around 430 nm. The Antitubercular activity by Alamar blue assay results explored that the silver nanoparticle synthesized by using leaf extract of Samanea saman exhibit minimum inhibitory concentration of 1.6 µg\ml. The silver nanoparticle of the extract also has shown activity against opportunistic which are associated with tuberculosis.

Keywords:
Green Synthesis, Silver Nanoparticle, Samanea Saman, Alamar Blue Assay.

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Perspectives in Carica Papaya L, Psidium Guajava and Punica Granatum Comparatively Evaluation of Flavanoid Content and Antitubercular Activity

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Abstract:
The present research work was aimed to carry out the phytochemical analysis and to investigate the Antitubercular perspectives of different extract of selected Indian medicinal plants such as Carica papaya L, Psidium Guajava, and Punica granatum. The extraction was carried out by cold maceration technique by using solvents of increasing polarity such as water; ethanol and chloroform. The extractive values were calculated. The flavonoids content was estimated by aluminium chloride method and characterized by UV spectroscopic method. The results revealed that the ethanol extract of Carica papaya L, Psidium Guajava and Punica granatum was found to contain 12.50 µg\ml, 11.78 µg\ml and 15.41µg\ml of flavonoids respectively. The UV absorption data analysis of the ethanolic extract of three medicinal plant reveals the presence of flavonoid in obtaining two absorption peaks, one around 300-350 nm and another round 240-285 nm. The Antitubercular activity by Alamar blue assay results explored that the ethanol extract of Psidium Guajava exhibit minimum inhibitor concentrate of 12.5µg\ml and the ethanol extracts of Carica papaya and Punica granatum was found to be 50 µg\ml and 25 µg\ml respectively. The ethanol extract of all the three medicinal plants has shown antifungal activity.

Keywords:
Phytochemical, Cold Maceration, Flavonoids, Alamar Blue Assay.

ISBN : 978-93-92106-19-4

Eco-Friendly Spectrophotometric Estimation of Olmesartan Medoxomil using Hydrotrophic Solubilization Technique

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Abstract:
In the proposed research work, a successful attempt was made to develop simple, accurate, noval, safe and precise method for the estimation of poorly water-soluble drug Olmesartan Medoxomil in single drug containing dosage form. In the present investigation, a mixed hydrotropic blend of 10% trisodium citrate was used for quantitative determination. Olmesartan Medoxomil showed λ-max at 256nm and beer's law was obeyed in the concentration range of 12 µg/ml- 24 µg/ml with mean recovery ranging from 99.02% to 101.95%. This developed method was validated as per ICH Guidelines.

Keywords:
Urea, Trisodium Citrate, Hydrotropy

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Evaluation of Phytochemical Constituents and Antitubercular Activity of Root Extracts of Saccharum Officinarum

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Abstract:
Saccharum officinarum is available in India and other Asian countries. It is distributed in India and other Asian countries. It has a wide range of potential benefits with significant biological activity. . In the present study, the root extracts of Saccharum officinarum were prepared based on polarity of solvents such as water, ethanol and chloroform. The root extracts were screened against Mycobacterium tuberculosis using Alamar blue TB assay method. Phytochemical analysis revealed the presence of secondary metabolites such as phenols, glycosides, alkaloids, tannins. Spectroscopic analysis revealed the presence of functional groups like phenol, amide, keto groups and confirms the presence of phytoconstituents. The total alkaloids present in the various extracts were determined by using the BCG method and atropine was used as standard drug. It was found that the aqueous extract contains 1.2 mg/ml, ethanol contains 0.8mg/ml and chloroform extract contains 1.6 mg/ml of alkaloids respectively. The extracts were screened for antitubercular activity and it was found that root extract were devoid of antitubercular activity.

Keywords:
Saccharum officinarum, Mycobacterium tuberculosis, BCG method.

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Extraction, Phytochemical Studies and In – vitro Screening of the Leaves and Flowers of Crossandra Infundibuliformis against Mycobacterium Tuberculosis

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Abstract:
Crossandra infundibuliformis is distributed in India, Srilanka and other Asian countries. It has wide range of pharmacological and antimicrobial potentials. In present study, the leaf and flower extracts of Crossandra infundibuliformis were prepared based on polarity of solvents such as petroleum ether, ethyl acetate & methanol. The leaf and flower extracts were screened against Mycobacterium tuberculosis using Alamar blue TB assay method. Phytochemical investigation revealed the presence of secondary metabolites such as phenols, glycosides, alkaloids, tannins. The MIC of methanolic extract of flower and ethyl acetate extract of leaf is sensitive at 3.12µg/ml against Mycobacterium tuberculosis.

Keywords:
Crossandra infundibuliformis, Mycobacterium tuberculosis, Alamar blue assay method, Phytochemical investigation, Secondary metabolites.

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Synthesis, Characterization, and Biological Evaluation of Novel Schiff Bases of 2-aminobenzothiazole Derivatives

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Abstract:

Schiff bases are the condensation products of primary amines, and carbonyl compounds are becoming more and more significant in today's world. It has been discovered that Schiff bases, which are compounds with an imine or azomethine (-C=N-) functional group, are a flexible pharmacophore for the design and development of diverse bioactive lead compounds In the present work new substituted azomethines of 2-aminobenzothiazole with other heterocyclic substituents were synthesized by condensation of 2-amino-6-nitro-benzothiazole, 2-amino-6-methoxy-benzothiazole, 2-amino-4-methyl-benzothiazole, 2-amino-4, 6-difluoro-benzothiazole and 6-amino-benzothiazole with indole-3-carboxaldehyde in ethanol/GAA. The structures of synthesized Schiff bases were elucidated by spectroscopic methods such as 1H-NMR, 13C-NMR, MS, and FTIR. The anti-Mycobacterial activity of the synthesized compounds was assessed against M. tuberculosis using Microplate Alamar Blue Assay (MABA). The disc diffusion method was used to examine the produced compounds' in vitro antibacterial activity. Individually synthesized Schiff bases showed variable degrees of growth-inhibitory effects on the tested microbiological species. The antioxidant activity of the synthesized compounds was determined by the 1,1-diphenyl-2-picrylhydrazyl(DPPH) method.

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Design, Synthesis and Antimicrobial Evaluation of Hetero-Arylated Tetrahydro Carbazole Derivatives

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Abstract

Aim and Objectives

The 1,2,3,4- Tetrahydro Carbazole-Pyrimidine 2-one derivatives will be confirmed by using different analytical techniques.

Introduction

Tetrahydro-carbazoles are used in the treatment of neoplastic and cardiovascular diseases. According to a review of the literature, Tetrahydro-carbazoles with a rigid aromatic moiety on the nitrogen atom aid to electron transfer in the π-conjugated system and have a wide range of pharmacological activities, such as antimicrobial activity, antipyretics, antiinflammatory, antiproliferative, and serum lipid lowering activity, including tumour growth inhibition.

Materials and Methods

Refluxation of cyclohexanone,and phenylhydrazin with glaxial acetic acid to obtain Tetrahydro-Carbazole[A], then with compound [A] is reacted with acetyle chloride and anhydrous potassium carbonate with DMF as solvent to get N-Acetyle 1,2,3,4-Tetrahydro-Carbazole [B]. For compound B, condensation of different aromatic aldehyde derivatives with ethanol and pyridine to obtaine 1,2,3,4-Tetrahydro-carbazole-Chalcone Derivatives[C]. Finally compound C is then reflux with urea and ethanolic sodium hydroxide for 4 hr, after completion poured the reaction mixture in ice cold water to obtain 1,2,3,4-Tetrahydro-Carbazole-pyrimidine 2-one –derivatives.

Results and Discussion

The synthesized compounds were characterized by spectral studies which includes IR, 1H NMR and Mass spectroscopy.

Conclusion

The synthesized compounds were characterized by spectral studies, which includes IR, NMR, Mass spectroscopy. The characteristic peak at 3300-3400 cm^{-1} of NH of 1,2,3,4-tetrahydro-carbazole , the characteristic peak at 1580-1650 cm^{-1} of C=O group, the characteristic peak at 2900-3050 cm^{-1} of C-H of aromatic, the characteristic peak at 1232.09 cm-1 of C-Cl, presence of Br at 737.25 cm^{-1}, the presence of F at 1140.82 cm^{-1} in IR confirm the formation of the targeted compounds.

Keywords

1,2,3,4 Tetrahydro-carbazole, N-Acetyle-tetrahydrocarbazole, Antibacterial Activity, E-coli [Escherichia coli].

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Evaluation of Quinazoline Derivatives on Breast Cancer by In-Silico Method

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Abstract:

Introduction:
Breast cancer is most common malignancy in female, second to lung cancer as a cause of death. Invasive cancer arises due to alterations in the cellular level resulting in the outgrowth and spread of breast epithelial cells with immortal features and uncontrolled growth. In our study the 26 quinazoline analogs are chosen as a ligand due to its wide biological activity which are targeted on the Human Epidermal Growth Factor Receptor 2 (HER2).

Aim & Objective:
- To identify the ligands, correct binding geometry in the binding site.
- To predict the binding affinity of the ligands with active binding site.

Methods:
Inhibition of HER2 emerges action in controlling the breast cancer, based on these the study has been carried on quinazoline ring due to its wide biological activity.
Based on these molecular docking study has been performed with 26 quinazoline analogues as ligand molecule were docked with HER2 receptor (PDB: 7PCD) by using Auto Dock vina.

Result:
On the basis of docking scores, the quinoline analog with (R- p methoxy benzamide, R1- CN) shown best binding affinity score (-11.5 Kcal/mol) with the target when compared to standard.

Summary:
In this study, molecular docking analysis has been performed to determine the binding affinity with active site and interactions with the same.

Conclusion:
The report has concluded that the quinazoline analogs are capable of binding with HER2 receptor and downregulates its activity, to confirm the mechanism and activity of the compound further studies can be done.

Keywords:
Auto Dock Vina, Breast Cancer, CN, HER2, Quinazoline

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Development and Validation of a RP- HPLC Method for the Simultaneous Estimation of Rosuvastatin Calcium and Coenzyme Q10 in the Formulated Tablet Dosage Form

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Abstract:
Rosuvastatin calcium is a widely used HMG CoA reductase inhibitor used in the treatment of hyperlipidaemia. About 0.1% of the patients experience myopathy rarely leading to fatal Rabdomyolysis. Statin associated myopathy is found to be related to a reduction in coenzyme Q10, which is an important cofactor in the mitochondrial respiratory chain converting ADP to ATP. Coenzyme Q10 synthesis shares a common biosynthesis pathway as that of cholesterol which is inhibited by statins. Coenzyme Q10 or Ubidecarenone is official in BP and USP as dietary supplement and is found to be effective against cardiovascular and neurodegenerative diseases. This is the rationale behind the combination tablet formulation. A simple, precise and accurate HPLC method was developed and validated for the simultaneous estimation of rosuvastatin calcium and coenzyme Q10 in tablet using Agilent 1220 infinity LC with Agilent Eclipse Plus C18 (4.6x 100mm) column, with 3.5µm particle size, a variable wavelength detector and 20µl loop injector. The solvent system for the drug mixture was acetonitrile:isopropanol (50:50% v/v). The separation was achieved with Methanol: Isopropanol (50:50 v/v) as mobile phase, at a flow rate of 1ml/min and detection wavelength of 264nm. The retention time for rouvastatin and coenzyme Q10 was found to be 0.983±0.006 and 5.68±0.05 min respectively. The method has been validated for accuracy, precision, robustness, and linearity. Linearity was found in the range of 2.5-15 µg/ml for rosuvastatin and 7.5-45 µg/ml for coenzyme Q10. 80%, 100% and 120% standards were added and mean recoveries were obtained. LOD was 0.36µg and 1.1µg while LOQ was 1.3µg and 4µg for rosuvastatin and coenzyme Q10 respectively. The developed method was found to be applicable for the assay of the formulated tablet dosage form.

Keywords:
RP- HPLC, Rosuvastatin Calcium, Coenzyme Q10, Method Validation.

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Variability's in Drug Response: Pharmacogenomics

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Abstract:
Drug response is the net effect of many factors such as age, functioning of organs, drug interactions and diseases, in addition to these there are numerous interindividual differences in the drug response due to variations in gene encoding. The variations in the genes that encode drug metabolizing enzymes, drug transporters / targets results in changes in drug response. Performing drug response studies in the clinical sectors is one of the challenging aspect in recent times. The goal of our article is to describe the contribution of genetic variations to drug response, mainly focus on drugs used in Cardio Vascular therapy.

Keywords:
Drug Interactions, Gene Encoding, Drug Transporters, Drug Response, Genetic Variation, Cardio Vascular Therapy.

Novelty of the Topic:
Incorporating the knowledge of Pharmacogenetics into medical practice.

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Protective Effect of Amaranthus viridis Linn. against Monosodium Glutamate Induced Oxidative Stress and Excitotoxic Brain Damage in Rat.

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Abstract:
Monosodium Glutamate (MSG) is a popular flavour enhancer used in food industries; however, excess MSG is neurotoxic. Oxidative stress is well documented in MSG induced neurotoxicity. The compounds having antioxidant and anti-inflammatory properties reportedly possess beneficial effects against various neurotoxic insults. Amaranthus viridis Linn. Whole plant extract (AVE) is known for its potent antioxidant and anti-inflammatory activities. Hence, this present study has been designed to evaluate the neuroprotective effect of AVE on MSG-induced neurotoxicity in rats. Female Swiss Albino Wistar rats were administered systemically for 21 days with MSG and after one hour of MSG injection, rats were treated with AVE (200 and 400 mg/kg) orally. At the end the treatment period, animals were assessed for locomotor activity and were sacrificed; brains were isolated for estimation of AchE, GSH, SOD, LPO, CAT and histopathological studies. MSG caused a significant alteration in animal behavior, oxidative defense (raised levels of LPO, depletion of antioxidant levels) and hippocampal neuronal histology. Treatment with AVE significantly attenuated behavioral alterations, oxidative stress, and hippocampal damage in MSG-treated animals. Hence, this study demonstrates that AVE protects against MSG-induced neurotoxicity in rats. The antioxidant and anti-inflammatory properties of AVE may be responsible for its observed neuroprotective action.

Keywords:
Excitotoxicity, MSG, Neuroprotective, Oxidative Stress

Novelty of the Topic:
This special issue aims to provide a comprehensive overview of the latest discoveries in plant extract products with an emphasis on Pharmacological activity.

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Evaluation of Anti-Cancer Potential of Artocarpus Heterophyllus Seed Extract and Its Zinc Oxide Nanoparticles

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Abstract:

Objectives:
The objective of the proposed study was to evaluate the potential anticancer activity of the Artocarpus heterophyllus seed extract and its zinc oxide nanoparticles.

Methods:
By using double distilled water the extract was prepared. Phytochemical screening of extract was evaluated. The anti-cancer activity of AHE and ZnONPs was evaluated in-vitro using the MTT assay model and in-vivo by the EAC-induced solid tumour model and EAC- induced liquid tumour model against Swiss Albino mice.

Results:
MTT cell proliferation assay of both AHE and AH ZnONPs has shown promising. In-vitro anti-cancer activity by inhibiting cell proliferation in a concentration gradient manner. In-vivo studies showed that the AHE and AH ZnONPs exhibited very good anticancer activity when compared with the standard drug. The activity was confirmed by a significant decrement of gain in average body weight in the solid tumour model and a decrease in WBC count, an increase in RBC and hemoglobin count, and an enhancement of survival time was observed in the liquid tumour model. Based on the study, we can conclude that both AHE and AH ZnONPs have potential anticancer activity against solid and liquid tumour.

Conclusion:
Further studies are needed to characterize the anticancer activity of the selected extract to find out the exact mechanism involved so that it can be formulated and may be tried clinically. Our work has opened a new avenue in the treatment/management of some cancers utilizing plant-based medication, which would increase cancer patients' life expectancy and quality of life, which is a significant contribution if the outcomes are effective.

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In-silico Based Analysis of Selected Herbal Drugs with Possible Targets Related to Olanzapine Induced Metabolic Syndrome

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Abstract:

Background:
Metabolic syndrome being a clutch of various abnormilities which include IR (Insulin Resistance), dyslipidemia, central obesity, hyperglycemia, and leptin resistance is a life threatening disorder with all the possible risk factors including that of the CVD. Olanzapine - a SGA (Second Generation Antipsychotics) is more proven to cause the metabolic syndrome in the schizophrenic patients treated with it. However, the current approach of the treatment last at the synthetic entities; so taking into consideration the diversion towards the herbal plant for the treatment of metabolic syndrome current study is aimed at In-silico based analysis of selected herbal drugs with targets related to Olanzapine induced metabolic syndrome.

Material and Methods:
Study is primarily aimed at construction of the interaction network between the targets of selected herbal plants and Olanzapine with the help of various online like Binding DB, PubChem, and Molsoft like databases and offline- Cytoscape like softwares.

Result and Discussion:
From the three selected herbal plants 146 targets were found to be common to that of the disease targets which were obtained from the 22 unique bioactives from all three plants combinely. Among three plants Nigella sativa and Momordica charantia are seen to possess high number of targets compared to the 3rd plant. Also, amongst the 146 targets MAPK14, PRKCA and EGFR are seen to highly modulate which are seen to be modulated by Dillapiole, Nigellidine, and Kemferol phytoconstituents as top three in the list.

Conclusion:
Multiple compounds from three selected plants were identified to modulate the targets which are demonstrated via in silico approach. Thus the study reveals that various phytoconstituents regulate and may modulate the multiple proteins and pathways concerning metabolic syndrome. This further may be cross-checked with an In-vivo and In-vitro study approaches.

Keywords:
Metabolic Syndrome, Olanzapine, Herbal Plants, In-silico Pharmacology Approach.

Novelty of Topic:
Metabolic syndrome being a cluster of a variety of abnormilities which include Insulin resistance, dyslipidemia, central obesity, hyperglycemia, leptin resistance is a life threatening disorder with all the possible risk factors including that of the CVD. The current available synthetic drugs are not free from side effects. Hence forth India is hub for the plant derived medicines which are highly promising and holistic approach in the treatment of illness with fewer side effects. Therefore till date no reports were present on selected herbal drugs with targets related to Olanzapine induced metabolic syndrome by using in-silico approach. Hence by using Network pharmacology tool identified possible pathways and targets involved in metabolic syndrome.

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Evaluation of Anti-Ulcer Activity of Careya Arborea Silver Nanoparticles.

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Abstract:
The aim of the study was to determine anti-ulcer activity of leaves of Careya arbore Roxb. on the Wister albino rats. Dried leaves of Careya arbore Roxb. was powdered and this coarse powder was extracted with 70% ethanol and 30% of water by maceration method to yield a hydroalcoholic extract of leaves of Careya arborea Roxb. The extract was subjected for preliminary phytochemical analysis and was evaluated for anti-ulcer activity against model such as ethanol induced model. According to acute toxicity study on extract was found to be safe till 3000mg/kg. The doses of hydroalcoholic extract of careya arborea. At a concentration of 400 mg/kg body weight was administered orally, and careya arborea silver nanoparticles was used in various concentration such as 200 and 400 mg/kg for Ethanol induced ulcers. Analytical parameters like Percentage of Ulcer protection were calculated based on Ulcer index and Gastric juice volume, pH and acidity of gastric juice. Preliminary phytochemical analysis of hydroalcoholic extract of careya arborea showed the presence of carbohydrates, glycosides, phytosterols, phenolic compounds, tannins and saponins. The careya arborea silver nanoparticles has shown significant activity at both 200mg/kg and 400mg/kg dose level in a dose dependent manner. Phytoconstituents like tannins and saponins may be responsible for anti-ulcer activity of hydroalcoholic extract of careya arborea.

Keywords:
Phytochemical Analysis, Ulcer Index, Ulcer Protection, Gastric Juice, Tannins, Saponins.

Novelty of the Topic:
Synthesis of Silver nanoparticles by using careya arborea leaves.

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Antidiabetic Activity of Silver Nanoparticles of Argyreia cuneata Leaf Extract on Streptozotocin Induced Diabetic Mellitus

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Abstract:
The current investigation highlighted a novel cost-effective silver nanoparticles of Argyriea cuneata leaves extract and evaluated anti-diabetic activity in Streptozotocin treated rats. Preliminary phytochemical analysis of the extract was evaluated, The Argyreia cuneata Extract was given at a dose of 400mg/kg and silver nanoparticles was given at a dose of 100, 200mg/kg body weight was administered orally and evaluated the parameters like fasting serum glucose, body weight, total cholesterol, triglycerides, and high-density lipoprotein. Results were found to be significant by reducing the serum glucose level, increased body weight, attenuating the altered lipid profile toward the normal by reducing the elevated total cholesterol, triglycerides, and high- density lipoprotein. Therefore, the present study justifies that the ethanol extract of Argyriea cuneata exhibits significant antidiabetic activity.

Keywords:
Argyreia cuneata, Streptozotocin, Anti-diabetic, Triglycerides, Total Cholesterol.

Novelty of the Topic:
Synthesis of silver nanoparticles by using Argyreia cuneata leaves extract

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Use of Pluripotent Stem Cells in Regenerative Medicine

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Abstract:
Stem cells are a significant tool for understanding both organogenesis and body's constant regenerative capacity. Human Pluripotent stem cells have the ability to renew itself and the ability to transfigure into cell types of human body. Because of these features HPSC are involved in regenerative medicine, they could be used in replacement therapy of cell, tissue and organ. The prospect of an unlimited cell source, intermingled with the preclinical data, shows that HPSC technology perhaps on the edge of clinical translation. Numerous new technologies have been eased the success of HPSC therapies. With the accessability of HPSC and bettered protocols for directed differentiation, this prospect would become a reality for complaint applicable cell types. Pluripotent stem cells have huge eventuality for new remedial approaches to regenerate or replace functionally impaired tissues and also assess lineage, fate and function of stem cell –derived cell types both in-vitro or in-vivo. Although several clinical studies have formerly reported boosting results for the development of new remedial strategies in cell-based medicine, there are number of risks and hurdles to prevail over.

Keywords:
HPSC Technologies, Pluripotent Stem Cells, Regenerative Medicine, Replacement Therapy.

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Evokes the Risk of Cancer in Type II Diabetes – Possible Mechanism


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Abstract:
Insulin is intense development factors that advance cell expansion of carcinogenesis in a roundabout way or straightforwardly through insulin like development factor (IGF-1). Diabetes and malignant growth address two edifices, various, ongoing and possibly lethal infections. Malignant growth is second and diabetes is seventh driving reason for death. Both are common infections world astute. There is a huge expansion in malignant growth frequency in diabetic patients. Epidemiologic investigations have shows type-II diabetes related with expanded chance of certain diseases like liver, pancreatic, colon, endometrium, bladder and so forth. There is expanding proof that kind of diseases with diabetes. Hyperinsulinemia prompts an expansion in bioactivity of IGF-1 by restraining IGF restricting protein-1. High glucose levels might utilize aberrant and direct impacts upon malignant growth cells to advance expansion. Chance of disease can be adjusted by different medications associated with the treatment of diabetes. Screening to identify disease at a beginning phase and suitable therapies of diabetic patient with malignant growth are vital to work on their forecast.

Keywords:
Cancer, Type-II Diabetes, Insulin, Insulin Growth Factor-1.

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Repurposing the use of Thalidomide

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Abstract:
Thalidomide, first launched in 1957 by a German company this was used in late 1950s and early 1960s for the treatment of nausea in pregnant women. In 46 countries which resulted in BISSEST MAN MADE MEDICAL DISASTER EVER due to this tragedy lose of many people life and also birth defects for children. The pharmacological effect of thalidomide which effect on cytokines mainly tumor necrosis factor. As a result WHO took initiation for clinical trails on the use of thalidomide for leprosy in 1967 in this process the patient was treated for 3 days which treated leprosy and healed. When the patient has stopped the medication the leprosy has reshown to the patient. Here the thalidomide which used to treat leprosy it gets suppressed the disease but not cure. Recently it has been used to control some AIDs, cancer and it was grand successful. In the pandemic situation of covid19, As there are more death rate due to respiratory problems caused by SARS COV-2 varients. To overcome that thalidomide had came to existence as it has gone two clinical trails Thalidomide had already been used for IPF and H1N1 influenza which showed safe and efficacy result. Because thalidomide have anti inflammatory effect, anti fibriotic effect. So it is reused to treat lung infections like in covid-19. And also this drug was repurposing with some molecular docking technique, by this the 3cl protease inhibitors which was out break of SARS this inhibitor act on the site of targeted disease by this the novel therapies usage of thalidomide can reduce the side effects. To get good effective by using this drug it should give in combinations with corticosteroids.

Keywords:
Covid 19, Molecular Docking, Leprosy, Cancer .

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Contagiousness of the New SARS-COV-2 Variant: Post Impact on Hospitalized Patients

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Abstract:
Throughout the pandemic, SARS-CoV-2 strains underwent continuous evolution and accumulated mutations in their genomes. Due to its high transmissibility, it has since quickly replaced other lineages as the dominant one. These viral genetic traits may in part determine the severity of a SARS-CoV-2 infection. Here, we present a broad conceptual framework for investigating the impact of COVID-19 disease severity among post-hospitalized patients on SARS-CoV-2 variants. The potential impact of SARS CoV-2 on hospitalized patients who have multiple organ dysfunction that affects motility at medical facilities across the nation, care clinics for post-COVID conditions are being established. These clinics bring together multidisciplinary teams to provide a thorough and coordinated treatment approach for COVID-19 aftercare. This research will contribute to a better understanding of the natural history of COVID-19-related illnesses and SARS-CoV-2 infections, which can help guide clinical judgment and public health responses to the virus.

Keywords:
Covid, Genome, SARS-Cov-2

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Sotrovimab – The New FDA-EUA Drug for High Risk Covid19

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Abstract:
Monoclonal antibodies are proteins that are made in labs to increase the human bodies capacity to fight against dangerous foreign bodies entering the body. Sotrovimab is a moAba especially acts on the spike protein of SARS Cov-2 and is made in such a way to restrict the attachment and penetration of antigen into cells which are alive. Based on scientific research and evidences the effectiveness of sotrovimab for adults and pediatrics with earlier to severe stages of COVID- 19 which was stated by FDA. The clinical trial of double-blind (tested with Sotrovimab), sugar capsules (inactive substance that look like a drug) are conducted in which 583 adults with mild to moderate COVID- 19 symptoms with positive patients of SARS Cov virus. Out of 583 50% of them administered with Sotrovimab and 50% with sugar capsules after diagnosis of symptoms. The target end point was also measured by progression of the disease ,admission into the hospital and mortality rate.. There were death of 3 cases in the patients received sotrovimab and 21 patients were died in sugar capsule treated group. precisely FDA thoroughly monitored the benifitial effect of sotrovimab. in the treatment of COVID- 19. The Laboratory testing showed that it reduces the effect of the virus, which is first reported in the UK, New York India and some other countries . The Emergency use authorization was issued to GSK and allowed the distribution of drug in 500 mg single dose to be given intravenously. The side effects which was reported are rashes infusion- related responses, rashes and Diarrhoea and anaphylaxis. A present paper emphasizes review on Sotrovimab.

Keywords:
Sotrovimab, SARS Cov-2, Emergency use Authorization

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M3DIMAKER for Oral Tailored-dose Therapies – A New Emerging

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Abstract

Most of medications are manufactured with mass production processes, which develop different drug dosage types are having similar properties like color, structure & release of dosage forms. However, inappropriate dosing leads to adverse drug events and in turn limiting treatment options belonging to middle & old age people. In pediatrics, the therapeutic approach involves splitting or crushing of capsules & tablets respectively in order to convene the required doses. Eventually, it results in imprecise doses of medications to be used. This challenges the development of pharmaceutical dosage forms as personalized medicines or customized drugs. FabRx Limited. a pharmaceutical biotechnology company, founded in 2014 from the London's School of Pharmacy, University College developed a Three dimensionally printed, modified drugs and medical devices with drug in it, using technologies like FFF, Stereo-lithography Selective laser sintering three dimensional to construct it's own Printlets. In 2018, FabRx was given with approximately £1 million from Innovate United Kingdom to construct the 1st identical three dimensional printer, which is used in 1st clinical study and tablets printed three dimensionally. The evaluation report properly represented that three dimensional formulation is a type of attainable & efficacious formulating process for make-ready oral dosage forms treatments at hospital formulary. Recently the organization has released the M3DIMAKER, it's the 1st medicinal three dimensional printer for the customized medicinal preparations. The printer, which is able to feature many types of nozzles for robust preparations, is made with a "sleek hardware system" that's run by specific software which allows to choose the dose selected by a physician's prescription and prescribed by a pharmacist. This also have the type of camera to detect the defects in prints and observe the progression of dosage form modern in QC techniques, three dimensional print 28 Printlets, or thirty days of medication, in about 8 min, depending on the medication to be modified.

Keywords:

M3DIMAKER, 3D Printer, Fabricating Personalized Medicines.

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Surveillance for Adverse Drug Reaction after Covid-19 Vaccination in Adolescents

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Abstract:

Introduction

Adverse Events Following Immunization (AEFI) are defined as the any untoward medical occurrence that follows immunization and that does not necessarily have a casual relationship with the usage of vaccines. The adverse events may be unfavorable and unintended signs, abnormal laboratory findings, symptoms, or disease. The vaccination program started at the immunization clinics at hospitals. In the fourth phase, vaccines were made available for adolescents (15years-18years) of age on January 10, 2022.

From a pathophysiological point of view, similar reactions might be seen upon immunogenic challenge with a corresponding vaccine. Conclusively, cutaneous Adverse Drug Reactions (ADRs) seem to be frequent events in the course of COVID-19 vaccines, some of the adverse drug reactions are pain at injection site, fatigue, headache, myalgia, pyrexia, chills, arthralgia, to mild extent and rarely myocardial infarction, Cerebral Venous Thrombosis (CVT), thrombocytopenia as a severe adverse event.

Aim & Objective :

To Assess the adverse drug effect following covid-19 vaccination in Adolescent population.

Methods:

An ambispective study was conducted in Students of 15-18 years of age, and who can give consent to participate. 10th standard, 1st and 2nd PUC ,1st year degree students.

Result :

Among 100 students, 40.60% experienced Fever,52.30 % experienced Pain at the site of injection , 4.60% experienced Headache, and 2.34% experienced Vomitting, 7.81% experienced Bodyaches.

Conclusion :

From this study we can understand that: majority of the students experienced Pain at the site of injection and secondly Fever. Mild adverse drug reaction experienced by the students are bodyache, Headache and vomiting.

Keywords:

Covid-19, Vaccination , Adolescents, Adverse Drug Reaction, Ambispective

Novelty of the Topic:

By identifying the severeness of adverse drug reaction of covid-19 vaccination among adolescents , we may able to create the awareness among people about the ADR's

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Formulation and Evaluation of Atorvastatin Calcium Liposomes

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Abstract:

Statins are used to decrease cholesterol levels. Atorvastatin calcium is used in liver injury and to decrease triglycerides levels into the body. Liposomal medicines are used to target the specific organs which also improves the therapeutic potency.

Ether injection method was used for Liposomal formulation. This methods involve the formulation of Liposomal vesicles was done on a optimum temperature and pressure under the control conditions and after formulation evaluation was done.

The formulation of Atorvastatin calcium Liposomes involves the usage of cholesterol and egg phosphatidylcholine. Methanol and ether is also added to study the effect of charge on them.

Various evaluation process were performed to study about the size, shape, encapsulation effectiveness and release rate. In vitro drug release and stability study were also performed.

Liposomes preparation was done between 55 to 65 degree celsius, under a reduce pressure, solution of lipid dissolved in a diethyl ether and during ether removing process under vacuum condition liposomes were produced.

Physical characterization of liposomes was done by using scanning electron microscopy, Optical Microscope and In-Vitro characterization of liposomes was done. pH is determined and Drug entrapment was studied and stability study was performed . The percentage of drug entrapment for formulation was made using the Ether injection method, entrapment was found to be 48%, 64%,72%,64%,40%& 32% respectively.

Preparation and testing of Atorvastatin calcium was major goal of this research.The result of the experiment were drawn the conclusion that soya lecithin and cholesterol were ideal carriers for Atorvastatin Calcium liposomes.

This formulation was prepared and formulated non-pegylated liposomes to reduce side effects on the site of action with good drug entrapment efficiency.

Keywords:

Liver Injury , Atorvastatin Calcium Liposomes, Ether Injection, Entrapment, Diethy Ether , Phosphatidylcholine

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Evaluation of Protective Role of Biochanin-A against Statin-induced Toxicity on the Skeletal Muscle Cells In-vitro

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Abstract:

Introduction:
Many reports suggest the onset of toxicity on skeletal muscle cells may result in insulin resistance and diabetes in patients on statin therapy. The mechanism of this toxicity is not well understood. Biochanin-A had shown anti-diabetic and anti-hyperlipidaemic action, but it has not been investigated for its use in preventing statin-induced toxicity and diabetes. This study explores the effect of Biochanin-A against statin-induced toxicity In-vitro.

Aim & Objectives:
To evaluate the role of Biochanin-A in mitigating statin-induced toxicity in vitro

Methods:
Sulforhodamine-B assay was performed to check the cytotoxic effect of Atorvastatin on the L-6 rat skeletal myoblast cell line. Approximately 50,000 cells/well were seeded and treated with different concentrations of Atorvastatin to determine its IC50 value. Later the cells were treated with Atorvastatin (IC50 concentration) and various concentrations of Biochanin-A to find the protective activity of Biochanin-A.

Results:
The concentration of Atorvastatin for toxicity induction was found to be 86.3nM (IC50). Biochanin-A has increased cell viability and showed optimal protection against the toxicity induced by atorvastatin in L-6 cells at different concentrations. Biochanin-A demonstrated cytotoxicity that was less than 20%, which is considered as negligible.

Summary:
L-6 cells were pre-treated with 100nM Atorvastatin for 48hrs and then treated with various concentrations of Biochanin-A. Cell proliferation up to 35.02% was observed. The post treatment outcome of Biochanin-A indicates that the drug can alleviate the cell cytotoxicity of Atorvastatin and produce cell proliferation at certain doses. Pre-treatment with various concentrations of Biochanin-A and post-treatment of Atorvastatin showed cell proliferation up to 23.93% which indicated that Biochanin-A is able to prevent the cytotoxic effect of Atorvastatin.

Conclusion:
Biochanin-A could be a potential adjuvant for patients with statin therapy to mitigate the toxicity and resulting diabetes. However, a complete in-depth evaluation of its activity and mechanisms is underway.

Keywords:
In-vitro, Statin, Cytotoxicity, Diabetes, Biochanin-A

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Novelty of the Topic:

Since the usage of statin treatment cannot be limited due to its side effects, we need to find an alternative to solve the issue. Biochanin-A has not been explored for its protective effect in statin induced diabetes. Statin is considered as a wonder drug among patients with CVDs, hence this study promises a solution to its onset of causing diabetes and benefit the society.

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Computational Molecular Modeling and Molecular Dynamics Studies of Glycerrihza. glabra as COX and TNF-α Inhibitor for Anti-inflammatory Activity.

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Abstract:

Aim:
AIM:COX, TNF-α, and its related proteins were evaluated for anti-inflammatory activity using Glycerrihza glabra alcoholic preparation (Dr. Willmar Schwabe).

Material and Method:
The ingredients' quantitative and qualitative analysis was performed using the HRLC-MS method. The selected phytochemical ISL(isoliquiritigenin) was further evaluated. The pharmacokinetics and pharmacodynamics properties of the selected drugs were demonstrated using SwissADME and PreADMET software. The anti-inflammatory activity associated with the selected phytochemical was examined using - silico studies (FlexX software). The protein-ligand high affinity was further presided in the simulation study to assert anti-inflammatory activity.

Result:
COX-1, COX-2 AND TNF-α protein 15-lipoxygenase-2 (PDB ID:7LAF,5F1A,7D77) was showing high affinity with hydrogen bonding with a bond distance of 1.90Å with amino acid (Ile 412) with RMSD of 2.2 to 2.7 Å.

Conclusion:
Concerning In-silico analysis COX and TNF-α and isolated phytochemical ISL from Glycyrrhiza glabra (MT) are showing potent anti-inflammatory activity. The activity has to be confirmed by further in-vivo and in-vitro cell line studies.

Keywords:
Anti-inflammatory, Alcoholic Preparation, Phytochemical, HRLC-MS, In-silico Study, Molecular Dynamics Simulation

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Post Covid and Vaccination Induced Thrombocytopenia – A Serious Health Threat

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Abstract:
Coronavirus Disease (COVID-19), the illness brought on by the severe acute respiratory syndrome coronavirus 2, continues to have a substantial impact on morbidity and mortality around the globe, with various countries experiencing multiple outbreaks of this deadly viral disease. Post COVID thrombocytopenia and Vaccine Induced Immune Thrombotic Thrombocytopenia (VITT) (also termed thrombosis with thrombocytopenia syndrome). Currently available various types of vaccines for COVID have been linked to cause thrombocytopenia. A growing body of scientific evidence reveal that the immunity of the individual plays a pivotal role in this pathophysiological process. About 79% people who experience thrombocytopenia following vaccinations have antibodies against Platelet Factor 4 (PF4) found on the platelets. Consequently, immunological thrombocytopenia may be the proper term. Some research investigations on VITT reveal that people have high titre IgG antibodies against PF4, a substance that is contained in platelet granules and released during platelet activation. PF4 is mostly a component of our innate immune defense system. This cationic molecule attaches to and opsonizes polyanionic surfaces of pathogens to make it easier for pre-existing B cells to create anti-PF4 antibodies. People administered with COVID vaccine, sometimes experience severe fatigue due to Immune Thrombocytopenic Purpura (ITP) which sometimes can result in mortality and the unfavorable impact of intended therapy. This is an important pathology to comprehend in the context of increased worldwide immunization efforts. Our study aims to raise doctors' awareness on the importance of excluding this condition when assessing patients who have thrombocytopenia after receiving the anti-SARS-CoV-2 vaccine and highlights the importance of getting vaccinated with the desired choice of COVID vaccine to stay protected against this serious alarming health threat.

Keywords:
COVID Vaccine, Post COVID Thrombocytopenia, Platelet Activation Factor.

Novelty of the Topic:
Our study aims to increase doctors' awareness of the significance of ruling out this condition when evaluating patients who have thrombocytopenia after receiving the anti-SARS-CoV-2 vaccine. It also focuses on the significance of receiving the desired COVID vaccination to protect oneself from this serious alarming health threat and following covid, clinicians should take into account vaccine-induced thrombocytopenia into considerations.

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Personalized Medicine

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Abstract:
Personalized Medicine (PM) is an emerging medical practice that uses an individual's genetic profile to guide decisions related to disease diagnosis, prevention, and treatment. This is a broad and rapidly evolving healthcare field that also relies on interdisciplinary healthcare teams and integrated technologies to harness the molecular understanding of disease to optimize preventive healthcare strategies. I'm here. Personalized medicine is being advanced by data from the Human Genome Project. Genes are pieces of DNA found in all human cells that can influence a person's response to drugs. In essence, DNA is a key component of the body's interactive chemical manipulation system, instructing the body how to behave and interact at the cellular level. Basic genes can have different shapes and chemical messengers. It is these interactions that also affect drug activity in the body. Investigation of "personal genomics" and consumer genetic testing, and the implications of this field for PM. Landmark policies, laws and government initiatives that exist and are being developed to support PMs, including the Genetic Information Non-discrimination Act (GINA), which was passed in 2008 and proposed changes to health care reimbursement policies. Information about. Examples of best practices from hospitals, community health systems, and educational institutions promoting clinical uptake of PM through reforms in research, clinical practice, and medical education. Major technological advances, new tools to decode the human genome faster and more accurately using physically smaller but more powerful machines. Large studies and sample archives help link genetic variation to disease in multiple countries and continents. Health Information Technology (HIT), which facilitates the integration of research and clinical data, is already growing rapidly in the United States due to aggressive government incentives for adoption.

Keywords:
Personalized Medicine, Genetics, Human Genome Project (HGP).

Novelty of the Topic:
Personalized medicine, also called precision medicine or individualized medicine, field of medicine in which decisions concerning disease prevention, diagnosis, and treatment are tailored to individual patients based on information derived from genetic and genomic data.

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A Review on Stem Cell Therapy Against Neurological Disorders

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Abstract

Human neurological disorders such as Parkinson's disease, Huntington's disease, Alzheimer's disease, Multiple Sclerosis, Stroke, and Spinal cord injury are caused by a loss of neurons and glial cells in the brain or spinal cord. Cell replacement therapy and gene transfer have provided the basis for the development of therapeutic strategies for a broad spectrum of human neurological diseases. Transplantation of stem cells or stem cell-derived progenitors has long been seen as a therapeutic solution to repair the damaged brain. In recent years, neurons and glial cells have successfully been generated from stem cells such as embryonic stem cells, mesenchymal stem cells, and neural stem cells. NSCs are defined as CNS progenitor cells that have the capacity for self-renewal and multipotent potential to become neurons or glial cells. A growing body of scientific evidence has shown that NSCs isolated from mammalian CNS including human can be propagated in vitro and then implanted into the brain of animal models of human neurological disorders. In animal models of brain tumors, F3 NSCs could deliver a bioactive therapeutically relevant molecules to show a significant anti-tumor response against intracranial tumor mass. Since these genetically engineered human NSCs are immortalized and continuously multiplying, there would be limitless supply of human neurons for treatment for patients suffering from neurological disorders. This review focuses on established studies focusing on stem cell therapy for neurological disorder. Further exploration must be carried on to bring out this therapy, a successful and an effective one against neurological disorders.

Keywords:

Alzheimer's Disease, Stem Cell Therapy, Parkinson's Disease, Multiple Sclerosis.

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Chronotherapy: An Exceptional Treatment for Hypertension

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Abstract:
The increased usage of medications in today's society makes chronotherapy a prime topic to deal with. Chronotherapy, an emerging idea in therapeutics, is changing the schedule of medication administration to improve the overall control of a condition and to minimise adverse effects which is currently an enlarging issue. A growing body of scientific evidence suggests that the use of chronotherapy for hypertensive patients is being successful and beneficial. According to the World Health Organisation, the number of adults with hypertension has increased from 594 million in 1975 to 1.13 billion in 2015 especially in the low-income and middle-income countries. One of the global targets is to reduce the prevalence of hypertension by 33% between 2010 and 2030. When the medications are taken at bedtime, chronotherapy has been shown to reduce both nocturnal and diurnal blood pressure. As a result, there is scheduled dipping status in BP throughout the day. Our body adheres to an internal endogenous clock (circadian rhythm) which differs from the standard clock (24 hours). Chronotherapy has demonstrated that taking antihypertensive medications at bedtime significantly reduced CVD comorbidity and other issues such as hypertension, cognitive impairment and end-organ damage. Various clinical studies were reported till date expliciting the importance of chronotherapy in hypertension treatment. Dihydropyridines and Angiotensin-II blockers and Angiotensin converting enzyme inhibitors were found to have advantageous effects on hypertensive treatment, when taken at night time. This review tries to exhibit the possible correlation between the endogenous clock and the treatment of Hypertension. Thus further exploration should be done to completely understand the correlation between chronotherapy and hypertensive treatment.

Keywords:
Chronotherapy, Hypertension, Circadian Rhythm, Endogenous Clock.

Novelty of the Topic:
Chronotherapy treats hypertension and other diseases by utilising the body's internal biological clock. As a result, chronotherapy tends to make a greater contribution to health.

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In-silico Synthesis and In-vitro Studies of Novel 2-Pyrazoline Derivative with their Acute Toxicity Study in Adult Zebra Fish

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Abstract :
Colorectal cancer is one of the lethal types of malignancies leading to a high mortality rate globally due to various risk factors involving inherited genetic disorders and inflammatory bowel diseases. There were different signaling pathways involved in the risk of CRC. The pyrazoline nucleus is selected to treat the disease that possesses various activities. Thus, the study aims to inhibit the CDK8 receptor by the synthesized compound, thereby achieving the anti-tumor effect. In-silico research was performed to analyse and shortlist the compounds using virtual screening, Lipinski's rule, bioavailability graphical RADAR plot, pharmacokinetics, toxicity, and molecular docking studies. A better compound, 3d (2-(4-chlorophenyl) sulfonyl-3-(4-methoxyphenyl)-5-(4-nitrophenyl)-3,4- dihydropyrazole), was selected and synthesized. For structural confirmation, IR and NMR studies were done. Then the synthesized compound was subjected to In-vitro studies using human HT-29 colorectal carcinoma cells. Experiments such as MTT assay and luciferase assay were performed to evaluate its anti-cancer effect compared to 5-fluorouracil. The MTT assay results showed that compound 3D inhibited the cell proliferation in HT-29 cells more than the standard, and their IC50 value was 78.37 µM. Similarly, luciferase assay confirms that compound 3d reduces gene expression by increasing its concentration. Following the In-vitro investigation, acute toxicity was done in adult zebrafish to determine the compound's LC50 value, 0.78 mg/L, with 50% of the fish discovered dead after 96 hours. Furthermore, the present study concludes that the synthesized compound 3d (2-(4-chlorophenyl) sulfonyl-3-(4-methoxyphenyl)-5-(4-nitrophenyl)-3,4 dihydropyrazole) has the potential for anti-cancer properties and can be used in further studies.

Keywords:
CDK8, Colorectal Cancer, 2-Pyrazoline.

Novelty of the Topic:
Effect of novel 2-pyrazoline derivatives on inhibiting the CDK8 receptors. The compound 3D could inhibit the proliferation of HT-29 cells. Acute toxicity studies performed on adult zebra fish and LC50 values was obtained.

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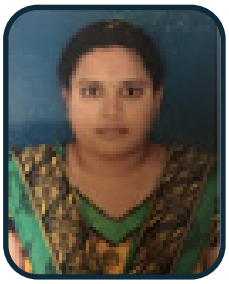
Breast Cancer and Personalized Medicine



P.Jayasree
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Abstract

One-size-fits-all conventional treatment strategies, or the use of a similar course of therapy or drug to treat a certain ailment, have been increasingly popular over the past few decades. This strategy is linked to unique genetic constitutions rather than particular personal traits. For the benefit of cancer patients, precision oncology presents numerous prospects to enhance prognosis, treatment, and post-treatment care. The development of breast cancer treatment strategies that are efficient with few side effects is therefore necessary. It has been reported that breast cancer patients and survivors experience a variety of symptoms that are detrimental to their quality of life. With the potential to aid in the creation of efficient cancer treatment regimens, personalised medicine, the practise of treating each patient according to their unique needs, is currently garnering more and more attention. The most popular form of treatment for the illness is currently a mix of surgery, chemotherapy, and radiotherapy. The initial response is frequently followed by disease relapse or metastasis due to the aggressive character of TNBC, particularly those harbouring BRCA mutations. TNBC is an area with significant unmet patient needs because metastatic breast cancer is now still incurable and has a low 5-year overall survival rate. Relevant biomarkers must be found, along with effective combination medicines, to enable patient classification for individualised care as there are a growing number of therapy alternatives are available. Finding the molecular biomarkers that influence individual variation in clinical outcomes or pharmacological reactions is essential for the success of personalised medicine.

Keywords:

Breast Cancer, Personalized Medicine, Oncology, Chemotherapy, Radiotheraphy

Novelty of the Topic:

The goal of personalising breast cancer treatment is to accommodate each patient's unique preferences. What does the patient desire the most from their care? Is the primary goal to increase the likelihood of a cure, prolong life, or perhaps to retain independence and quality of life?

Although there is still much to be done in the fight against breast cancer, women today have an unmatched array of alternatives when deciding what they want to get out of their treatment and how to go about doing it.

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CRISPR/Cas9 and CAR T- cells Therapy to Optimize Cancer Therapeutics

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Abstract:
Cancer is one of the world's foremost causes of morbidity and mortality. A combination of genetic and epigenetic factors is involved in cancer development. In recent years, potential tumour-immune regulators have been discovered through functional genetic and immuno-oncology screens. Malignant transformation is commonly caused by altered chromatin modifier proteins that cause dysregulation of the epigenome. RNA interference (RNAi) prevents gene expression in diseases caused by well-known molecular abnormalities. A new generation of gene-editing tools known as Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) associated protein 9 (Cas9) have revolutionized immunotherapy. By practically targeting any genomic sequence, it has provided several advantages over current approaches, making it possible to design novel CRISPR-mediated knock-out/knock-in methods. These methodologies validate essential genes as druggable targets, study drug-resistance mechanisms, explore gene non-coding areas, develop biomarkers and use Chimeric Antigen Receptor (CAR) T-cell therapies. They have recently been proven effective against resistant leukemia. There are considerable challenges ahead in developing CRISPR/Cas9 technology as a routine treatment for cancer treatment such as the high cost of manufacturing, anti-tumour effects and delivery of CAR-Ts, along with safety and toxicity issues. Alternative therapeutic approaches are needed due to the complexity of current cancer therapies. The use of gene editing technology is expected to become an integral part of clinical trials in the coming years.

Keywords:
Cancer, Epigenetics, CRISPR/Cas9, CAR-T Cells, RNAi

Novelty of the Topic:
Although this type of gene editing techniques are well established for treatment of cancer, effect of CRISPR/Cas9 on cancer cells and delivery of CAR-Ts has not been extensively studied.

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A Study on Psychiatric Morbidity and Its Clinical Correlations in Diabetic Patients in a Tertiary Care Hospital

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Abstract

Background:
Diabetes is a chronic, disease with life altering consequences, which effects virtually every organ human system. Coexistence of psychological symptoms and DM becomes a grave challenge for the clinicians as both illness worsen the outcomes. Depression/ Anxiety is one of the raising cause of seeking health care. Presence of psychiatric symptoms seriously impairs the health related quality of life among diabetic patients. Individuals with type-2 diabetes are having 2 to 4 times greater risk of psychological distress when compared to individuals without diabetes.

Methodology:
This prospective, observational study was conducted in the department of Endocrinology who attended the outpatient department.

Discussion and Results:
Among 150 subjects , majority of the study subjects 119 (79%) were found to be anxiety condition than depression at the time of assessment. The subjects with depression were found to be 28 (17%) The presence of depression among subjects who are taking Insulin, OHA, both were found to be 11.5%,4.6%and 1% respectively. The distribution of anxiety in subjects who are taking Insulin, OHA, both were found to be 8%, 51.3% and 19.3% respectively.

Conclusion:
The study found a high proportion of anxiety among patients with T2DM. Therefore the care of individuals with DM should include the screening and possible treatment of anxiety in order to achieve and sustain treatment goals.

Keywords :
Type 2 Diabetes, Depression, Anxiety, Psychiatry Morbidity.

Novelty of the Topic:
There are sparse prevalence studies or articles regarding this study. This study is focusing to evaluate the prevalence of psychiatric illness and its clinical correlates in patients with diabetes mellitus. Through this study we are aiming to evaluate the undiagnosed psychiatric illness in patients who are diagnosed with Diabetes and also to improve the medication adherence of Diabetic patients.

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A Study on Predisposing Factors Affecting the Cancer Chemotherapy Induced Adverse Drug Reactions

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Abstract:

Introduction:
Adverse drug reactions are the main drug related problems identified especially in the patients undergoing cancer chemotherapy. This study helps in understanding the impact of predisposing factors on occurrence of adverse drug reactions, minimizing the risk of drug induced hospital stay, ease of individualized drug therapy and enhancing health related quality of life.
Objective: This study aims to evaluate the impact of predisposing factors for chemotherapy induced hematological and renal system adverse drug reactions in cancer patients.

Methodology:
A hospital based prospective observational study involving in data collection from the patients and case records regarding predisposing factors and incidence of ADRs to evaluate the influence of predisposing factors by means of number and severity of ADRs occurring.

Results and Summary:
This study was carried out with 112 patients who were presented with cancer and are on chemotherapy, the following observations evaluated. Patients aged more than 60 years (52%), Male Gender (48%), Low and High BMI (50% & 47%), Metastatic Cancer (65%), Frailty Index > 4 (47%), ECOG Performance Status-3 (83%) and Charlson Comorbidity Index 4-7 (50%) are more vulnerable for the incidence of ADRs when compare to remaining.

Conclusion:
Predisposing factors increases the possibility of occurrence of adverse drug reactions in cancer patients. Our study reveals that the predisposing factors like age, gender, underweight, obese, metastasis, frailty greater than four, performance status two and comorbidity between four to seven had more chances of occurring ADRs in cancer patients.

Keywords:
Predisposing Factors, ADRs, Chemotherapy, Frailty Index, Charlson Comorbidity Index

Novelty of the Topic:
As the occurrence of ADRs and its prevalence is multi-factorial, there is very limited studies have been observed still. This study aiming to establish the influence of predisposing factors on the incidence of ADRs in individual patients and trying to minimize the drug related hospitalizations, thus improving the patient's quality of life.

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Challenges in Health Care Sector /Clinical Practice: Adverse Drug Reactions

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Abstract:
Drug safety and patient compliance are important aspects in healthcare sector, using numerous drugs for various medical conditions has been increased by people in recent days. Adverse reactions to drugs is one of the aspect that mainly effect the drug safety in developing countries , so there is a necessity of comprehensive system like pharmacovigilance monitoring of drug safety. Pharmacovigilance plays a key role in healthcare system through monitoring, assessment, analysis and documentation of interactions amongst drugs and their effects in human. Various drugs have both conceptual and observed adverse effects but all the conceptual adverse reactions to drugs are not observed reactions in clinical sector. The main aim of our article is to explain the incidence of observed rare adverse reactions of few drugs like Pramipexole, Steroids ,Insulin, Tramadol, Levodopa, Syndopa plus, Nsaids, Rabeprazole in clinical sector and remedies or alternative treatment for that reactions advised by the doctor thereby to increase awareness regarding reporting of adverse reactions among pharmacist , nurses , physicians and other professionals involved in health care sector.

Keywords:
Pharmacovigilance, Adverse Reactions, Drug Safety, Patient Compliance.

Novelty of the Topic:
Determining the importance of identifying and reporting adverse reactions to achieve drug safety.

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Evaluation of Medicine Prescription Pattern Among Geriatric Patients Based on Fit fOR The Aged [FORTA] Guidelines in a Tertiary Care Hospital

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Abstract:

Introduction:
The FORTA list is a compilation of 190 medications most frequently prescribed in older patients, aligned to 20 main indication groups. Each substance or group is assigned a FORTA class A, B, C, OR D. Applying FORTA to hospitalized geriatric patients leads to improvement of medication quality and may improve secondary clinical end points.
The FORTA (Fit fOR The Aged)
The FORTA classes are defined as follows:
- Class A (absolutely):
- Class B (beneficial):
- Class C (careful):
- Class D (don't):

Aim & Objective:
To assess the drugs prescribed to elderly patients by using FORTA guidelines.
Methods:
An ambispective study was conducted in tertiary care hospital with a sample size of 70 patients aged above 60 years who consented for the study. The data regarding the drugs prescribed were collected using the designed data collection form and direct patient interview. The drugs were assigned FORTA classes with the help of FORTA list and FORTA App. The descriptive statistics were applied to analyze the data.
Result:
Among 268 medications, 209 were included in FORTA list. About 56.39% were found to be under Category A, 33.9% belonged to Category B, 7.17% belonged to Category C and 1.91% belonged to Category D.
Conclusion:
From this study we could draw out prescription pattern were: majority of the drugs were under safe category of drugs i.e. Category A, 1.91% was found to be under category D (to be omitted in elderly).

Keywords:
Geriatrics, FORTA, Prescription Pattern, Ambispective

Novelty of the Topic:
Implementation of FORTA Guidelines in hospital sector will improve the prescribing pattern for the geriatric patients which in turn enhance the patient safety.

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A Case of Schizophrenia in a Virile Adult with no History of Substance Abuse: Impact of Clinical Apothecary Interventions on Case Outgrowth

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Abstract:

Prolusion:
Schizophrenia is a habitual & severe internal complaint characterised by deformations in thinking, perception, passions, sense of tone, behavior, hallucinations & delusions. This report presents the part of clinical apothecaries in the operation of a case diagnosed with schizophrenia with symptoms of paranoia.

Case Report:
A 19 time virile grown- up reported to be mooching around megacity & hail voices for the formerly 10 months & also entered death pitfalls. Case was appertained to psychiatric unit of our Hospital & was diagnosed with schizophrenia. Pivotal interventions offered included rapid tranquilization, electroconvulsive remedy, and psychotherapy. Specifics administered to the case while on admission included IV diazepam, IM haloperidol, IV Ketamine, IM flupentixol, olanzapine tablets, and trihexyphenidyl tablets. As a clinical apothecaries issues raised by us during the case's admission included need for necessary medicine for rapid tranquilization, need for original examinations & documentation of the case's vitals, induction of antipsychotic remedy without original monitoring and netting for substance abuse, unhappy cure at induction of antipsychotic specifics, undressed suggestion, and prevalence of missed boluses.

Conclusion:
Interventions by the clinical apothecaries according with the BAP & APA guidelines contributed to enhancement in the case's symptoms previous to hospital discharge. The case proves that it's critical for clinical apothecaries to be involved in the multidisciplinary platoon during operation of cases with psychosis.

Keywords:
Paranoia, Hallucinations, Delusions, Rapid Tranquilization, Electroconvulsive Remedy, British Association of Psychopharmacology, American Psychiatric Association.

Novelty of the Topic:
This Study focus on clinical Apothecary intervention impact on patient safety and improving the health-related quality of life

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The Role of Clinical Pharmacist in Preventing the Adverse Drug Reactions: - A Meta Analysis Study

[1]Dr. Mohammed Mustafa G, [2] Ashika K V
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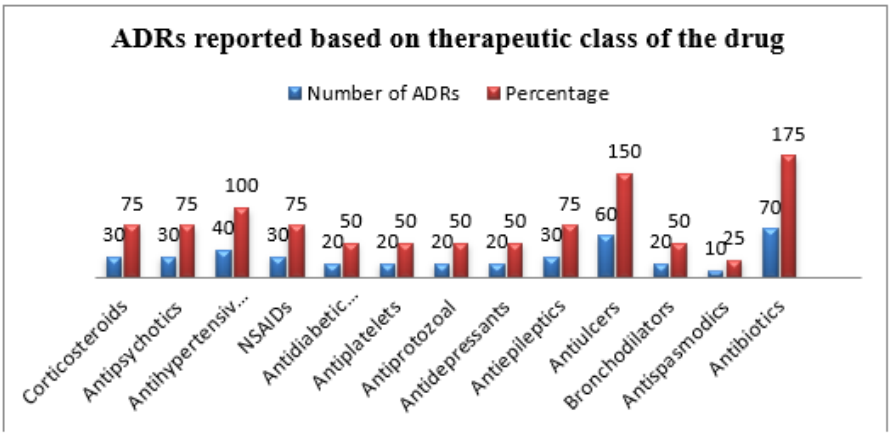
Abstract:

Introduction:
ADRs are one of the reasons for morbidity and mortality, leading to economic burden on the patient healthcare needs. Reporting of ADRs are essential, as it can improve patient safety. This study focus on the responsibilities of clinical pharmacist in interpreting, monitoring and assessing the ADRs.

Objectives:
• To determineADR related hospital admissions in elderly patients.
• To identify the risk factors of ADRs leading to hospitalization.

Method:
Literature search was performed from Google scholar, Pub med, journals and published articles. Based on the inclusion and exclusion criteria the articles were reviewed and selected. The outcome from all the included studies has been integrated to determine the incidence of ADR related hospitalizations.

Results:
Hospitalization due to ADR was found to be 6-12% in the elderly population. After the clinical pharmacist intervention, the standardised reporting of the suspected ADR was increased upto 63.34%.



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Conclusion:
After the review and analysis, it was concluded that clinical pharmacist have a potential role in identifying, reporting and preventing the ADRs which leads to faster management and in turn results in reduction of morbidity and mortality.

Keywords:
Clinical Pharmacist, Adverse Drug Reaction, Meta Analysis, Older Patients, Risk Factors, Pharmacovigilance.

Novelty of the Topic:
It has been the responsibility of the clinical pharmacist to promote the voluntary reporting of suspected ADRs, which is the patients right to safety during the medical management.

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Use of Non-Steroidal Anti-Inflammatory Drugs Causing Cardiovascular Risk: A Meta-analysis

[1]Dr. Mohammad Mustafa G, [2]Kavya S
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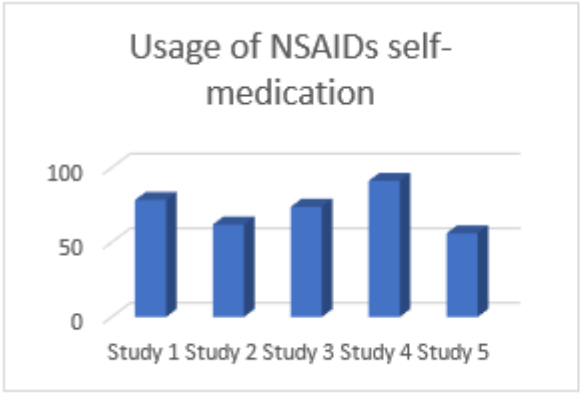
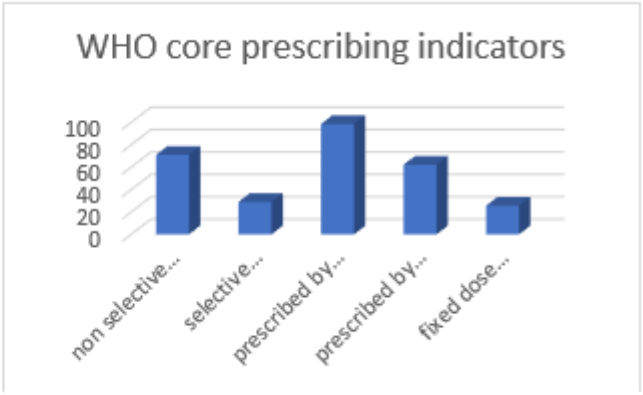
Abstract:

Introduction:
Non-steroidal Anti-inflammatory Drugs (NSAIDs) are the most commonly used analgesics universally. Since NSAIDs are freely assessable for self-medication, there is an increased risk of cardiovascular disease. NSAIDs cause various cardiovascular diseases by different mechanisms such as sodium retention, and prostacyclin synthesis inhibition. They lead to the development of acute myocardial infarction, atrial fibrillation, and congestive cardiac failure.





Objective:
•To determine the risk of cardiovascular diseases in compliance to the use of NSAIDs
•To identify the population who are at high risk of cardiovascular disease from NSAIDs.

Methodology:
A systematic literature search was performed from google scholar, PubMed, and science direct. Based on the inclusion and exclusion criteria articles were reviewed and selected. The outcome from all the included studies has been integrated to determine the cardiovascular effects of NSAID use.

Result:
The risk of development of cardiovascular events was high with long-term use than those with short-term use. Both selective and non-selective NSAIDs have demonstrated this association. The odds ratio of development of cardiovascular disease with diclofenac users' v/s non-users was found to be 1.17 – 2.08 (95% CI). The adjusted hazard ratio was 1.09 – 1.70 (95%CI) for NSAID users. The incidence of cardiovascular events was 2834 events/ 1000 person years.

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Conclusion:
The results from the cohort study, and a nested case-control study showed the connotation between cardiovascular diseases and consequence use of NSAID. Patients with comorbidities are at greater risk. Creating awareness about the adverse effects among the high-risk and general population can be beneficial.

Keywords:
Non-steroidal Anti-inflammatory Drugs, NSAIDs, Cardiovascular Disease

Novelty of the Topic:
It demonstrates the risk of cardiovascular disease from NSAIDs use and the population who are at high risk.

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Prescribing Pattern and Cost Analysis of Beta Blockers as Antihypertensive in a Tertiary Care Hospital

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Abstract:

Background:
Hypertension is a major chronic disease resulting in high mortality and morbidity worldwide. Prescription patterns and Cost Analysis of Beta-blockers provide regular feedback to hospital settings, enabling the health sector to examine their usage.

Objective:
To identify, measure, and compare the costs and analyse the prescription practices of an antihypertensive class of drug in a tertiary care hospital.

Methodology:
A prospective observational study was conducted by collecting data and consent was taken from all study subjects during a period of 6 months. The data were analysed through descriptive statistics.

Results:
A total of 88 subjects were involved in the study, and 21 branded drugs were analysed with cost variations. Metoprolol is the most prescribed antihypertensive drug. Carvedilol shows a maximum percentage cost variation of 235.63% and Bisoprolol shows the least percentage cost variation of 40.11% among prescribed beta blockers.

Discussion:
The reason for cost variation between different brands is due to manufacturing expenses by the company, physicians' knowledge and favour of prescribing different brands.

Conclusion:
This study reveals that there is a huge variation in branded drugs. Hence, a clinical pharmacist can suggest prescribing a generic drug name when it is clinically appropriate. The patient can choose their affordable drug.

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Design, Synthesis, Characterization and Pharmacological Evaluation of Indole-Dihydropyrimidine Derivatives

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Abstract:
Indole-Dihydropyrimidine and thiopyrimidine derivatives were synthesised by using different aromatic aldehydes, urea and thiourea. The synthesised compounds were characterized by spectral studies like IR, NMR, and Mass spectroscopy. The characteristic peak at 3400 cm-1 of NH of indole-dihydropyrimidine, the characteristic peak at 1240-1280 cm-1 of C=O group, the peak at 2750-2800 cm-1 of OCH3 group, peak at 750 cm-1 of C-Cl group and the presence of C=N at cm-1 in IR confirm the formation of the targeted compounds. The reaction was also ascertained by a detailed 1H NMR study of products. A peak at δ 8.2-8.6 is characteristic for aromatic protons and singlet at δ 9.2-9.8 is characteristic for NH and CH=CH peak at δ 4.92-4.96. The synthesised indole-dihydropyrimidine derivatives showed analgesic activity at 100, 200 and 400 mg/kg; the study was done with the reference of standard drugs like Indomethacin. Among the three doses, 400 mg/kg showed maximum analgesic activity at reaction time 120 min (7.2±0.44) is slightly lower than the standard drug Indomethacin (9.9±0.34) in this analgesic testing model.

Keywords:
Indole, Chalcone, Indomethacin, Analgesic Activity.

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A Dream Machine-MRI Scanner

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Abstract:
The MRI as we know it is used in medicine to perform a thorough examination of the body's organs using magnetic technology and radio waves. Scientists were able to turn an MRI (Magnetic Resonance Imaging) machine into a device capable of reading dreams.To decode the images in the mind during the sleep with the dream reading machine, they have integrated the data into the algorithm which reconstructs the dreams and the hormones produced by the brain is related to what we have dream in our sleep. MRI in medicine is used to examine diseases such as cancer, stroke, damage to blood vessels in the brain, tumors, spinal cord injuries, disorders of the eye or inner ear, multiple sclerosis, and to detect head injuries. The modified MRI machine can not only be used to read dreams but also to reconstruct dreams. When you wake up, you can replay the dream on the screen. In that case, no more forgetting the dream and people dream in their sleep, and the dreams rarely or hardly ever come back to the memory when waking up. The 'dream machine' works by measuring brain activity while humans are sleeping. When a person at deeper sleep, where the most vivid dreams are thought to occur, as well as see whether brain scans can help them to reveal the emotions, smells, colours and actions that people experience as they sleep. The collected data is then fed into an algorithm that reconstructs the dream. The reconstruction resulted in the playback of the dream. Researcher admit that their technology is not perfect because its accuracy is around 60 percent. The researchers used the results to build a database, where they grouped together objects into similar visual categories. For example: they were grouped the results as 'Structures'

Keywords:
Dream, MRI, Hormones, Sleeping, Brain

Novelty of the Topic:
The researchers now want to look at deeper sleep, where the most vivid dreams are thought to occur, as well as see whether brain scans can help them to reveal the emotions, smells, colours and actions that people experience as they sleep.The modified MRI machine can not only be used to read dreams but also to reconstruct dreams.

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Molecular Modeling, In-Silico ADME, Synthesis and Characterization of Indole Analogues to Target Epidermal Growth Factor Receptor for Non-Small Cell Lung Cancer

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Abstract:

NSCLC (Non-small Cell Lung Cancer) is one of the most common types of cancer with high mortality rate in the world and Osimertinib is the 3rd generation EGFR-TKI (Epidermal Growth Factor Receptor Tyrosine Kinase Inhibitor) effective for it. This research work intends to explore indole analogues having potential for NSCLC as EGFR-TKIs. These indole analogues simulate indole pharmacophore of Osimertinib. In-silico ADME studies were performed using QikProp v5.5 (Schrödinger, USA) to ensure the drug-like suitability of designed series. Molecular docking studies were performed utilizing PDB ID 6LUD possessing Osimertinib as co-crystallized ligand. These studies were undertaken using Schrödinger's Maestro and GOLD v5.2.2 (CCDC, UK). Analogues showcasing In-silico favorable pharmacokinetic properties and exhibiting good interactions within active site of 6LUD were subjected to synthesis and characterization. In docking study, Osimertinib forms H-bonds with Met793, Ser797, Leu718 active site residues, analogously some analogues viz. IM_57, IM_45, IM_20, IM_17 exhibited similar interactions within active site, hence they may show good inhibitory activity potential against EGFR. The anticipated structures of synthesized analogues were confirmed using spectral techniques like IR, 1HNMR and 13CNMR. The In-silico ADME values for these analogues were within the recommended Qikprop range. Further, adding to the point that the Lipinski rule of five has been followed given molecular weight within range of 130 to 725Da, HBD ≤3, HBA≤4 and log P value< 6.5. From these findings, it can be proposed that some of these analogues may be promising hits having potential to target EGFR for NSCLC.

Keywords:

NSCLC, Osimertinib, EGFR, In-silico ADME

Novelty of the Topic:

To design Indole analogues having potential to overcome EGFR resistant mutations .

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Chemical Synthesis and Molecular Docking of New Pyrimidine Derivatives as Inhibitors of InhA Enzyme and Mycobacterium Tuberculosis Growth

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Abstract:
Enoyl ACP reductase enzymes are used to target narrow-spectrum antibacterial, to prevent the production of mycolic acid and preventing the formation of bacterial cell walls. Hence the targeted pyrimidine molecules a part of heterocyclic compounds having a wide variety of biological activities. Through a recent literature review novel molecule inhibits in bacterial cell wall synthesis by inhibiting in synthesis of mycolic acid, keeping this in view we have designed the molecule containing pyrimidine nucleus. Designing is done on the bases of structural similarities and further they have docked onto the ENR enzyme to understand the binding abilities of newly designed molecules and Further the identified lead compound will be validated by experimental studies. The docking study was performed by using BIOVIA Discovery studio 2019. Pre ADMET an online server was used to predict the pharmacokinetic and toxicological parameters of molecule. The crystal structure of InhA protein (PDB ID-2NSD & 4OIM) having 1.90 and 1.85. Å resolution were downloaded from the Protein Data Bank. Compounds showed Hydrogen bonding interactions with essential amino acids. NAD+ is present as a co-factor, it binds on the active site of InhA. Further all the synthesized derivatives were selected for In-vitro analysis against M. tuberculosis H37Rv, as well as. All compounds showed satisfactory anti-TB activities but only few compounds showed the enough InhA enzyme inhibition activity.

Keywords:
Enoyl-ACP Reductase Enzyme(InhA), Mycobacterium Tuberculosis, Molecular Docking, Pyrimidine Derivatives.

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Analytical Studies on the Array of Wound Healing Processes using a Potential Phytochemical Agent: A Rational In-silico Approach

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Abstract:
The pharmacology of natural wound healing in mammals is characterized by an array of enzymes that work together to bring about the process of healing, which results in a process that is drawn out. Wounds and their management is a critical condition if uncured and a point of concern globally. There has therefore been a demand for cutting-edge phytochemical substances, which have long been known to speed up the healing process after injuries. Phytochemicals are known for ages as an impactful therapeutic agent with promising results in health-care industry. In this study, we investigate the cascade of wound healing by focusing on the enzymes that play a central role in the process through the use of computer simulations which parallelly forms a basis of rational approaches towards the introduction of potential agents. A computer model-based approach was used to examine a potential phytochemical agent's healing duration and effectiveness. This study used a docking process model to examine Berberine's (BRB) ability to interact with the relevant receptors involved in the wound-healing process. Berberine (BRB) was explored in this paper in terms of its capacity to engage with the essential receptors by using a docking process model. The binding energy properties of the molecules to each of the proteins were then analyzed to quantify the interaction that BRB had with each of the receptors. In addition, the present research elucidates the necessary BRB dimensions that would improve its interaction with the receptors involved in the wound healing process, paving the way for the development of a potent medication dosage form.

Keywords:
In-silico, Wound Healing, Natural Products, Docking.

Novelty of the Topic:
The topic consists of using rational approaches for development and introducing a therapeutic agent with the help of CADD.

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3D QSAR Studies of 16-(Substituted) Dehydro-Epiandrosterone Derivatives as Anticancer Agents

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[1][2][3][4][5][6] Dyananda Sagar University, India

Abstract:
The role of steroids in cancer is well established in reducing inflammation, immune response, sickness while undergoing chemotherapy and to improve appetite. However, these steroidal agents have been seldom tested as direct inhibitors for the enzymes associated with cancer. For this study we have taken, some novel steroidal derivatives exhibiting CNS anti cancer activity and tried to understand their SAR and quantify it using 3D QSAR to know the requirement for future development in the area.

Methodology:
About 56 novel 16-(substituted) dehydroepiandrosterone derivatives which were previously synthesized in our lab and evaluated for CNS anticancer activity were taken for this study. After energy minimization these compounds were aligned over each other to determine the pharmacophore and then subjected to CoMFA analysis.

Findings:
Eight CoMFA models were generated, the most optimum model was the one with R2 0.892, q2 0.02 and lowest std deviation error correction. The introduction of electropositive groups at position 11 and 14 and electro negative groups at position 3 and 16 in steroidal ring are the recommendations of the study.

Conclusion:
This study can help in understanding the future directions for the various substitution to be made in steroidal ring to get more active molecules possessing CNS anti-cancer activity.

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Design, Molecular Docking, Synthesis and QSAR Studies of Some Novel Benzoxazole Bearing Thiazolidinone Derivatives

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[2] RTM, India.

Abstract :

Benzoxazoles are used primarily in industry and being a heterocyclic compound, benzoxazole finds use in research as a starting material for the synthesis of larger, usually bioactive structures. The present study involves design, molecular docking, synthesis and QSAR studies of novel series of Benzoxazole moiety bearing 3-(benzo[d]oxazol-2-yl)-5-(4- chlorophenyl) thiazolidin-2-one derivatives and evaluation of their anticancer and anti-inflammatory activity. The synthesis involves three steps reaction to give 20 derivatives which were characterized by by FT-IR, H1-NMR and Mass spectroscopy. The anticancer activity was carried out by onion root model the compound found to be active were studied by cell line method. The anti-inflammtory activity was carried out by carrageen induced paw edema method.

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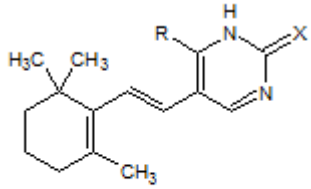
Synthesis and Biological Studies of Pyrimidinone Derivatives for CNS Disorders with In-silico ADME Studies

[1]Lata Kothapalli, [2]Tanuja Dhakane
[1][2] Dr. D. Y. Patil Institute of Pharmaceutical Science & Research, India

Abstract:
Modern drug discovery research requires the continual application of strategies to increase efficiency, implement new technologies and increase drug candidate quality. Diseases of the CNS represent a major health care burden that ranges from chronic disorders like epilepsy to the diseases of ageing like the Alzheimer's disorder. Literature survey reveals that pyrimidinones and their derivatives exhibit a wide range of biological activities such as antihypertensive, and CNS related disease conditions. Beta ionone, was used as substrate for synthesis of 5-unsubstituted dihydropyrimidinone / thione compounds by Biginelli reaction using microwave irradiation .All aromatic aldehydes carrying either electron donating or electron withdrawing substituents reacted very well to give the corresponding pyrimidinethione /one derivatives. The products obtained 4-[(E)-2-(2,6,6-trimethylcyclohex-1-en-1-yl)ethenyl]pyrimidine-2(1H)ones/4-[(E)-2-(2,6,6-trimethylcyclohex-1-en-1-yl)ethenyl] pyrimidine-2(1H) thiones were characterized physicochemical and spectroscopical studies. Nootropic activity was carried out by elevated plus maze method at the dose of 400 mg/ kg using scopolamine as negative control. Further the molecular docking studies on Cholinesterase enzyme showed good binding interaction when compared with native ligand Donepazil. The Swiss ADME parameters studies showed that the compounds follow the Lipinsky rule of Five and have good CNS permeability.



X = S, Pyrimidinethione
X = O, Pyrimidinone

Keywords:
Pyrimidinone/ Thione, β-ionone, Nootropic Activity, ADME, Elevated Plus Maze

Novelty of the Topic:
The synthesis of Dihydropyrimidinone analogs is done with a unique substrate Beta ionone which has not been explored as methyl ketone analog. 5 unsubstituted DHPM obtained follow the Lipinski rule of 5 and are predicted to have better ADME parameters with BBB permeability. The synthesis is an eco-friendly one pot reaction with water soluble catalyst requiring less than 15 mins for completion of reaction and with good yield.

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Study the In-vivo Efficacy of Neratinib on 4T1 Tumor Bearing Mice


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Cauvery College of Pharmacy, India
Farooquia College of Pharmacy, India

Abstract

Aim :
Aim of the study was to study was to carry out In-vivo efficacy efficacy study performed on 4T1 tumor bearing mice showed better therapeutic efficacy of Neratinib (NB).

Method:
Dissolvable Microneedles was prepared by Micro moulding method.

Result and Discussion:
The present study demonstrated delivery of NB using MNs and In vitro studies showed that MNs were efficiently inserted into skin, dissolved within the skin and could permeate across mouse skin. Transdermal application of NB loaded MN in 4T1 tumor bearing athymic nude mice showed greater reduction in tumor volume and tumor weight compared with control group. MNs groups fared well in terms of survival against intratumoral injection groups. Effectiveness of drug loaded MNs treatment is comparable to intratumoral administration. Confocal studies confirmed efficient insertion of MNs into the skin. The needles were seen to dissolve in 60 minutes when inserted into the skin. NB was release efficiently from the matrix upon insertion with about 60% of it permeated across the skin at the end of 48h. NB was seen to permeate more than 60% of the loaded amount recovered from the viable epidermis. In-vivo efficacy studies performed in 4T1 tumor bearing mice showed better therapeutic efficacy between delivery of NB using MNs against intratumoral injection. Moreover, the survival rates were improved with MNs assisted delivery against intratumoral administration and Tumor weights from tumor excised from animals upon end of study further showed significant reduction in tumor weights for all treatment groups against control. This trend in apoptosis is consistent with the in-vivo tumor inhibition results. A decreased cell density, decreased nuclear stain intensity, cell shrinkage, appearance of spindle shaped nuclei, a condensed nucleoplasm, even a disappearance of cells and appearance of necrotic areas within the sections was observed in the NB injection

Conclusion :
This could be attributed to the lower skin permeation of NB observed with in-vitro permeation studies. MNs are easily retained in local tissues, allowing long-term and multiple chemotherapy without the pain and adverse effects associated with multiple syringe injections. TUNEL assay revealed large areas of apoptotic cells in tumors injected withs free NB and NB-MNs. Contrarily, no apoptotic cells were observed in tumors from the untreated animal group.

Keywords :
In-vivo efficacy, Neratinib, Dissolvable Microneedles, TUNEL assay

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Development and Evaluation of Anti-neoplastic and Flavonoid Loaded Nano-formulation for the Management of Glioma


[1]Preethi V, [2]Shalini MK, [3]DV Gowda, [4]Manjunatha M
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Abstract:

Objectives:
The objective of this study was to develop a Gefitinib (Gef) and Resveratrol (Res) loaded Polymeric hybrid lipid nanoparticle formulation and tested its efficacy In-vitro and In-vivo studies.

Methodology:
In-silico molecular docking study for 27 flavonoids along with Gef to determine the significant binding energy towards EGFR, PI3K/AKT and mTOR targeted receptor. Cell viability and combination assay was measured by using MTT assay. Gef and Resv loaded Polymeric hybrid lipid nanoparticles (G+R-PHLNPs) were prepared by thin film hydration method. For the design and optimization of multi-factor experiments, central composite design has been extensively employed. The prepared G+R-PHLNPs was characterized by PS, PDI, %EE, FTIR, DSC, XRD, SEM, TEM and were assessed for in-vitro drug release, effect on cell viability, migration, cellular uptake and apoptosis. RT-qPCR and western blot assay was conducted to understand the functional impact of EGFR and Akt inhibition on Gef and Res treated individually and combination in U87MG cells. The optimized G+R-PHLNPs were further evaluated for in-vivo pharmacokinetic and biodistribution studies using the rat model. Results: According to the in-silico model and previous research results resveratrol and quercetin were taken among all other flavonoids for the determination of anti-proliferation activity against C6 and U87MG cells. The results of combination of G+R treatment exerted a synergistic toxic effect on C6 and U87MG. The PS, PDI, and % EE of prepared G+R PHLNPs was 84.63 ± 2.14 nm, 0.247 ± 0.08, and 89.24 ± 3.24(Gef), 92.99 ± 0.95 (Res) %, respectively. The results of FTIR, DSC and XRD revealed that the G+R was completely entrapped inside the PHLNPs. The SEM and TEM analysis confirmed the spherical shape of particles. The G+R PHLNPs exhibited 3 times higher cytotoxicity against C6 and U87MG cells than Gef and Resv pure drug (G+R-PD) in the in-vitro cell viability study. Furthermore, G+R PHLNPs exhibited significantly higher cellular uptake, and inhibited the migration and induced apoptosis when tested against C6 and U87MG cells compared to pure G+R. The combination of G+R PD and G+R-PHLNPs treatment in U87MG cells results found to be a remarkable reduction of both pEGFR and pAKT expression in cDNA and protein. In-vivo pharmacokinetic study resulted that in comparison to G+R PD, the distribution of Gef and Res has been reduced by 2.69-fold increased than that of G+R-PHLNPs. Closely, 10-fold increases the concentration of PHLNPs formulation in the brain compared with pure drug treated brain in rat.

Conclusion:
In summary, the PHLNPs enhanced the therapeutic effect of G+R, hence, the G+R PHLNPs can be considered as effective drug carriers to treat glioma.

Keywords:
Resveratrol, Gefitinib, Polymeric Hybrid Lipid Nanoparticles, Thin Film Hydration Method, Glioma.

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Insulin Via Oral Mucosa

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Abstract:
Diabetes is a group of conditions where the body cannot produce enough or any insulin, cannot properly use the insulin that is produced, or cannot do a combination of either. The three main types of diabetes are type 1 - insulin dependent diabetes, type 2- non insulin dependent diabetes, type 3-gestational diabetes. Insulin is a hormone made by the islet cells of the pancreas. Insulin controls the amount of sugar in the blood by moving it into the cells, where it can be used by the body for energy. Recent studies show that the new oral mucosal dosage form has been developed as an alternative to the administration of insulin via injection. This dosage form is best over injection and inhalation dosage form. This dosage form was tested on animals. The core base constituents of the new oral dosage of insulin consist of insulin, cocoa butter, and other additives. The peripheral base contains the mixture Hydroxypropyl Cellulose-H (HPC) and Carbopol-934 Cp in the ratio of 1:2. This ratio is obtained from the experimental results of stickiness, viscosity, fracture resistance, and dissolution properties. During the clinical studies, the medicament (bio-adhesive tablets) was applied to the oral mucosa of beagle dogs for 6 hours. The Cross over method has been conducted by 3 way: Group A has reference, Group B has given insulin alone, Group C has insulin and sodium glycocholate. The study shows an alternation in the glycemic level and plasma insulin level in the beagle dogs. The effective absorption of insulin from the oral mucosa was seen in Group C due to the presence of sodium glycocholate. The percentage absorbed insulin from this dosage form was 0.5 % more compared to the intramuscular injection of insulin.

Keywords:
Oral Insulin, Dosage Form, Absorption, Oral Mucosa, Sodium Glycocholate.

Novelty of the Topic:
Now a days the insulin is taken via three primary methods of administration i.e. injections, inhalers , and pumps. Oral mucosal insulin delivery is an alternative method of systemic drug delivery that offers several advantages over both injectable and enteral methods. Because the oral mucosa is highly vascularised, drugs that are absorbed through the oral mucosa directly enter the systemic circulation, bypassing the gastrointestinal tract and first-pass metabolism in the liver. this results in rapid onset of action via a more comfortable and convenient delivery route than the intravenous route.

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Comparing the Bioavailability of Different Brands of Tablets

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Abstract

Comparative bioavailability is another term used to describe bioequivalence. After it became clear that several marketed treatments having the same quantity of medicine and advertised in the same dosage form displayed noticeably different therapeutic responses, the notion of bioequivalence began to get more attention during the previous three decades. Different therapeutic responses seen with these items were frequently successfully associated with various degrees of medication concentration in the plasma, which was mostly brought on by variations in the rate of drug absorption from these products. It is now well-established that a medicine must enter systemic circulation in order to exert a systemic impact after being delivered; as a result, the bioavailability of a drug relies on a variety of factors. Since this comparison also includes therapeutic medicine components, it is evident that pharmaceutical alternatives are also included.

Conclusion:

Bioavailability testing for all products is economically challenging, and such studies may not always be necessary for some treatments to be crucial. However medicinal items that fit into certain categories are of special importance for calculating bioavailability.

Keywords:

Bioequivalence, Bioavailability, Clinical Effectiveness.

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Evaluation of Preliminary Trial Batches of Formulations-Containing Oral Hypoglycemic Drugs Metformin Hydrochloride and Canagliflozin

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Abstract:
The In-vitro drug release profile from a hydrophilic matrix tablet is influenced by the viscosity of the gel layer formed due to its polymer hydration and it depends on various other physical properties like drug: polymer ratio water-solubility and particle size of the drug, particle size and type of the polymer, type of diluents used, and temperature of media. The drug release profile of different formulation i.e. C1to C6 formulated by utilizing Hypromellose K4M, Hypromellose K15M and Hypromellose K100M Respectively. K4M utilized which is low viscosity polymer shows a faster release at initial time points. Hypromellose polymer (K100M) which is hydrophilic in nature and showing fast hydration and controlling the dissolution profile. Dissolution profile of batch C1 to C2 having drug (Metformin HCl): polymer ratio 1:0.25 and 1:0.5 gives not much controlled release profiles of drug in C1,C2. Hence, 1:0.5 drug (Metformin HCl) to HPMC K100M was used for further study. It had been observed that HPMC K15M and K4M could not retard the release rate sufficiently to get the active content release from the dosage form at regulated rate but HPMC K100M could. Thus, high viscosity grade HPMC K100M was selected for study. The active content release from the tablet is dependent on the viscosity. Polymer with higher viscosity prevents the rapid release in the beginning but no effect on later stages of release rate of active content

Keywords:
Canagliflozin, Release Retardants, Metformin, Oral Hypoglycemic Drugs, Drug: Polymer Ratio.

Novelty of the Topic:
Hypoglycemia had become a most common disorder. Severe hypoglycemia can lead to serious problems including seizures and unconsciousness that requires emergency care. The aim of the medication is to prevent diabetes from leading to other health problems.

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Nanotechnology in Diagnosis and Treatment of Oral Cancer

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Abstract:
With an high fatality rate, oral cancer is the sixth most prevalent malignant cancer and negatively impacts people's health. Despite using a variety of clinical techniques such as surgery, chemoradiotherapy, computed tomography, and magnetic resonance imaging, the diagnosis and treatment of oral cancer are still far from ideal. Therefore, there is a pressing need for efficient and doable methods for the early detection and treatment of oral cancer. Different kinds of nanoparticles, which are a promising tool for medicinal devices and diagnostic probes, are currently causing widespread public concern. Because of their innate physicochemical characteristics, such as their ultrasmall size, high reactivity, and customizable surface modification, they are able to get around some restrictions and provide the desired diagnostic and therapeutic results. In this poster, we outline the many kinds of nanoparticles that have been developed for the detection and treatment of oral malignancies. The difficulties and prospects for the use of nanoparticles in the treatment and diagnostics of oral cancer are then discussed. This poster's goal is to aid researchers in understanding how nanoparticles affect the detection and treatment of oral cancer, which might hasten scientific advances in this area.

Keywords:
Nanotechnology, Nanoparticles, Oral Cancer, Diagnosis, Treatment, Chemoprevention.

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Formulation and Evaluation of Gastro-retentive Drug Delivery System of Cefdinir by using Fenugreek Mucilage

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Abstract

Introduction:
FDDS have a bulk density less than gastric fluid and so remain buoyant in the stomach without affecting gastric emptying rate for a prolonged period of time. While the system is floating on the gastric contents, the drug is released slowly at the desired rate from the system. After release of drug the residual system is emptied from the stomach. This results in an increased GRT and a better control of the fluctuations in plasma drug concentration.

Aim & Objectives:
The aim of the present work is to formulate and evaluate Gastro-retentive DDS of Cefdinir by using Fenugreek mucilage by direct compression method.

Methods:
The floating tablets of Cefdinir were prepared by direct compression method, Trigonella foenum graceum seed mucilage, Hibiscus Rosa sinensis leaves mucilage, and Xanthan gum and Guar gum are used as a natural rate controlling agents. The physicochemical parameters like pre-formulation and post-compression evaluation were performed. The release data were subjected to different kinetic models.

Results:
The FTIR spectral analysis showed that there was no drug interaction with formulation additives of the tablet as there is no variation and shift in bands. Precompression parameters showed good flow properties. Post compression parameters like thickness, hardness, weight-variation, friability, swelling index, floating lag time, total floating time, drug content, in-vitro drug release study shown good results. Formulation F1, F3, F5, F7 showed good results throughout the study. As the concentration of the polymer increases the rate of release increases.

Conclusion:
From the literature Hibiscus Rosa sinensis leaves mucilage, Xanthan gum, and Guar gum are best candidate of Natural floating Material & Rate controlling agent but this study proved that Trigonella foenum graecum mucilage can act as good Floating Material & rate controlling polymer at optimum Range better than xanthan gum and other gums.

Keywords:
Gastro-retentive Drug Delivery System, Trigonella Foenum Graceum, Hibiscus Rosa Sinensis

Novelty of the Topic:
Prepared floating tablets using natural mucilage extracts.

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Formulation and Evaluation of Herbal Gel for Anti-Headlice Activity

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Abstract

Introduction:
Pediculus Humanus Capitis[Head-lice] is a prevalent parasitic infestation occurring in both developed and under developed nations. It often affects children causing itching, different skin reactions and secondary infections.

Aim and Objectives:
The aim was to formulate and evaluate herbal gel containing Azadirachta indica and Melaleuca alternifolia extract and to study its anti-head-lice activity.

Method:
In this study a new herbal anti head-lice gel was developed by using hydroalcoholic extraction process. Prepared herbal extract containing Neem, Hibiscus, Amla and Henna. Camphor was dissolved in Tea tree oil and olive oil. Methyl paraben and Propyl paraben are used as preservatives. All the ingredients were slowly added to the prepared Carbopol-934 gel and mixed with the help of magnetic stirrer to achieve uniform gel. pH of the prepared gel was adjusted by adding required quantity of tri-ethanolamine.

Result:
Formulation along with conditioner showed good anti head-lice activity. Each herbal ingredient is responsible for an individual effect against lice and the product formulated with the standard range of viscosity as well as spreadability.

Summary and Conclusion:
Herbal anti head-lice gel was prepared effectively with reduced side effects compared to synthetic products. The product is having both anti lice and conditioning effect hence it helps to nourish and improve the elasticity of the hair.

Keywords
Hydroalcoholic Extraction, Anti Head-lice Gel, Conditioner, Azadirachta Indica, Melaleuca Alternifolia.

Novelty of the Topic:
Effective herbal gel with both conditioning and anti-head-lice activity.

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Formulation and Characterisation of Liquisolid Compact for Enhancing Dissolution of Amisulpride

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Abstract

Introduction:
The liquid-solid system is a powdered form of liquid drug formulated by dissolving water insoluble solid drug in suitable non-volatile solvent system followed by conversion into dry looking, free flowing and readily compressible powdered mixture by blending with selected carriers and coating materials.

Aim and Objectives:
To develop, evaluate and optimise Liquisolid Compact Tablet (LSCT) containing amisulpride.

Methods:
LSCT were prepared by direct compression method. Formulation containing various drug concentration in liquid medication (20%,30%and 40%) were prepared. The ratio of Carrier to coating powder material was kept at 10,15 and 20. Tablets were evaluated for pre and post compression parameters as per pharmacopoeial standard. The optimization was carried out by 32 Factorial design. Compatibility and characterisation studies were done by FTIR, DSC, XRD and SEM.

Results:
The Liquisolid system showed acceptable flow properties and improved dissolution rate as compared to DCT. The IR and DSC studies demonstrated absence of significant interaction between drug and excipients. The XRD and SEM analysis confirmed the absence of amisulpride crystals in the optimised formulation. Tablets were found to be stable.

Summary:
LSCT of amisulpride were formulated and characterized. The optimized formulation showed increased solubility and dissolution profile.

Conclusion:
Liquisolid technique is a promising alternative for improvement of the dissolution rate of water insoluble drugs like Amisupride.

Keywords
Liquisolid System, Amisulpride, Solubility, Dissolution Profile.

Novelty of the Topic:
Solubility enhancement of poorly soluble drug using non-volatile solvent and its conversion into solid dosage form.

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Development and Characterization of Mouth Dissolving Tablets of Ebastine by using Natural Super Disintegrating Agents

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Abstract

Introduction:
Disintegrating agents are compounds added to the medicine formulation to help the content of tablets disintegrate into tiny particles that dissolve more quickly. ODTs are designed to have a disintegration time typically less than a minute. The formulation is more beneficial for people who are bedridden and have swallowing issues.

Objectives:
The aim of the was to develop a mouth dissolving tablet of Ebastine drug by direct compression method using different natural super disintegrants.

Methods:
The Mouth dissolving tablets of Ebastine were prepared by direct compression method. Used solvent evaporation and Fusion method to improve solubility and enhance dissolution of the drug. Extraction of Lepidium sativum powder used as a natural disintegrating agent. Croscarmellose Na as synthetic super disintegrant, the physicochemical parameters evaluation were performed as per pharmacopoeia standards. The release data were subjected to different models in order to evaluate their kinetics and release mechanism.

Results:
The characterization of solid dispersions and the compatibility study of the drug with various polymers and carriers was done. FTIR spectral analysis showed there was no drug interaction with formulations additives. Solid dispersion with 1:3 ratio shows better aqueous solubility and dissolution rate of the drug. Pre compression parameters showed good flow properties. Post compression parameters like wetting- time, water absorption ratio, disintegration time, in-vitro drug release shown good results. Formulation F2 showed good results throughout the study. Short term stability studies on the formulation F2 indicated that there is no significant change in the post compression parameters. The release kinetics data implies the formulation was First order and Higuchi model.

Conclusion:
MDTs of Ebastine containing seeds of Lepidium sativum mucilage (F2) with the Solid dispersion of β-Cyclodextrin showed less disintegration time and faster in-vitro drug release than the Solid dispersion of drug with AVICEL PH 102.

Keywords:
Mouth Dissolving Tablet (MDT), Ebastine, Lepidium Sativum Mucilage (LSM).

Novelty of the Topic:
Prepared mouth dissolving tablets by using natural disintegrating agents.

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Brain Uptake Studies of Neurotherapeutic Loaded Functionalized Solid Lipid Nanoparticles: Treatment for Parkinson's Disease

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Abstract:
Many neurotherapeutics have low bioavailability of drug into the brain due to Blood Brain Barrier (BBB). Rotigotine is non-ergoline dopamine and histamine agonist for the treatment of Parkinson Disease with <1% oral bioavailability and 1-46 % transdermal bioavailability. Lactoferrine receptors are overexpressed at diseased site. Surface modification of lipidic nanocarriers was done using Lactoferrine ligand. Functionalized nanoparticles were delivered through intranasal route to brain via olfactory pathway which avoid BBB and delivers drug to the brain. Lipidic nanocarriers were prepared via hot melt emulsification method using high speed homogenizer. Ligand was attached on the surface of nanocarriers using carbodiimide linkage using NHS and EDC as coupling agents. Optimized surface modified lipidic nanocarriers were evaluated for particle size, Polydispersivity index, zeta potential, % entrapment efficiency, FTIR, AFM, In-vitro drug release (dialysis bag), Ex-vivo permeability studies (goat nasal mucosa using Franz diffusion cell) and confocal laser scanning microscopy. Ex-vivo drug permeability studies also showed the controlled release of drug and permeable through nasal mucosa. This formulation is nontoxic based on histopathological studies. In-vivo brain uptake studies was done in wistar rats. Functionalization showed more brain uptake compared to non-functionalized nanocarriers. Prepared surface modified lipidic nanocarriers showed controlled release of drug and good permeability through biological membrane with no toxicity.

Keywords:
Brain Uptake Studies, Lactoferrine, Parkinson Disease, Functionalization, Intranasal

Novelty of the Topic:
The functionalization of nanoparticles increased the localization of drug at target site compared to non-functionalized nanoparticles.

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Formulation and Evaluation of Freez Dried Microparticles Used in the Treatment of Cystic Fibrosis

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Abstract:
Cystic fibrosis is the most common autosomal recessive disease that shortens life expectancy. According to studies, approximately 60 to 70% of adult patients are infected with P. aeruginosa. The current work explores the possibility of using a combination of ivacaftor and ciprofloxacin to combat the bacteria. The two drugs were loaded into microparticles which were then coated with L-salbutamol and were to be given as a dry powder inhaler. The microparticles were prepared using bovine serum albumin and L-leucine by employing the freez drying approach. The entrapment of ivacaftor and ciprofloxacin was confirmed by SEM, XRD, and FTIR. The morphology was observed by SEM and TEM scans. Antimicrobial synergism was proven by the agar broth and dilution technique and the formulation was deemed safe by the MTT assay.

Keywords:
Cystic Fibrosis, Antimicrobial, Dry Powder Inhaler, Microparticles, Freeze Drying Pulmonary Drug Delivery, Mucoadhesive, Polymeric Drug Delivery System.

Novelty of the Topic:
Freez-dried microparticles of ivacaftor, ciprofloxacin, and L-salbutamol could be a new way to treat cystic fibrosis.

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Yagopathy"- An Ancient Holistic Therapy to Treat Multiple Disease

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Abstract :

In this modern era of research and development, pollution has become one of the serious problem which not only affects human health but also other living organisms causing imbalance in ecosystem. Many ecologists and expert are trying to minimize this pollution and other toxins by bioremediations and other methodology etc. But due to disturbance in ecosystem, lack of resources its becoming difficult to adjust and restore our environments healthy and pollution free. But it can be possible instead of spending large cost in machinery and technology. We can purify our environment with ancient remedy to treat air through "Yagya" or commonly called as "hawan" which is an ancient therapy of purify the environment even mental health body, mind and soul. This practice is perform by mixture of selective medicinal herbs sublimated in the fire of yajana along with the chant of distinct Vedic Hymes (mantras). The fumes and vapours generated significantly remove pathogenic microbes and shows therapeutic and environmental benefits. The chemical transformation of the herbal/ plant medicinal preparations into aerosol lead to release of medicinal phytochemicals which are affect are effective against respiratory illness (pneumonia, pulmonary fibrosis, mucormycosis, COPD and tuberculosis) and neurodegenerative disorder (anxiety, alzheimer's, epilepsy parkinson's) with potential antimicrobial activities(SARS-CoV-2, mycobacterial disease, meningitis etc). It has been noticed that chanting of hyms when performed with yagya helps in mental healing and improves overall health of individual.

Keywords:

Air Pollution, Pollutent's, Hawan and Yagaya, Aromatherapy, Medicinal Preparation, Respiratory and Neurodegenerative Disorder.

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Pharmacognostical and Oviposition Deterrence of an Western Ghat Plant (Artocarpus lakoocha. Roxb)

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Abstract

Mosquitoes are vectors that carry much life-threatening aliments. It is important to use natural pesticides to avoid hazardous effect from chemical pesticides. Our Western ghats have enormous natural wealth which has solution for many problems. Artocarpus lakoocha Roxb. is one such plant from Western Ghat that belong to the family Moraceae. It is valuable tropical deciduous tree species commonly called as “Monkey jack” or “Lakuchi”. The fruit bark and seeds are utilized in Ayurvedic and Unani systems of medicine. The timber of the tree is highly utilized for furniture, boat building and paper manufacture due to the durability of the furniture, which is resistant against white ants, termites, and wood borers of Teredo species. Pharmacognostical evaluations such as organoleptic, physico-chemical, microscopical evaluation, fluorescence analysis, phytochemical analysis were carried out as per standard procedure. The phytochemical screening of successive solvent extracts of leaves and fruits of Artocarpus lakoocha Roxb. shown the presence of Alkaloid, Phytosterols, triterpenoid, in pet ether extract. Phytosterol in chloroform and Ethanolic extract. Alkaloid, glycoside, flavonoids, reducing sugar in ethanol extract of fruits of Artocarpus lakoocha. Oviposition deterrence activity was performed according to WHO guidelines for three different species of mosquitoes. Petroleum ether extract was more effective as oviposition deterrent than chloroform and ethanol extract with ER50 of 104.95, 113.99, 214.40 ppm on An. stephensi, Cx. quinquefasciatus, Ae. aegypti respectively.

Keywords:

Mosquitoes, Western Ghats, Teredo Species, Pharmacognostical Evaluation, Artocarpus Lakoocha, Oviposition Deterrence

Novelty of the Topic:

Natural Pesticide for Mosquitoes.

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Synergestic Antibacterial Potential of Extract and Green Synthesised Nanoparticles of Butea Monosperma(lam) Taub.

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Abstract:
Butea monosperma (Lam.) Taub, belonging to the family Fabaceae which is also known as Flame of forest ,known as 'palasha' in Sanskrit posses precious therapeutic properties.it is traditionally reported to possess antibacterial, antihelmentic and anti-asthmatic properties. The methanolic and aqueous floral extracts of Butea monosperma (Lam.) were prepared and subjected to antibacterial studies. The methanolic extract obtained by soxhlation method was found to possess better antibacterial activity compared to the aqueous extracts prepared by refluxation method. Silver Nanoparticles(SNPs) of the methanolic flower extract were prepared using a simple green synthesis method by mixing the extracts with different concentrations of silver nitrate. The nano particles were characterized using UV-Visible spectroscopy, particle size analysis, XRD and SEM. The silver nanoparticles were found to be spherical smooth and below 200nm in size. The antibacterial activity of extract and SNPs was determined against Staphylococcus aureus, Bacillus cereus, Escherichia coli and Salmonella typhi using agar diffusion and MIC determination methods. The extracts were found to be active at a concentration of 1mg/ml and the SNPs were active at 200µg. the MIC of SNPs was found to be 125 µg/ml for Bacillus cereus, Escherichia coli < 7.8 µg/ml Staphylococcus aureus and Salmonella typhi .A combination of extract and SNPs was found to be active in a mixture of 1000 µg of extract and 10 µg of SNPs. The results indicated that extracts and green synthesized SNPs of Butea monosperma (Lam.) Taub, possess good antibacterial property. The synergestic antibacterial effect of the combination of extracts and SNPs was confirmed.

Keywords:
Butea Monosperma, Silver Nanoparticles, Green Synthesis, Antibacterial.

Novelty of the Topic:
Synergestic antibacterial activity of combination of SNPs and extracts.

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Phytochemical Evaluation and Formulation of Nannari

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Abstract:

Indian Sarsaparilla is a well known drug of Ayurvedic Pharmacopeia of India and identified as Hemidesmus indicus Linn.R.Br. It is popular for its Dahaprasamana (alleviates burning sensations), Deepana (appetizing) and Raktashodaka (blood purifying) properties. Flavonoids are widely distributed in plants like orange peel, berries, carrots etc; Hemidesmus indicus commonly known as nannari is one such drug which is rich in Polyphones and Flavonoids well known for their anti-oxidant activity. Because of anti-oxidant activity the Herbal drug is able to keep the body cool. The Flavonoids are able to reduce the inflammatory mediators such as cytokines, interleukins, C-reactive protein etc. in blood so that the drug acts as blood purifier. Hence, the present study has been undertaken for evaluation and formulation of Hemidesmusindicus. Thin layer chromatography identification is an important parameter to analyze the various phyto-constituents such as Polyphenols, Flavonoids, Saponins etc., present in the drug. Determination of total Phenol content and Flavonoid content will enlight the potential health benefits of herbal drug.
Many herbal extracts are formulated into syrups because of their better stability and compatability. Syrups are palatable and soothing formulations even can be suitably diluted with water to make juices. Physicochemical parameters such as pH, specific gravity, viscosity, acid value and microbial determination are to found to be significant for evaluation of syrup.

Keywords:

Anti-oxidant, Flavonoids, Saponins

Novelty of the Topic:

Hemidesmus indicus is rich in antioxidants due to this it acts as a cooling agent in the body.

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Development and Validation of Analytical Method for the Marker Compounds of Boerhavia Diffusa

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Abstract:

Herbal medicine is now expanding at an incredible rate as a result of massive inputs from ethno-medicinal practices from all over the world. When we consume a plant/product as food or medicine, we acquire a wide range of "active compounds" the function of which in our system is unclear. Knowledge of a plant's chemical components is required for quality control analyses of the plant, extract, or any preparation including them. Consequently, there is a need to provide reliable analytical techniques that can profile the phytochemical composition, quantitatively analyze phytochemicals, test for marker/bioactive molecules, and identify other key elements.

The goal of the current work is to create a High performance liquid chromatographic method for estimating the marker compounds of Boerhavia diffusa, and to validate it in accordance with ICH guidelines.

For the assessment of active constituents in herbal extract, a simple, precise, rapid and rugged HPLC method was developed. HPLC (Agilent) with Phenomenex Luna-5u; C18 column and mobile phase as methanol with a flow rate of 1.5 mL/min, inject volume of 20µL and column Temperature as 25º C was chosen as optimum chromatographic conditions.

The proposed method may be successfully used in the routine examination of quality control for raw material and extract of Boerhavia diffusa, according to the observations of the validation of 8 parameters such as linearity, range of quantification, specificity, accuracy, precision, stability, system suitability and ruggedness. The results obtained were found to be in the acceptable range.

Keywords:

Boerhavia Diffusa, HPLC Method, ICH Guidelines, Method Development, Validation

Novelty of the Topic:

Boerhavia diffusa is a widely available plant throughout India with a variety of therapeutic actions like diuretic, antioxidant, anti-inflammatory and so on. Although due to the controversial nature of the plant, quality control measures for this specific plant were determined to be deficient. The marker compounds extracted from the leaves are characterized chromatographically by using HPLC in this work, adding to the collection of technical and scientific information regarding the species Boerhavia diffusa. The novelty of the method is in its analytical recovery of Boerhavia. diffusa, and in the validation of the parameters, which satisfies the requirements of the ICH guidelines.

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Chlorpyrifos Induced In-vivo DNA Damage in Cyprinus Carpio (L.) by Comet and Micronuclei Assay

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Abstract:
Pesticide poisoning poses an extreme risk to the aquatic biota, especially non-target organism fish, Chlorpyrifos (O, O diethyl O-3,5,6-trichloro-2-pyridylphosphorothioate) is one of the earliest evolved biggest selling organophosphate insecticides. In India widely used for controlling agricultural and household pests due to its reckless applications in the agricultural fields, it may cause adverse effects on the non-target organism, fish. Hence it is categorized as a harmful pesticide. The study's goal was to investigate the DNA damage using comet assay in gill cells and blood erythrocytes of freshwater fish, Cyprinus carpio. The acclimatized fish in the laboratory were divided into two groups. Group, I maintained as control, while the other group II was exposed to sublethal concentration (1/5th of the 96 h LC50) for a 7, 14, and 21 days exposure period. Result confers that significant ($P<0.05$) DNA damage in gill cells followed by erythrocytes. Toxic potential of CPF results in substantial changes in gene expression and induced oxidative stress attributed to reduced antioxidant enzymes and increased reactive oxygen species (ROS) levels resulting in DNA strand breaks and may cause mutation and finally, apoptosis thus proves genotoxic/mutagenic potential of CPF in the freshwater fish C.carpio. Thus results confer the hazardous impact of CPF on aquatic organisms. Biomonitoring of aquatic biota to ensure the safety level is important hence care should be taken while disposal of agricultural and domestic wastes and precautions should be taken while using even low concentrations of chlorpyrifos.

Keywords:
Chlorpyrifos, Cyprinus Carpio, Genotoxicity, Comet Assay

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Development and Validation of Stability Indicating RP-HPLC Method for Estimation of Indoramin in Pharmaceutical Dosage Form

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Abstract:
In the current study, A simple, precise and economic UV and stability indicating RP-HPLC method was developed and validated for estimation of Indoramin in tablet dosage form. In the current study, this approach was used to estimate the Indoramin tablet formulation. The investigation was conducted using HPLC Water 2469 with GL-Science, Inertsil ODS 3V C18, 5, 4.6 x 150 mm column, and UV/PDA detector with empower pro Software. Buffer and ACN, with a wavelength of 233 nm, were determined to be the most suited mobile phase. The method shows good reproducibility; moreover the RP-HPLC method is accurate, precise, specific, reproducible and sensitive. The findings in the table show that the RP-HPLC technology may be used to accurately estimate the above-mentioned medicines in their formulation.

Keywords:
Stability-indicating RP-HPLC, Indoramin, Forced Degradation

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Determination of Free Radical Scavenging Activity and MIC of 5 Selected Commonly Used Herbs of India

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Abstract

Introduction:
Traditional methods of medicine continue to be extensively practiced on many grounds. India has been acknowledged to be rich reservoir of medicinal herbs, and is the major reservoir of vast number of medicinal and aromatic plants, which are mostly harvested as raw materials for production of phytopharmaceuticals.

Aim & Objectives:
Determination of free radical scavenging activity and MIC of 5 selected herbs and activity comparison thereof.

Method:
In the proposed research 5 generally used herbs were chosen viz., Alternanthera Sessilis (ASE), Celastrus Paniculatus (CPE), Cassia Auriculata (CAE), Murraya Koenigii (MKE), and Moringa Concanensis (MCE) followed by their authentication, they were exposed to Ultrasonication extraction utilizing hydroalcoholic solvent (70% alcohol). The Hydroalcoholic extracts of 5 plants were evaluated for Free radical scavenging activities by DPPH, ABTS, FRAP methods and MIC by Resazurin method.

Results and Discussion:
FRAP experiment indicated that CAE was discovered to display maximum scavenging value of 740 mg Vit. C equivalent/gm of dry extract followed by CPE (635 mg equv.). In DPPH radical scavenging activity CAE (71.5µg/ml) and CPE (178.1 µg/ml) exhibited most powerful DPPH free radical assay as compared to standard Quercetin. According to ABTS radical scavenging activity, CAE (79.37 µg/ml) and CPE (81.46 µg/ml) exhibited most powerful ABTS free radical scavenging as compared to standard Quercetin. MIC determination revealed CAE, CPE and ASE against P. aeruginosa 87.5mg/100 µl concentration, and no detectable activity against E coli, S aureus and S mutans.

Summary & Conclusion:
Thus, it was determined that, hydroalcoholic extract of Cassia auriculata leaves were discovered to exhibit superior free radical scavenging activity of 5 chosen herbs. Thus, C auriculata extract could prove as a source of potential natural antioxidant substance but MIC values did not indicate the herbs of being potential antimicrobials.

Keywords:
DPPH, ABTS, FRAP, Free Radicals, Quercetin, MIC.

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Phytochemical Analysis and Evaluation of Anti-oxidant and Anti – urolithiatic Potential of Plants Available in Tirumala Hills

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Abstract:
The present study comprises preparation of hydroalcoholic extraction of Aerva lanata, Kigellia pinnata, Terminalia bellerica, Moringa oleifera and Crateva magna, the extracts were further subjected for preliminary phytochemical tests as well as for quantification of some important secondary metabolites. In addition, In-vitro anti-oxidant and anti-urolithiatic potential of all the extracts were evaluated. During phytochemical analysis, all the plant extracts showed the presence of carbohydrates, alkaloids, steroids, saponins, proteins, aminoacids, falvonoids, tannins, phenolic compounds and fixed oils. All the extracts showed varied level of anti-oxidant activities assayed, of them Crateva magna shows less oxidative property when compared to other plant extracts. In-vitro anti-urolithiatic activity has been performed using aggregation assay by calcium oxalate crystals and physiological kidney stones. Out of which Kigellia pinnata is more effective.

Keywords:
Anti-oxidant, Anti-urolithiatic, Aggregation, Calcium Oxalate Crystals, Physiological Stones

Novelty of the Topic:
Studies on physiological stones for anti – urolithiatic activity

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Synthesis & Antimicrobial Study of Indazole-3-Carboxylic Acid Derivatives Synthesis & Antimicrobial Study of Indazole-3-Carboxylic Acid Derivatives

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Abstract:
In this novel scheme, a series of Indazole-3-carboxylic acid containing oxadiazole moieties were designed and well scored compound get synthesized. The reaction precedes the synthesis of Indazole-3-carbohydrazide from Indazole-3-carboxylic acid and condensed with Benzoyl –amino acid derivatives synthesized from Benzyol-chloride with different amino acids. The final derivatives N-{1-[5-(1H-indazole-3-yl)-1,3,4-oxadiazole-2-yl]-2-methyl substituted} benzamide were synthesized and compounds have been characterized by spectral data (I.R, 1H-NMR and MASS). After spectral studies the novel compounds have been screened for antibacterial activities by the Broth dilution method. The compound (3a) relatively showed good activity against both Escherichia coli and staphylococcus aureus in comparison with azithromycin as a standard drug.

Keywords:
Indazole-3-carboxylic Acid, Anti-bacterial Activity, Escherichia-coli, Staphylococcus aureus, Azithromycin.

Novelty of the Topic:
All the prepared molecules are novel and some of them shown the best activity.

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A Review on Novel Approach to Transethosomes of Transdermal Drug Delivery System

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Abstract:
To overcome the drawbacks of oral drug delivery system, one of the best drug delivery system is a transdermal drug delivery system. TDDS is a one of the controlled drug delivery system. Pharmaceutical industry is showing a greatest interest and found many research opportunities with the transdermal drug delivery system through skin. Drugs were encapsulated within the vesicular formulation called liposomes. Liposomes can easily target the specific site of action. Conventional liposomes are facing difficulties to transport through the deeper layers of skin layer like stratum corneum. To overcome this problem, by using advanced technology of liposomes like Ethosomes, transferosomes, and transethosomes. To increase the penetration problems used an ethanol, called Ethosomes. Even though facing problem at stratum corneum layer of the skin. To this Ethosomes when added the penetration enhancers become a transferosomes. Penetration is increased by using Ethosomes and transferosomes. Penetration enhancer and ethanol combination drugs were well penetrated through the stratum corneum. In this review discussing about properties of drug delivery of transethosomes, composition, formulation, characterization, and patents obtained.

Keywords:
Transdermal Drug Delivery System, Liposomes, Ethosomes, Transferosomes, and Transethosomes

Novelty of the Topic:
Transethosomes are even better than nanoethosomes . Researchers are more focused on transethosomes for better targeting actions on special diseases like autoimmune diseases and cancers disease.

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Marine Derived Biomaterials for Biomedical Applications

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Abstract:
The ocean is a massive collection of uncultivated materials. They include a variety of substances with several biotechnological and medicinal applications. The creation of novel systems and tools for biomedical applications can benefit from using the ocean as a renewable supply of compounds. In addition to their solubility behavior in aqueous solvents and extraction media and their interaction with other bio compounds, marine polysaccharides are among the most plentiful materials in the oceans, which helps to reduce extraction costs. While chitosan and hyaluronan can be acquired from animal sources, polysaccharides like alginate, carrageenan, and fucoidan may be produced from algae. Most marine polysaccharides contain adhesive and antibacterial qualities and significant biological traits such as biocompatibility, biodegradability, and anti-inflammatory activity. Additionally, they may be altered to enable processing into different forms and sizes and may display reaction dependability to outside stimuli, such as pH and temperature. These biomaterials have been investigated as raw materials for creating drug carrier devices, such as particles, capsules, and hydrogels, because of their characteristics. The devices are intended to be utilized in cutting-edge therapies, such as gene delivery or regenerative medicine, and to achieve a regulated release of therapeutic chemicals to combat critical illnesses.

Keywords:
Drug Delivery, Marine, Polysaccharides, Biomaterials, Biomedical.

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Smart Drug Delivery Through Carbon Nanotubes

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Abstract

Aim:
Functionalization and Evaluation of PEGylated Carbon Nanotubes as Smart Drug delivery for methotrexate.
Objective:
Functionalization and Evaluation of PEGylated Carbon Nanotubes as Smart Drug delivery for methotrexate.
Methods:
Noncovalent functionalization of Multiwall carbon nanotubes was achieved using DSPE-m PEG for PEGylation. Functionalized MWCNT were attached with methotrexate by sonication.
Result: Different batches of functionalized MWCNTs were prepared by keeping the concentration of MWCNT constant (1mg/ml) and using varied concentrations of DSPE-mPEG.
Conclusion:
Methotrexate-loaded PEGylated carbon nanotubes were prepared by functionalization of MWCNTs effectively with a drug loading capacity of about 2.26 mg of methotrexate per mg of MWCNT.

Keywords:
Carbon Nanotubes, Functionalized Multiwall Carbon Nanotubes (FMWCNT), Methotrexate.

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Eco-friendly Green Synthesis of Functionalized Silver Nanoparticles Clove Buds Extracts and Evaluation of Antifungal Activity in Geriatric Denture Wearers- Preliminary Screening Study

Dr Meenakshi S
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Abstract:

Introduction:
Polymeric Materials (PMs) and Polymeric Films (PMFs) have been used in medicine and dentistry. This growing interest can be attributed to the excellent surfaces of PMs and PMFs, as well as their desired mechanical and biological properties, low production costs, and ease of processing, which allow them to be customized for a wide range of applications.

Aim:
The current study sought to create Bio Nano-composite Films (BNCFs) with antifungal activity using a green process.

Methods:
Silver Nanoparticles (AgNPs) were extracted using a bioreduction process mediated by clove extract. Coated with Badam Gum (BG) and solvent cast into antifungal Bio Nano-composite Films (BNCFs).

Results:
The AgNPs were coated with Badam Gum (BG) and Clove Extract (CE) using green synthesis and then fabricated into Bio Nano-composite Films (BNCFs) using Poly-lactic Acid (PLA). The presence of silver nanoparticles is indicated by a peak at 340nm observed by UV-visible spectroscopy. The presence of Silver (Ag) nanoparticles on BG was supported by XRD and SEM. The obtained XRD pattern confirmed that the Ag impregnated BG was crystalline in nature. Photographs taken with a Scanning Electron Microscope (SEM) revealed a solid, free-flowing, spherical-shaped silver particle. The formation of an Ag structure on BG was revealed by SEM/ED analysis of BG/Ag bio-Nano composite films. The anti-fungal study found that BG with AgNPs/PLA bio-Nano-composite films inhibited Candida Albicans effectively.

Conclusion
Prepared bio–Nano composite films exhibits significant antifungal properties.

Keywords:
Bio Nano-composite Films, Silver Nanoparticles, Candida Albicans, Super Critical Fluid Extraction, Solvent Casting.

Novelty of the Topic:
The developed nano composite films could be used to treat fungal infections in geriatric denture wearers

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Development and Characterization of Mucoadhesive Buccal Films of Cilnidipine Using Mucoadhesive Polymers

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Abstract

Mucoadhesive drug delivery systems are attractive, feasible and good alternative route for drug delivery. Buccal mucosa is one of the better site for local and systemic delivery of various drugs because of the good blood supply and good permeability. The aim of the present work was to develop and evaluate buccal film of Cilnidipine. The buccal films were formulated by using three different polymers with three different concentration by solvent casting method. Nine such different formulations were made by using HPMC K4M, HPMC K15 and Carbopol 934 as film forming agents. Films were evaluated for various parameters like physical appearance, folding endurance, thickness, swelling index, moisture loss, moisture uptake, surface pH, content uniformity, uniformity of weight, in-vitro drug release, ex-vivo permeation and stability studies. Buccal films showed uniformity in physical characteristics along with low moisture content and folding endurance study of the films showed that the prepared films were having good flexibility and capability to withstand the mechanical pressure. The in-vitro drug release and ex vivo permission studies shows that the drug can be released upto 12 hrs. Stability studies indicates that there is no significant effect on physicochemical properties of films kept at 250C/60% RH and 400C/75% for 3 months. Therefore, buccal films of Cilnidipine can be developed successfully by using mucoadhesive polymers and the evaluation parameters suggest excellent quality and uniformity in film characteristics.

Key words:

Oral Mucoadhesive Drug Delivery Systems, Mucoadhesive Polymers, Buccal Films, In-vitro Drug Release, Ex-vivo Diffusion Studies.

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ALCOA+ Addressing the Data Integrity Lifecycle Management

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Abstract:
In the last couple of years regulators have seen Violations regarding the data during inspections where accurate data ensures the Quality of information. Data integrity refers when data is complete, consistent and reliable throughout the lifecycle. The goal of regulators is to ensure that the industry collects reliable data throughout the drug development lifecycle. People think Data integrity and Good Documentation Practices (GDP) errors are the same but no they are different; GDP errors are those errors that occur during documentation and are unintentional whereas Data integrity issues are intentional errors. We all know the importance of Documentation (21 CFR parts 211) in Pharma so for this purpose USFDA has given a tool called ALCOA+ that highlights whether the data follows Data integrity or not. ALCOA+ stands for Attributable, Legible, Contemporaneous, Original, and Accurate and Plus means Enduring, Available and Accessible, Complete, Consistent, Credible, and Corroborated. To demonstrate the safety and efficacy of a pharmaceutical product before it can be used, the manufacturing must conduct trials, research, and laboratory testing. ALCOA+ in the pharmaceutical industry guarantees the validity of the evidence and appropriate documentation techniques for medicines. The ALCOA+ principles were primarily developed for the pharmaceutical industry; they are applicable to nearly every industry that uses data. It makes sure that your data always has an audit trail to record any insertion, modification, or deletion. The purpose of this is to shed light on the accuracy of the data that was gathered and documented utilizing ALCOA+.

Keywords:
ALCOA Plus, Data Integrity, USFDA, ALCOA+ Principles, Documentation

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Regulatory Framework of Precision Medicine

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Abstract:
Of the most recent advancements and innovative approaches towards disease treatment in healthcare has been the concept of customized diagnosis and precise therapies emerging in the field of scientific research and now booming in the pharmaceutical industry. Precision medicine strives to consider all information that is known about a single individual, including that person's surroundings, way of life, family history, and dangers discovered by cutting-edge "-omics" technology. The strategy should be able to go from treating diseases to preventing them, enhancing the health of those who are affected by them. Targeting the appropriate treatments to the appropriate patients is the aim of precision medicine. The foundation of Precision Medicine (PMx) is the discovery of molecular markers that are present in every element of the unique individual. The study focuses on the regulatory environments for precision medicine in the US and the EU. However, the objective of the study is to comprehend the clinical strategies used by PMx and its regulatory framework in the US and EU. The strategy entails gathering data on the precision medicine idea and US FDA and EMA requirements. Personalized medicine, or the development of drugs that are safer and more suited for a specific disease group, offers a new approach to drug research and medical practise. PMx won't be realised unless the adoption roadblocks—uncertain legal requirements, inadequate insurance coverage for diagnostic testing, and a lack of effective legal protections against genetic discrimination—are overcome. Though this can be a very precise way for treatment but at the very same time this can be overly expensive for common people considering this involves expensive tests. The scientific, economic, ands social circumstances all indicate that the “tailor-made” medicine is likely the way of the future.

Keywords:
Precision, Regulatory Framework, Personalized Medicine

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Study on the Comprehensive Regulatory Outline for the Breast Cancer Products

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Abstract:

Introduction:
Breast cancer is caused by unchecked proliferation of tissue/cells. It is the 2nd most common type after skin cancer, affecting men and women. This study examines the timelines of approvals for breast cancer drugs by United States Food and Drug Administration (USFDA), European Medicines Agency (EMA) and Health Sciences Authority (HSA).

Aim:
To study and compare the timelines for the approval pathway of breast cancer drugs in US, Europe and Singapore and broadly understand the regulatory challenges faced.

Objective:
To select successful breast cancer molecules for the study based on the chosen criteria and design a comprehensive regulatory outline for the selected breast cancer products.

Methods:
Three reference countries' health authorities (USFDA, EMA, HSA), official websites, directives, guidelines of the above-mentioned countries were searched for study. For selection of successful molecules, the criteria used were- drug in current use, belonging to targeted therapy group and if it's blockbuster. Duration for approval was calculated from time of New Drug Application submission till Approval.

Results:
After screening 27 approved drugs, 3 matched the criteria- Abemaciclib, Palbociclib and Pertuzumab. From the study, it was observed that, the time duration for approval process was higher in Europe for all 3 drugs when compared with USA and Singapore. Since Singapore follows the approval pathway as USA, the results of this analysis concluded that the FDA and HSA's approval decisions for breast cancer drugs were highly congruent.

Summary:
Since EMA has a different approval pathway, there is an "approval lag" in the timelines. Hence, there is a need to harmonize the regulations of the breast cancer clinical trials and the costs involved to speed up the process in NDA approvals.

Conclusion:
There is a need for inclusive collaboration between reference nations such as US and Europe to avoid approval lag of potent drugs to patients.

Keywords:
Clinical Trials, Approval, Breast Cancer, Regulations

Novelty of the Topic:
Currently there's no generalized understanding of regulatory challenges throughout approval phase of breast cancer drug molecules.

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Access to Quality and Affordability of Medical Products

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Abstract:

Introduction:
Efficient delivery systems can reduce complications, reduction of duplication of programs or services within the same markets. Accomplishment of these may not be easy politically but will be essential in achieving the best health care system. Quality medicines and affordability of them are very crucial factors to be considered. Quality of the medicines are of utmost priority and the drug must be safe and highly effective. Affordability enables maximum population to use that drug. There are few measures mentioned to assure that the drugs are affordable and of high quality. The data collected is from various articles, from various regulatory agencies and from the leading news magazines of India.

Aim:
To Enhance the health care delivery system can be achieved by addressing the cost and quality to certain extent which can raise the expectation in public by well-trained workforce, implementation of post marketing surveillance system, telehealth and other technologies can be used to make things more affordable.

Objective: To provide quality of the medicines are of utmost priority and the drug must be safe and highly effective. Affordability enables maximum population to use that drug.

Methods & Results:
1. India needs to have separate EML (Essential Medicines List) for children and adults. The list should also emphasize on reproductive health medicine and complementary medicines. Careful selection of limited range of essential medicines results in higher quality and cost effective use of health resources.
2. Incorporation of internationally recognised, science based and harmonised standards along with increased collaboration among regulators to strengthen regulatory decision making.
There should be well preparedness with plans and tools in case of public health emergency. And establishing well advanced pharmacovigilance programme.
3. By increasing autonomy of health facilities (e.g. touchless factories), enforcing regulations more stringently and having greater accountability of medicine procurement and medicine supply system.
4. The PMBJP should include all essential drugs featuring in NLEM. BPPI should procure only those drugs that pass bioequivalence test. Compulsory de-branding of generics should be done in a phased manner.
5.There should be more and more public-private partnerships which will ensure product registration, increase local production and distribution capacity and governance for global health. Such partnerships will strengthen research capacity by advance infrastructure and providing trainings etc.
Public–private partnerships leverage knowledge and technology transfer of new medical technologies. mobile health application, providing free health information to expectant mothers by means of text messages, telehealth etc.

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Increase of period of patent and market exclusivity can increase profit which may lead to Innovation if reinvested in R&D. Revenues from extended patent terms could be considered as a source of funding for drug donations. Implementing differential or tiered pricing.

6. By expansion of local manufacturing capabilities implemented according to GMP.

7. Increased investment by research funders for assessing the impact of substandard and falsified medical products, especially on patient outcomes, economic cost, and antimicrobial resistance, and the cost-effectiveness of interventions to eliminate substandard and falsified medical products.

Improved regulatory action, governance, accountability, and transparency across the medical product lifecycle, including appropriate public access to data on registered quality-assured medical products, inspection outcomes, product recalls, and for internet sales.

Education of health workers, policy-makers, and the public on the importance and impact of quality-assured medical products, safe procurement, and distribution, and incorporation of these elements into pharmacy, nursing, and medical curricula.

8.Evaluating the implementation of regulatory framework for orphan medicines to provide guidance on priority unmet medical need, to evaluate existing incentive schemes to facilitate the development of effective, safe and affordable medicines for rare diseases compared to the best available alternative.

9. The co-relation between academics and industries should be strengthened and more research should be encouraged at institutional level. There should be more health care facilities in the rural areas.

10. Harnessing roles of generics and biosimilars in encouraging price competition, maximizing opportunities for personalizing and repurposing medicines. Awareness about the generics and biosimilars among the people.

11. Relevant clinical and patient benefit should be a key factor in pricing and reimbursement decisions. No public resources should be wasted on medicines that offer little or no added value compared to treatments already available. It is therefore important to enhance the ability of health systems to review and adjust prices, and to withdraw funding for superseded or less cost-effective medicines if required.

Summary:

Quality of the medicines are of utmost priority and the drug must be safe and highly effective. Affordability enables maximum population to use that drug. There are few measures mentioned to assure that the drugs are affordable and of high quality. The data collected is from various articles, from various regulatory agencies and from the leading news magazines of India.

Conclusion:

The quality and affordability of medicines are very important aspect and can have the direct impact on the economy. India does have few policies ensuring quality and affordability of medicines, but those policies need to be revised and modified. New technologies are needed to be included and more collaborations are required to be done.

Keywords:

Quality, Affordability, Safety & Effectiveness of Drug Delivery Systems.

Novelty of the Topic:

This Methodology includes collection of data from various sources, thorough study to draw possibilities to make medical products more affordable and of utmost quality.

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Defining Substandard/ Spurious/ Falsified/ Falsely Labelled/ Counterfeit (SSFFC) Medical Products: Regulatory Point of View

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Abstract:

Introduction:
Drug counterfeiting has proved to be a menace to the society. The term "fake" is frequently used to refer fraudulent drugs in plain language. The phrases "Falsified", and "Counterfeit" have historically been used synonymously. In 2011, the WHO member nations adopted the new term "substandard/ spurious/falsely labelled/falsified/counterfeit medical items"(SSFFC) to describe such medicines.

Aim:
To define “SSFFC medical products” through regulatory point of view.

Objective:
To comparatively evaluate the definitions given by different health regulatory agencies to give snapshot of current state of “SSFFC medical products”.

Methods:
Three reference countries health regulatory authorities (USFDA, EMA, CDSCO) and a global observer WHO was chosen for this study. The official websites, directives, guidelines of the above-mentioned countries were searched for screening.

Results:
WHO calls substandard medical products as “out of specifications” products. Spurious products are not defined. Falsified medicines are defined as “Medical products that deliberately/ fraudulently misrepresent their identity, composition, or source.” The term ‘counterfeit’ is defined with respect to Intellectual Property Rights (IPR). They also use unregistered/ unlicensed medical products to define faulty medical products. USFDA don’t have clear definitions for “SSFFC medical products”. They define counterfeit medicines as illicit/ fake medicines that cause harm to human health. Drug Supply Chain Security Act (DSCSA) of USA describe about these illegitimate products and actions needed to counter it. EMA define falsified medicines as fake medicines designed to mimic real ones. EMA stress more about ‘medicines counterfeiting’, i.e. pharmaceuticals that violate intellectual property rights or trademark laws. The Falsified medicines directive talks more about it. CDSCO Section 17-B of Drugs and Cosmetics Act 1940 defines the terms used for explaining “SSFFC medical products”.

Summary:
There is no universally accepted single definitions to define these terminologies. Harmonization of definition is needed to solve the loopholes and ambiguity in understanding, and medicines that require distinct regulatory actions.

Conclusion:
This study will give comprehensive understanding of the various regulatory authorities opinion and stand on dealing with these “SSFFC medical products”. This will help the researchers who intend to conduct further studies on this domain.

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Keywords:
SSFFC, Counterfeit, Substandard, Falsified, Substandard.

Novelty of the Topic:
Comparison of health regulatory authorities' point of view on the domain of substandard medical products.

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Sublethal Effects of Carbosulfan on Geno-neurotoxic Profiles in Cyprinus carpio (L.)

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Abstract:
Pesticides are the most relevant of all types of water pollutants. Carbosulfan is one such carbamate pesticide that is widely used in rural communities and enters aquatic environments from proximity to agricultural lands or is directly applied to such environments. The study aimed to look into the sublethal effects of carbosulfan on the Geno-neurotoxic profiles of the freshwater fish Cyprinus carpio using the comet assay (in gill cells) and the ACh & AChE assay (in brain tissue). The laboratory-acclimatized fish were separated into four groups. Group, I acted as the control, while the other three groups were subjected to sublethal concentrations (1/5th of the 96 h LC50) for 7, 14, and 21 days. The experiments were designed in such a way that each group's fish were sacrificed on the same day. In a time-dependent way, there were significant ($P<0.05$) changes in DNA damage and ACh & AChE levels. Carbosulfan-induced DNA damage in C.carpio gill cells may be due to the generation of reactive oxygen species (ROS), which causes breaks in the DNA strands and may result in apoptosis. The lower ionic composition of C.carpio brain tissue explains why AChE is inhibited and ACh concentrations rise. The study indicates the genotoxic and neurotoxic potential of carbosulfan in freshwater fish C.carpio, as well as the potential value of C.carpio to assess pesticide pollution in freshwater bodies and precautions, should be taken when using low concentrations of carbosulfan. And it is worth banning or restricting the use of carbosulfan.

Keywords:
Carbosulfan, Cyprinus carpio, Genotoxic, Neurotoxic, Comet assay

Novelty of the Topic:
There were no studies were undertaken to evaluate the Geno-neurotoxic effects of carbosulfan in C. carpio. As the studies show the toxic effects of carbosulfan, given the importance of fish in human nutrition, biological monitoring of water and fish meat should be done frequently to ensure the continued safety of freshwater food. To prevent these pesticides and other toxins from entering the environment, safe disposal and recycling of domestic sewage and industrial wastes should be practiced.

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Synthesis, Characterization, Docking and Anti-oxidant Activity of Some Coumarin Derivatives

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Abstract:
Coumarins have attracted significant scientific interest in recent years due to their wide range of pharmacological activities like antioxidants, antinociceptives, antitumor agents, antiasthmatics, antibacterial, anti-inflammatory, antivirals, anticoagulants, etc. In this research work, an attempt has been made to synthesize some coumarin derivatives, perform docking studies, and further screen for their anti-oxidant activities. To achieve the target compounds, the synthetic pathway started by reacting resorcinol with ethyl acetoacetate. The obtained 7- hydroxy-3-methyl coumarin was made to react with substituted carbonyl and sulfonyl to get the carbonyl (CT-1 to 4) and sulphonyl (CS-1 to 4) coumarin derivatives. In order to predict the probability of therapeutically active compounds, molecular docking studies were performed on all the synthesized compounds. All the synthesized coumarin derivatives were screened for in-vitro and ex-vivo anti-oxidant properties. The antioxidant activity was carried out by the DPPH method and estimation of enzymatic antioxidants on goat liver slices. All the compounds showed moderate to good anti-oxidant, which correlates with the obtained docking scores. All the compounds had appropriate ADME values which suggests that these derivatives are likely to have drug-like properties.

Keywords:
Coumarin, Anti-Oxidants, DPPH, ADME, Docking.

Novelty of the Topic:
To synthesize some new derivatives of coumarin and evaluate for various pharmacological activities.

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Force Degradation Studies and Validated Stability Indicating LC Method Development for Estimation of Chlordiazepoxide and Trifluoperazine Hydrochloride in Presence of its Degradation Products

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Abstract:
A simple, accurate and highly specific stability-indicating LC method has been developed for the simultaneous determination of Chlordiazepoxide(CLR) and Trifluoperazine HCl (TFP) in drug substance and drug product. Forced degradation study was performed as per the ICH guideline for the both drugs. Different stress conditions like acid degradation, base degradation, neutral degradation, oxidative degradation, thermal degradation, and photolytic degradation were performed on Chlordiazepoxide and Trifluoperazine HCl. The Separation was done by using a C18 (250 mm × 4.6 mm, 5µm) column as a stationary phase and 70:30%(v/v) acetonitrile: PDP buffer (pH 5.5)adjusted with 0.1%TEA as isocratic mobile phase. The flow rate was 1ml/min and the wavelength for detection was 262 nm. The retention time was 4.1min and 7.1min for Chlordiazepoxide and Trifluoperazine HCl respectively. The developed method was validated as per the ICH guideline Q2(R1). The different parameter was done that is specificity, system suitability, linearity, accuracy, precision, LOD and LOQ, robustness. Chlordiazepoxide and Trifluoperazine HCl were susceptive to degradation in photolytic and thermal stress condition. The proposed methods could be successfully applied for the routine analysis of the studied drugs either in their pure bulk powders or in their pharmaceutical preparations without any preliminary separation step.

Keywords:
Chlordiazepoxide, Trifluoperazine hydrochloride, HPLC, Stability indicating, Degradation products

Novelty of the Topic:
The method was proven to be appropriate for use in the analysis of Chlordiazepoxide and Trifluoperazine HCl formulations in quality-control laboratories.

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In-Silico ADME/Tox Studies of Novel Dibenzopyrrole and Their Pyrazole Derivatives

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Abstract:
Due to their well-known versatility with biological and pharmacological characteristics, dibenzopyrroles constitute one of the most valuable ring systems in contemporary synthetic chemistry. Vinca-site binding substances come from many organisms and have different chemical makes ups. For more than 40 years, a number of these ingredients, including vincristine and vinblastine, have been utilized as therapeutically effective chemotherapy medicines. According to a docking study, compounds with the serial numbers DPO-1 and DPO-9 demonstrated stronger tubulin binding (PDB ID: 5J2T, Resolution: 2.20). Among them all, DPCO9 demonstrated strong binding at the M-loop of the Vinca binding site at the -chain of tubulin. The developed compounds' in-silico ADME/Tox computation provides a concise understanding of absorption, distribution, metabolism, and excretion as well as toxicological assessment. According to an in-silico analysis of our newly created compounds, they successfully pass the ADME/Tox tests that are required for almost 95% of medications currently on the market.

Keywords:
M-loop, ADMET Studies, DPCO9, Dibenzopyrrole

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Comprehensive Review and Global Assessment of HPLC Based Analytical Methods for Quantification of Amlodipine Besylate and Telmisartan

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Abstract:

Objective:
Nowadays, the majority of pharmaceutical formulations include more than one medicine due to the many benefits of multi-component formulations, such as patient compliance, increased efficacy, the synergistic effects of both treatments, etc. There are many spectroscopic techniques available, including infrared, mass, NMR, and UV Spectroscopy as well as chromatographic techniques like Ultra-performance Liquid Chromatography, TLC, HPTLC, GC, and HPLC. This review article addresses the simultaneous measurement of telmisartan and amlodipine besylate in bulk and formulations. Long-acting calcium channel blocker amlodipine besylate (AMLB) is used as an antihypertensive and antianginal medication, In the treatment of hypertension, the drug telmisartan (TEL) reduces blood pressure by inhibiting the Rennin-angiotensin-aldosterone System (RAAS). A combination of amlodipine Besylate and Telmisartan is used to lower blood pressure.

Methods:
This review paper will concentrate on several recently published analytical techniques for simultaneous estimate of Telmisartan and Amlodipine besylate. According to the existing literature, RP-HPLC techniques were created and validated in order to quantify the drug concentration in these multicomponent formulations. When analyzing pharmaceuticals in pharmaceutical formulations, RP-HPLC is one of the most important procedures. Using a multicriteria approach and algorithmic tools, the created approaches were evaluated.

Results:
The RP-HPLC methodologies for simultaneous measurement of amlodipine besylate and telmisartan are briefly discussed in this review paper. It goes into detail on many stages involved in the creation of the RP-HPLC process. The advantages and disadvantages of the created approaches were noted and contrasted.

Conclusion:
The information that is now accessible is particularly instructive for multicomponent analysis and will lead to the development of new paradigms for analysis-related research in the future. Based on the requirements for the research, this review is useful in helping to choose an appropriate analytical approach.

Keywords:
Amlodipine, Telmisartan, HPLC

Novelty of the Topic:
This topic covers the literature review on HPLC methods for estimation of Amlodipine besylate and Telmisartan in bulk drugs and formulations. The methods were compared for their analytical performance and the methods which showed good analytical performance were assessed for their ecofriendly nature and productivity using algorithmic tools so as to conclude the one as sustainable method till date.

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Method Development and Validation of Antiviral Drugs Ombitasvir and Ritinovir by Greener Liquid Chromatography Technique

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Abstract:
The world is witnessing the huge surge in various viral diseases among these HIV is found to be one of the life threatening and associated with highest mortality rate. Various antiviral drugs are employed to manage the symptoms of AIDS and few important antiretroviral drugs include Darunavir and Ritinovir. Researchers around the globe working on these molecules and developed conventional analytical methods that are found to employ organic solvents like acetonitrile and methanol that have negative impact on environment and analyst working in lab. Hence, the present study was designed to reduce the burden of these hazardous solvents in the analysis of these two antiretroviral drugs by green chromatographic technique, Method: In the present study, both these drugs were analysed using the mobile phase of non-organic solvents composed of Methanol and isopropyl acetate and at different wavelength, flow rate and run time using the C 18 column (Eclipse Plus C 18) in an HPLC, 2489 (WATERS, Japan). Results: Among the various parameters employed, both ombitavir (R T : 8.09) and Ritinovir (R T : 1.854) were resolved very well by the optimized method consisting of the mobile of Methanol and isopropyl acetate in the ratio of 60:40 with a flow rate of 1 mL/min and run time of 10 mins. The developed method was found to be more precise, specific, accurate and robust as well as the results were found to be in the acceptable limit. Hence, it was concluded that the present optimized and validated method was found to be environment and analyst safe by assessing the method with different tool for greenness and can be widely employed to analyse these two antiretroviral drugs in the lab where lacks of advanced instruments.

Keywords:
Antiretroviral, Green Solvent, Green Chromatography Technique

Novelty of the Topic:
The developed method is greener HPLC Method which is Eco Friendly in nature and analyst safeties as it consist of non hazardous solvent.

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Qualitative and Quantitative Estimation of Nitrosamines in the Cetirizine Dihydrochloride Tablets by Using Gas Chromatography-Mass Spectrometry

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Abstract

Introduction:
Nitrosamines are carcinogenic compounds and controlling and limiting the nitrosamines in the formulation composition is very important to protect human beings from adverse effects.

Aim and Objectives:
The purpose of this presentation is to present a method developed and validated for the determination of N-Nitrosodimethylamine (NDMA), N-Nitrosodiethylamine (NDEA), N-Nitroso-di-n-butylamine (NDBA), content in Cetirizine HCl Tablets.

Methods:
Gas Chromatography-Mass Spectrometry method was developed and validated for N-Nitrosodimethylamine (NDMA), N-Nitrosodiethylamine (NDEA), N-Nitroso-di-n-butylamine (NDBA), which could be formed during the formulation of the Cetirizine HCl tablets. The development methods were validated for the validation parameters like system suitability, specificity, accuracy, precision, linearity, the limit of quantitation (8ng/mL), and limit of detection (5 ng/mL).

Results:
Accurate and precise method was developed and validated, and the results are well within the acceptable limits as per ICH guidelines.

Summary and Conclusion:
The developed methods are very useful for society, and easily adaptable method for any type of GC-MS/MS.

Keywords:
Cetirizine HCl, N-Nitrosodimethylamine (NDMA), N-Nitrosodiethylamine (NDEA), N-Nitroso-di-n-butylamine (NDBA), 1 – Nitrosopiperazine and 1,4 Di Nitrosopiperazine, LC-MS/MS, GC-MS.MS.

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Borderline Products in Cosmetics: Regulatory Aspects

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Abstract

At the beginning of the 20th century, there were no regulations for cosmetics and medicines. the term Borderline cosmetics itself probably did not exist at the time. Several tragic incidents have prompted government agencies to enact drug safety and efficacy regulations. Most countries have followed a similar path when it comes to regulating pharmaceuticals, cosmetics, medical devices, and some sophisticated products such as cosmetics and nutritional supplements. Borderline cosmetics are products that have both cosmetic and pharmaceutical properties. When it comes to borderlines there are significant differences between regulators from terminology to differences in regulatory requirements advised by various stakeholders in the cosmetics industry. The borderline regulatory regime is said to be a developing stage despite Its rapid proliferation. Cosmetics with documented pharmaceutical activity are not officially recognized as a separate product category by regulatory bodies around the world. The goal of regulating borderlines is to establish their safety and efficacy along with consumer satisfaction. Regulatory giants have a lot of differences in regulating borderline cosmetics which makes the manufacturers comply with different regulations when it comes to registering, licensing, and manufacturing borderline cosmetics. This review focuses on different regulatory requirements of leading European and Asian countries and will put light on how different Countries have been regulating cosmeceuticals. However, Regulatory bodies need international harmonization on the status of borderline cosmetics, starting with the USA, Japan, and Europe. The recent advancement in technologies has made borderline cosmetics more sophisticated and more widely used, the regulatory status should be clear enough and the consumers should be educated about the benefits and risks of such products. The lack of a suitable regulatory framework and the dilemma of understanding the term borderline cosmetics give cosmetics manufacturers an unfair advantage.

Keywords:

Borderline, Cosmeceuticals, Regulations, Cosmetics.

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Validated Bioanalytical Method for Simultaneous Quantitative Analysis of Carbamazepine and its Metabolite (Carbamazepine-10,11-epoxide) in Human Plasma by UPLC-MS/MS Method and its Application in Fast Condition of Bioequivalence Study.

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Abstract:

Introduction:
Generic drug manufacturers to prove their formulation to be bioequivalent to innovator formulation needs an analytical method for efficient and sensitive quantification of analytes of interest in clinical pharmacology.

Aim & Objective:
A rapid, robust, sensitive and simple UPLC-MS/MS method to quantify
Carbamazepine (CB) and Carbamazepine-10,11-epoxide (CBMET) in human plasma was developed, and validated as per regulatory guideline and applied in a Fed condition of Bioequivalence study.

Method:
Reverse phased chromatography was performed with Ascentis Express C18 50 x 4.6 mm, 2.7µm as stationary phase, mixture of acetonitrile and 5mM Ammonium acetate in the ratio of 40:60 v/v as mobile phase delivered isocratically at a flow rate of 0.5 mL/min. The Protein precipitation method was used to extract analyte and its metabolite.

Results and Summary:
The validated method was accurate and precise with the curve range was 40.00/4000.00 – 2.00/200.00 ng/mL. The CB and CBMET were positively ionized using ESI source prior to detection by Multiple Reaction Monitoring (MRM) mode with transitions m/z 237.05→194.09 for carbamazepine and m/z 253.05→210.10 for metabolite. The method was successfully dosed with carbamazepine oral suspension (100mg/5 mL) in six healthy human adult male subjects under fed condition.

Conclusion:
This method was validated in accordance with ICH M10 bioanalytical guidelines and could be applied for a routine sample analysis of CB and CBMET in clinical pharmacological studies.

Keywords:
Bioanalytical, UPLC-MS/MS, Bioequivalence Study, Carbamazepine, Validation.

Novelty of the Topic:
New simple, Robust, Cost-effective, rapid and selective bioanalytical method.

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Phytochemical Profile, Cytotoxic Assay, Antibacterial Activity and In-silico Evaluation of Essential Oil Extracted from Nepeta Nervosa, Blue Moon Catmint

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Abstract

Nepeta nervosa, also known as blue moon catmint, is an aromatic and medicinally important perennial herb, belonging to family, lamiaceae. Nepeta species are widely used as folk medicines by the inhabitants of its native places. However, the phytochemical profile, pharmacological and biological activities of the plant are yet to be ascertained. In this study, we attempted to evaluate the phytochemical profile of Essential Oils (EOs) extracted from whole Nepeta plant for exploring its efficacy in pharmacology and antibacterial activity. The phytochemical analysis was carried out by GC-MS and about eighteen chemical constituents were detected, accounting about 99.98% of total oil composition. From GC-MS chromatogram, octadodecamethyl-cyclododecasiloxane (23.82%) was found in abundance followed by tetracosamethyl-cyclododecasiloxane (12.41%) and Distearin (11.98%). Furthermore, in-silico molecular docking of major constituents demonstrates the best structural features, which were used to elucidate the cytotoxic and antibacterial activity of the essential oils extracted from the plant. The EOs shows good cytotoxic activity against breast cancer cell lines, MCF-7 and MDA-MB-231 with 52% and 87% inhibition of cell growth, respectively. Moreover, the EOs shows commendable antibacterial activity with characteristic zone of inhibition and the concentration was inhibited upto minimal value of 10-20 µL mL-1 (minimum inhibitory concentration). It is noteworthy to mention that the current study has explored the bioactivity of plant species and may prove important in pharmacology and drug design.

Keywords:

Nepeta Nervosa, Essential Oils, GC-MS, Antibacterial Potential, Cytotoxic Activity.

Novelty of the Topic:

The present study demonstrates the utilization of biomass derived essential oils for application in pharmacy, pharmocognosy and acquired resistances. The novelty lies in the exploration of bioactivity of plant derived essential oils and may prove useful in pharmacology and drug design.

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In-silico Evaluation Studies on Quinazoline Analogues as an Antifungal Agents

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Abstract

Introduction:
Quinazoline is a chemical entity made up two fused six membered aromatic rings (a benzene ring and pyrimidine ring), its also known as benzopyrimidine. Quinazoline covers a large spectrum biological activity like anti-bacterial, anti-fungal, anti-leishmanial, anti-protozoal etc.
In our study the 26 quinazoline analogs are chosen as a ligand, which are targeted on the on lanosine 14αdemethylase enzyme which is responsible for the conversion of lanosterol to ergosterol.

Aim & Objective:
- To identify the ligands, correct binding geometry in the binding site.
- To predict the binding affinity of the ligands with active binding site.

Methods:
Inhibition of lanosine 14αdemethylase enzyme results in blocking the conversion of lanosterol to ergosterol as a result antagonizes the fungal activity the present work on different analogs of quinazoline around 26 compounds were screened for anti-fungal activity.
Molecular docking of the 26 quinazoline derivatives were done on 14αdemethylase (PDB: 6UEZ).

Result:
On the basis of docking score the quinazoline analog (R- 2 CH3 and R1- CN) best binding affinity with docking score -12.6 Kcal/mol shown by the compound when compared to standard and helps in the prediction of the anti-fungal activity.

Summary:
In this study, molecular docking analysis has been performed to determine the binding affinity with active site and interactions with the same.

Conclusion:
The report has concluded that the quinazoline analogs are capable of binding with 14α demethylase enzyme and down regulates its activity. To confirm the biological activity further studies are needed.

Keywords:
Anti-fungal, CN, Lanosterol, Quinazoline, 6UEZ

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Hyphenated Techniques in Standardization of Marine Products

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Abstract:

Introduction

Hyphenated techniques in analysis of natural product. Hyphenated technique is developed from the coupling of a separation technique and an on-line spectroscopic detection technology. The remarkable improvements in hyphenated analytical methods over the last two decades have significantly broadened their applications in the analysis of biomaterials, especially natural products. In this article, recent advances in the applications of various hyphenated techniques, e.g., GC-MS, LC-MS, LC-FTIR, LC-NMR, CE-MS, etc. in the context of pre-isolation analyses of crude extracts or fraction from various natural sources, isolation and on-line detection of natural products, chemotaxonomic studies, chemical fingerprinting, quality control of herbal products, dereplication of natural products, and metabolomic studies are discussed with appropriate examples.

Aims and Objectives

The ocean has a variety of superior useful biological resources. In order to identify excellent functional materials from these organisms, state-of-the-art analysis equipment has been developed and analysis technology using this equipment has seen extraordinary advances, with researchers coming out to directly identify useful components from marine resources using hyphenated techniques. In addition to the existing LC–MS/MS, GC–MS/MS, and ABTS-online HPLC, various analysis techniques such as LC–MS/MS–SPE–NMR–biochromatography are being developed. In addition, as information such as metabolomics and lipidomics is used as important data for usability analysis, sophistication of analysis technology is becoming more important.

Methods

1) Molecular Networking-Guided Isolation of New Etzionin-Type Diketopiperazine Hydroxamates from the Persian Gulf Sponge Cliona celata

The organic extracts were combined and screened for in vitro biological activities, including antimicrobial activity against the bacterial Enterococcus faecium, methicillin-resistant Staphylococcus aureus (MRSA), Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa, and Escherichia coli (ESKAPE) panel, antifungal activity (against Candida albicans and Cryptococcus neoformans), and cytotoxicity against six cancer cell lines (human breast MDA-MB231, malignant melanoma A375, colorectal adenocarcinoma HT29, colon cancer HCT116, liver cancer Hep G2, and lung carcinoma A549) and the non-cancerous human keratinocyte cell line HaCaT. The crude extract was inactive at the test concentration of 100 µg/mL in all assays.

2. Analysis of the Mycosporine-Like Amino Acid (MAA) Pattern of the Salt Marsh Red Alga Bostrychia scorpioides

Maria Orfanoudaki et al developed a method. In this context, the main focus of the present study was to investigate the different MAA patterns in the salt marsh macroalga B. scorpioides. To investigate the phytochemical profile of different B. scorpioides samples and unravel possible geographic patterns, various isolates were collected from several coastal regions of Western Europe and analyzed with an HPLC-DAD method that was developed and validated for the quantification of the main MAAs in

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Bostrychia scorpioides.

Validation was carried out following the ICH guidelines based on specificity, linearity, precision, and accuracy. Optimal chromatographic separation was achieved in 40 min on a YMS-Pack Pro C18 RS (150 × 4.6 mm, 3 µm) column by using water and methanol as mobile phase, modified with 0.9% (v/v) formic acid and 0.1% (v/v) acetic acid. The assay's sensitivity, linearity ($R2 \geq 0.9996$), precision (intraday precision $\leq 4.31\%$; interday precision $\leq 4.81\%$) and accuracy (recovery rates between 93.08% and 103.78%) were confirmed, rendering it suitable for the quantitative analysis of the main MAAs. Finally, practical applicability was proven by assaying different Bostrychia scorpioides extracts.

Result

One difficulty in classical natural product research is the re-isolation of already known compounds. Therefore, it is crucial to implement efficient dereplication strategies from the earliest (crude extract) stage to focus on new metabolites. In a previous study, we investigated the metabolome of the crude extract of the Persian Gulf sponge Axinella sinoxea by a combined MS/MS-based molecular networking and 1H NMR spectroscopy approach. This guided and facilitated the isolation and structure elucidation of eight metabolites, including a new DKP [16]. In the continuation of our project on the demosponges of the Persian Gulf, we now investigated the secondary metabolome of C. celata, a perforating sponge collected from the same site as A. sinoxea. Herein, we used, successfully, an MS/MS-based molecular networking dereplication strategy for (a) the identification of the chemical profile of the crude sponge extract, (b) the chemical structure prediction of many DKPs and DKPHs through their MS/MS fragmentation patterns, and (c) the targeted isolation of the DKPHs 1–3. The molecular-networking-based untargeted metabolomics approach indicated the presence of other putatively new DKP derivatives in the crude extract. However, we were unable to purify them due to their minor quantity.

Keywords:

Bioactive Compound, LC–MS/MS, Biochromatography, Metabolomics, Lipidomics Hyphenated Technique

Novelty of the Topic:

Recent advances in this field, mainly associated with the development of ultra-fast HPLC separation equipment and last generation mass spectrometry and NMR instruments have remarkably widened the use of these techniques in the marine natural products field. The development of algorithms and platforms for the analysis of data originated from these sources, such as the Global Natural Products Social Molecular Networking (GNPS) or the Small Molecular Accurate Recognition Technology (SMART) has notably enhanced the efficient exchange of data, establishing a community of users, and allowing the propagation of information that eventually can lead to the discovery of new bioactive molecules. Chemical dereplication, chemotaxonomic studies, chemical finger-printing, metabolomic studies, molecular networking, microbial community interactions, biosynthetic pathways, partial identification of compounds, and isolation of bioactive natural products constitute specific examples of tasks that can be successfully accomplished using these techniques and platforms.

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Design, Synthesis and Antimicrobial Activity of 2-oxo-3-phenylazetidine Derivatives

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Abstract
We have synthesized a 1-(1H-indol-1-yl)-3-(-oxo-phenylazetidine-1yl) urea derivatives (L1-L7). The structure of all newly synthesized compounds was confirmed by IR, proton NMR and mass spectroscopy. All these compounds were screened or subjected to antibacterial activity against the commonly found bacteria such as E-coli, staphylococcus aureus, shigella flexneri and protease vulgaris using agar cup method, streptomycin was used as control the growth inhibition was found to 20, 22, 22 and 23 mg /ml respectively for bacteria. The minimum inhibitory concentration was determined by serial dilution method. The compound L1, L2 and L3 shows activity. But L1 showed a good activity in staphylococcus aureus. The growth inhibition was found to be 11, 13 and 16 mg/ml with respect to the drug concentration 5, 10 and 15 mg/ml.

Keywords:
Azetidine, Antibacterial

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Overview of the Bioanalytical Method of Bisoprolol in Biological Matrices

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Abstract:

Aim & Objective:
Bisoprolol is a beta-blocker protocol was developed and validated for quantification of bisoprolol in human plasma. Bio-availability studies are analysed with the human plasma bind with bisoprolol.

Methods:
In assay methods are can be used to determine the presence of a specific protein binding are occur approximately 30% of serum within 2 to 4 hrs in renal function.

Result:
The mass transition pairs of m/z 326 > 116 and 326.4 > 268.4 mass spectrometery method are determine the bisoprolol and internal examination . During method validation over the range of 0.4-100 ng/mL.Linearity, accuracy, precision, recovery, matrix effect, dilution test and stability are analysed.

Conclusion:
It is used to determine FTIR,HPTLC, LCMS , HPLC examine in the form of biological fluids. LCMS methods are more sensitive, specific and reproducible, suitable to determine the bisoprolol concentration.

Keywords:
Bisoprolol, Analytical Method, LC-MS/MS, Method Validation, β blockers, Biological Matrices

Novelty of the Topic:
All analytical methods has been determination of bisoprolol fumarate in the matters of raw materials, pharmaceutical preparations and biological fluids. the analysis method for the mixture of bisoprolol with other substances has been developed. Spectrophotometric analysis methods are carry out quickly but LCMS are better than other method are more accuracy, linearity, precision, reliability. LC-MS are complicated but more sensitive.

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Synthesis, Characterization, Docking and Anti-inflammatory Activity of Some Coumarin Derivatives

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Abstract:
The coumarin moiety, which belongs to the benzopyrone family of compounds is made up of a benzene ring attached to a pyrone ring and is frequently found in many classes of naturally occurring heterocyclic compounds of biological relevance. Derivatives of coumarin exhibit a wide range of therapeutical properties, including antibacterial, anti-inflammatory, antioxidant, etc. In the current study, an attempt has been made to synthesize various noble coumarin derivatives and evaluate for their anti-inflammatory and anti-microbial activity
Resorcinol and ethyl acetoacetate reacted in presence of conc sulphuric acid to form 7-hydroxy-3-methyl coumarin which was further reacted with p-chloro aniline to form amino derivative of coumarin. Finally, the titled Schiff's base coumarin (CP-1 to CP-3) derivatives were obtained by undergoing Schiff's base reaction with substituted aromatic aldehydes. All the synthesized compounds were screened for molecular docking studies to predict the required pharmacological activity. Finally, the screened compounds were tested for in-vitro anti-inflammatory activity by the BSA method followed by in-vivo using the carrageenan-induced rat paw edema method and antimicrobial activity by cup-plate method. All of the compounds had moderate to good anti-inflammatory and anti-microbial properties, which are consistent with the docking scores. All of the compounds had suitable ADME values, indicating that these derivatives are likely to possess drug-like properties

Keywords:
Coumarin, Anti-inflammatory Activity, Docking, ADME

Novelty of the Topic:
To synthesize some noble derivatives of coumarin and screen for various pharmacological activities.

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Walnuts and Alzheimer's Disease Progression: An Emerging Therapeutic Interventions

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Abstract

Amyloid Beta Protein (Aβ) is the major amyloid protein in Alzheimer's Disease (AD), that is produced by the proteolytic cleavage of Amyloid Precursor Protein (APP). APP is cleaved by α-secretase or by β-secretase with subsequent cleavage by γ-secretase, which releases Aβ isoforms. Aβ clearance is accomplished by its proteolytic degradation by Neprilysin (NEP) and Insulin Degrading Enzyme (IDE). In this study, we examined the efficacy of walnuts enriched diet on the activities of APP-processing and Aβ degrading enzymes. Further, we studied here whether short- and/or long-term dietary supplementation with walnuts can improve the BDNF levels and decline cholinergic deficit caused by ChAT and AChE enzymes in AD-tg mice. From the age of 4 months, the experimental groups of AD-tg mice were fed custom-mixed diets containing 6% walnuts (T6) or 9% walnuts (T9) (i.e., equivalent to recommended 1 or 1.5 oz, respectively, daily intake of walnuts in humans) for 5, 10 or 15 months (i.e., until the age of 9, 14 and 19 months). The control groups, i.e., AD-tg (T0) and wild-type mice (Wt), were fed a diet without walnuts. AD-tg mice on the control diet without walnuts (T0) showed a significant age-dependent decrease in the α-secretase activity and increase in β- and γ-secretases activities compared to wild-type mice on the same diet. A significant decrease in IDE activity was also observed until 14 months, but NEP activity was not affected except at the age of 14 months. The activities of α-, β- and γ-secretases were significantly restored in AD-tg mice on diets with 6% or 9% walnuts (T6 and T9). Diet with 9% walnuts was more effective compared to diet with 6% walnuts. The walnut supplementation also increased NEP and IDE activities in the AD-tg mice. Long-term supplementation with walnuts in the diet for 10 or 15 months was found to be more effective in modulating the activities of these enzymes and oxidative stress in comparison with short-term supplementation with walnuts for 5 months in AD-tg mice. Long-term supplementation with walnuts in the diet for 10 or 15 months in AD-tg mice was found to be more effective on ChAT and BDNF levels in comparison with short-term supplementation with walnuts for 5 months. Whereas on AChE activity both short- and long-term supplementation of walnuts have almost the similar protective effect. Our findings indicate that dietary supplementation with walnuts can significantly elevate the α-secretase activity and alleviate β- and γ-secretase activities compared to the AD-tg mice on the control diet. In addition, walnut supplementation declines the cholinergic deficit by improving ChAT and BDNF levels and reducing AChE activity in AD-tg mice. Therefore, diet with walnuts will lead to decreased processing of APP to Aβ, thereby reducing amyloid burden and delay the onset of AD.

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Keywords:
Alzheimer's Disease, α-secretase, β-secretase, γ-secretase, Neprilysin, Insulysin, Choline Acetyltransferase, Acetylcholinesterase, Brain-derived Neurotrophic Factor, Walnuts.

Novelty of the Topic:
Dietary walnut supplementation reducing amyloid burden and delay the onset of AD by modulating the enzyme activities involved in processing of APP, Aβ degradation and cholinergic deficit.

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Phytochemical Screening and GC-MS Analysis of Madhuca Longifolia (J. Koenig Ex L.) J. F. Macbr. (Family: Sapotaceae) Seeds with Special Reference to Cancer Chemoprevention

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Abstract:

Introduction:
Exhaustive studies showed that several parts of Madhuca longifolia have pharmaceutical, ethno-medicinal and ethnopharmacological value and also have effective against cancer, ulcer etc.

Aim & Objectives:
The aim & objectives were to analyze the phytochemical screening and GC-MS study for evaluation of ethanolic extract of Madhuca longifolia seeds as a potent anticancer therapeutic agent.

Methods:
Preliminary phytochemical screening was performed through chemical tests i.e., alkaloids, glycosides, phytosterols, triterpenoids, alpha amino acids, dipeptides, arginine, tryptophan, tyrosin, amino acids, reducing sugar etc. The phytochemical investigation of the ethanolic extract was performed on a GC-MS equipment as per protocol.

Results:
In the phytochemical screening; reducing sugar, ketohexoses, disaccharides, aromatic amino acids, tyrosin, tryptophan, arginine, alpha amino acids and dipeptides, phytosterols, polyphenols (flavonoids), alkaloids, saponin glycosides, triterpenoids were present and pentose was absent in the ethanolic extract. Based on GC-MS analysis, the important phytochemicals present in seeds were Hexaylcyclohexane; Octylcyclohexane; E-14-Hexadecenal; Pentadecan-8-one; 8-Octadecanone (potent anti-cancer compound) and Dibutyl Phthalate.

Summary:
Phytochemical screening was useful to the detection of the bioactive principles present or absent in the plant extracts. The GC-MS analysis of the plant seeds may be provided useful information with regard to identity and quantity of phytochemicals present and isolate the anti-cancer compound. This protocol may be helpful to isolate the cancer chemopreventive chemical compound of the ethanolic seed extract.

Conclusion:
Ethanolic extract of Madhuca longifolia seeds have potent chemo preventive compound.

Keywords:
Madhuca Longifolia, Phytochemical, Gas Chromatography-Mass Spectrometry.

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Evaluation of Antidepressant Like Activity of L - Fenchone in Chronic Unpredictable Mild Stress (CUMS) Induced Depression in Rats

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Abstract

A comprehensive approach like combining the natural medicine and CUS model for evaluating it as anti-depressant would be productive. Fenchone screened for anti-depressant activity in CUMS model using Fluoxetine as standard. Wistar albino rats were selected to CUMS procedure for 28 days and all the period test substance was administered at doses of 400 mg/kg and 800 mg/kg and at the end of the treatment behavioral and biochemical parameters were analyzed and histopathology findings were observed. CUMS exposure caused a depression like behavior corroborated by the increased immobility time in Despair swim test. In Actophotometer decreased locomotor activity and in the hole-board test a decrease in the number of head dips and line crossings. Biochemical findings revealed that decreased serum oxide dismutase and catalase. Fenchone at the doses tested produced significant effects on behavioral and biochemical tests when compare to CUS group. These results manifested that Fenchone had specifically anti-depressant like effect in vivo. In conclusion, the present study advocate that the repeated administration of Fenchone notably reversed CUMS induced depression and oxidative damage and possessed antidepressant like effects, which would be of therapeutic interest for using Fenchone in the treatment of depressive disorders.

Keywords:

Chronic Unpredictable Mild Stress, Despair Swim Test, Super Oxide Dismutase, Catalase, Fluoxetine.

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Evaluation of Anti-Obesity Activity of Hydro-Alcoholic Extract of Artocarpus Heterophyllus Lam. Seeds in High Fat Diet Induced Obese Rat

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Abstract:

Background:
Allopathic medical approaches to treating obesity come with a number of downsides, such as negative effects on monoamine neurotransmitters and the possibility of medication dependence and abuse. It is necessary to increase the safety of these drugs. For more than 2000 years, herbal medicine has been utilized to treat diseases with success. Numerous research has demonstrated the effectiveness of herbal therapy in treating obesity, although the underlying mechanisms remain unclear.

Objectives:
To evaluate anti-obesity activity of hydroalcoholic extract of Artocarpous heterophyllus Lam. seeds in high fat diet induced obese rats.

Methods:
30 male Albino Wistar rats were divided into 5 groups such that each group had 6 animals each. Group I was the normal group, treated with the normal commercial diet for a period of 12 weeks. Group 2 was the induction group, treated with high-fat diet for a period of 12 weeks. Groups 3, 4 and 5 were treated with the standard Orlistat (30 mg/kg p.o), AHHE (200 mg/kg) and AHHE (400 mg/kg) respectively after induction with the high fat diet from the 6th week onwards till the end of 12 week. During the treatment also, the animals were fed with high-fat diet. Anti-obesity activity was evaluated by anthropometric parameters, lipid profile, antioxidants status along with the histopathological studies.

Results:
An improvement in the anthropometric parameters, lipid profile, antioxidants status along with the histopathological studies confirms that the obesity was maintained in high-fat diet fed rats treated with the hydroalcoholic extract of Artocarpus heterophyllus Lam. Seeds.

Conclusion:
The hydrolacoholic extract of Artocarpus heterophyllus Lam. seeds may posses properties which help in the maintenance of obesity, however further research is needed to confirm its exact mechanism of action.

Keywords:
ARTOCARPOUS HETEROPHYLLUS LAM seeds, High Fat Diet, Orlistat, Lipid Profile

Novelty of the Topic:
To evaluate anti-obesity activity of HYDROALCOHOLIC HETEROPHYLLUS LAM. Seeds in obese rat induced by feeding high fat diet.

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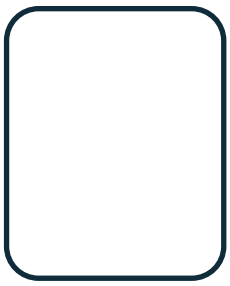
Assessment of Neuroprotective Action of Fresh Fruit Juice of Opuntia Dillenii Haw. Against Experimentally Induced Neurotoxicity in Rats



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Abstract:

The neuroprotective activity of fresh Fruit Juice of Opuntia dillenii Haw. (FJOD) was tested using Bilateral Carotid Artery Occlusion (BCAO)-reperfusion induced neurotoxicity models in rats. In BCAO-reperfusion model the animals were pretreated with FJOD (2.5 and 5 ml/kg p.o.) and Vit E (10 mg/kg p.o.) for 11 days and on 11th day animals were subjected to BCAO for 45 min and reperfusion for 24 h the assessment of behavioral activity and the estimation of antioxidant parameters were carried out. The infract volume was evaluated by TTC staining method and brain histopathological studies were carried out. Evan's blue method of Blood Brain Barrier (BBB) disruption was carried out by occluding two animals from each group for 3 h and reperfused for 24 h.

Treatment with FJOD significantly inhibited BCAO-reperfusion induced alteration in behavioral and physiological responses. The significant decrease the infract volume, extent of blood brain barrier disruption and prevents the elevation of AchE, LPO and nitrite levels. Increase in GSH, SOD, CAT, TT, Total proteins was observed in groups treated with FJOD. The FJOD improves the behavioral and physiological parameters and reduced the histopathological changes induced by BCAO-reperfusion.

Keywords:

Excitotoxicity, FJOD, Neuroprotective, Oxidative Stress

Novelty of the Topic:

This special issue aims to provide a comprehensive overview of the latest discoveries in plant extract products with an emphasis on Pharmacological activity.

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Brain Tumor

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Abstract

Introduction:
A mass or collection of undesirable brain cells is known as a brain tumor. Our brain is encased inside a highly rigid skull. Any growth in such a constrained area can be problematic. These tumors are more precisely termed "intracranial neoplasms," as some of them do not originate from brain tissue (for instance, meningiomas and lymphomas), and each of them has its own biology, etiology, and course of medication. Benign and malignant brain tumors can be widely classified as brain tumors.

Aim & Objectives:
To know comprehensive information about brain tumors, including their categorization, risk factors, associated symptoms, diagnoses, and treatment regimens.

Method:
This comprehensive review was made from literatures collected from search engines like PubMed, Google Scholar, etc.

Results and Discussion:
Our brain is the most protected organ of our body and also very difficult to know what's happening in it. If any deadly disease like brain tumor also it become difficult for its exact treatment due to lack of poor diagnostic in early stage, so diagnosis in early stage necessary by considering its symptoms. Histopathological analysis (biopsy) is necessary for determining exact type of tumor and its alternative treatment.

Summary and Conclusion:
The early detection of brain tumors is crucial for enhancing treatment options and raising patient survival rates, hence it is a crucial responsibility of medical practitioners. A thorough neurologic examination, extensive history taking, and the appropriate diagnostic neuroimaging procedures are all necessary for the accurate assessment of the patient with a suspected brain tumor. Treatment strategies are determined by a number of factors, such as the patient's health and the tumor's size, type, and location.

Keywords:
Brain Tumor, Benign Brain Tumor, Malignant Brain Tumor, and Biopsy.

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Evaluation of Fertility Enhancing Activity of Aqueous Extract of Terminalia Cattappa Leaves against Male Albino Rat

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Abstract:
Infertility is aase of the male or female reproductive system defined by the failure to achieve pregnancy. Infertility affects millions of people of reproductive age worldwide – and has an impact. Estimates suggest that between 48 million couples and 186 million individuals live with infertility globally. In the male reproductive system, infertility is most commonly caused by problems in the ejection of semen, absence or low levels of sperm, or abnormal shape (morphology) and movement (motility) of the sperm. In the female reproductive system, infertility may be caused by a range of abnormalities of the ovaries, uterus, fallopian tubes, and the endocrine system, among others. The number of pharmacological investigations on Terminalia catappa has been so far. The present study is to evaluate the fertility enhancing activity of Terminalia catappa in experimental animals (MALE Albino rats).

Keywords:
Fertility, Terminalia Catappa, Bio Flavonoids (Rutin).

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Review on Hashimoto's Thyroiditis Auto-immune Disorder

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Abstract:

Hashimoto thyroiditis is an autoimmune disease which means the immune system can affect the body's own tissue. Immune system can attack thyroid . Hashimoto's disease attack thyroid gland with antibodies that are anti thyroperoxidase (TPO) antibodies, thyroid stimulating hormone receptor , anti thyroglobulin antibodies. Thyroperoxidase is an enzyme that can produce thyroid hormones like thyroxine (T4) & triiodothyronine (T3), TSH produces thyroid hormone by stimulating thyroid gland . TSH secreted by pituitary gland in the brain .TSH receptor antibodies initiate action of TSH. Low Thyroid Stimulating Hormone Receptor Antibodies (TSHR-AB) initiate the hypothyroidism is known as Hashimoto's thyroiditis or chronic lymphatic thyroiditis. High TSHR-AB initiate the hyperthyroidism that is known as Grave's disease. Mostly Hashimoto's thyroiditis does not have any symptoms at first, later on it shows an inflammation on front neck that is thyroid gland become enlarged called goite, they gives some discomfort in swallowing, breathing, muscles and joint pains, weight gain, problems in getting pregnancy, fatigue, hair loss etc. untreated hypothyroidism can leads to enlarged heart that is known as cardiomyopathy, heart failure, accumulation of fluids around lungs. Main cause of this disease is it can also affect by genetic factors. It can be diagnosed by blood test . It can be prevented by injecting hormones like levothyroxine, liotrix, liothyroxin, selenium etc.

Keywords:

Auto-immune Disease, Hashimoto's Thyroiditis, Hypothyroidism, TSH Receptor.

Novelty of the Topic:

Autoimmune disease is one of the most dangerous disease in human body. There are many types of autoimmune disease. Hashimoto thyroidits is one among them. It affects the thyroid gland and causes thyroid related disease which leads to life threathening . So to know about them is essential to avoid them. In Hashimoto's disease, immune-system cells lead to the death of the thyroid's hormone-producing cells. The disease usually results in a decline in hormone production. Thyroiditis is when your thyroid gland becomes irritated. Hashimoto's thyroiditis occurs when your body makes antibodies that attack the cells in your thyroid.

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Aqueous Acacia Arabica Leaf Extract Has Skeletal Muscle Relaxant Effects in Wistar Rats

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Abstract:
A muscle relaxant is a medication that alters skeletal muscle tone and function. It can be applied to treat symptoms like hyperreflexia, discomfort, and muscle spasms. By assessing the extract's effects on wistar rats using a rota-rod apparatus model, the current study aims to determine the aqueous leaves extract of Acacia Arabica's skeletal muscle relaxant activity. Male rats were used in the experiments, and they were divided into three groups: control, standard, and test. Tannin, polyphenolic chemicals, flavonoids including kaempferol, glucoside, iso-quercitrin, and leucocyanidin, galactose, arabinose, rhamnose, and aldobiouronic acids, as well as arabinobioses, are all present in the extract (aqueous). A 200 mg/kg dosage of the extract was given orally. As a reference, 4 mg/kg (s.c.) of diazepam was employed. Control is given in the form of regular saline. Aqueous extract demonstrated skeletal muscular relaxant action at a dosage level of 200 mg/kg body weight. Based on the research, we can say that Acacia Arabica can be utilised to make herbal medications that fight the effects of relaxants.

Keywords:
Acacia Arabica, Muscle Relaxant, Rota-rod, Flavonoids, Diazepam

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Beneficial of Satureja Hortensis L. in Restoring Ovarian Functions in Letrozole-Induced PCOS

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Abstract:
Polycystic Ovarian Syndrome (PCOS), a common endocrine-metabolic and reproductive disorder in reproductive-aged women, have an unknown pathophysiology. Satureja Hortensis L. Hydroalcoholic Extract (HASH) was tested for its ability to restore ovarian function in a letrozole-induced rat model of PCOS.

Methods:
56 Albino Wistar rats were divided into five groups, normal, induction, standard, and test, except for the induction group, which had 16 animals. Phase 1 (PCOS induction and treatment) and Phase 2 (treatment) comprised the study (Mating). In Phase -1, female rats were given 1 mg/kg of letrozole (LTZ) for 28 days to induce PCOS, followed by 15 days of Metformin (300 mg/kg) p.o. and 200 and 400 mg/kg of HASH p.o. to the standard and test groups, respectively. 10 induction group animals underwent 15 days of Natural Recovery (NR) after PCOS induction. During induction, NR, and treatment, daily vaginal smears monitored the oestrous cycle. After NR and treatment, rats were euthanized, and their ovaries and uteruses were weighed. Fasting glucose, estrogen, progesterone, testosterone, and lipids were assessed. Histopathological and antioxidant tests were done. Phase 2 included four animals per group. Phase 2 assessed litter size and neonatal mortality. Phase 1 HASH normalized rat oestrous cycles. All treatment groups improved anthropometrics. HASH-treated rats had better fasting blood glucose, hormone, and lipid profiles than PCOS controls. Histopathology showed fewer cystic follicles in the treatment group. HASH reduced neonatal mortality, fatal malformations, and litter size in Phase 2 (400 mg/kg) compared to the PCOS control group.

Conclusion:
HASH regulated the oestrous cycle and improved anthropometric parameters. Histopathological evaluations showed an increase in litter size, a decrease in neonatal mortality, and a decrease in fatal deformities. HASH restored ovarian function. Its PCOS treatment and management efficacy need further study.

Keywords:
Satureja Hortnensis L., PCOS, Letrozole, Neonatal Mortality.

Novelty of the Topic:
To evaluate whether satureja hortensis l. Has the ability in restoring ovarian functions in letrozole-induced PCOS.

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Recent updates on Alpha-7-N-Icotinic Acetylcholine Receptor with Relation to Alzhiemer's Disease

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Abstract

Alzheimer's disease is one of the most common disease-causing disabilities in old age group. There are many hypotheses till date one among them is large reduction in nicotinic receptor level in brain. Alpha-7-nicotinic acetylcholine receptor is a ligand gated ion channel found in cerebral cortex and hippocampus area that are responsible for cognitive function. In Alzheimer's there is large decrease in α7nAChR. As it has exceptional high permeability for calcium which in turn responsible for many physiological responses including memory and behaviour. Many drugs have been investigated as an agonist as well as allosteric modification of α7nAChR through which improvement has been reported in cognitive deficit. Agonist of α7nAChR has been investigated in clinical studies to improve the memory deficit. Many drugs have been investigated as an agonist as well as allosteric modification of α7nAChR through which improvement has been reported in cognitive deficit. Therefore, current review we begin with a brief overview of nicotinic receptor followed by summary and discussion of studies showing role of α7nAChR in Alzheimer's disease.

Keywords:

Alzheimer's Disease, Alpha-7-nicotinic Acetylcholine Receptor, Memory Deficit.

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Electronic Skin-A Health Monitor

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Abstract:
Human skin can sense the information from the environment and play a significant role in the contact with the outside world. Electronic skins, which mimic the characteristics of human skin and the ability to perceive the environment have a wide range of applications in the fields of medical monitoring, bionic prostheses and robotic tactile perception.The electronic skin can continuously sense large number of physical and biochemical parameters of the human body, human motion and gas to monitor human health, sports condition and surrounding gases in various environments in real time.The System on Chip (SoC) implementation significantly reduces the physical footprint and power requirements compared to commercial interfaces, which enables the creation nimble prosthetic limbs. Its small size and reduced battery requirements are ideal for advanced prosthetics that utilize electronic skin to provide their user tactile feedback. The architecture consists of multiple charge-sensitive Analog Front Ends (AFEs) interfaced to a central, 16 bit microcontroller core which is capable of processing the sensory information in real time. Event-driven operation allows the chip to monitor all input channels while consuming minimal energy. A test chip has been fabricated in a 0.13 μ m CMOS technology and its functionality demonstrated by interfacing the chip to a prototype electronic skin based on Polyvinylidene Fluoride (PVDF) piezoelectric sensors. Tactile signals from the sensors are measured and processed on chip to calculate the corresponding charge.It was pointed out that there are still some remaining technical problems in the research process of electronic skin such as high cost and complex process.The development trend of electrode skin was towards multi function and simultaneous detection of multiple external stimuli, and it had broad application prospects in the fields of medical equipment robotics and future manufacturing.

Keywords:
Human Skin, Electronic Skin,16 Bit Microcontroller, Test Chip, Tactile Signals

Novelty of the Topic:
Wearable electronic devices with skin-like properties will provide platforms for continuous and real time monitoring of human physiological signals such as tissue pressure, body motion, temperature, metabolites, electrolyte balance, and disease-related biomarkers. Transdermal drug delivery devices can also be integrated into electronic skin to enhance its non-invasive, real-time dynamic therapy functions.

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Omicron Variant BF.7 – An Alarming Global Threat

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Abstract:

Introduction:
Since its identification in the early 2019 the novel coronavirus causing severe respiratory syndrome in Wuhan, China by WHO, which caused the coronavirus diseases 2019 and is rapidly spreading diseases resulting in global pandemic. In 2022 December new subvariant omicron BF.7 has been reported in China, alarming global threat. Approximately 64 million confirmed cases and 66,45,812 deaths have been reported across the world.
Overtime, the SARS-COV-2 acquired genetic mutation resulting in multiple types of SARS-COV-2 variants and subvariants that have been confirmed.
Aim & Objectives:
To know the severity of Omicron variant BF.7 spread and precautions to be taken to safeguard a vaccinated/non-vaccinated individuals from omicron variant BF.7.
Method:
This comprehensive review was made from literatures collected from search engines like PubMed, Google Scholar, Altavista, Web of Science and literatures from authentic databases etc.
Results and Discussion: Comparing all 4 phases of covid pandemic and subsequent strains if SARS-COV2, Omicron variantBF.7 is causing major chaos and panic across the China and its neighboring countries with regard to its spread and it is more likely to cause severe illness compare to all other variants.
Summary & Conclusion:
by considering all the phases of covid pandemic with millions of deaths across the globe, the omicron BF.7, a mutant or subvariant of corona virus has spread in China despite complete immunization across the country. Still severe health issues persist in both vaccinated and non-vaccinated peoples and in many cases, people are unaware of what are the necessary precautions to safeguard.

Key words:
Omicron Variant and BF.7, Wuhan, Vaccine, SARS-COV2, WHO

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A Study of Antioxidant Non- Nutrient and Different Phytochemicals in Oat, Barley and Barnyard

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Abstract:

Introduction
Any modified food which provides health benefits beyond the traditional nutrients it generally contains is known as functional ingredient.

Aims and Objective
Towards the promotion of fit lifestyle and proper nutrition, the present study was an effort to validate the acceptability and promotion of three different functional ingredients (oat, barley and barnyard) for general and therapeutic use. Therefore, these ingredients maybe included in the diet of diabetic patients.

Methods
Present study was a laboratory based experimental study. This phase showed the estimation of differential nutrient components (soluble starch, amylose, amylopectin, resistant starch) and different phytochemicals.

Results
The results discovered that all the selected three functional ingredients were found to be rich in soluble starch, amylose, amylopectin, total phenols and alkaloids.

Summary and Conclusions
Cereal grains are important part of daily diet, mainly due to its nutrient content and therapeutic potential. These functional ingredients were rich in soluble fibers and other phytochemicals which has tendency to lowering the risk of obesity, diabetes, CVD and cancer. Consumption of these functional ingredients helps in fighting against the diseases. Functional properties enhance the function of the food which helps in the formulation of food products, so these ingredients used as functional ingredients in food formulation. These functional ingredients possess medicinal potential for all living beings. Therefore, it is necessary to throw light on their uses and pharmacological values and therapeutic properties.

Keywords
Functional Ingredients, Oat, Barley, Barnyard

Novelty of the Topic
since in this field no research has been conducted so far on the differential nutrient component of these functional ingredients – oat, barley and barnyard. Detailed and comprehensive research is needed in this regard and current study is an attempt to provide new insights about the same.

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Risk of Covid Infection in Cancer Patients after Vaccination and an Outbreak in Nanovaccinology

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Abstract

Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) has affected more than 600 million people worldwide, leading the WHO to declare a pandemic. Patients living with cancer are at a significantly increased risk of morbidity and mortality followed by infection with SARS-CoV-2 and its variants even after COVID vaccination. The vaccine dose neutralizing response against SARS CoV-2 in patients with cancer was blunted especially in patients with B-cell derived hematologic malignancies who fail to produce protective levels of anti-spike antibodies or T-cells in response to SARS-CoV-2 vaccination. The reason behind this is Bruton Tyrosine Kinase Inhibitor (BTKi). Anti-CD20 targeted cancer therapy, Anti-CD20 Monoclonal Antibodies (mAbs) were also significantly associated with poor seroconversion and associated with a decreased humoral response which is around 80% patients with haematological cancer patients who were not receiving cancer treatment at the time of vaccination but had received treatment before vaccination also had significantly lower rates of response. Therefore, the development of safe and effective vaccines is crucial for cancer and other immunosuppressant patients. The use of nanotechnology in vaccinology provides the opportunity to contrast these difficulties and develop effective vaccines. Nano-vaccine confers targeted delivering capacity to lymph nodes and provides platform for adjuvants and antigens that modulate the immune system to produce a powerful response. This review highlights the risk of SARS CoV-2 infection in cancer patients after vaccination and recent advances in nanovaccinology paving the way towards reducing the virus's pathogenic efficiency in cancerous patients and other immunocompromised individuals.

Keywords:

COVID-19, Neoplasm, Hematologic Malignancy, Chemotherapy, Nano-vaccine.

Novelty of the Topic:

Nano-vaccine produce a powerful antibody response by conferring targeted delivery to lymph nodes, which can be used in cancer and other immunocompromised patients who have higher risk of covid infection. Therefore, nano-vaccine trends to make a greater contribution to modern vaccinology.

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A Review on Diabetes Mellitus and Autoimmunity in Patients with Congenital Rubella Syndrome

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Abstract

Patients with Congenital Rubella Syndrome (CRS) have a higher incidence of Insulin-dependent Diabetic Mellitus (IDDM), according to reports. Therefore, research on children with CRS would be crucial in observing the emergence of IDDM in a sensitive population. A growing body scientific investigations reveal that 30% children from entire world population who suffer from CRS are found to have diabetes. The pancreatic Islet Cell Cytotoxic or Surface Antibodies (ICSA) are detected in 50 to 80% of patients with glucose problems, they are only discovered in 20.2% of the overall population of patients with CRS. Possible mechanisms for beta cell destruction by these chemicals include generation of oxygen free radicals and alteration of endogenous scavengers of these reactive species, breakage of DNA and a consequent increase in the activity of poly-ADP-ribose synthetase, an enzyme depleting nicotinamide adenine dinucleotide in beta cells, and due to inhibition of active calcium transport and calmodulin-activated protein kinase activity. This review focuses on highlighting the possible mechanisms with emphasize on the therapeutical aspect of CRS. Further exploration about CRS and DM are necessary to explicit the cross-linking mechanism and to overcome this pathological condition.

Keywords:

Congenital Rubella Syndrome, IDDM, Diabetes Milletus.

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A Review on Post Covid Muscular Atrophy

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Abstract

Skeletal muscle symptoms are common in both acute coronavirus disease (Covid)-19 and Post-acute Covid-19 Sequelae (PASC). The cause of this is the affected cellular and molecular pathways and their involvement in other conditions such as acute respiratory distress syndrome, critical illness myopathy, and post-viral fatigue syndrome. Skeletal muscle weakness and exercise intolerance are common in patients with severe Covid-19 and PASC. Muscle fibre atrophy, metabolic changes, and immune cell infiltration. Systemic inflammation, disuse, hypoxemia, and malnutrition are all factors that contribute to weakness and fatigue in patients with severe Covid-19. These factors also contribute to Post-intensive Care Unit (ICU) syndrome and ICU-acquired weakness, and they are most likely responsible for a significant portion of Covid-19-acquired weakness. PASC-related skeletal muscle weakness and exercise intolerance are less well understood. A direct Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV)-2 viral infiltration into skeletal muscle or a faulty immune system are likely to be involved. The similarities between skeletal muscle changes in PASC and chronic fatigue syndrome warrant further investigation. The observed skeletal muscle alterations in both acute Covid-19 and PASC are likely due to SARS-CoV-2-specific factors as well as generic consequences of acute disease.

Keywords:

Covid-19 Inflammation, Muscular Atrophy, Muscle Weakening, Skeletal Muscle.

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Role of Micro-Fluidic Chipsin Thedetection of Covid-19

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Abstract
Time and Accuracy of detection of disease plays a very crucial role in management and treatment of any disease especially during epidemic like covid 19. Micro-fluidic chip (lab on chip) can be used for analysis and detection of virus within short time with help of one drop of sample. It is a set of microchannels etched or molded into a material (glass, silicon, or polymers like PDMS). The micro channel forming the chip connected in order to achieve the desired features (mix, pump, sort or control the biochemical environment). Nucleic acid detection is widely used method of diagnosis but major drawback is complexity, time consuming. By application of Micro-fluidic technique, we can combine various steps into a single miniature chip.Various micro fluidic chips have been developed for the rapid detection of nucleic acid, such as amplification-free microfluidics in combination with Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR). In response to the global outbreak developed a CRISPR/CRISPR-associated (Cas) 13a-based biosensor combined with RPA to detect the S and Orf1ab genes of SARS-CoV-2 within 30 min and the chip combined DNA extraction, multiplex digital RPA, and fluorescence detection into a "sample-multiplex-digital-answer-output" system were successfully established to detect pathogenic bacteria simultaneously and give digital quantitative results in 45 min. Based on this review, we conclude that microfluidics application compared to conventional methods can enhance the accuracy and faster detection on corona virus.

Keywords:
Covid19, Lab on Chip, CRISPR, RPA, Corona Diagnosis.

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Sperm Proteomics: A Potential Impact on Treatment of Male Infertility

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Abstract:

Spermatozoa are unique cells that have highly compact DNA, motility (and hypermotility) patterns, a specific morphology, localized mitochondria, and an apical acrosome. They are the product of a dynamic process termed spermatogenesis. A total of 1139 proteins were identified in normozoospermic fertile and 1095 infertile men, respectively. The proteins associated with reproductive system development and function, and the ubiquitination pathway were under expressed in normozoospermic infertile men. The global proteomic profile of normozoospermic infertile men is different from that of normozoospermic fertile men. Western blot analysis revealed the overexpression of annexin A2 (ANXA2), and under expression of sperm surface protein Sp17 (SPA17) and serine protease inhibitor (SERPINA5) in men with Unexplained Male Infertility (UMI). A body of the scientific investigations suggests that SPA17, ANXA2, and SERPINA5 may potentially serve as non-invasive protein biomarkers associated with the fertilization process of the spermatozoa in UMI. In addition, sperm exhibit several post-translational modifications, which are fundamental to their function, such as SUMOylation and ubiquitination. In this review, a detailed discussion about the current knowledge of the sperm proteome in terms of its composition and the function that these proteins determine, as well as their post-translational modifications and how these alter sperm functional integrity. Thus, we conclude that, further exploration on sperm proteomics, can benefit the humankind to overcome the reasons behind male infertility and also help in improving the performance and quality of sperm.

Keywords:

Spermatozoa, Normozoospermia, Annexin A2, Surface Protein Sp17, Serine Protease, Unexplained Male Infertility.

Novelty of the Topic :

Proteomics, a high throughput platform, is used to identify and select non-invasive biomarkers for the diagnosis of male infertility [15, 16, 17]. This has facilitated the identification of cellular and molecular pathways that are being dysregulated in the spermatozoa of infertile patients

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Researchers Map Rotating Spiral Waves in Live Human Heart

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Abstract:
In recent years, studies are conducted on the electrical signals which tells the heart to contract, but when the signals from spiral waves, they can lead to dangerous cardiac events like tachycardia and fibrillation. Researchers are bringing a new understanding to these complicated conditions with the first high-resolution visualizations of stable spiral waves in human ventricles. Most importantly the technique named “optical mapping” is used to visualize and record the spiral waves.

The human heart normally beats at a fairly regular rate of once per second. Under abnormal conditions, however, the heart may beat irregularly, at fast rates, leading quickly to death. The most dangerous of these irregular heart rhythms are due to recirculating electrical waves of activity. However, the detailed mechanisms of these “reentrant arrhythmias” are unclear. It has been suggested that these recirculating waves are spiral waves. This review article presents recent studies of the heart providing evidence that reentrant arrhythmias result from spiral waves of electrical activity. Spiral waves are generic to many excitable media, therefore the theory of spiral waves is well developed and also reviewed herein. Many of the predictions of spiral wave theory are being realized in the heart and leading investigators in new directions

Keywords:
Fibrillation, Spiral Waves, Optical Mapping, Tachycardia

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The Influence of Medication Complexity on Pharmacotherapy Evaluation in COVID Patients

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Abstract

Introduction

The symptomatic approach is still the most effective strategy for managing and preventing COVID-19. Due to a lack of evidence regarding toxicity and/or efficacy, off-label medications do not offer sufficient health outcomes. Off-label medications are more prone to Adverse Drug Reactions (ADRs), a major cause of morbidity and mortality. To determine the impact of medication complexity on pharmacotherapy evaluation.

Method

The study was conducted between August 8th, 2021, and January 30th, 2022.

A prospective, cross-sectional study was conducted in the COVID ward for 673 patients.

The study team was asked to be notified by the hospital administration of each new admission. A patient data collection form was used to collect the necessary information (demographic information, disease symptoms, hospitalization-related investigations, and prescriptions). The medication complexity was assessed for all prescriptions on admission using the Medical Regimen Complexity Index's guidelines and subjected to pharmacotherapy evaluation for potential drug interactions (using Medscape), drug disease interaction, untreated indication, medication duplication, and polypharmacy.

(Ethical Approved No. IEC/AH&RC/AC/004/2021)

Results

Each prescription contained an average of 6.36 ± 2.67 drugs. The patients spent an average of 8.45 ± 3.58 days in the hospital. Polypharmacy was found in 75.8% (515) of the prescriptions, while medication duplication was found in 50.67% (341), potential severe drug interactions accounted for 77.56% (522), drug-disease interactions were found at 4.31% (29), untreated indications at 2.82% (19), and drug dosage adjustment was performed in 10.7% (72).

Medication complexity was 27.34 8.27 on average. In the risk factor analysis, medication complexity greater than 30 was associated with increased odds of polypharmacy (Odd ratio [OR] 24.695, 95% CI 9.965-61.197), therapeutic duplication (Odd ratio [OR] 1.507, 95% CI 1.095-2.074), death (Odd ratio [OR] 2.079, 95% CI 0.933-4.632), untreated indication (Odd ratio [OR] 4.216, 95% CI 1.581-11.243), drug disease interaction (Odd ratio [OR] 9.85, 95% CI 3.706-26.179), and drug-drug interaction (Odd ratio [OR] 2.257, 95% CI 1.477-3.45).

There were statistically significant impacts of medication complexity on therapeutic duplication, untreated indications, potential drug-drug interaction, drug-disease interaction, and hospital stay, whose p values were <0.001, <0.005, <0.001, <0.001, and <0.001, respectively.

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Conclusion

The study concluded that the assessment of medication complexity in routine pharmacotherapy evaluations has a positive impact. It could be beneficial in alerting potential risks, suggesting additional focus wherever required, and decreasing the financial burden by reducing hospital stays.

Keywords:

Medication Complexity, Covid-19, Pharmacotherapy, Drug-interaction, Medication Duplication

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A Clinical Case Report on Drug Induced Hepatitis with Toxic Epidermal Necrolysis (Ten)

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Abstract
Drug Induced Hepatitis is rare and is caused by toxic exposure to certain medications, vitamins, herbal remedies, or food supplements. Toxic Epidermal Necrolysis (TEN) is a severe form of Stevens Johnson Syndrome (SJS) which is a rare, life-threatening skin reaction usually caused by a medication such as antiepileptic drugs (oxcarbazepine), sulfa drugs and allopurinol. Immediate withdrawal of the offending medication may improve the prognosis of the disease. Oxcarbazepine, a 10-keto variant of carbamazepine, is a mood-stabilizing, anticholinergic, and anticonvulsant medication used largely to treat epilepsy. While allergic reactions and enzyme induction are rare, its effectiveness is comparable to that of carbamazepine. This is a case of 40 years male patient who was hospitalized for having skin rashes and itching all over the body and skin peel with bleed over the neck and chest after the intake of oral medication for seizures - Oxetol (Oxcarbazepine), Levetiracetam and Etizolam. The patient medical history show that he is a known case of seizures and was prescribed with oxetol and was finally diagnosed as drug induced hepatitis with Toxic Epidermal Necrolysis. Patient was treated with Derma dew Aloe Cream, Fudic BNF cream, T. Levera, Inj. Solumedrol.

Key Words:
Steven Johnson Syndrome, Toxic Epidermal Necrolysis, Drug Induced Hepatitis, Oxetol, Seizures.

Novelty of the Topic:
To know the importance of the serious adverse drug reaction caused by the anti-epileptic drug.

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Design of Novel Amino-pyrimidines as GABA Amino Transferase Inhibitors to Treat Convulsions: A Computational Approach

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Abstract:
Epilepsy is a ubiquitous disease characterized by chronic and recurrent seizures usually caused by brief and excessive electrical discharges in a group of brain cells. When the brain concentration of the inhibitory neurotransmitter γ-aminobutyric acid (GABA) diminishes below a threshold level, the excess neuronal excitation can lead to convulsions. In the present study novel series of amino pyrimidines were subjected to In-silico molecular docking against the protein target GABA Amino transferase (PDB ID: 2COI) and the compounds were compared against the marketed GABA amino transferase inhibitor and result indicated that Compounds JJMK03 showed more binding energy values and demonstrated significant inhibition when compared to the marketed drug. These results highlight that the new class of GABA Amino transferase inhibitors that have potential to be more efficacious to treat convulsions.

Keywords:
Convulsions, GABA Amino Transferase, Molecular Docking, Amino Pyrimidine

Novelty of the Topic:
In-silico molecular docking study for the drug discovery and design of novel amino pyrimidines as potential GABA amino pyrimidine inhibitor.

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Formulation, Optimization and Characterization of Naproxen Sodium Loaded Solid Lipid Nanoparticles for Oral Drug Delivery System

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Abstract:
The drug profile with poor solubility, instability, and poor bioavailability limits the physiochemical and pharmacokinetic performance of the drug molecule. Naproxen sodium the drug of interest belongs to the category of a non-steroidal anti-inflammatory agent which is extensively in the treatment and management of reducing fever and relieving mild pain from headaches, muscle aches, rheumatoid arthritis, and menstrual periods. Thus, it has to be administered orally for the most effective results. The enhanced solubility and therefore the bioavailability results in dose reduction which also lowers the risk of side effects due to drug toxicity or due to higher doses. Therefore, in the present study, a multidisciplinary approach has been carried out in formulating the Solid lipid nanoparticles for oral delivery of Naproxen sodium in the form of capsules to counteract the pre-existing setbacks in oral administration of the drug. Therefore, the current investigation demonstrates the development of Naproxen Sodium-loaded Solid Lipid Nanoparticles (NPS-SLNs) using a high-shear homogenization technique by employing a three-level, three-factor Box–Behnken design. The concentration of lipid, concentration of surfactant, and homogenization speed were selected as independent variables, and % Entrapment Efficiency(%EE), particle size, and zeta potential were selected as dependent variables. The developed NPS-SLNs were characterized for particle size, polydispersity index, zeta potential, %EE, %DL, and SEM analysis. The Particle size of NPS-SLNs was found to be 161.2 nm, % EE of 93.39 %, and zeta potential -17.9mV. The SLNs were then, filled into capsules. The optimized SLN capsules were studied for various evaluation parameters such as in vitro release, SLN capsule stability, and release kinetics.

Keywords:
NPS, Solid Lipid Nanoparticle, Box-Behnken Design, Oral Drug Delivery System.

Novelty of the Topic:
Hence the current investigation was an attempt to enhance the solubility, design, formulate, optimize and evaluate solid lipid nanoparticles of the NSAID class of drug for its controlled drug delivery system.

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Wound Healing and Antimicrobial Potential of Formulated Cream from Nyctanthes Arbor-Tristis-Linn

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Abstract:
The leaves of Nyctanthes arbor-tristis (Linn) are used in traditional system of medicine for the treatment of stomachic, carminative, intestinal astringent, expectorant, hair tonic and wound healing. In this context, an attempt has been made to evaluate the wound healing and antimicrobial potential in the cream containing Nyctanthes arbor-tristis. The wound healing activity of cream was evaluated by excision and incision wound models. The Nyctanthes arbor-tristis extract and cream was screened for antimicrobial activity by disc diffusion method, using nutrient agar media against gram-positive bacteria namely Staphylococcus aureus, Staphylococcus albus, Bacillus subtilis, gram-negative bacteria namely Escherchia coli, Porteus vulgaris, Klebsiella auregenosa. Then it was also tested against fungi namely Candida albicans. Ciprofloxacin and Clotrimazole are used as a reference standard for bacteria fungi respectively. Extract and the cream containing Nyctanthes arbor - tristis extract showed significant ($P < 0.001$) wound healing activity and also observed that the wound contracting ability were greater than that of the control and STD Nitrofurazone ointment. The extracts of Nyctanthes arbor-tristis leaves exhibited marked anti-microbial activity against all the microorganisms, which were tested except proteus vulgaris. where us cream show moderate susceptibility against all the microorganisms. So the finding of the study revealed that Nyctanthes arbor-tristis extract and cream containing extract have synergistic wound healing and antimicrobial activity.

Keywords:
Nyctanthes Arbor-tristis, Wound Healing Activity, Antimicrobial Activity, Nitrofurazone, Traditional Medicine.

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Fabrication and Characterization of Vanillin Based Crosslinked Films of CmCh-PV

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Abstract:
In this study, a novel polymeric cross-linked film was fabricated using vanillin as the cross-linking agent. The polymers used in the study were carboxymethyl chitosan (CmCh) and Polyvinyl Alcohol (PVA) in various concentrations. Cross-linking of the film was performed by using vanillin as a Schiff's base, which reacted with the amino group of carboxymethyl chitosan. The formation of a hydrogen bond between hydroxyl group of vanillin and polyvinyl alcohol also resulted in increased cross linking of the film.
The new polymeric entity so obtained was identified by using FTIR and DSC studies, where the presence of characteristic peaks were observed. The prepared films were also sent for SEM analysis.
The prepared film was further evaluated for swelling index, tensile strength, hydrolytic degradation and water vapor transmission. Antibacterial evaluation was also carried out to evaluate its antimicrobial activity. Swelling studies indicated that the swelling index increased as the proportion of carboxymethyl chitosan increased, due to the hydrophilic nature of the polymer. The hydrolytic degradation study indicated that films containing higher concentration of carboxymethyl chitosan showed better structural integrity. Thus, the use of this novel polymer improved the characteristics of the film.
Additionally, the L929 mouse fibroblast cell line was used to study cytotoxicity and cell viability as additional parameters. Cellular proliferation was observed at a concentration of 10mg/mL.
Thus, the polymeric film developed by cross linking carboxymethyl chitosan and polyvinyl alcohol by using vanillin was found to have several unique properties and can be explored further for biomedical applications.

Keywords:
Carboxymethyl Chitosan, Vanillin, Polymeric Film

Novelty of the Topic:
The use of crosslinked polymeric films such as the one prepared in the study contain bioactive polymers. Such films are devoid of any antimicrobial agent, but can still be used for biomedical applications. This is unique application, which can help to bring down the cases of AMRs and reduce the irrational use of antimicrobials used for conditions like wound healing.

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Nasal In-situ Mucoadheisve Gel for Treatment of Motion Sickness

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Abstract;

Motion sickness occurs due to a difference between actual and expected motion. These repetitive motion convey a large number of messages to the brain. This disparity of signal processing between inner ear motion receptors and the visual senses leads to confusion brain, precipitates nausea, dizziness and other symptoms. Cinnarizine an anti-histamine which belong to BCS class II possess poor solubility and oral bioavailability is most widely used in the treatment of motion-sickness.

The present research envisaged to design stimuli responsive intra-nasal delivery of cinnarizine to bypass the oral route and to directly target the brain for better pharmacological activity. Formulations of in-situ gel were prepared by DoE using polymers Xanthan gum and HPMC E50 in various blends. Pluronic F-127 served dual role both as a solubility enhancer and as a thermos-responsive polymer. The effect of formulation variables on the pharmaco-technical parameters such as pH, viscosity, gelation time and temperature were evaluated.

The comparative in-vitro drug permeation using synthetic membrane and ex vivo using sheep nasal mucosa exhibited slow and steady drug release of 62.95% at the end of 7 hours.

The optimized formulation evaluated for biochemical and in-vivo pharmacodynamic studies like motor coordination, locomotor activity, taste avoidance proved to be an ideal alternative to oral marketed formulation. Accelerated stability studies was performed as per ICH guidelines in order to predict shelf life and stability of the product.

Keywords

Motion Sickness, Cinnarizine, Nasal Delivery System, In-situ Gel

Novelty of the Topic

Design of stimuli responsive intra-nasal muco-adhesive in-situ delivery of cinnarizine bypassing oral route, BBB and directly targeting the brain for therapeutic action was achieved.

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Raft Forming Gastro Retentive Delivery System Containing Anti-Epileptic Drug

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Abstract:
Epilepsy is a common brain disorder described as continuous predisposition which leads to an epileptic seizure. Partial epileptic seizures are known to generate from a specific site of the brain and often remain in a localized area causing head injury, intracranial neoplasms, infections like meningitis, encephalitis, cerebral issues, unconsciousness etc. Pregabalin is an anti-epileptic drug which is used to treat partial seizures and is preferably absorbed from the upper segment of the gastro-intestinal tract. However due to its high dose of 150-600mg/day and shorter half-life, it needs to be administered 2-3 times a day depending on the severity of the seizures causing increased dose frequency leading to inconvenience with the patients.
The present research envisaged to develop a gastro-retentive raft system to increase the gastric residence time for better absorption using central composite optimization technique using polymers Xanthan gum and HPMC E50LV as independent variables with viscosity and total floatation time as responses for dependent variables. The drug-excipient compatibility was confirmed by IR and DSC studies. Out of 8 formulations trials, the optimized formulation was selected based on the results obtained from the viscosity and total floatation time. It was observed that as the polymer blend concentrations in the formulation increased, the total floatation time increased. Incorporation of PEG-400 yielded better texture with the raft formation but there was a slight decrease in the viscosity of the preparation. The in-vitro dissolution studies analysis conducted in simulated gastric condition indicated slow and steady drug release over a period of 6 hours in the in contrast to commercially available oral conventional tablets. The developed liquid dosage form complied with all the evaluation tests as per the official compendium and accelerated stability studies conducted.

Keywords:
Gastro-retentive Drug Delivery, Pregabalin, Raft, Seizures

Novelty of the Topic:
The developed raft formulation prolonged the gastric residence time by which better absorption of pregabalin was achieved.

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Exploratory Research of Prokinetic Nasal Spray for Treating Gastrointestinal Motility Disorder

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Abstract
Gastroparesis is a chronic symptomatic disorder of the stomach characterized by delayed emptying in the absence of mechanical obstruction. The term 'gastro' means "stomach" and 'paresis' means "partial paralysis". The function of digestive tract is the food reaches esophagus, peristalsis takes place, propels the contents into the digestive tract. From studies, in USA 5 million people suffer from some form of gastroparesis and study conducted in India for 146 patients with type 2 diabetics, 13% among them found to have symptoms after gastric surgery and 39% was idiopathic. The prokinetics plays an important role in management of Gastroparesis. Metoclopramide first line drug has a role in the management of diabetic gastroparesis through centrally mediated anti-emetic actions and prokinetic. The present work aims at delivery of drug through nasal delivery for treating gastroparesis and determining the mechanical and electrical activity if gastric smooth muscle that is measuring ICC. Analytical validation of the drug was carried out IR studies, by HPLC and UV spectrophotometer linearity was determined. Stability studies analysed by microbial challenge test, electrical and mechanical activity of the gastric smooth muscle was determined by Digital Polygraph using the NIVIQUIRE software and Kymograph respectively, HET-CAM assay method was carried out for the irritancy test, spray pattern analysed by Schlieren Photography. The microbial and irritancy assays showed that our formulation was suitable for animal experiments. Drug diffusion showed nearly 50 % permeation across the nasal epithelium which could be enhanced using penetration enhancers and other additives.

Keywords:
Gastroparesis, Nasal Spray, Metoclopramide

Novelty of the Topic:
Nasal drug delivery of prokinetics for managing Gastroparesis

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Formulation of Particulate System Releasing Potassium Nitrate as De-Sensitizing Toothpaste

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Abstract:
Dentin hypersensitivity is a pain or discomfort in the teeth arising as a response to certain stimuli, such as hot or cold temperatures. It may be temporary or a chronic problem, and it can affect one tooth, several teeth, or all the teeth in a single individual. There are mainly two methods to reduce sensitivity they are nerve depolarization and tubular occlusion. The de-sensitising agent is an alkali salt typically, potassium nitrate, potassium chloride, potassium citrate, etc. The anti-caries agent is usually a metal salt typically, sodium fluoride, Sodium Hexameta-phosphate etc. The present work aims at formulation of a particulate system toothpaste that combines both nerve depolarization and tubular occlusion methods to reduce sensitivity, and to determine whether potassium and nitrate releasing systems are more effective in treating dental hypersensitivity than conventional toothpastes. Mesoporous silica was synthesised by modified Stober process as a particulate system to that potassium nitrate was coated by incubation method. The particle sizes of the MSN were in the range of nanometre measured by DLS and it is confirmed by SEM. The potassium nitrate coating over MSNs were confirmed from Zeta potential, FTIR, EDX and XRD. The amount of potassium ion coating was determined by ICP-OES method. 10 mg MSNs can load maximum of 2.5 mg of potassium at 48 hrs of incubation was discovered. Release studies shows, around 80% of potassium release within 4hrs. so, this concludes controlled or extended release of postassium nitrate from the particle composition which can have longer therapeutic activityEx vivo tooth occlusion studies shows that the P-MSNs will occlude in the dentine tubules.

Keywords:
Desenstivity, Toothpaste, Potassium Nitrate, Mesoporous Silica Nanoparticles

Novelty of the Topic:
Potassium nitrate nanoparticles loaded toothpaste for prolonged de sensitizing effect

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Bilayer Tablet : An Emerging Trend

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Abstract:
Bilayering tableting technology has gained popularity in recent times as bilayer tablets offer several advantages over a conventional tablets. Bilay er tablets provide a potential means of reducing the pill burden, chemical incompatibility, and synergistic effect. The main advantage of bilayer tablets is to treat different ailments at the same potential (co-morbidity), at the same time, and with one pill. In this review, a summary of the state-of-the-art panorama of a bilayered tablet as a drug delivery system has been conducted, focusing mainly on those applications in which the corresponding disease involves irritable bowel disease, migraine, was carried out and a short discussion about prospects of these systems is included.

Keywords :
Bilayer, Pill Burden, Chemical Incompatibility, Synergistic Effect, Ailments, Irritable Bowe, Migraine, Advanced.

Novelty of Topic :
The benefit of bilayer tablets includes a desired drug release of the active component present in one layer by utilizing the functional property of the other layer. A Bilayer tablet is the best option for a drug which have low bioavailability and a short plasma half-life for formulating as a sustained release layer.

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Polymeric Nanoparticles as Drug Delivery System

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Abstract:
The complexity of some diseases—as well as the inherent toxicity of certain drugs—has led to an increasing interest in the development and optimization of drug-delivery systems. Polymeric nanoparticles stand out as a key tool to improve drug bioavailability or specific delivery at the site of action. The versatility of polymers makes them potentially ideal for fulfilling the requirements of each particular drug-delivery system. In this review, a summary of the state-of-the-art panorama of polymeric nanoparticles as drug-delivery systems has been conducted, focusing mainly on those applications in which the corresponding disease involves an important morbidity, a considerable reduction in the life quality of patients—or even a high mortality. A revision of the use of polymeric nanoparticles for ocular drug delivery, for cancer diagnosis and treatment, as well as nutraceutical delivery, was carried out, and a short discussion about future prospects of these systems is included.

Keywords:
Polymeric Nanoparticles, Polymer Conjugation Chemistry, Targeted Drug Delivery, Surface Functionalization, Aptamers, Chemotherapy, Microfluidics.

Novelty of Topic:
Advantages of nanostructure-mediated drug delivery include the ability to deliver drug molecules directly into cells and the capacity to target tumours within healthy tissue. Nanoscale drug delivery architectures are able to penetrate tumours due to the discontinuous, or "leaky," nature of the tumour microvasculature, which typically contains pores ranging from 100 to 1000 nm in diameter.

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Development of Anti-Oxidant Peel off Mask Containing Trachyspermum Ammi Fruit Oil

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Abstract:

Antioxidants are compounds which protects the cells from the harmful free radicals that are unstable molecules preventing post damages caused by free radicals. Based on Hydrogen peroxide scavenging activity, desired amount of Trachyspermum Ammi fruit oil was blended with polyvinyl alcohol, polyvinylpyrrolidine, Propylene glycol, methyl and propyl paraben, honey, silica gel, Alovera gel and a peel off mask was developed. Based on preliminary studies, three formulations were selected to carry out further investigation. Selection of formulations were based the results obtained from peel off test, viscosity, drying time, pH of the product. The formulation was subjected to various evaluation tests as per the official compendium and the stability studies were performed.

All the prepared formulations showed drying time between 7 minutes to 20 minutes, pH ranging from 5.4 - 5.8, viscosity ranging from 40 cps to 80 cps. Based on drying time and ease of application, APM (anti-oxidant peel off mask) formulation was altered by addition of glycerine, honey and aloevera (APM1, APM2, APM3). And also these 3 formulations showed ease of application and good peelability Formulation APM1, APM2, APM3 were found to have 14, 17, 20 minutes of drying time with soothing effect. Acute Dermal irritation test was conducted on rat to check the irritation of the formulation, FTIR test was also performed. All the 3 formulations were equally good, however based on the consistency on storage; APM2 formulation was found to be more stable in comparison with APM1 and APM3.

Keywords

Trachyspermum Ammi Fruit Oil, Peel Off Mask, Antioxidant Property

Novelity of the Topic:

Herbal based peel off mask having antioxidant and anti microbial properties was developed. Inclusion of natural herbal soothing agents adds on to the better skin care properties.

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Pomegranate Seed Oil Loaded Niosomes for Psoriasis Management

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Abstract:

Psoriasis is a chronic inflammatory skin disease with a strong genetic predisposition and autoimmune pathogenic traits. Treatment for superficial psoriatic information includes topical therapies, keratolytic agents, emollients etc.,. Pomegranate Seed Oil (PSO) with high amount of Punicic Acid (PA), a conjugated isomer of α-linolenic acid, has variety of pharmacological properties. Niosomes have drawn tremendous interest because of its various advantages over other nanoparticles, the possibility to enhance the efficiency and safety of the topical products has expanded to a great extent. Pomegranate seed oil was formulated as a topical film-forming niosomal spray for the management of skin psoriatic infections. Pomegranate seed oil-loaded niosomes were formulated using Taguchi optimization design. The independent variables were drug (X1), surfactant (X2), cholesterol (X3), and sonication time (X4), with dependant variables of particle size (Y1), PDI (Y2), and entrapment efficiency (Y3). PSO Niosomes was prepared using the ethanol injection method and out of 9 formulation trails, the optimized formulation (NS-9) was selected based on the results of the various pharmaco-technical parameters, Then, niosomal solution was converted into spray and pomegranate seed oil gel was prepared as a conventional formulation using Carbopol gel base. The prepared niosomes were evaluated and the optimal formulation resulted in a particle size of 143.4 nm, PDI of 0.087, and an entrapment efficiency of 95%. The spray formulation was subjected to various evaluation parameters as well as for container. Viscosity was 9.81 cps with a spray angle and spray pattern of 360 201 and 1.26 cm, respectively. In-vivo studies were carried out for the optimized formulation along with a gel on imiquimod induced psoriasis in the Balb-c mice model. Among all the formulations, the PSO loaded niosomal spray formulation exhibited a good anti-psoriatic effect due to the better contact time with a flexible film formation and adherence.

Keywords:

Pomegranate Seed Oil, Punicic Acid, Topical Film Forming Spray, Niosomes, Taguchi Design

Novelty of the Topic:

Extended release of natural anti-psoriatic drug as niosomes

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Nanotechnology-Based Treatment for Diabetes Mellitus

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Abstract:

Antidiabetic drugs with conventional dosage forms shows decreased bioavailability, short half life, dose frequency, and toxic effects leads to inefficient therapy and patient's non compliance. Global wise. Million of peoples are suffering diabetes mellitus. Nanotechnology is a trending, non-obstrusive technique, easy preparation, enhanced bioavailability in the treatment of diabetic patients. Diabetic blood glucose can check by self-monitoring, treated with insulin injections, and now progressed treatment with nanomedicine like nanosensors, carbon nanotubes, the layer-by-layer polymeric technique, quantum dots, microspheres and artificial pancreases and nanopump. To overcome the rapid degradation of insulin using different strategies like enzyme inhibitors, chemical modification for receptor-mediated absorption and mucoadhesive polymers absorption enhancers. Nanoparticles are prepared by using polymeric biodegradable nanoparticles, polymeric micelles, ceramic nanoparticles, , dendrimers, and liposomes. Site-specific target delivery of drugs can be achieved by using nanotechnology according to the severity of diabetes that increase bioavailability and dose frequency.

Keywords:

Diabetes Mellitus, Antidiabetic Drugs, Nanoparticles, Increased Bioavailability, Nanotechnology

Novelty of the Topic:

Nanotechnology is better than conventional dosage forms, based on this nowadays researchers are focusing on this technology to treat the diabetes mellitus.

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Development of Wound Healing Gel Containing Lignin and Tannin

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Abstract:
The aim of this work is to develop topical gel-based formulations containing a lignin and tannin for wound healing activity. Coconut coir and tea leaves were chosen as source for lignin and tannin respectively and they were authenticated and extracted using soxhlet extraction and maceration methods. Acetone extract of coconut coir and alcohol extract of tea leaves were subjected to phytochemical screening to confirm presence of lignin and tannin in the extract and characterized through GC-MS followed by in-silico studies against selected proteins involved in wound healing. Topical gel formulations were prepared using carbopol 940 and xanthan gum. Developed formulations were evaluated for percentage yield, spreadability, pH, viscosity, and in-vitro permeation studies. The developed formulations were assessed In-vivo wound healing study studies. The wound healing activity was evaluated for period of epithelialization, wound contraction rate and histopathological studies were carried out. Among the six formulations prepared F3 (1.5% carbopol) and F6 (1.5% xanthum gum) formulations were selected based on viscosity, pH, spreadability, and drug content. On the basis of affinity of the selected ligands to the chosen proteins, and interpretation of the obtained docking scores, it can be concluded that among the ligands, myrecitin, quercetin, catechine and theaflavin has shown better binding affinity compared to other ligands and have exhibited maximum binding scores. FT-IR study confirmed that the extracts were found to be compatible with other formulation excipients as there were no physical interactions seen between them. The developed formulations showed significant wound healing activity in excision wound model when compared to positive control group. Thus, the developed topical gel formulations containing coir extract and tea leaves extract had exhibited the good wound healing activity as evidenced from the studies.

Keywords:
Lignin and Tannin, Coconut Coir, Tea Leaves, Acetone Extract

Novelty of the Topic:
The formulated gel containing lignin and tannin extract can be used to treat patients with wounds during accidents, crackers bursting etc. It heals the wound effectively within 12 days as tested in animal models. Such gel formulations containing lignin and tannin extract for treatment of wounds are not available in Indian and international market.

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Emulgels of Biopeptides from Lactobacillus Strain for Management of Eczema

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Abstract:
Eczema is a chronic inflammatory skin disease that could be complicated by recurrent skin infections, commonly seen in pediatric populations. Bacteriocins are biopeptides or proteins with an antimicrobial activity against gram positive bacteria. The aim of this study was to develop an emulgel of biopeptides obtained from Lactobacillus strain for the management of eczema. Lactobacillus Plantarum (LP) was used for the study. LP was cultured in MRS broth at 37ºC for 16 hours. The cell free supernatant was separated by centrifugation and was subsequently precipitated by ammonium sulphate. The precipitate obtained was dissolved in double distilled water and used for further studies. The antimicrobial activity of the precipitate against the causative organism Staphylococcus aureus and Candida albicans were studied using agar-well diffusion method. The prepared biopeptide emulgel was evaluated for its appearance, homogeneity, pH, viscosity, spreadability, rheology, cytotoxicity and stability.
The zone of inhibition recorded was found to be 17.4 ± 0.23 mm for S.aureus. The biopeptides showed poor antifungal activity against C.albicans as there was no clear zone of inhibition observed. Emulgel with 1% and 1.5% of xanthan gum showed good consistency and stability and hence was selected for further studies. From the various evaluation parameters performed, it could be inferred that the formulation containing 1.5% xanthan gum possessed antibacterial activity, optimum pH, good spreadability, consistency and stability.

Keywords:
Lactobacillus Plantarum, Biopeptides, Emulgels

Novelty of the Topic:
The novelty of the work lies in developing emulgels containing bacteriocins from bacteria which could effectively be used in the management of eczema

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Preservative Pellets Containing Trachyspermum Ammi Extract

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Abstract:
Any alteration that renders food unfit for ingestion is considered food deterioration. Spoilage may result in reduced nutrient value of food and may also make them unfit for consumption. Currently, there is great global research interest in the use of novel methods of protection of agricultural produce against urban pests, particularly in the use of botanical substances and nontoxic materials. To ensure efficacy and safety, botanical and synthetic insecticides must be properly formulated and delivered in a species-specific way to their pest targets.
The present study was aimed at development of food preservative pellets containing Trachyspermum ammi extract. The fruits were extracted by maceration using 95% ethanol. The dried extract was evaluated for its antimicrobial properties. Phytochemical constituents were evaluated by GC-MS. The extract was then incorporated into pellets of Lactose, MCC and HPMC. The dried pellets containing 1, 2 and 3% extract were packed into empty tea bags and kept in contact with food grains to evaluate their preservative property.
Phytochemical evaluation of the extract showed the presence of major phytochemical constituents responsible for bioactivity. The extract exhibited good antibacterial activity against both gram positive and gram-negative organisms. Antifungal activity was pronounced in comparison with standard drug miconazole. Absence of infestation in grains kept in contact with extract-containing pellets served as proof of the preservative's effectiveness. This natural preservation technique could replace harmful pesticides used in food articles and help in maintaining the integrity and nutritional value of food grains.

Keywords:
Trachyspermum Ammi, Preservative, Pellets, Antibacterial, Antifungal

Novelty of the Topic:
This study introduces a natural technique of incorporating the Trachysperma ammi extract into pellets as household remedies against pest infestation in food grains which can be conveniently stored in food grains containers for prolonged storage of food materials.

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Novel Film Forming Excipient from a Natural Source

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Abstract:
Film forming system is defined as non-solid dosage forms that produces a film after application on the skin. In the proposed work, mucilage from the chosen fruits was isolated and evaluated for its film forming abilities and compared with currently existing natural and semi synthetic polymers.
Preliminary phytochemical screening of the mucilage was carried out and showed positive for carbohydrate and mucilage. The mucilage was subjected to SEM and XRD analysis and confirmed its amorphous nature. After performing a residual solvent analysis, it was discovered that the mucilage's chromatogram did not include any peaks that would have indicated the presence of the organic solvents acetone and ethanol, which were employed to extract the mucilage. Different concentrations of films were prepared from the mucilage of the fruit as well as the existing polymer HPMC K4M and chitosan.
The prepared films were evaluated based on their visual observation, drying time, stickiness, film formation, film flexibility, skin feel, water washability, water vapour permeability and film thickness. SEM analysis of mucilage film was carried out in which the surface of the film appeared to be smooth. The in vitro cytotoxicity against L929 mouse fibroblast cell line showed that the formulation was nontoxic and safe for the topical application to the skin. In vivo skin irritation test carried out on rabbit skin did not show any irritation, redness, indicating the formulation to be safe for topical application to the skin. A prototype formulation containing diclofenac sodium as an active ingredient was prepared and evaluated for visual observation, dying time, stickiness, film formation, film flexibility, skin feel, water washability, water vapor permeability and thickness. Drug content and In vitro drug permeation was determined from the prototype films and the film prepared from 6% mucilage concentration showed maximum percentage of drug content i.e., 61.8% and drug release at the end of 5th hour i.e., 79.5%.

Keywords:
C grandis, Film Forming, Topical, Excipient

Novelty of the Topic:
Film forming system can be used as an alternative approach for the delivery of drug for the treatment of various topical and transdermal formulations. Many of the currently used film forming polymers suffer from certain disadvantages like solubility, film tackiness, cracking tendency, cost factor, biocompatibility, etc. Hence, there is always a constant quest for novel polymers or biomaterials with better film forming characteristics. In the present study, mucilage from the chosen fruits is isolated and is used as a polymer in the preparation of film

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Development of Anti-Ulcer Tablets of Areca Catechu Extract

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Abstract:

Gastric ulcers are one of the most prevalent gastrointestinal problem. Caused due to imbalance in aggressive and defensive components. Areca seed extract has been reported to have a variety of pharmacological properties. Formulation of tablets from the Areca catechu extract was done and evaluation for its anti-ulcerogenic effect was performed. Different extraction methods were used to extract the areca nut, including Soxhlet, Sonication, Centrifugation and Microwave assisted extraction methods, and. Preliminary phytochemical screening, column chromatography, and GC-MS analysis were performed on the crude extracts, 35 compounds were revealed from GC-MS analysis. On identified targets for antiulcer activity, In-silico docking investigations were conducted. The drug and excipients were compatibility tested using FT-IR tests. Direct compression, wet granulation, and suspension techniques were used in oral formulations. In vitro and in vivo evaluations were assessed by pyloric ligation model in developed formulations. The stability tests were carried out in accordance with ICH recommendations.

The phytochemical screening column chromatography and GC-MS screening revealed the presence of Tannins (12.5%-14.5%) which is responsible for anti-ulcer activity. Catechin had a substantial score when compared to standard omeprazole, according to docking studies. No significant change in peak location of drug and excipient FT-IR peaks were observed. In-vitro assessment of formulations indicated that immediate release tablets with higher MCC and chewable tablets CTF. In-vivo acute toxicity studies found no toxic symptoms or mortality after oral administration. The stability studies carried out on the chosen formulations showed least changes in physicochemical properties indicating integrity of the formulations.

The results showed that the developed areca formulations containing Catechins (tannins) exhibited good anti-ulcer activity as evidenced from the studies.

Keywords:

Areca Catechu, Gastric Ulcers, Chewable Tablet, Microcrystalline Cellulose

Novelty of the Topic:

Safe and cost effective Anti-ulcer activity of areca catechu over synthetic drugs

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Dissolution Rate Enhancement of Atorvastatin

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Abstract:
In-vitro dissolution of a tablet is a very important and rate determining process, as it mainly helps us to assess the extent of drug release and drug absorption. Dissolution of a drug directly affects the extent of drug absorption. Atorvastatin calcium a HMG-CoA reductase used to control hyperlipidaemia. The present study was aimed to enhance the dissolution rate of Atorvastatin with decreased related substance and also develop industry feasible methods. Where initially the solubility studies were carried out with arginine, meglumine, PEG-4000, Pluronics F-68. Drug-excipients interactions were performed using ATR-IR. Further to increase the solubility solid-dispersions with different hydrophilic carriers were formed. Immediate release tablets were formulated by direct compression method using solubilizing agents and Solid-dispersions. Formulations were analyzed for both pre-compression and post- compression parameters. The in-vitro drug release, related substance and drug content assay was analyzed by liquid chromatography as per IP. In-vitro absorption studies using everted-sac chick intestine was performed using UV-Visible spectrophotometer. In vitro drug release profile of F-05 was compared with marketed formulation (Dr Reddy's Atocor-20mg and Lupin's Tonact-20mg) and similarity factor was determined. 3 months accelerated stability studies were performed .The in-vitro drug release by liquid chromatography drug content assay was found to be 99.1%, similarity factors were found to be 72 and 66 respectively, the in-vitro drug release and drug content assay after three months accelerated stability studies were found to be 88.7% and 99.1% respectively.

Keywords:
Atorvastatin Calcium, HMG-CoA Reductase, Hyperlipidemia

Novelty of the Topic:
In the present study, a simple and rapid method was developed to improve the in-vitro dissolution of repaglinide, an oral antidiabetic drug, which was based on addition of meglumine as a binder to prepare tablets. This study provides a feasible way to enhance the dissolution of drugs with low solubility, which will be leading to improved bioavailability of poorly water soluble drugs.

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Traditional Medicaments Combating Against Hypertension

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Abstract:
Hypertension is the medical term for elevated blood pressure (HTN). It is dangerous because it strains the heart and, in addition to increasing the risk of heart attack and stroke, causes atherosclerosis (hardening of arteries). HTN can potentially cause other conditions such as congestive heart failure, renal damage, and blindness. Traditional antihypertensive medications include a number of adverse effects. Due to its higher acceptance by the human body and reduced side effects, herbal medicine is used for basic health care by around 75 to 80 percent of the world's population, particularly in underdeveloped nations. Over the last three decades, many systematic efforts have been directed toward the research of local plants with hypotensive and antihypertensive medicinal qualities. Some of these medicinal plants' hypertensive and antihypertensive properties have been proven, while others have been proven false. However, Ayurvedic knowledge must be supplemented with medication, and more scientific studies must be conducted to assess the efficiency of such herbal medicines and to define the safety profile of their antihypertensive potential.

Keywords:
Antihypertensive, Herbs, Hypotension, Medicinal Plants.

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Pharma Foods - A Guide to Natural Therapeutics

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Abstract:
A definition and implementation of genetically modified food functional food is any modified food or food ingredient that may provide a health benefit beyond the nutrients it contains. genetically modified food is a food derived from an organism that has had its genetic material modified in a way that does not occur in nature.
The rise and fall of biochemical structures in the food industry Metabolic syndrome defines a grouping of many metabolic disorders in an individual. Altan Onat says lifestyle changes are essential to prevent and treat MetS. Statins are the drugs of choice in patients with type 2 diabetes and cardiovascular disease.

Keywords:
Pharma foods, Functional foods, Chili pepper (capsicum genus) and Sichuan pepper (zanthoxylum genus): From pungent spices to pharma-foods Withania somnifera, Pumpkin.

Novelty of the Topic:
Pharma Foods More customised foods blur the line between pharmaceuticals and food as nutrigenomics allow individualized diets to fit genetic profiles.

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Formulation and Evaluation of Antioxidants Face Cream Containing Kokum Butter, Nutmeg Oil and Ashwagandha Oil

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Abstract:

Introduction:
Cosmetics have been defined as any materials used for the purpose of beautification or promotion of appearance. Pharmaceutical creams are used for a range of functions, including cleansing, beautifying, changing appearance, moisturizing, and skin protection against bacterial and fungal infections, as well as mending cuts, burns, and sores on the skin.

Aim and Objective:
To formulate and evaluate cream containing Kokum butter, nutmeg oil and Ashwagandha oil and to carry out antioxidant activity of the cream.

Methods:
The cream was prepared by using the cream base viz., oil phase- stearic acid, cetyl alcohol, almond oil and water phase- methyl paraben, Propyl paraben, triethanolamine, and Propylene glycol were melted separately and combined. The medicinal extracts Kokum, Nutmeg, and Ashwagandha were added to the cream base and constantly mixed until a smooth cream was formed.

Results:
The formulations F4 showed good spreadibilty, good consistency, homogeneity, appearance, pH, spreadibilty, no evidence of phase separation was found. The antioxidant activity of the F4 was found to be approximately 80 % using DPPH assay which proves the formulated cream possess antioxidant effect.

Conclusion:
The cream formulation prepared containing Kokum butter, Nutmeg oil and Ashwagandha oil showed good consistency. As Kokum butter contains 50% of stearic acid the ratio of stearic acid and cetyl alcohol was altered in the formulations to balance the emollient and humectant effect. Hence replacing 50% of overall stearic acid with natural kokum butter shows non-comedogenic effect and it acts as an excipient and as an active ingredient. F4 formulation was considered as the better formulation among the six-formulations prepared as it showed good consistency, spreadability etc. The antioxidant activity of the F4 was found to be approximately 80 % using DPPH assay which proves the formulated cream possess antioxidant effect.

Keywords:
Kokum Butter, Nutmeg Oil, Ashwagandha Oil, DPPH Assay, Antioxidant

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In-vitro Anti-cancer Activity of Ethanolic Extract of Basella Rubra on Human Colon Cancer Cell Line

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Abstract:

Aim:
The present study experimentally investigated the in-vitro anti-cancer activity of ethanolic extract of Basella rubra on human colon cancer cell lines.

Method:
For the past few decades, cancer has been one of the major disease mankind has ever faced. Cancer kills more people than AIDS, Tuberculosis, and Malaria combined. Cancer is defined as uncontrolled cell divisions induced by mutations in the cell. Basella rubra, a member of the Basellaceae family, was used to make an ethanolic leaf extract by maceration method and preliminary phytochemical analysis is performed. The leaf extract was treated against human colon cancer cell lines to determine the anti-cancer activity by MTT assay method. After maceration, the results were compared with standard as vincristine. Further, a comparative study was performed between standard as vincristine and sample as ethanolic leaf extract of Basella rubra.

Results:
The samples anti-cancer activity was considerable and showed as a reliable alternative for vincristine. Vincristine's source is not that profound compared to Basella rubra which is vast. We may infer that Basella rubra ethanolic leaf extract has cytotoxic action. With further research, it can be a drug of choice in future. Aside from cytotoxicity, it has anti-fungal, anti-inflammatory, and anti-ulcer properties, as well as androgenic properties. The more inhibitory percentage was 82.76 at 590 nm of ethanolic extract of Basella rubra on DMEM supported Colo-205 cell lines. Alkaloids, Flavonoids, Glycosides, Tannins, Steroids, Phenols, Proteins, and Sugars were among the phytochemicals found.
The ethanolic extract of Basella rubra exhibited more inhibitory effect in DMEM supported Colo-205 cells.

Conclusion
IC50 value for sample BR-01 was 91.39 µg/ml in Colo-205 cells. Standard vincristine had IC50 value of 15.28 µM.
When tested in vitro on Colo-205 cell lines the ethanolic extract of Basella rubra (Malabar spinach) demonstrated substantial anti-colon cancer activity. According to the findings the final sample medications were shown to exhibit promising anti-cancer action against disease called colon cancer.

Keywords:
Cancer, Ethanolic Leaf Extract of Basella Rubra, Phytochemical Screening, Maceration, Isolation and Purification, Vincristine, Cytotoxic Activity.

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Formulation and Evaluation of Orodispersible Tablet of an Anti-Histamine Drug

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Abstract:

Bilastine is a novel new second generation antihistamine with high selectivity for the H1 histamine receptor which is approved for the symptomatic treatment of Allergic Rhinitis (AR) and Chronic Urticaria (CU). It comes under BCS class II drugs and its absorption is dissolution rate limited with oral bioavailability of 61%. It requires increase in the bioavailability to get the maximum therapeutic effect. The main purpose of this research work is to improve the solubility and dissolution of Bilastine by using super disintegrants. Nine formulations were prepared by direct compression method using varying concentration and combination of both synthetic and natural super disintegrants are namely Crospovidone, Sodium starch glycolate & Dehydrated banana powder, and other excipients. FTIR studies revealed no interaction between drug and excipients. The Precompression parameters were found to be within the pharmacopeial limits. Formulation F8 was found to be the best formulation with Invitro disintegration time of 7.55 ± 0.406 seconds, Invitro dispersion time of 13.39 ± 0.452 seconds & Invitro % drug release of 95.48 ± 0.804 % at the end of 30 minutes. Data's of in-vitro dissolution studies were fit to different kinetic models to explain release profiles. The best formulation was compared with the conventional marketed product of Bilastine and showed better drug release and expected a higher bioavailability. The best formulation F8 was also subjected to short term stability studies at room temperature for 3 months as per ICH guidelines by using desiccator and the study indicated that there was no significant change in the formulation before and after the stability studies.

Keywords:

Oro Dispersible Tablets, Antihistamine, Bilastine, Crospovidone, Sodium Starch Glycolate, Dehydrated Banana Powder.

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In-Vitro Anti-Lung Cancer Activity of Brassica Oleraceae Var. Capitata F. Rubra (Red Cabbage) Using MTT Assay Method

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Abstract:

Aim:
The aim of the study is to determine the anticancer activity of the ethanolic extract of Brassica oleraceae var.capitata f.rubra (red cabbage) in lung cancer cell line using MTT Assay method.

Method:
The outer layer of red cabbage was removed, and the inner layer was cut into small pieces, shade dried, and crushed to a fine powder. The cabbage powdered was subjected to maceration using ethanol with a constant stirring. The mixture was filtered, followed by the removal of the solvent by using evaporation process, to give a dark brown paste extract and preliminary Phytochemical screening of the ethanolic extracts was carried out. MTT assay was then carried out to determine the anti-cancer activity of red cabbage against lung cancer cell lines. The results were compared with the Anti-cancer activity of standard drug Vinblastine.

Results:
Phytochemical screening of the ethanolic extracts was carried out which showed the presence of Flavonoids, Tannins and Phenolic compounds, Steroids and glycosides. The results were interpreted by calculating the IC50 value by Non-Linear Regression. Sample Red cabbage and Standard Vinblastine showed an IC50 value of 113.4 µg/ml and 19.62 µM inhibition in A549cells.

Discussion:
The ethanolic extract of Brassica oleracea var.capitata f.rubra (Red cabbage) showed significant anti-lung cancer activity when studied in-vitro A549 cells cell line compared with standard drug Vinblastine.. The test drug was proved to be effective in treating serious diseases like lung cancer.

Keywords:
Anti-lung Cancer, Red Cabbage, MTT Assay

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In-Vitro Anti-Buccal Cancer Activity of Brassica Oleracea Var.Italica Using MTT Assay Method

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Abstract:

Introduction:
Cancer may be a disease during which certain cells within the body grow uncontrollably and spread to other parts of the body. Cancer starts almost everywhere within the organic structure, which is created of trillions of cells. Normally, human cells grow and multiply to make new cells when the body needs them. Types of cancer are influenced by many factors, like age, gender, race, local environmental factors, diet, and genetics. Some common signs and symptoms related to cancer, but not specific to cancer, include: Fatigue, Lumps or thickened area that may be felt under the skin, Weight changes, including unintended gain or loss, Skin changes, like yellowing darkening or reddening of the skin, sores that don't heal or transform existing moles, Persistent cough or difficulty breathing etc

Aim:
The present study experimentally investigated the anticancer activity of ethanolic extract of cruciferous vegetable Brassica oleracea var. italica against buccal cancer cell line by MTT assay.

Method: The Cruciferous vegetable Brassica oleracea var. italica was collected, authenticated and extracted by maceration process by using ethanol and phytochemical screening was performed. Broccoli (Brassica oleracea L. italica) has been marketed as a health-promoting food because it naturally contains many bioactive phytochemicals, like glucosinolates, phenols, vitamin C and mineral nutrients. The leaf extract was treated against human oral cancer cell lines to determine the anti-cancer activity by their screening methods. The results were compared with standard vinblastine. Further, a comparative study was performed between standard vinblastine and sample as ethanolic leaf extract of Brassica oleracea var. italica

Results:
The anti-cancer activity of sample was considerable and showed as a reliable alternative for vinblastine. The results were interpreted by calculating IC50 value by non-linear regression. Brassica oleracea var.italica showed IC50 Value at 213.5µM which has shown significant anti-cancer activity when compared to standard drug Vinblastine.

Conclusion:
Standard Vinblastine showed an IC50 value 22.27µM and IC50 value of sample SCC9 cells showed 213.5µg/ml. According to the findings the sample exhibit promising anticancer activity against human buccal cancer.

Keywords:
Cancer, Brassica oleracea var.italica, Ethanolic extract, Human buccal cancer cell line, Vinblastine

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Study of In-vitro Anticolon Cancer Activity of Ophiorziza Recurvipetala Using MTT Assay Method

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Abstract:

Objective:
To validate the claim of traditional uses of Indian medicinal plants in management of In-vitro anticolon cancer activity of Ophiorhiza recurvipetala using MTT assay method.

Method:
The plant was collected, the powdered Ophiorrhiza recurvipetala was subjected to maceration using methanol with a constant stirring. The mixture was filtered, followed by the removal of the solvent by using evaporation process, to give a dark brown paste extract and preliminary phytochemical screening of the methanolic extracts was carried out. MTT assay was carried out to determine the Anti-Colon Cancer activity against the COLO-205 cell lines. The results were compared with the standard drug Vinblastine.

Results:
In this study the anti-colon cancer activity was assessed using COLO-205 cell lines. The efficiency of standard drug vinblastine was compared to the sample under test Ophiorrhiza recurvipetala. The increasing concentration of vinblastine showed that at concentration up to 100 µM the maximum percentage inhibition was found to be 85.34%. For the test drug it was found that the concentration can be increased up to 320µg/ml which resulted in the similar percentage inhibition up to 85.92%.

Discussion:
The results obtained in the study provide quantitative basis to explain the traditional use of Ophiorrhiza recurvipetala as anti-colon cancer drug. Sample OR-1 and Standard Vinblastine showed an IC50 value of 95.56µg/ml and 15.41µM inhibition in COLO-205 cells.

Keywords:
Ophiorrhiza recurvipetala, Vinblastine, Maceration, MTT assay.

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Antivenom Activity of Methanolic Leaf Extract of Leucas Cephalotes in Experimental Animal Model

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Abstract:

Objective:
To validate the claim of traditional uses of Indian medicinal plants in management of envenomation and evaluate the antivenom (antiophidian) properties showed by the methanolic leaf extract of Leucas cephalotes (L. cephalotes).

Method:
The plant was collected, identified and the subjected to exhaustive maceration using methanol. The venom neutralization activity of plant extract was accessed in swiss albino mice (18-25g) and the animals were grouped into five (n=6) and injected with PBS (normal), venom (control), antivenom (standard) and methanolic leaf extract at dose of 200 mg/Kg and 400mg/Kg. Neutralization effect of plant extract on edema formation for 6 hr and hemorrhagic lesion for 24 hr were observed and compared with venom (negative control) and antivenom (standard as positive control).

Results:
The neutralization effect of methanolic leaf extract of L. cephalotes was tested against Daboia russelli venom using in vivo method. The Minimum Edema Dose (MED) of D. russelii was found to be 3 µg and Minimum Hemorrhagic Dose (MHD) was found to be 5µg ($p<0.01$ and $p<0.01$).

Discussion:
The methanolic leaf extract of L. cephalotes possesses antivenom activity. Current studies confirm the claimed antivenom activity at a dose of 400 mg/Kg.

Keywords:
Antivenom, Edema Formation, Hemorrhagic Lesion.

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Formulation and Evaluation of Herbal Mouth Wash

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Abstract:

Herbal mouthwashes are in high demand Since they combat oral infections while also providing relief instantly relieve pain and fewer negative effects.The objective of the formulation was to prepare and evaluate herbal mouth wash against bacterial activity in oral cavity . Formulation containing antibacterial effect from cinnamon, Tulsi, Neem twigs, and liquorice, will introduce a combination which is more effective against bacterial growth. The extract were formulated into 5 different formulations (F1 to F5) with different concentrations 2%,4%,6%,8%,10%.The evaluation of all formulation (F1 to F5) were done on different parameters such as pH, colour, odour,test for microbial growth, and invitro antibacterial activity. The formulation were evaluated against oral pathogens by using agar well diffusion technique. Hence these study proves that F4 (8%) and F5 (10%) formulation shows maximum zone of inhibition against bacteria. Hence from the agar well diffusion method at different concentrations shows that it has significant antibacterial activity and this preparation is able to inhibit the bacterial growth in oral cavity.

Keywords:

Herbal Mouthwash, Agar Well Diffusion Technique, Microbial Growth, Oral Pathogens

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In-vitro Anticancer Activity of Ethanolic Extract of Basella Rubra on Human Prostate Cancer Cell Lines

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Abstract:

Aim:
The present study experimentally investigated the in-vitro anti-cancer activity of ethanolic extract of Basella rubra on human prostate cancer cell lines (PC-3).

Method:
Cancer is a leading cause of death worldwide, accounting for nearly 10 million deaths in 2020, or nearly one in six deaths. Cancer arises from the transformation of normal cells into tumour cells in a multi-stage process that generally progresses from a pre-cancerous lesion to a malignant tumour. Cancer kills more people than AIDS, Tuberculosis, and Malaria combined. Basella rubra, a member of the Basellaceae family, was used to make an ethanolic leaf extract. To obtain the leaf extract, maceration method was carried out in multiple steps. After maceration, isolation and purification was conducted. The ethanolic leaf extract was subjected to preliminary phytochemical screening. Alkaloids, flavonoids, glycosides, tannins, steroids, phenols, proteins, and sugars were among the major phytochemical constituents found. The leaf extract was treated against human prostate cancer cell lines to determine the anti-cancer activity by MTT assay and the results were compared with standard as vincristine.

Results:
The anti-cancer activity of the sample was considerable and showed as a reliable alternative for vincristine. We may infer that Basella rubra ethanolic leaf extract has cytotoxic action. With further research, it can be a drug of choice in future. Apart from being cytotoxic in nature, it has antifungal, anti-inflammatory, and anti-ulcer properties, as well as androgenic properties. The more inhibitory percentage was 82.76 at 590nm of ethanolic extract of Basella rubra on DMEM supported PC-3 cell lines.
The ethanolic extract of Basella rubra exhibited more inhibitory effect in DMEM supported PC-3 cell lines.

Conclusion:
IC50 value for the sample BR-01 was 85.79 µg/ml in PC-3 cells. Standard vincristine had IC50 value of 16.01 µM. When tested in vitro on PC-3 cell lines the ethanolic extract of Basella rubra (Malabar spinach) demonstrated potential cytotoxicity. According to the findings the final sample medications were shown to exhibit promising anti-cancer action against prostate cancer.

Keywords:
Cancer, Ethanolic Extract, Prostate Cancer, Basella Rubra

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Formulation and Evaluation of Mucoadhesive Buccal Films of an Antidiabetic Drug

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Abstract:
Mucoadhesive buccal film is developed as a promising dosage form, which has prominent advantages because of drug delivery through buccal mucosa. Repaglinide is an anti-diabetic drug in the class of medications known as meglitinide. It is having an oral bioavailability of 56% and half-life of 1 hour. Formulations were developed containing Repaglinide for systemic delivery through buccal route using solvent casting method. Nine formulations were developed containing hydroxypropyl methylcellulose HPMCK15M, sodium carboxymethyl cellulose SCMC and novel mucoadhesive polysaccharide tamarind seed xyloglucan in various concentrations and combinations. Polyvinyl pyrrolidone PVPK30 as adhesive and glycerol were used as plasticizer. All the formulations were examined for weight variation, film thickness, folding endurance, surface pH, % moisture absorption, % moisture loss, tensile strength, drug content, and in vitro permeation studies, ex vivo permeation studies, and ex vivo residence time were performed. The formulation containing HPMC and SCMC in 1:2 ratio (F2) showed optimum tensile strength (6.86±0.12kg/mm^2). More satisfactory results were obtained in terms of swelling studies (189.13±1.01%)), in vitro permeation study (96.23±0.75%), and ex vivo permeation study (94.92±0.34%). The optimized formulation F2 patches were further studied for intermediate and accelerated stability studies for three months. No appreciable change in physical structure, physicochemical properties, drug content, and in-vitro permeation study were observed before and after the stability studies. The results suggested that repaglinide mucoadhesive buccal films could be a potential candidate to achieve optimum drug release the for effective treatment of type II diabetes mellitus.

Keywords:
Mucoadhesive buccal films, Repaglinide, Solvent casting method, Hydroxypropyl methylcellulose, Sodium carboxymethylcellulose, Tamarind seed xyloglucan, Tensile strength, In-vitro permeation studies, Ex-vivo permeation studies.

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The Antimutagenic Activity of Ethanolic Extracts of the Fruits of Manilkara Zapota (L.) in Swiss Albino Mice

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Abstract:

Objective:
To validate the Antimutagenic activity of Ethanolic extracts of the fruits of Manilkara zapota (L.) in Swiss albino mice."

Method:
The peel of the 10 fruits and the pulp were collected and mashed by grinding method and the fruit juice was extracted. About 50ml of fresh fruit juice of sapota fruit exhaustively extracted in 50ml of 60% aqueous, ethanol.The resultant extract was boiled in a water bath until a syrupy consistency was obtained. The antimutagenic activity of fruit extract was accessed in Swiss albino mice (18-25g) and the animals were grouped into five (n=6) and injected with Corn Oil (Negative control), Cyclophosphamide and Colchicine (Positive control), Melatonin (Standard) and Ethanolic fruit extract at dose of 200 mg/Kg and 400mg/Kg. The potency of extract was compared with the Standard drug Melatonin. The reduction in MNPCE count and the NCE/PCE ratio will indicates the efficacy of the extracts more or less same as that of the Standard.

Results:
The antimutagenic effect of ethanolic fruit extract of Manilkara zapota was performed using In- vivo methods. Incidence of aberrant cells and suppressive effect of Manilkara zapota at sampling time of 24 hrs was less compared to 48 hrs of sampling time.

Discussion:
Due to the reduction in MNPCE count and the NCE/PCE ratio will indicates the efficacy of the extracts more or less same as that of the standard. It can be concluded that fruit extract of Manilkara zapota possesses potent antimutagenic activity due to the presence of antioxidant principles.

Keywords:
Antimutagenicity, NCE/PCE Ratio, Aberrant Cells Formation.

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Neuroprotective Potential of Methanolic Extract of Nelumbo Nucifera Leaves in Various Models of Induced Parkinson's Disease in Albino Rats

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Abstract:

Introduction:
Parkinson's disease is a neurological disorder with evolving layers of complexity. It has long been characterized by the classical motor features of parkinsonism associated with Lewy bodies and loss of dopaminergic neurons in the substantia nigra. However, the symptomatology of Parkinson's disease is now established as heterogeneous, with clinically significant non-motor features. Similarly, its pathology involves extensive regions of the nervous system, various neurotransmitters, and protein aggregates other than just Lewy bodies. The cause of Parkinson's disease remains unknown, but risk of developing Parkinson's disease is no longer viewed as primarily due to environmental factors. Instead, Parkinson's disease seems to result from a complicated interplay of genetic and environmental factors affecting numerous fundamental cellular processes.

Aim and Objective:
The present study aims to investigate the Neuroprotective potential of methanolic extract of Nelumbo nucifera leaves in various models of induced Parkinson's disease in albino rats

Methods:
The pulverized form of leaves was subjected to maceration extraction followed by phytochemical investigation. Parkinsonism was induced by reserpine (50mg/kg i.p) and haloperidol (1mg/kg) for 14 days and 5 days respectively, and animals were treated with two doses of Nelumbo nucifera leaves extract (200mg/kg and 400mg/kg p.o) 60mins prior to induction every time. Different motor deficit parameters like akinesia, locomotor activity and catalepsy were measured. Biochemical assays namely Bradford assay and lipid peroxidation assay of animal brain homogenates were carried out.

Results:
The methanolic extract of Nelumbo nucifera leaves has excellent neuroprotective and antioxidant property. There is a decrease in akinesia, catalepsy duration as well as increase in locomotor activity of MENN treated animals compared to the control. There is also reduction in the anti-anemic activity may be due to the neuroprotective and anti-oxidant potential of Nelumbo nucifera leaves extract, due to presence of flavonoids, alkaloids, glycosides and terpenoids.

Conclusion:
Nelumbo nucifera leaf extract possess good neuroprotective and antioxidant activity, therefore, it can be used as a source of treatment for Parkinson's disease.

Keywords:
Parkinson's Disease, Neuroprotective, Antioxidant, Nelumbo Nucifera, Brain Homogenates

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Formulation and Evaluation of Buccal Tablet of an Anti-histamine Drug

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Abstract:

The Buccal route offers an attractive alternative for systemic drug delivery of drugs because of better patient compliance, ease of dosage form removal in emergencies, robustness, and good. The present research work was aimed with the objective of developing and evaluating Buccal tablets to treat Allergic rhinitis and Chronic urticaria. Due to bilastine low oral bioavailability of about 61% buccal route is an promising route for increasing the bioavailability of Bilastine in the body as it directly reaches into the blood. All the excipients are tested for compatibility with drug (Bilastine) by FTIR, which revealed that there was no physical and chemical interaction occurred. A total of 9 formulations were prepared in the following ratios, from F1 to F3 the drug to carrier (β-cyclodextrin) ratio was found to be (1:2), from F4 to F6 the ratio was of (1:4) and from F7 to F9 the ratio was of (1:6). In the formulation F1, F4, F7 crospovidone is used in 4% concentration, in formulation F2, F5, F8 sodium starch glycolate is used in 4% concentration, and in the formulation F3, F6, F9 both crospovidone (2%) and sodium starch glycolate (2%) are used in combination as superdisintegrants, Carbopol as mucoadhesive polymer and ethyl cellulose as backing layer. Based on the evaluation result the formulations F-7 containing β-CD of ratio 1:6 along with crospovidone were selected as best formulation with highest release with 97.89%. These findings revealed that the bioavailability of Bilastine can be increased. Hence, Buccal tablets of Bilastine was found to be more effective for antihistamine therapy through buccal DDS.

Keywords:

Bilastine, Antihistamine, Buccal Tablets, Beta-Cyclodextrins, Crospovidone, Sodium Starch Glycolate, FTIR, Dissolution, Stability Studies

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A Systematic Approach Towards Antibiotic Stewardship Programme in Post-Operative Orthopedic Surgery in Tertiary Care Teaching Hospital

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Abstract:

Background:
Antibiotic resistance is an increasing problem globally, including in India. Antibiotic stewardship focuses on enhancing patient care and avoids the negative implications of antibiotic abuse or misuse. Proper surveillance and stewardship are critical to retaining antibiotic efficacy and reducing the growth and progression of AMR.

Objectives:
To estimate the antibiotic stewardship in post-operative orthopedics, To provide a strategy for optimum usage of antibiotics, To estimate the overall economic burden of antibiotics in orthopedic surgeries and To determine the extent of guidelines adherence.

Methodology:
A Prospective, Observational study was conducted in the Department of Orthopedics, Adichunchanagiri Hospital and Research Centre, B.G Nagar. The Prospective Audit and Feedback (PAF) form were based on the antibiotics prescribed which had two parts which was the initial review of antibiotics, and the 48-hour review. The suitably designed data collection form was used to collect all the necessary information.

Results:
The most often prescribed antibiotics in the cephalosporin medication class were Ceftriaxone, Cefoperazone, and Cefotaxime with percentages of 28%, 26.5%, 6%, and 2.5%, respectively which barely followed the AWaRe classification. Using the cost of illness method, the total direct cost and indirect cost accounted economically for an average of 60% to 57% of burden respectively.

Discussion:
Among 200 participants in the study, 68% of participants were males while the 32% were females. Only 48% of the antibiotics prescribed followed the AWaRe classification rules provided by the WHO. The following actions—escalate, discontinue antibiotics, de-escalate, and transition from IV to oral therapy—were done after reviewing only 29.5% of antibiotic treatment. Nearly half the participants faced an economic burden due to their hospital stay.

Conclusion:
Antimicrobial stewardship programs in hospital is necessary to optimize the use of antibiotics, boost patient outcomes, minimize AMR and infections linked to healthcare, and lower medical expenses.

Keywords:
Antibiotic Stewardship, Orthopedics, Post-Operative Surgery, Antimicrobial Resistance, Economic Burden

Novelty of the Topic:
This research study has thought to be one of its kind in South Indian region to evaluate antibiotics stewardship in post-operative orthopedics.

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Design, Synthesis, In-silico Studies and Biological Evaluation of Akt Inhibitors as Potent Anti-Proliferative Agents

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Abstract:
The PI3K/AKT/mTOR signaling pathway is important because it regulates cell growth, proliferation, survival, and metabolism. AKT is a serine/threonine kinase. In breast cancer, including HER2-amplified, triple-negative, and Hormone Receptor-positive (HR+) illness, deregulation of this system is a frequent occurrence. Targeting AKT is therefore a desirable therapeutic option for many breast cancer subtypes, particularly for those that are resistant to standard therapies. Two ATP-competitive drugs, capivasertib, and ipatasertib have undergone thorough testing in phase I and II clinical trials either alone, in combination with chemotherapy, or with hormonal treatments. AKT inhibitors have recently been produced in a number of different forms. Cancer has been proven to be a target of Akt overexpression, and inhibition has been emphasized as a possible strategy for the creation of anticancer drugs. In this study, a series of anticancer drugs [(6,7-dimethoxy-3,4-tetrahydroisoquinoline-2(1H)-sulfonamide derivatives] with potential Akt inhibitory activity were developed and synthesized. Based on in-silico screening, which included molecular docking and ADMET predictions, compounds 4a and 6a were identified. Analytical characterization of the synthesized molecule was carried out using a Shimadzu FT-IR 8400-S spectrophotometer. Compounds 4a and 6a, respectively, it has shown the presence of a 3-Chlorophenyl group and a 2,3-Dichlorophenyl. Furthermore, the planned goal is to conduct in-vitro cell line cytotoxicity studies to assess the effectiveness of 4a and 6a.

Keywords:
Breast Cancer, PI3K/AKT/mTOR Pathway, Akt Inhibitors, In-silico Screening, In-vitro Cytotoxicity

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Challenges in Development of Companion Diagnostics and Comparative Regulatory Requirements for the Same in US, EU and India

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Abstract:
In vitro diagnostic Companion Diagnostics (IVD CDx), often referred to simply as companion diagnostics, represent an important and indispensable pillar of personalized or precision medicine. Advancement in molecular diagnostics coupled with increased understanding of disease mechanisms has resulted in an increasing number of predictive biomarker assays being developed to guide the use of targeted cancer drugs employing the drug-diagnostic co- development model. Companion diagnostics play key role in therapeutic decision-making and global regulatory agencies classify them as high-risk in vitro diagnostic medical devices as analytical validation as well as clinical development and overall regulation of CDx presents complications with respect to their sensitivity and specificity. In recent years, emerging markets such as India as well as developed markets such as the European Union and the US have introduced a wide range of requirements for scientific validity, analytical and clinical performance, post-market surveillance, etc. of In-vitro Diagnostics (IVD) thereby prescribing diverse and stringent regulatory requirements for companion diagnostics apart from presenting unique regulatory challenges throughout their product lifecycle. This changing regulatory landscape is going to significantly affect all stakeholders viz. developers, manufacturers, reference laboratories, conformity assessment/notified bodies, in-country authorized representatives, importers, distributors, etc. involved in the companion diagnostics industry. Present work highlights the challenges encountered in development/co-development of companion diagnostics and comparative regulatory requirements for them in the US, EU and India.

Keywords:
Companion Diagnostics, Precision Medicine, USFDA, IVDR, CDSCO

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Drug Disposal Regulations: A Study to Identify the Barriers and to Suggest Recommendations Based on the Guidelines of United States and Europe

MANIPAL COLLEGE OF PHARMACEUTICAL SCIENCES
MANIPAL
(A constituent unit of MAHE, Manipal)

Siddharth Udupa
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Abstract:

Introduction:
Drug disposal is the act of discarding of drugs. Individuals commonly dispose of unused drugs that remain after the end of medical treatment. Health care organizations dispose of drugs on a larger scale for a range of reasons, including having leftover drugs after treating patients and discarding of expired drugs. Failure to properly dispose of drugs creates opportunities for others (of whom the drug is unintended) to take them inappropriately.
Improper disposal of unused or expired medicines also leads to serious personal and environmental health hazards. Recent research in United States suggests that the nation's water supply is contaminated with trace pharmaceuticals that affect a negative environmental and public health impact. Incorrect medication disposal methods (e.g., flushing medications down the toilet or drain) are a significant factor contributing to the presence of medicated compounds in the aquatic environment. The improper drug disposal also leads to drug abuse and diversion of expired medicines into the market.

Aim and Objective
- The aim of this study is to provide an insight about the current regulations for safe disposal of drug/ medications in US and Europe.
- To identify the barriers for the safe disposal of unused medications in US and Europe.
- To recommend strategies in improving the safe disposal of medicines in US and Europe.

Methods
Research papers or articles are collected from databases like PubMed, Web of Science, Scopus and other pharmaceutical journals are compared and studied.

Results
- As per Government Accountability Office Report, only 3% of eligible pharmacies and other entities voluntarily participate as Drug Enforcement Administration authorized collectors of unused prescription Drugs.
- The Stake holders cited cost and uncertainty over proper implementation as main reasons.
- In Europe, the directive does not provide any guidelines on implementation of schemes & there are significant differences between Member States and EU collection schemes for expired and unused pharmaceuticals must be harmonized

Summary
Proper disposal of unused and expired medication is a challenging task since it involves complying with various federal and state regulatory bodies and other healthcare groups, and it becomes even more challenging in implementing these procedures since there are significant differences between member states of various counties like Europe and US. Incorrect medication disposal methods (e.g. flushing medications down the toilet or drain) are a significant factor contributing to the presence of medicated compounds in the aquatic environment. Recent research in United States suggested that the nation's water supply is contaminated

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with trace pharmaceuticals that affect a negative environmental and public health impact. If the medicine disposal practices are improper, the health of the exposed population is at high risk. Currently, there are three approaches to disposing of unused prescription drugs that are sanctioned by the DEA- special disposal bins installed at pharmacies or other registered entities, mail-back programs, and take-back events. The problem, the GAO report noted, is that despite thousands of pharmacies, drug makers and distributors, narcotic treatment programs, and hospitals and clinics that are nominally eligible to serve as drug take-back sites, only3% nationally register to do so. The reasons cited are the cost of purchasing, installing, and managing prescription drug disposal bins; uncertainties over complying with DEA regulations; and the availability of other drug collection efforts.14 In the United States, the Product Stewardship Institute focuses on setting up take-back programs that are funded by "Extended Producer Responsibility" (EPR) legislation. This mandates manufacturers to pay for the safe disposal of consumer products, such as batteries or paint, at the end of their useful life. There is no federal legislation pending in Congress that would implement Drug-Take-Back programs funded by EPR, but there are 20 such laws for drugs in the U.S. including two statewide laws in Massachusetts and Vermont. Cost is the biggest obstacle for take back programs. Most companies will not engage in expensive take-back initiatives.

A strong regulatory framework, which can make a major contribution to environmental protection is required. The key aspects to be considered include, Enforcing of disposal of pharmaceuticals in a right way. EU collection schemes for expired and unused pharmaceuticals must be harmonized. Accountability of the pharmaceutical industry must be increased. Transparency regarding the results of collection schemes implemented in different Member States and enforcing compliance must be increased. Reporting should be harmonized at EU level, so data is comparable between countries. ERA (Environmental Risk Assessments) for all new & old drugs. The adoption of a disposal code for pharmaceutical packaging about the correct disposal of pharmaceuticals and Chemical deactivation

Conclusion

The proper disposal of unused medications and pharmaceutical waste is a challenging problem that involves several regulatory bodies and healthcare groups. Monitoring and detection of pharmaceutical impact to environment must be done in priority. To maintain compliance with intricate federal, state, and local regulations, health care institutions should partner with authorized waste management and municipal regulations on the disposal of medicines. When feasible, drugs should be disposed of in the community through collecting programmes rather than being dumped into the sewage system.

Keywords

Dispose of medicines, health risks, environmental contamination and solid waste products, national policy on solid waste, chemical waste

Novelty of the Topic

To understand and compare various regulations regarding drug disposal across various countries like US and EU and to identify the barriers and suggest recommendations.

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Formulation and Evaluation of Gastro-retentive Drug Delivery System of Cefdinir by Using Fenugreek Mucilage

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[1][2][3] BVV's Hanagal Shri Kumareshwar College of Pharmacy, India

Abstract

Introduction:
FDDS have a bulk density less than gastric fluid and so remain buoyant in the stomach without affecting gastric emptying rate for a prolonged period of time. While the system is floating on the gastric contents, the drug is released slowly at the desired rate from the system. After release of drug the residual system is emptied from the stomach. This results in an increased GRT and a better control of the fluctuations in plasma drug concentration.

Aim & Objectives:
The aim of the present work is to formulate and evaluate Gastro-retentive DDS of Cefdinir by using Fenugreek mucilage by direct compression method.

Methods.
The floating tablets of Cefdinir were prepared by direct compression method, Trigonella foenum graceum seed mucilage, Hibiscus Rosa sinensis leaves mucilage, and Xanthan gum and Guar gum are used as a natural rate controlling agents. The physicochemical parameters like pre-formulation and post-compression evaluation were performed. The release data were subjected to different kinetic models.

Results
The FTIR spectral analysis showed that there was no drug interaction with formulation additives of the tablet as there is no variation and shift in bands. Precompression parameters showed good flow properties. Post compression parameters like thickness, hardness, weight-variation, friability, swelling index, floating lag time, total floating time, drug content, in-vitro drug release study shown good results. Formulation F1, F3, F5, F7 showed good results throughout the study. As the concentration of the polymer increases the rate of release increases.

Conclusion.
From the literature Hibiscus Rosa sinensis leaves mucilage, Xanthan gum, and Guar gum are best candidate of Natural floating Material & Rate controlling agent but this study proved that Trigonella foenum graecum mucilage can act as good Floating Material & rate controlling polymer at optimum Range better than xanthan gum and other gums.

Keywords:
Gastro-retentive Drug Delivery System, Trigonella Foenum Graceum, Hibiscus Rosa Sinensis

Novelty:
Prepared floating tablets using natural mucilage extracts.

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In-silico Molecular Docking, Prediction of ADME and Toxicity Properties of Potentially Active Isolated Constituents of Dried Fruit Extract of Terminalia Chebula

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Abstract:

Background Study:
It is acknowledged that plant-based molecules can be utilized to derive medicines for treating illnesses.
Introduction: In recent years, traditional medicinal plant investigation has steadily risen globally. Because plants enable them to complement contemporary pharmacological treatment. In-silico techniques are widely used to shed light on the pharmacological foundation of the actions of traditional medicinal plants. These techniques can increase the number of active substances among the candidates and reveal the mode of action of therapeutic plants. They include network pharmacology, in-silico screening, and pharmacokinetic screening.

Objective:
The present study aimed to conduct molecular docking and ADMET studies of the identified potentially active candidate compounds from methanolic extracts of Terminalia chebula dried fruit extract by using in-silico techniques, Swiss ADME, and Toxicity studies.

Method:
Molecular docking of compounds on target protein 5HT4R_HUMAN (Q13639) was performed using Maestro 9.2 Schrodinger LLC. The physicochemical, ADME and drug-likeness parameters were computed using the SwissADME online software.

Result:
T.chebula extracts showed the presence of fifteen compounds after GC-MS analysis. Namely Hexadecanoic acid, methyl ester, N-Hexadecanoic acid, 13-Hexyloxacyclotridec-10-en-2-one, 9, 12-Octadecadienoic acid (Z, Z)-, methyl ester, Cis-Vaccenic acid, Octadecanoic acid, 15-Hydroxypentadecanoic acid, Ricinoleic acid, 2-Hydroxy-3-[(9E)-9-octadecenoyloxy]propyl (9E)-9-octadecenoate, 15-Hydroxypentadecanoic acid, Hexadecanoic acid, 2-hydroxy-1-(hydroxymethyl)ethyl ester, 1,4-Dioxaspiro[4.5] decane, 2-(hydroxymethyl)-, 9,12-Octadecadienoic acid (Z, Z)-, 2-hydroxy-1-(hydroxym), Glycidyl oleate, 3-tert-butyl-6-octen-1-ol. The result corroborated the laxative activities of the plants with significant binding interactions between compounds. Four compounds produced the highest docking scores namely 9,12-Octadecadienoic acid (Z, Z)-,2-hydroxy-1-(hydroxymethyl) ethyl ester; Hexadecanoic acid, 2-hydroxy-1-(hydroxymethyl) ethyl ester; Ricinoleic acid and Glycidyl oleate with ligand binding affinity docking scores -7.319, -5.695, -5.481 and -5.18 Kcal/mol respectively for the target proteins. Lipinski's rule of five was applied to 15 compounds, and all the compounds showed no violation and the findings showed promising results without any restrictions.

Conclusion:
All compounds in the extract of T.chebula met the drug-likeness according to Lipinski's rules. SwissADME emerged to be a simple, robust, and accurate method to understand the ADME properties of phytoconstituents. Research might continue using the findings of these investigations to look into in-vitro and in-vivo experiments to uncover the pharmacological underpinnings

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of Terminalia chebula extracts. The optimized and potent molecule could be developed as traditional medicine and nutraceutical products.

Keywords:
Terminalia Chebula, Molecular Docking, In-silico, Pharmacokinetic Screening, SwissADME.

Novelty of the Topic:
The formulation will be the first of its kind pediatric laxative drug using oil and isolated compound from the methanolic extract of Terminalia chebula fruit and can be used as a nutritional supplement in dose dependent manner.

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Probiotics, Prebiotics and Synbiotics as a Constructive Nutraceutical Approach to Overcome Gut Related Diseases

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Abstract:
The most prominent colonized organ in human is Gastrointestinal Tract (GIT) which shelters mass number of microbes. It has been assessed that 90-95% of the microbes are found in our gut (GUT Microbiota). They aid in producing metabolite, harvesting energy, protect against the pathogens, synthesis of vitamins and hormones. During the recent years the globe witnessed the existence of wide range of infectious disease with higher rate of morbidity and mortality. This necessitates the usage of huge number of different antibiotics, continuous intake of antibiotics and other synthetic agents disturbs the natural intestinal flora by expelling them. Changes in gut microbiota are reported to associate with diabetes, neurodegernerative diseases, hypertension, etc. Combination of 'Nutrition' and 'Pharmaceuticals' is termed as "Nutraceuticals" and it is defined as "the phyto substances that are derived from food of vegetable and animal origin as a pool of secondary metabolites". The FAO have defined the word Probiotics as "Non Pathogenic living microbes that ensures host health if used properly in foods or dietary supplements". Example: Lactobacillus and Bifidobacterium Species. In the year 1995 Glenn Gibson and Marcel Roberfroid defined the term Prebiotics as "A nondigestible food ingredient which beneficially affects the host by selectively stimulating the growth, development and multiplication of one or a limited number of bacteria and thus improves host health". Combination of both Probiotics and Prebiotics is referred as "SYNBIOTICS" that has recently reported to have the capability to increase the survival chances of Probiotics with a synergistic effect. Production of different types of synbiotics using different source of pre and probiotics will be gain the future pharmaceutical market to overcome various gut related disorders. The global Synbiotic demand is forecast to increase at a healthy CAGR of around 7% to 9% between 2022-2032, totaling over US $ 1.86 Billion by 2032.

Keywords:
GUT Microbiota, Nutraceuticals, Probiotics, Prebiotics, Synbiotics.

Novelty of the Topic:
Prolonged intake of allopathic related drugs resulting in gastrointestinal tract infections, which destroys natural intestinal flora and declines the natural immune system resulting in expansion of fungal colonies. Hence attention towards promoting use of Herbal medicines, nutraceuticals was observed globally to reduce the burden of adverse reactions and rejuvenation of micro flora is utmost important.

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Development and Evaluation of Gel-Embedded Plant Derived Silver Nanoparticles for Atopic Dermatitis

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Acharya & BM Reddy College of Pharmacy (ABMRCP) Under RGUHS, India

Abstract:

Introduction:
Atopic dermatitis is a common, chronic, relapsing, inflammatory skin disease that primarily affects young children. Atopy is defined as an inherited tendency to produce immunoglobulin E (IgE) antibodies in response to minute amounts of common environmental pollutants such as pollen, house dust mites, and food allergens. Dermatitis derives from the Greek "derma," which means skin, and "itis," which means inflammation.

Objective:
•Collection of Glycyrrhiza glabra roots
•Extraction of the crude drug by maceration,
•Phytochemical screening of methanolic extract
•Preformulation studies
•Synthesis of liquorice silver nanoparticles
•Analysis of liquorice silver nanoparticles
•Development of topical gel with liquorice silver nanoparticles
•In-vitro evaluation of gel embedded liquorice silver nanoparticles

Methods:
Extraction and Preliminary Phytochemical Screening, Preformulation Studies(Identification and characterization, Drug-excipient compatibility studies), Synthesis Of Liquorice Silver Nanoparticles Snp's, Analysis Of Liquorice Silver Nanoparticles Snp's(Visual Observation, Ultraviolet-Visible (UV-Vis) Spectroscopy, FTIR,TEM), In-Vitro Evaluation Of Gel Embedded Liquorice Silver Nanoparticles(Physical Examination, Ph Measurement, FT-IR,TEM, Spreadability, Rheological test)

Results:
All results showed positive in chemical tests for herbal constituents, all values were recorded in the range±5%.

Summary and Conclusion:
Three gel embedded silver nanoparticles formulations was developed based on different concentrations of Carbopol 934 and then subjected for its In-vitro characterization like physical appearance, pH , FTIR, Spreadability and rheological evaluation were carried out. the formulation SNPG-2 obtained satisfactory value of viscosity and its antimicrobial activity. So, it was finally concluded that the prepared gel embedded silver nanoparticles can be effectively used for treatment of atopic dermatitis

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Key Words:
silver nanoparticles (SNPs), Silver nanoparticle gel solution (SNPG)

Novelty of the topic:
A novel approach in the topical treatment of AD that is considered useful, especially in the latest European guidelines, is proactive treatment. We know from literature review that 2% of liquorice is more effective than 1% liquorice so we are formulation 2% liquorice gel for atopic dermatitis.

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Correlative Study of Iron Content with Genetic Diversity in Moringa oleifera Lam Leaves Assembled from Four Different Agro-climatic-regions of Rajasthan, India

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[2] University of Rajasthan, India

Abstract

The present study was aimed to determine the inherited assortment in wild indigenous plants of Moringa oleifera Lam. collected from different agro-climatic regions of Rajasthan. Genomic DNA isolation has been modified from well-known Cetyltrime Thylammonium Bromide (CTAB) method where CTAB is used for DNA extraction and diversity analysis by PCR RAPD marker (OPA-2, OPA-5, OPA-9) primers. The leaves Iron content was estimated by using Atomic Absorption Spectrophotometer (AAS). The leaf size ranged from 10.1 cm – 10.9 cm. Significant differences were recorded in Fe content of leaves collected from different Agro-climatic zones, such that the highest content was recorded in (0.89±0.0036 mg/g), (0.875±0.015), (0.86±0.014), (0.88±0.0047) leaves collected from Bhuwana, Pahada, Rupsagar, Durga nursery road (Udaipur) and (0.851±0.029), (0.84±0.006), (0.846±0.017) from Mandana, Chambel garden, and Borkheda (Kota) respectively. This study shows us that there is significant relation between iron and M. oleifera. These findings have not yet been extrapolated to humans in terms of a thorough biological analysis of the potential effects of the phytochemicals found in Moringa.

Keywords:

Drumstick tree, Genetic diversity, AAS, RAPD

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Automated Technologies and Novel Techniques in Protein X-ray Crystallography for Structure Based Drug Discovery

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Abstract:

The sequence infrastructure that has obtained through genomic projects dedicated to protein analysis has provided a wealth of information and understanding of the molecular processes governing human diseases at the atomic level. As a consequence, the development of novel technologies and methodologies has begun for protein structure determination to unravel the proteins both at functional and molecular level. The knowledge of accurate three-dimensional protein structures is a pre-requisite for rational drug design. The use of the protein structural information in drug discovery research has matured and has been applied to all levels ranging from target identification to design and develop selective inhibitors and suitable drug candidates for drug discovery. In the late sixties, when X-ray crystallography had just been established, the knowledge of determining protein structure on an almost widespread basis was analogous to an impossible vision or a phenomenon. Yet only sixty years after, automated protein structure determination platforms have been established to speed up drug discovery efforts, especially, identifying the binding mode of the small molecules or drugs that will fit accurately into the active site of a protein in order to determine the protein-drug interactions at the atomic level. The widespread use of robotics in protein crystallography, X-rays generated at the synchrotron and powerful computational tools had a huge impact at every stage of the structure determination pipeline and all of which have become more or less automated with minimal human intervention and can be used to rationalize and increase the speed and cost effectiveness of the drug discovery process. The recent advances in protein crystal structure analysis in the context of Fragment Based Drug Discovery (FBDD) will be presented. In addition, the role of protein crystallography in the drug discovery programs at leading pharmaceutical companies both India and abroad will be discussed.

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Preparation, Characterization and Evaluation of Resveratrol Loaded Pegylated PLGA Nanoparticles

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Abstract
This study focuses on preparing and evaluating polymeric nanoparticles made of pegylated PLGA. In this study, both double-emulsion solvent evaporation and single-emulsion solvent evaporation were employed to formulate the pegylated PLGA nanoparticles with PVA as the surfactant. For the encapsulation of the hydrophobic drug Resveratrol, formulations were successfully prepared and tested for their particle size, polydispersity index, zeta potential, drug loading, and entrapment efficiency. Scanning electron microscopy was used to observe the morphology and surface characteristics of the nanoparticles. The results demonstrated successful fabrication of the Resveratrol loaded pegylated PLGA nanoparticles. PVA was demonstrated in the present study to be a promising surfactant for the encapsulation and delivery of poorly water-soluble compounds as pegylated PLGA nanoparticles with the desired particle size, morphology, and drug loading, as demonstrated in the present study. PLGA nanoparticles encapsulated with Resveratrol had been successfully used to deliver the drug to the target site by pegylated PLGA nanoparticles.

Keywords:
Resveratrol, Polyethylene Glycol, PLGA, Nanoparticles, Cytotoxicity

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Molecular Docking Assessment of the Anti-inflammatory Potential of Some Phytoconstituents against Ulcerative Colitis

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Abstract:
Inflammatory Bowel Disease (IBD) is a chronic condition that mostly affects the gastrointestinal tract anywhere from the mouth to the anus. The two diseases which make up IBD are: Crohn's Disease (CD) and Ulcerative Colitis (UC). Tumor Necrosis Factor-alpha (TNF-α) is an inflammatory cytokine mediating the TH1 immune response characteristic of IBD. The prolong use of marketed drugs were reported to cause various side effects such as diabetes, intestinal flora disturbance. The current study aimed to determine the anti-inflammatory potential of Fulvic acid, eugenol, linalool and naringenin which also had anti-ulcer, antioxidant, wound healing abilities which was chosen after literature review. Molecular docking was done using Auto dock vina. The Naringenin showed more binding energy values when compared with binding affinity of standard drugs. The selected phytoconstituents are subsequently evaluated for ADMET properties using PKCSM webserver. The results showed that the selected herbs were more potent than standard drugs. To standardize and enhance the traditional herbs for IBD medication, the current study represents a modest first step in that direction.

Keywords:
Inflammatory Bowel Disease, TNF- α, Molecular Docking, ADMET

Novelty of the Topic:
In-silico molecular docking studies identified some novel phytoconstituents as potential TNF- α inhibitors which is in turn can be used to prevent Inflammatory bowel disorder

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Design, Optimization and Evaluation of Clopidogrel Loaded BSA Nanoparticles for the Management of Atherosclerosis

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[1][2][3] Dayananda Sagar University, India

Abstract:

Introduction:
The anti- platelet drug Clopidogrel has poor water solubility and oral bioavailability of ≤ 50% with rapid first-pass metabolism.

Aim & Objectives:
This present study aimed to formulate and optimize the Clopidogrel bovine serum albumin nanoparticles as a sustained drug delivery system for effective management of atherosclerosis.

Methods:
The Clopidogrel bovine serum albumin nanoparticles were successfully prepared by the desolvation technique and Box-Behnken quadratic model was employed for optimization studies. For the preliminary study, the pH of the polymeric solution, concentration of bovine serum albumin and volume of 4% v/v glutaraldehyde were varied. The stirring speed, stirring time, and quantity of drug were kept constant. The process yield, PDI and drug loading was characterized. The selected formulation from preliminary study had higher PDI and particle size and had lower drug loading. The data from preliminary study was used to formulate various formulations by Box- Behnken design. The Box- Behnken quadratic model was employed to further optimize the formulation and to study the effect of independent variables like X1 (Polymer concentration), X2 (pH), and X3 (Cross-linking hours) on dependent variables like particle size, PDI, and drug loading.

Result:
The particle's morphology was studied by TEM. The drug content, entrapment efficiency, in vitro drug release studies were carried out. The particle size, zeta potential, clotting and bleeding time of the optimized Clopidogrel bovine serum albumin nanoparticles were examined.

Summary and Conclusion:
The efficiency of nanoparticles was confirmed in the wistar albino rats, the animals which had been administered with Clopidogrel bovine serum albumin nanoparticles showed prolonged clotting and bleeding time compared to control and Clopidogrel drug solution treated groups.

Keywords:
Bovine serum albumin, Clopidogrel, atherosclerosis, Box- Behnken design.

Novelty of the Topic:
Clopidogrel was chosen as the appropriate drug for the current investigation since considerable research on nanoparticles for management of atherosclerosis has not yet been done. In this study the nanoparticles were formulated and optimized using Box-Behnken Design (BBD). The particle size and size distribution, surface charge, particle shape, thermal behavior, interaction of prepared Clopidogrel bovine serum albumin nanoparticles were evaluated. Furthermore the effects of prepared Clopidogrel bovine serum albumin nanoparticles on bleeding and clotting time were examined in wistar albino rats.

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In-vitro Toxicity and Antioxidant Assay of Emblica officinalis Methanolic Extract and its Gel

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Abstract

Introduction:
Emblica officinalis (Family: Euphorbiaceae), also known as Phyllanthus emblica and often as amla, is a medium perennial medicinal plant that is found primarily in tropical forest locations such as India, Sri Lanka and others. Bioactive components primarily contain tannins, flavonoids, phenolic compounds, saponin, terpenoids, ascorbic acid, carbohydrates and many other. It has diverse pharmacological activities like antimicrobial, antioxidant, anticancer, wound healing and many more. The purpose of study is to assess antioxidant potential and toxicity study of amla extract and its gel.

Aim and Objective:
To prepare amla extract and its gel.
To perform In-vitro antioxidant and toxicity study.

Materials and Method:
Plant material dried at room temperature and powdered. About 125g powder soaked in methanol for 72 hrs and extracted using Soxhlet extraction. Gel was prepared by using 1% Carbapol. For DPPH scavenging activity, methanolic solution of extract and gel at different concentration (3.12-100 µg/ml) were used and DPPH (4 mg /100 ml methanol) solution was used. Absorbance of solution measured at 517nm in UV visible spectrophotometer. For toxicity study, L929 cell line was used. Ascorbic acid was used as standard.

Results:
Plant extract and its gel showed potent antioxidant activity when compared to standard ascorbic acid. The toxicity study done by MTT assay, showed cell viability of 95% at higher concentration i.e., 100 µg/ml confirming compound is non-toxic.

Conclusion:
E. officinalis extract and its gel has potent antioxidant activity and showed no morphological changes in cells indicating compound to be non-toxic.

Keywords:
Emblica Officinalis, Antioxidants, DPPH Assay, Toxicity Study

Novelty of the Topic:
As per literature, amla is used for various cancer cell lines studies such as HepG2, HeLa, A549, etc. The current work emphasizes the toxicity study of amla extract and its herbal gel on L929 mouse fibroblast cell lines resulting in non-toxic effects.

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Design, Synthesis and Identification of Quinoline Based Derivatives for their Anticancer and Spindle Kinase Inhibitor Activity

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Abstract

Introduction and Objectives:
Cancer has emerged as a major health threat to the entire population worldwide people of all ages that can affect body organs through metastasis. Despite the existence of an effective treatment cancer is spreading globally till date, leading to an urgent need for shorter and more effectual treatment regimens. Hence in the present study we have designed, synthesized and identified quinoline based molecules for their spindle kinase inhibitors.

Methods:
In an endeavor to develop efficacious anticancer agents 2-((7-chloroquinolin-4-yl) amino)-n'-(benzylidene) benzohydrazide compounds were synthesized using a conventional synthetic route. compounds were tested for their in vitro anti-proliferative activity against selectedcell lines by mtt assay and were evaluated for their eg5 inhibitory activity. all the synthesized compounds were characterized by spectroscopy. other than this, molecular docking studies are carried out in order to predict the hypothetical binding mode.

Results:
All synthesized compounds were characterized by spectroscopy and have shown the characteristic peaks. Most of the synthesized analogues exhibited moderate to good inhibitory against cancer cell lines. The few synthesized compounds displayed more than 50 % inhibitory activity and shown promising spindle kinase inhibitor activity.

Conclusion:
After carrying out biological activity data and In-silico results strongly suggested that N'-benzylidene-2-((7-chloroquinolin-4-yl) amino)benzohydrazide compounds can further used in the development of new promising anticancer agents.

Key Words:
Quinoline, Cancer, Spindle Kinase

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The Clinical Relevance of Erucic Acid in Neurodegenerative Diseases

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Abstract

The main hallmark of Neurodegenerative Diseases (NDs) is the loss of neurons in the brain and spinal cord. Diverse groups of fatty acids, such as those found in glycerophospholipids, glycerol ether lipids, cerebrosides, sulfatides, and gangliosides, are crucial for the healthy operation of the brain. They are widely distributed throughout the nervous system and actively contribute to the growth and upkeep of the nervous system. An essential fatty acid deficit in the diet during development causes hypomyelination, which has an impact on several neuronal processes. Age is still the biggest risk factor for practically all neurodegenerative diseases, according to research. These fatty acids may have an important role in the development of neurological diseases. Research has been done on Erucic Acid (EA), an ingestible omega-9 fatty acid that is found in Lorenzo's oil. Erucic acid was previously thought to be a natural toxin because of its negative effects on heart muscle function and hepatic steatosis, but it has been discovered that EA is regularly consumed in Asian countries through the consumption of cruciferous vegetables like mustard and rapeseed oil with no evidence of cardiac harm. EA is also capable of being transformed into nervonic acid, a crucial element of myelin. EA may therefore have remyelinating effects, which may be crucial for the treatment of different demyelinating conditions. Also, EA exerts anti-oxidant and anti-inflammatory effects which suggest its possible therapeutic role in different NDs. Considering the fruitful effects of this compound, this review focuses on the potential role of erucic acid as a pharmacological agent for the treatment and management of several NDs.

Keywords

Erucic acid, Lorenzo’s oil, Neurodegeneration, Alzheimer’s disease, Parkinson’s disease, Huntington’s disease, Multiple sclerosis

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A Review of the Herbs and their Extract used to Treat the Breast Cancer

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Abstract:
Breast cancer is women's most commonly diagnosed, life-threatening, and fatal disease. Breast cancer threatens 25% of all cancer patients in women globally each year. Plant extracts have been used to cure a variety of ailments since prehistoric times. In addition to the analysis, exploring the molecular impact of the active compounds present in these plant extracts is necessary. This review article discusses several intriguing bioactive compounds obtained from various plants that have therapeutic applications for breast cancer treatment.

Keywords:
Plant Extracts, Medicinal Plants, Breast Cancer

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Regulatory Consideration for Xenotransplantation Products in United States: A Premarketing Review

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Abstract:

Introduction:
Xenotransplantation is defined as any procedure that involves the transplantation, implantation, or infusion into a human recipient of live cells, tissues, or organs from a nonhuman animal source. It also includes any procedure in which human body fluids, cell tissues, or organs have ex vivo contact with live human animal cells, tissues, or organs. More generally, xenotransplantation defines any cross-species transplantation (e.g., mouse to rat, pig to primate, and sheep to human). According to the World Health Organization (WHO), more than 114 000 organ transplantations are performed each year worldwide, which meets less than 10% of the current need.

Aim:
To analyze the various regulatory concerns and strategies for xenotransplantation products in United States.

Objectives
1. To understand the basic terminologies and types of xenotransplantation
2. To analyze the strategies in choosing animal donors for xenotransplantation.
3. To outline the regulatory consideration for animal characterization, preclinical studies and clinical studies.
4. To identify the challenges and barriers in regulating xenotransplantation.

Methodology:
It includes various guidelines and regulations compiled by WHO and FDA for the successful xenotransplantation. It includes initially source animal characterization followed by characterization of xenotransplantation products and their microbiological testing with preclinical consideration and clinical issues in xenotransplantation.

Results:
Xenotransplantation challenges us at all levels of thought and action. It includes major drawbacks in Medical and safety issues, Informed consent and confidentiality, Issues in regulation in xenotransplantation and Animal welfare.

Conclusion:
After the intense review and assessment, we come across various type of transplantation and discussed mainly on characterization of xenotransplantation products with respect safety, identity, purity and potency though microbiological testing and assay design. it was concluded by highlighting challenges in regulating xenotransplantation product effectively.

Keywords:
Xenotransplantation, WHO, FDA

Novelty of the Topic:
This review study has thought to be evaluate regulatory consideration for xenotransplantation product in United State.

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Preparation and Evaluation of Trasdermal Patch of Aceclofenac

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Abstract:
The goal of this study was to create an Aceclofenac-containing matrix-type transdermal therapeutic system using solvent evaporation technology with various ratios of hydrophilic (hydroxyl propyl cellulose) and hydrophobic (ethyl cellulose) polymeric systems. As a plasticizer, 15% of the polymer weight was made up of dibutyl phthalate. To increase the penetration of Aceclofenac through the skin, various concentrations of oleic acid and isopropyl myristate were utilised. The medicine and the polymers' physicochemical compatibility, as determined by differential scanning calorimetry and infrared spectroscopy, revealed that there was no incompatibility. The physical properties of the prepared transdermal films were assessed, including thickness, weight fluctuation, drug content, flatness, tensile strength, folding durability, percentage of moisture content, and water vapour transmission rate. Every formulation that was ready showed good physical stability. Utilizing Franz diffusion cells, formulation In-vitro permeation tests were carried out. When compared to all other formulations, those made with hydrophilic polymers that contained permeation enhancer demonstrated the best In-vitro skin permeation through Wistar albino rat skin. The results showed that mixed zero-order and first-order kinetics were used in various formulations to determine Aceclofenac's release profile. However, the penetration of the medication from the patches was controlled by a diffusion mechanism, according to the release profile of the improved formulation F9 (r2 = 0.9935 for higuchi). Formulation F9 demonstrated the highest flux of any formulation and increased drug permeation by 1.369 times. These findings demonstrate that Aceclofenac is more effectively absorbed through the skin of rats when a formulation containing 15% oleic acid and 10% isopropyl myristate is used.

Keywords:
Aceclofenac, Transdermal Film, Permeation Enhancer, In-vitro Permeation Study

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The Future of Pharmacy – Digital Pharmacy

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Abstract

Patients need a digital pharmacist to oversee the ever-growing digital therapy and patient data specific deluge. Innovations in digitalization are emerging in pharmacy career paths. Depending on mounting acceptance of products of wearable health-monitoring, health apps for managing daily activities, and smart pill dispensers for monitoring and improving treatment adherence, the FDA is promoting digital solutions for monitoring and treating patients. We are increasing the number of products. "Technology is transforming the patient journey," Majorly, COVID-19 pandemic and telemedicine accelerated the digital health which don't want to let it go. Digital health requires a digital pharmacist. Digital health covers technologies to overcome numerous overlapping, methodologies, policy for healthcare sectors, hospitals, pharmacies, pharmacists, physicians, nurses, other support staff as well as patients. The core integrity of digital system enables the system to collect, store and transfers the data for proper and immediately diagnose, monitor the patients with transparency. This will enable the continuous medical interventions which meet the objective of therapeutic outcome improvement in patients as a part of real time patient monitoring system.

Keywords:

Digital Pharmacy, Patient Outcome Improvement, Health Care System

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Formulation and Evaluation of Polyherbal Anti Dandruff Hair Oil

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Abstract :
The present study on formulated polyherbal anti dandruff hair oil is very effective in management of dandruff . However, during our experiment the formulation has proved to be excellent hair growth stimulation . Herbal medicine is very popular among the people because of its availability and less side effect. The aim of present study involves preparation of polyherbal hair oil using fresh leaves sphaeranthus indicus, wrightia tinctoria, Edipta alba, Hibiscus rosa sinensis. From the experiment it was reported that the volatile oils of eucalyptus citriodora along with the aquous extracts of allium cepa and datura stramonium possess antifungal activity. Polyherbal anti dandruff hair oil provide a treatment of common hair problems such as baldness, alopecia, hair fall, grey hair, dryness and most common dandruff.

Keywords:
Dandruff, Polyherbal Hair Oil, Antifungal, Baldness

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Walnuts and Alzheimer's Disease Progression: An Emerging Therapeutic Interventions

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Abstract

Amyloid Beta protein (Aβ) is the major amyloid protein in Alzheimer's Disease (AD), that is produced by the proteolytic cleavage of Amyloid Precursor Protein (APP). APP is cleaved by α-secretase or by β-secretase with subsequent cleavage by γ-secretase, which releases Aβ isoforms. Aβ clearance is accomplished by its proteolytic degradation by Neprilysin (NEP) and Insulin Degrading Enzyme (IDE). In this study, we examined the efficacy of walnuts enriched diet on the activities of APP-processing and Aβ degrading enzymes. Further, we studied here whether short- and/or long-term dietary supplementation with walnuts can improve the BDNF levels and decline cholinergic deficit caused by ChAT and AChE enzymes in AD-tg mice. From the age of 4 months, the experimental groups of AD-tg mice were fed custom-mixed diets containing 6% walnuts (T6) or 9% walnuts (T9) (i.e., equivalent to recommended 1 or 1.5 oz, respectively, daily intake of walnuts in humans) for 5, 10 or 15 months (i.e., until the age of 9, 14 and 19 months). The control groups, i.e., AD-tg (T0) and wild-type mice (Wt), were fed a diet without walnuts. AD-tg mice on the control diet without walnuts (T0) showed a significant age-dependent decrease in the α-secretase activity and increase in β- and γ-secretases activities compared to wild-type mice on the same diet. A significant decrease in IDE activity was also observed until 14 months, but NEP activity was not affected except at the age of 14 months. The activities of α-, β- and γ-secretases were significantly restored in AD-tg mice on diets with 6% or 9% walnuts (T6 and T9). Diet with 9% walnuts was more effective compared to diet with 6% walnuts. The walnut supplementation also increased NEP and IDE activities in the AD-tg mice. Long-term supplementation with walnuts in the diet for 10 or 15 months was found to be more effective in modulating the activities of these enzymes and oxidative stress in comparison with short-term supplementation with walnuts for 5 months in AD-tg mice. Long-term supplementation with walnuts in the diet for 10 or 15 months in AD-tg mice was found to be more effective on ChAT and BDNF levels in comparison with short-term supplementation with walnuts for 5 months. Whereas on AChE activity both short- and long-term supplementation of walnuts have almost the similar protective effect. Our findings indicate that dietary supplementation with walnuts can significantly elevate the α-secretase activity and alleviate β- and γ-secretase activities compared to the AD-tg mice on the control diet. In addition, walnut supplementation declines the cholinergic deficit by improving ChAT and BDNF levels and reducing AChE activity in AD-tg mice. Therefore, diet with walnuts will lead to decreased processing of APP to Aβ, thereby reducing amyloid burden and delay the onset of AD.

Keywords:

Alzheimer's Disease, α-secretase, β-secretase, γ-secretase, Neprilysin, Insulysin, Choline Acetyltransferase, Acetylcholinesterase, Brain-derived Neurotrophic Factor, Walnuts

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Formulation and Evaluation of Forskolin Proniosomal Gel for Ocular Drug Delivery

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Abstract

Aim:
The focus of the current study continues to compose with estimate an ophthalmic productive extended proniosomal gel derived niosomes formulations of Forskolin considering the therapy about eye disease.

Materials as well as Techniques:
Forskolin filled proniosomal gel derived niosomes was prepared by phase co acervation method using Cholesterol, Lecithin, Span 60, Brij 72, and Tween 80 within different collections. Optimized batch of proniosomal gel derived niosomes was choose found on the outcome of entrapment efficiency and in-vitro delivery outcome. Forskolin proniosomal gel derived niosomes arise produced by scattering proniosomes within In-situ gelatinized arrangement. Interactivity research take place established by (FTIR) examine.

Results and Discussion:
The end result of surfactant with other ingradients on entrapment efficiency and in-vitro medicament delivery nature of Proniosomal gel derived niosomes was evaluated. co acervation method using Cholesterol, Lecithin, Span 20, Brij 72, along with Tween 80 in different collections.

Conclusion:
Optimized batch of proniosomal gel derived niosomes was selected found on the outcomes of particle size, polydispersity index, zeta potential results. Forskolin proniosomal gel was formulated by scattering proniosomes within in-situ gelatinized arrangement.

Keywords:
Forskolin, Proniosomal Gel, Phase Co-acervation Technique, Niosomes, Ophthalmic Drug Release

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Neuro-Pharmacological Investigation of Dodonaea Viscosa Linn. Leaf on Experimentally Induced Amnesia Mice

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Abstract:

Introduction
At the moment, Alzheimer's disease medications can temporarily relieve symptoms but cannot prevent cognitive loss and other neurological effects. For thousands of years, plants have provided humans with new medicines. They are one of the richest sources of compounds.

Aim & Objectives
The study was Neuropharmacological Investigation of Dodonaea viscosa linn. (Dv) leaf on experimentally induced amnesia mice.

Methods
Investigation the potential effect of ethanolic extract of Dv-100 and 200 mg/kg, p.o. in learning and memory on behavioral changes and estimation the whole brain acetylcholinesterase in scopolamine inducing amnesia young and aged mice.

Results
The behavioral results for Elevated Plus Maze (EPM) revealed significant reduction of Transfer Latency Time (TLT) when compared with control (piracetam (200mg/kg i.p.) For Morris Water Maze (MWM) Dv exhibited significant memory on TSTQ (Time Spent in Target Quadrant) in MWM. Delineation the possible mechanism through which Dv elicits the anti-amnesic effects, Dodonaea viscosa significantly decreased acetylcholinesterase activity in mice.

Summary and Conclusion
Taken altogether , the ethanolic extract of Dv might prove to be a useful memory restorative agent in the treatment of amnesia. The underlying mechanism of action can be attributed to its anti acetylcholinesterase property.

Keywords:
Amnesia, Acetylcholinesterase, Dodonaea Viscosa, Memory, Scopolamine

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Formulation Development and Evaluation of Herbal Ointment for Wound Healing Activity

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Abstract:
Many of the traditional plants are helpful in various treatment processes because of it contains various active constituents which is used either in extract form or by formulating any type of prepartions. Wounds are physical injuries that results in a gap or infringement of the skin. Proper healing of wounds is very essential for the reestablishment of disrupted anatomical continuity and disturbed functional status of the skin. Wound healing is a complex but usually systematic process. Ointment was evaluated by performing evaluation test for ointments,including rate of absorbtion, non-irritancy, rate of penetration, rheological properties etc… and also by quality control tests like phase separation, apparent viscosity, In-vitro release studies etc..

Keywords:
Wound, Rheological Properties, Penetration

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Pharmacological Evaluation of Protective Effect of Soluble Epoxide Hydrolase Inhibitor, t-TUCB Against Diabetic Peripheral Neuropathy in Rats

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Abstract:

Background:
Background: One of the most prevalent consequences of diabetes is diabetic peripheral neuropathy. It is the main reason for amputation in 50–60% of diabetic people. Currently offered therapeutic approaches have serious side effects.

Aim:
The purpose of the current investigation was to determine whether the soluble epoxide hydrolase inhibitor t-TUCB could protect rats against streptozotocin-induced diabetic neuropathy.

Method:
Male Wistar rats were given streptozotocin (52 mg/kg, i.p.) to induce diabetes. For six weeks, t-TUCB at doses of 0.1 mg/kg and 0.3 mg/kg was administered to diabetic rats. Motor coordination, neuropathic pain, sensitivity to a mechanical stimulation, thermal hyperalgesia, grip strength, sciatic nerve conduction velocity, glycosylated haemoglobin, and nitrate/nitrite levels were used to gauge the level of protection. Additional anti-oxidant research on sciatic nerve homogenate and its histology were also found.

Results:
When diabetic rats received t-TUCB therapy, their body weight, glycated haemoglobin, and sciatic nerve conduction velocity all improved. In diabetic rats' sciatic nerve homogenate, further treatment with t-TUCB dramatically lowered malondialdehyde levels and considerably restored the antioxidant enzymes that had been depleted. The architect of the sciatic nerve underwent pathological modifications, which further supported the protective effect of t-TUCB.
Conclusion: Treatment with t-TUCB had analgesic and antihyperglycemic effects, which reduced the discomfort associated with diabetic neuropathic pain. Soluble epoxide hydrolase inhibitor is thus a target for efficiently blocking diabetic neuropathic pain and has a possible function in slowing the evolution of this illness.

Summary:
This investigation looked at t-ability TUCB's to protect rats against streptozotocin-induced diabetic peripheral neuropathy. Rats receiving t-TUCB for six weeks showed better sciatic nerve conduction velocity, increased mechanical sensitivity, decreased mechanical hyperalgesia, decreased thermal hyperalgesia, and decreased thermal hyperalgesia. These rats had higher levels of antioxidants such SOD, catalase, and GSH and lower levels of MDA and nitrite/nitrate.

Keywords:
Diabetic Peripheral Neuropathy, Streptozotocin, t-TUCB, Nerve Conduction Velocity

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Neuroprotective and Antidepressant Effects of Curcumin

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Abstract:

One of the most prevalent mental disease and mood disorder syndromes, depression, can be detrimental to one's physical and mental well-being.For the nervous system to operate properly, there must be a balance in neurotransmission, and even a little disruption that persists for a long time can trigger negative feedback processes that cause a variety of neuropathologies.There are more and more medical and societal issues related to neurodegenerative and mood illnesses like Alzheimer's, Parkinson's, or affective disorders.Among the wide spectrum of potentially destructive events, oxidative stress and disrupted metabolism of some neurotransmitters such as acetylcholine, GABA, glutamate, serotonin or dopamine appear to play a decisive role. Biologically active plant polyphenols have been shown to exert a positive impact on the function of the central nervous system by modulation of metabolism and the action of some neurotransmitters.The predominant biologically active polyphenolic component of turmeric (Curcuma longa) is known as curcumin, and studies have linked it to a number of health benefits, including anti-inflammatory, anti-cancer, neuroprotective, anti-microbial, and cardioprotective properties. There is growing preclinical and clinical research studying the antidepressant and anxiolytic properties of curcumin as a potential therapy for mental health disorders.The goal of this investigation is to provide comprehensive, accurate information on curcumin's role in neuroprotective and depressive illnesses.

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Formulation and Evaluation of Antifungal Herbal Gel in Indian Tradition

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Abstract:
Herbal medicine has been gaining popularity since decades among the people because of its traditional values and beliefs. The advantages of herbal medicine like easily available,less side effects,compatible with human body make it more acceptable.The focus of the present poster is to study about the preparation and evaluation of such herbal gel used in antifungal activity.Fungal infection may be caused by various species like Candida Spp,Aspergillus.In Indian tradition various herbs are being used for the formulation of antifungal gel like Neem,Tulsi,Aloe Vera.The herbal extract contains Monoterpenoids and Sesquiterpenoids which exhibit antifungal activity.The present study is to formulate the herbal gel using neem seed extract, tulsi extract and turmeric extract as well as to evaluate the formulation by using various physical evaluation parameters like physical appearance,pH,viscosity etc.

Keywords:
Antifungal Activity, Herbal Gel, Monoterpenoids & Sesquiterpenoids

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