Shri Shankaracharya Professional University

- Data Science / Cyber Security Network
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2nd International Multidisciplinary Conference – 2024
(IMC – 2024)

On

28th – 29th November 2024

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2nd International Multidisciplinary Conference 2024 (IMC-2024)

Theme: Advances in Fundamental and Applied Research

(A global platform for researchers, academicians, and industry professionals)

IMC-2024 will provide a unique opportunity to delve into the latest advancements, share your research with an international audience, and forge connections that can propel your academic or professional career. Whether you are an experienced researcher or a budding scholar, IMC-2024 offers a dynamic platform for learning, collaboration, and inspiration.

CONFERENCE HIGHLIGHTS:

- **Free workshops: In three different disciplines. Only for first thirty participants.**
- **Cutting-Edge Research: Explore the latest advancements in both fundamental and applied research across diverse disciplines.**
- **Interdisciplinary Exchange: Engage in vibrant discussions that bridge the gap between different fields, fostering interdisciplinary collaboration.**
- **Global Networking: Connect with experts and peers from around the world, building valuable networks and collaborations.**
- **Free Publications: We will help to publish three best research papers in reputed international journals.**

IN ASSOCIAN WITH

- Indian Pharmacopoeia Commission (IPC)
- Tata Consultancy Services (TCS)
- Bentham Science
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WHO CAN PARTICIPATE

Industry delegates, Academician, Research Scholar, PG and UG students of any discipline can participate. The Participants will get new insights & knowledge through close interaction / discussion with the experts of respective field during sessions.

- Data Science/ Cybersecurity/Networks/ Block chain
- Journalism
- Robotics
- UAV/Drones
- Life science
- Mathematics/physics/chemistry
- Pharmacy
- Medical science
- Business administrations
- All Other Technical Courses

ABOUT SSPU

Shri Shankaracharya Professional University (SSPU), Bhilai is the first university in India to be named after Adi-Shri Shankaracharya and blessed by all present Jagadgurus.This university was established on June 9, 2020, under the Chhattisgarh Private University (Establishment and Operation) Act, 2005 (No.13 of 2005) vide amendment Act 2020 (No. 12 of 2020) as Shri Shankaracharya Professional University (SSPU), Bhilai. SSPU received top university of India award in 2021 from competition success review. SSPU is recognized by UGC and Chhattisgarh government. This is one of the fastest growing universities in central India.

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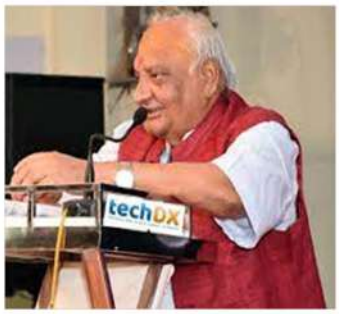

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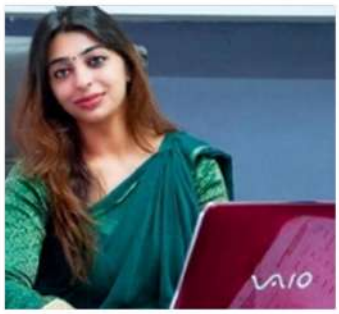
Chhattisgarh, India



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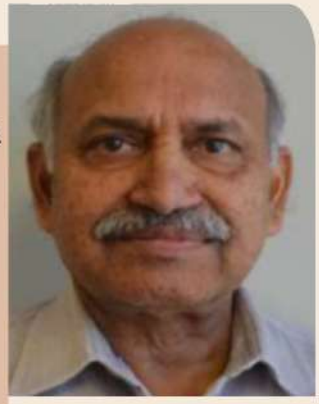

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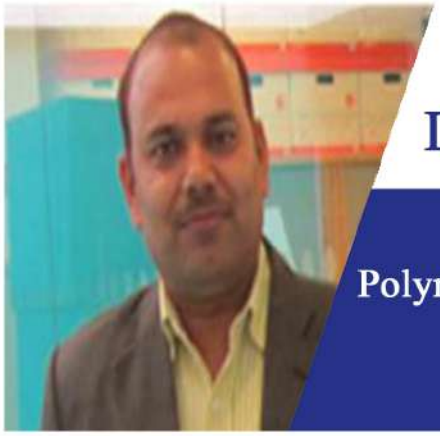

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Principal Scientist
Polymers and Functional materials Division
CSIR - Indian Institute of
Chemical Technology

Dr. A K Singh

Proff, Department of Chemistry
V.Y.P.T PG Autonomous College
Durg

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Dr. Dhanesh Joshi, Director-Research, SSPU

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Awards	Eligibility Criteria
Budding Researcher	Academic Qualification: UG Age: Below 22 For Students only
Junior Scientist	Academic Qualification: PG Age: Below 24 Category: For students only
Young Researcher	Academic Qualification: UG/PG Age: Below 35 Category: Research scholar/academician
Pioneer Scientist	Academic Qualification: Ph.D. Mandatory/PG in any discipline having outstanding research record Age: Above 35 Category: Senior scientist/academician
Industry Excellence	Industrial experience (2yrs) Age: NA Person engaged actively in R&D/marketing/other departments in industry
Academic Excellence	Outstanding performance in Academic Experience of minimum 3 yrs. Age: NA For teachers only having excellent record in teaching and learning

Award Nomination Guidelines

Participant should register for award nomination bypaying the fees separately.They have to send their CV to sscpsseminar@gmail.com in the prescribed format (attached in last).

The decision of Jury members will be final.

CALL FOR ABSTRACTS

Abstracts are invited on the topic "Advances in fundamental and applied research". Broad area including (but not limited to) for oral and poster presentation

1. Pharmaceutical Sciences
2. Biotechnology and Microbiology
3. Life sciences
4. Nanotechnology
5. Artificial Intelligence
6. Computer Aided drug design
7. NDDS
8. Medical Sciences
9. AI tools
10. Engineering
11. Mathematics/Chemistry/Physics
12. Business administration

Abstract submission guidelines

- ☐ **Abstracts must be submitted in the following format for paper presentations: In heading mention category Oral/poster/innovation idea for which abstract has to be submitted.**
- ☐ **Authors name with their affiliation, & email addresses (12 point, Bold, Times New Roman)**
- ☐ **Name of the presenting Author must be underlined.**
- ☐ **Objective with background, Methodology, Result and Conclusion**
- ☐ **File Type: MS Word (docx)**
- ☐ **Word Limit: 250 words**
- ☐ **Title of the presentation (14 point, Bold, Times New Roman)**
- ☐ **Email the abstract to sscpsseminar@gmail.com**

Guidelines for Oral Presentation

Participants will be given 10 minutes for presentation. Not more than 15 slides.

Guidelines for Poster Presentation

Poster size – 4 feet X 3 Feet

Designation, Affiliation, Email Id must be there.

*online presentations would be allowed for the participants belongs to an area more than 250 KM of the conference venue.

Abstract Submission Link: https://forms.gle/LwQvrSLwnJZ5Ykqy6

REGISTRATION FEES

REGISTRATION					
	Early registration (INR)			Till Last date of registration (INR)	
	Individual	Group (Min.10)	Online	Individual	Group (Min.10)
Student (For 2 days) (For 1day)	1000 800	800 650	800	1200 1000	1000 800
Research scholar / Faculty	1200	1000	1000	1400	1200
Award Nomination	3000	-	-	4000	-

*Registration Link: https://forms.gle/Ki7fUMRJ1Tak2CpZ8

IMPORTANT DATES

1st October	Registration and abstract submission start
30th October 2024	Award nomination deadline Early registration deadline
10th November 2024	Abstract submission deadline
15th November 2024	Registration close
18th November 2024	Abstract acceptance notification
28th and 29th November 2024	Date of Conference

ORGANIZING COMIITEE

Convenor: Dr. Swarnali Das Paul, Director-IQAC. SSPU

Organizing Heads: Dr. Prachi Nimje, Dean-Student welfare, SSPU

Dr. Dhanesh Joshi, Director-Research, SSPU

Dr. Gunjan Jeswani, Head-SOP

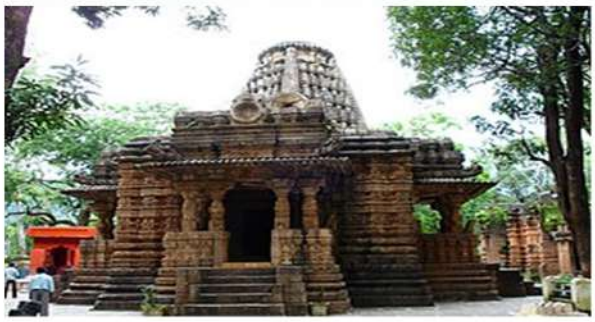
Dr. Jaya Shree, Asso. Professor, SSCPS

ABOUT CHHATTISGARH

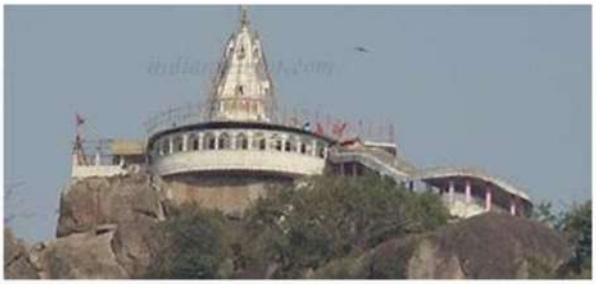
Chhattisgarh is a state of east central India. A resource-rich state, it has the third largest reserves in the country and provides electricity, coal, and steel to the rest of the nation. It also has the third largest forest cover in the country after and with over 40% of the state covered by forests. There are several theories as to the origin of the name Chhattisgarh, which in ancient times was known as Dakshina kosala. Chhattisgarh takes its name from the 36 ancient forts (from chhattis meaning thirty-six and garh meaning) in the area. The central part of the state lies in the fertile upper basin of the and its tributaries, of which is a major one running around 300 km long. Chhattisgarh has the 3rd largest forest cover in the country. India's largest covered forests across state boundaries. There are multiple National Parks, Tiger Reserves across the state. Chhattisgarh has four-lane or two-lane roads that provide connectivity to major cities. Total of 20 national highways pass through the state. Almost the entire railway network spread over the state comes under the geographical jurisdiction of the south east central railway. The state has the highest freight loading in the country, and one-sixth of the Indian Railway's revenue comes from Chhattisgarh. The air infrastructure in Chhattisgarh is gradually improving in. swami Vivekanand airport Raipur is the primary airport (domestic) and is well connected to all major cities of India.

Places to visit in Chhattisgarh:

Bhoramdev
Kawardha,
CG India



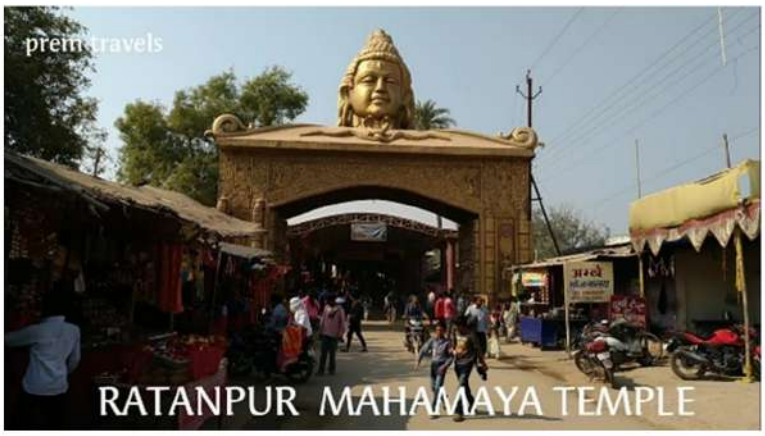
Bamleshwwari Temple
Dongargarh,
CG India



Danteshwari Temple
Dantewada,
CG, India

Chitrakoot Waterfall
Jagdalpur,
CG, India

Ratanpur Mandir
Bilaspur
C.G, India



PROFORMA FOR BIO-DATA
(to be uploaded for award nomination)\

1. Name and full correspondence address
2. Email(s) and contact number(s)
3. Institution
4. Date of Birth
5. Gender (M/F/T)
6. Category Gen/SC/ST/OBC
7. Whether differently abled (Yes/No)
8. Academic Qualification (Undergraduate Onwards)

	Degree	Year	Subject	University/Institution	% of marks
1.					
2.					
3.					
4.					

9. Ph.D thesis title, Guide's Name, Institute/Organization/University, Year of Award.

10. Work experience (in chronological order).

S.No.	Positions held	Name of the Institute	From	To	Pay Scale

11.Professional Recognition/ Award/ Prize/ Certificate, Fellowship received by the applicant.

S.No	Name of Award	Awarding Agency	Year

12. Publications (List of papers published in SCI Journals, in year wise descending order).

S.No.	Author(s)	Title	Name of Journal	Volume	Page	Year

13. Detail of patents.

S.No	Patent Title	Name of Applicant(s)	Patent No.	Award Date	Agency/Country	Status

14. Books/Reports/Chapters/General articles etc.

S.No	Title	Author's Name	Publisher	Year of Publication

Any other specific relevant Information (maximum 500)

A Review on Medicinal Properties and Traditional Uses of *Cassia Tora*

Dr. Neeli Rose Beck

Department of Pharmacy, Guru Ghasi Das Vishwavidyalaya, Bilaspur-495009, Chhattisgarh, India

Email - Neeli05011974@gmail.com

Abstract:

Cassia tora (Charota) is a medicinal herb which are grows wildly on the wasteland. Plant parts leaves, roots and seeds are used for medicinal purpose. It is rich in phytoconstituents. Chemical compounds found in plants are like aloe-emodin, resins, stearic acid, succinic acid, d-tartaric acid, cathatrine, calcium, iron, phosphorus, beta-sitosterol, naptho-alpha-pyrone-toralactune, chrysophanol, physcion, emodin, rubrofusarin, chrysophonic acid-9-anthrone, tricontan-1-0l, stigmasterol, b-sitosteral-b-D-glucoside, freindlen, palmitic, 1,3,5-trihydroxy-6-7-dimethoxy-2-methylanthroquinone, quercitrin and isoquercitrin. Pharmacologically this plant is used as antioxidant, anticancer, antiviral, antiinflammatory, antispasmodic, analgesic, anticonvulsant, antipyretic, antifungal, anthelmintic, diuretic, expectorant carminative, laxative, purgative, anticholesterolemic, emollient and ophthalmic purpose. Traditionally this plant is used for treatment of various diseases like indigestion, blood purifier, haemorrhoids, constipation, eczema, cough and nerve disorder. These medicinal properties are enhancing the significant medicinal value of *Cassia tora* for design, preparation, formulation of herbal drugs and dosage forms.

Keywords: *Cassia tora;* Phytoconstituents; Traditional uses; Medicinal properties

Exploring the Intersection of Fundamental and Applied Research: A Multidisciplinary Perspective

Mrs. Manisha Majumdar
Shri Shankaracharya Professional University, Junwani – 490020, Bhilai, Chhattisgarh, India
Email: manishamajumdar3@gmail.com

Abstract

Background: The distinction between fundamental and applied research has long been debated, with some arguing that basic scientific inquiry should prioritize theoretical advancements, while others emphasize the need for practical applications. However, the intersection of these two approaches holds significant potential for driving innovation, economic growth, and societal benefit. This study aims to explore the complex relationship between fundamental and applied research, examining the synergies and tensions that arise when theoretical advancements meet real-world problems.

Methodology: This multidisciplinary study employs a mixed-methods approach, combining: Comprehensive literature reviews across physics, biology, engineering, and social sciences to identify key themes and case studies. In-depth analysis of successful interdisciplinary collaborations and knowledge translation initiatives. Case studies of research projects that have bridged the gap between fundamental and applied research. Expert interviews with researchers, policymakers, and industry stakeholders to provide insights into the challenges and opportunities at the intersection of fundamental and applied research. By integrating these methods, this study provides a nuanced understanding of the complex dynamics between fundamental and applied research, informing strategies for fostering innovation, collaboration, and societal impact.

Results: Interdisciplinary collaboration enhances knowledge translation, Clear communication, stakeholder engagement, and adaptive planning. Fundamental research lays groundwork for breakthrough innovations.

Conclusion: Bridging fundamental and applied research drives innovation and societal impact through Interdisciplinary collaboration, Adaptive planning and Effective communication.

Emerging Issues in Safety Regulatory Under Pharmacological Aspects under Radiopharmaceuticals Therapies in Clinical Practice

Mr. Victor Dey
Shri Shankaracharya Professional University, Bhilai – 490020, Chhattisgarh, India
Email - deyvictor06@gmail.com

Abstract

Background: In recent years, we have been seen the establishment of several radionuclides as medicinal products in particular in the setting and activity determination devices. [^{177}Lu] Lutenium Chloride or [^{64}Cu] Copper Chloride has received marketing authorization as radionuclide precursor, and has received in regulatory approval in the form of different treatment with its fundamental use. This is a formal requirement by the EU directive 2001/83. In view of several highily promising, especially metallic radionuclides applications in a wider sense, the strict regulatory environment poses the risk of slowing down development, in particular for radionuclide procedures that want to provide innovative radionuclides for clinical research purposes, which is the basis for their further establishment. With the development of ever more radiopharmaceuticals suitable for applying translation of novel compounds from the preclinical development stage towards clinical stage towards clinical application becomes a bottle-neck for the advances in Nuclear Medicine.

Objective: To develop radiopharmaceuticals requires extensive evaluation before they can be applied in a diagnostic or therapeutic setting in Nuclear Medicine.

Conclusion: The documentation intended as a guide for radiopharmaceutical scientists, Nuclear Medicine specialists, and regulatory professionals to brig innovative diagnostic and therapeutic radionuclides into the clinical evaluation process in safe and effective way involving guidance and information gained regarding on Radiopharmaceuticals from pre-clinical to clinical trial while navigating the regulatory.

Keywords: Radionuclides; Nuclear medicine; Innovative diagnostic; Applications

Synthesis, Molecular Docking, And Antimicrobial Evaluation of Mannich Bases Derived From (Z)-3-(Benzylimino)-6-Methylindolin-2-One

Noor Afrin

Shri Shankaracharya Institute of Pharmaceutical Sciences and Research

Abstract:

This study aimed to design, synthesize, and evaluate (6-methyl-3-oxoindolin-2-ylidene) oxonium derivatives as potential antibacterial and anticancer agents. A series of compounds were synthesized through Mannich reactions and characterized using FT-IR and ^{1}H NMR spectroscopy. Molecular docking simulations were conducted to predict their binding affinity to Escherichia coli quinol-fumarate reductase. The synthesized compounds exhibited moderate antibacterial activity against both Gram- positive and Gram-negative bacteria. Notably, compounds IM3, IM4, and IM20 demonstrated significant activity against Pseudomonas aeruginosa. In vitro anticancer evaluation against HeLa cells revealed that IM3 and IM20 exhibited promising inhibitory effects, with IC50 values comparable to the standard chemotherapeutic agent 5-fluorouracil. These findings suggest that (6-methyl-3-oxoindolin-2-ylidene) oxonium derivatives hold potential as promising lead compounds for the development of novel antibacterial and anticancer agents. Further studies are warranted to elucidate their mechanism of action and optimize their pharmacological properties.

Keywords: Colony-forming units; Infrared spectroscopy; Benzylimino-(6-methyl-3-oxoindolin-2-ylidene) oxonium; P. aeruginosa

IMC-2024 SSPU/Pharm/05

Formulation and Optimization of a Dual Combination of Synthetic and Phytoconstituent Loaded Novel Dosage Form Bearing Gel for Atopic Dermatitis

Taranjeet Kukreja*, Prof. Swarnlata Saraf

Email - taranjeetkukreja16@gmail.com

Abstract

Background:

Atopic dermatitis is a persistent, recurrent eczema. Marked by irritation and itching. Children and teenagers around the world are impacted. Globally, the prevalence of atopic eczema ranges from 3.5% to 20.5%, however in India, the disease's point prevalence is 9.98%.

Aim & Objectives:

The treatment of mild to severe atopic eczema may benefit greatly from a unique formulation. One of the best ways to treat atopic eczema is with combination therapy, which offers a multi-targeted approach and synergistic combinations of two or more therapeutically appropriate medications that maximize the therapeutic impact through several mechanisms.

Material & Method:

A synthetic medication has long been used as a stand-alone treatment for atopic eczema. It has been discovered that a phytoconstituent has remarkable therapeutic properties. By inhibiting the NF-Kß and MAPK pathways, phytoconstituents can reduce a variety of pro-inflammatory cytokines that are essential to the development of atopic eczema. However, their poor bioavailability and instability due to solubility issues restrict their usefulness. Enhancing the solubility of the given phytoconstituent will increase its bioavailability, improve its topical penetration, and boost its effectiveness.

Results & Conclusion:

Therefore, the combination of synthetic and phytoconstituents may show to be a promising medication option in the future. Combining the two medications in a novel way could assist boost their therapeutic efficacy by improving penetration and encouraging a skin-normalizing impact.

Our goal is to create a gel that contains the dual medication in a novel formulation for a more modern and efficient treatment of atopic eczema.

Keywords: Atopic Dermatitis, Inflammation, Novel dosage, Phytoconstituent, sustained release, Synthetic, therapeutic effectiveness, topical therapy

IMC-2024 SSPU/Pharm/06

Pharmacological Evaluation of Selenium Nanoparticles in Diabetic Osteoporosis: *In-vitro* and *In-vivo* Study

Dr. Sumathi Poleboina

Guru Ghasidas Vishwavidyalaya (GGU), A Central University, Bilaspur, Chhattisgarh- 495009,
Department of Pharmacy
Email - sumathipoleboina@gmail.com

Abstract:

Worldwide increase in the risk of osteoporosis in the female diabetic population is an area of concern requiring immediate attention. High glucose induced oxidative stress is among the major causes of bone fragility in diabetic patients. Selenium nanoparticles (SeNPs) were reported to possess anti-inflammatory and anti-oxidant effects. However, its role in diabetic osteoporosis is unexplored. Female Sprague Dawley rats were used to study type-2 diabetes associated osteoporosis. *In vitro* studies with rat osteoblastic UMR-106 cells also show that SeNPs promote osteoblast differentiation via modulating the alkaline phosphatase (ALP), promoting calcium nodule formation and collagen content. We also provide evidence regarding the involvement of BMP-2/MAPKs/β-catenin molecular pathway in preventing diabetic osteoporosis. Further, *ex vivo* and *in vivo* studies confirm improvement in bone mechanical stability and architecture via altering the various bone turnover markers. To the best of our knowledge, our study provides the first evidence regarding the therapeutic benefits of SeNPs in preventing diabetes associated bone fragility.

Keywords: Diabetic osteoporosis; Selenium nanoparticles; osteoblast differentiation; BMP-2/MAPKs/β-catenin pathway

Design, Synthesis, Characterization of Benzothiazole Derivatives and Evaluation for Anti-Inflammatory and Antioxidant Activity

Aanchal Yadu, Nityapal Singh

Shri Rawatpura Sarkar Institute of Pharmacy, Kumhari, Durg

Email - aanchalyadu5a@gmail.com

Abstract:

A series of benzothiazole derivatives were synthesized from 4-nitroaniline and evaluated for anti-inflammatory and antioxidant activity. The synthesized compounds structures was confirmed on the basis of FTIR, ^{1}H NMR, ^{13}C NMR, Mass spectroscopy methods. The antioxidant activity of synthesized compound (3a-3h) was determined by DPPH scavenging method. Among the synthesized compounds 3a and 3h showed better antioxidant activity due to presence of electron withdrawing group. For anti-inflammatory activity of compound 3a and 3d was determined by carrageenan induced paw edema using diclofenac sodium as standard. In both tested compounds 3a showed better activity than 3d when compared to standard.

Keywords: Anti-inflammatory; Antioxidant; Benzothiazole; Carrageenan induced paw edema.

Design, Synthesis, Characterization and Antimicrobial Activity of Semicarbazide Schiff Base Containing Benzimidazole-2-Thione Derivatives

Chouhan S. Nitypal*
Shri Shankaracharya Professional University, Bhilai (C.G.)
Mail id; nityapharmacy87@gmail.com

Abstract:

Backgrounds: Benzimidazole-2-thione has been reported to show a broad spectrum of biological activities including antimicrobial, anti-inflammatory, anticancer, anti-hypertensive, anticonvulsant, and anti-oxidant activity.

Objective: Design, synthesis, characterization and antimicrobial activity of Semicarbazide Schiff base containing Benzimidazole-2-thione derivatives.

Methods:

A series of Semicarbazide Schiff base containing N,N-substituted Benzimidazole-2-thione derivatives as a potential antimicrobial agent were synthesized by reaction of (1H-benzo[d]imidazole-2(3H)-thione-1,3bis-(methylsemicabazide) (2) with substituted benzaldehyde using conventional method. Invitro anti-microbial activity was evaluated by disc diffusion (cup plate) method at different concentrations for the entire newly synthesized compound against three gram positive organism (S.aureus, *S.mutants, B.coagulants)* and one gram negative organism *(E.Coli.)*. Ciprofloxacin was used as reference standard for antimicrobial activity. Furthermore, molecular docking was performed against with active site residues Helicobacter pylori urease.

Results and conclusion:

All synthesized compounds were characterized on the basis of melting point, TLC, analytical IR, 1^{H} NMR, 13^{C} NMR spectral data. All the synthesized compounds exhibited variable antimicrobial activity against all tested microbial strains. It was observed that majority of synthesized compounds showed zone of inhibition against all microbial strains. Among the entire designed compound hydrogen, Hydroxy and Chlorine group substituted compound (**3a, 3b, 3d, 3f)** represent the promising binding energy at -13.1508, -11.9016, -12.0815, -13.3782 kcal/mol respectively when compared to standard Ciprofloxacin which has hydrogen bonding energy -8.0755 kcal/mol.

Keywords: Benzimidazole-2-thione; O-phenylenediamine; Semicarbazide; Formaldehyde; Substituted benzaldehyde; Ciprofloxacin; Antimicrobial.

Recent Advances in Pharmacological Strategies for the Prevention of Cataracts

Apurva Yadav and Rajesh Choudhary

Shri Shankaracharya Professional University, Junwani – 490020, Bhilai, Chhattisgarh, India
Email - juhiyadav1994@gmail.com

Abstract:

Opacification in the lens is known as cataract, the leading cause of blindness. The situation that can be managed for cataracts is the surgical removal of the cataractous lens. Many researchers give various pharmacological strategies for the prevention of cataracts. There are many pathways for the development of cataracts. There are various anticataract agents which use various pharmacological strategies i.e. Aldose reductase inhibitors, Non-steroidal anti-inflammatory drugs, Agents acting on glutathione, Vitamins, minerals, antioxidants, and herbal drugs Miscellaneous agents prevent the development of cataracts. There are in vitro and in vivo investigations of vitamins, minerals, herbal medications, and nutritional supplements in the prevention and treatment of cataracts. The majority of research are only preliminary, even though several medications may be used to cure cataracts. Nevertheless, more extensive and prospective clinical research is required to treat cataracts with dietary supplements and herbal medications.

Keywords: Cataracts; Blindness; Anti-cataract agents; Pharmacological strategies

Recent Advancements in VEGFR-2 Inhibitors: Exploring 1, 3, 4- Thiadiazole Derivatives for Targeted Cancer Therapy

Pragya Gawande, Partha Pratim Roy, Jagadish Singh

Department of Pharmacy, Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur, Chhattisgarh-495009, India

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Abstract:

Cancer remains a significant global health challenge which required targeted therapies or selective inhibitors to address issues like drug resistance, therapeutic failures and severe side effects. Immoderate angiogenesis driven by VEGF overexpression and VEGFR activation supports the tumor growth and metastasis which emphasizing the need for novel anticancer agents. Numerous azole compounds like oxazole, oxadiazole, thiazole, thiadiazole and pyrazole has been identified as potent anticancer drugs and VEGFR inhibitors. The 1,3,4- thiadiazole (TDA) derivatives have been reported for their potential VEGFR inhibitory activity. The electron-deficient sulfur atom and -N-N=C-S functionality enhance their potential through crucial non-covalent interactions. The 2^{nd} and 5^{th} positions carbon atoms are highly reactive with nucleophiles which facilitating membrane penetration and potency. Significant research highlights the development of novel therapeutic combinations and an in-depth understanding of cancer biology to improve treatment efficacy and patient survival rates. In this article, we discuss the detailed structure, classification, mechanism and different VFGF/VEGFR pathways involved cancer development and metastasis. The structure and chemistry of TDA scaffolds, potential VEGFR-2 inhibitors containing 1,3,4-TDA, SAR and the anticancer or VEGFR-2 inhibition mechanism was highlighted.

Keywords: Angiogenesis; Cancer, VEGFR-2 inhibitors; 1, 3, 4- thiadiazole; SAR and Mechanism

Role of Rosuvastatin in Phenylhydrazine induced Hemolytic Anaemic associated with Hyperlipidaemia in Male Rats

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Abstract:

Hemolytic anemia is a life-threatening condition characterized by premature red blood cell destruction. This study investigated the therapeutic potential of *Rosuvastatin*, a statin with and antioxidant properties, in hemolytic anemia.

Objective: Role of *Rosuvastatin* in *Phenylhydrazine* induced Hemolytic anaemic associated with Hyperlipidaemia in male rats.

Rationale: Antioxidant properties with lipid-lowering effects and potential to address underlying pathophysiological mechanisms of hemolytic anemia.

Materials and Methods: In this study, male Wistar Albino Rats weighing 150-200g were utilized as the experimental animal model. The animals were randomly assigned to four groups(Normal, Control, Treatment-1, Treatment-2), Hemolytic anemia was successfully induced via intraperitoneal administration of *Phenylhydrazine* (PHZ) at a dose of (10mg/kg) for a period of 4 days. Following the induction of hemolytic anemia, pathological evaluations were performed on whole blood and serum samples collected via tail vein to verify the efficacy of anemia induction. Thereafter, the animals underwent an 8-week treatment regimen with *Rosuvastatin* (RUV) administered orally at doses of 5mg/kg, 10mg/kg. RUV was formulated in 0.5% Carboxymethyl cellulose (CMC) vehicle and administered subsequent to anemia confirmation. Upon study termination, animals were humanely euthanized, and serum analyses were conducted to assess blood and lipid profiles.

Results: The results of our study demonstrate that *Rosuvastatin* treatment significantly improves hematological parameters in rats but not sure more changes to hemolytic anemia. Additionally, our findings indicate a significant reduction in oxidative stress markers and lipid profiles.

Conclusion: Rosuvastatin demonstrates therapeutic potential in treating hemolytic anemia, These findings suggest Rosuvastatin as a promising adjunct therapy for managing hemolytic anemia, warranting further clinical investigation.

Keywords: *Rosuvastatin; Phenylhydrazine;* Hemolytic Anemia; Hyperlipidaemia; Antioxidant properties; Carboxymethyl cellulose

Evaluation of Anti-Inflammatory Activity of Seeds Extract of *Clitoria Ternatea* and *Ocimum Sanctum* on Carrageenan Induce Paw Edema in Rats

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Abstract:

Clitoria ternatea and *Ocimum sanctum* are traditionally used plants with reported anti-inflammatory properties.

Objective: To evaluate the anti-inflammatory activity of seeds extract of CT and OS on carrageenan-induced paw edema in rats.

Rationale: Combination therapy may enhance efficacy and reduce side effects.

Materials and Methods: The seeds were dried, crushed and place in soxhlet extractor for extraction using ethanol (60-80°C) as a solvent for 48 hrs. Formulation of CT and OS extracts was prepared in 1:1 ratios for anti- inflammatory activity. Animals were divided into five groups comprise, five animals in each group and treated orally once a day. Group 1: Normal (vehicle), Group 2: control group (Carrageenan 0.1%), Group 3: standard group (Serratiopeptidase + Carrageenan) (10-30 mg/kg). And Group 4 And Group 5: test group ethanolic seeds extract of *clitoria ternatea* and *ocimum sanctum* (CT: OS = 1:1, 200 mg/kg), (CT: OS = 1:1, 400 mg/kg) respectively. Paw volume was measured using plethysmometer.

Results: Combination extract (1:1)200 mg/kg showed significant anti-inflammatory activity ($p<0.01$) compared to individual extracts. Formulation of extract (1:1)400mg/kg demonstrated faster onset and longer duration of action.

Conclusion: The formulation of seeds extract of *Clitoria ternatea* and *Ocimum sanctum* exhibited significant anti-inflammatory activity, superior to individual extracts, suggesting a synergistic effect.

Keywords: *Clitoria ternatea, Ocimum sanctum,* Anti-inflammatory activity, Carrageenan, Serratiopeptidase, Plethysmometer.

Formulation and Evaluation of Liposomes Loaded With Isoniazide

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Abstract:

Objective: The objective of the present study was to formulate and evaluate liposomes loaded with isoniazide.

Methods: Liposome of isoniazid was made by thin layer film hydration method. L-α-phosphatidylcholine and cholesterol were used to make multiamellar vesicles. Six batches of liposomes were prepared based on the different weight ratio of L-α-phosphatidylcholine and cholesterol. Differential scanning calorimetry (DSC) study conducted to study in any compatibility.

Results: The prepared liposomes were evaluated by particle size analysis, entrapment efficiency, release study and stability study. Particle sizes were determined from the scanning electron microscopy (SEM) photographs when particle frequencies were plotted against particle diameter in the histogram, it showed that F1 batch had a skewed distribution towards smaller liposomes while F6 shows a proper bell-shaped curve with a mean at 225 µm. The percentage entrapment efficiency was found to be 8.99 ± 0.15 to 4.19 ± 0.12 % respectively. From the release profile, it was seen that F1 batch was fastest and F6 was slowest to release the drug satisfactory batch F1 was packed in Eppendorf tube and stored at 4°C temperature for one month.
the samples were analyzed for their physical properties, drug entrapment and in vitro release profile. The percentage release was found to be 96.5 ± 3.2 after 4 h.

Conclusion: The F1 batch showed most promising results compared to other. No significant change was found during one month's stability study of final batch (F1).

Keywords: Formulation; Liposomes; Isoniazide; Phosphatidylcholine

Evaluation of Anti-Hyperlipidemic Activity of Cinnamaldehyde in Triton-Induced Animal Model

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Abstract:

Hyperlipidemia is one of the major risk factors of atherosclerosis and cardiovascular diseases. Cinnamomum zeylanicum (cinnamon) is widely used in the traditional system of medicine to treat diabetes in India and exhibits antihyperlipidemic effects.

Objectives: The present study was carried out to evaluate the putative antihyperlipidemic effects of cinnamaldehyde

Methods: Male Sprague Dawley albino rats (130-150 g) were used in this study. Cinnamaldehyde was administered at different doses (10 and 30 mg/kg/day, p.o.) for 15 days in triton (single intraperitoneal dose of 100 mg/kg)-induced hyperlipidemic Sprague Dawley rats. Blood lipids and oxidative stress markers were examined in the study.

Results: It was found that oral administration of cinnamaldehyde (10 and 30 mg/kg) significantly ($P < 0.05$) restored plasma lipid concentration compared to the hyperlipidemic control group. In addition, cinnamaldehyde significantly increased GSH, and SOD levels and decreased MDA levels as compared to the hyperlipidemic control group. Administration of atorvastatin, a reference drug (10mg/kg/day, p.o.) also produced a significant ($P < 0.05$) restoration in blood lipid concentration and oxidative stress markers against triton-induced hyperlipidemic rats.

Conclusions: The results of this experimental study indicate that cinnamaldehyde possesses antihyperlipidemic effects in triton-induced hyperlipidemic rats.

Keywords: Cinnamaldehyde; Atorvastatin; Antioxidant; Atherosclerosis; Triton-X; Hyperlipidemia

Phloretin: A Promising Antioxidant for Cataract Prevention

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Abstract:

Cataracts, a leading cause of vision impairment globally, are characterized by the clouding of the eye lens. Oxidative stress lays a significant role in cataract formation, leading to the accumulation of phloretin aggregates and lens opacity. Phloretin, a natural flavonoid found in apples, has emerged as potential therapeutic agent for cataract prevention due to its potent antioxidant properties. This study aims to investigate the efficacy of phloretin in mitigating oxidative stress- induced lens damage and its potential as a novel cataract drug. In vivo and in vivo experiments will be conducted to evaluate phloretin's ability to scavenge reactive oxygen species, inhibit lipid peroxidation, and protect lens epithelial cells from oxidative damage. Additionally, the pharmacokinetics and safety profile of phloretin will be assessed to determine its suitability for clinical application by understanding the molecular mechanism underlying phloretin's protective effect, we can develop targeted strategies for cataract prevention and treatment. The finding of this research may pave the way for the development of novel therapeutic interventions based on phloretin or its derivatives, offering hope for millions of individuals affected by cataracts.

Keywords: Phloretin; Cataract; Oxidative stress; Flavonoids

The Role of Epigallocatechin Gallate (EGCG) in Cataract Prevention and Treatment

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Abstract:

Cataract, the main cause of visual impairment worldwide, is characterized by the clouding of the eye lens. Although surgical intervention is the primary treatment, the prevention for cataract formation through pharmacological approaches remain a critical area of research. Oxidative stress is important in cataract development because it causes lens protein to aggregate and denatured. Epigallocatechin gallate (EGCG) is a polyphenolic flavonoid compound present in green tea. EGCG is a potent antioxidant, having ability to resist oxidative stress and delayed cataract progression. This review examines the processes by which EGCG protects the lens, such as scavenging free radicals, preventing oxidative damage to lens protein and modulating inflammatory pathways and also focus on other activity like antioxidant, anti-inflammatory and anti-apoptotic properties of EGCG. In addition, we examine the preclinical and clinical data supporting the use of EGCG as a possible therapeutic agent for cataract prevention and management. While promising findings have emerged result, further research is necessary to elucidate the optimal dosage, route of administration, long term safety and efficacy of EGCG for clinical application. This review highlights the encouraging therapeutic potential of EGCG and recommends its incorporation into future strategies for management of cataract.

Keywords: Cataract; Epigallocatechin gallate; Antioxidant, Oxidative stress

Therapeutic Potentials of Genistein: New Insights and its Anti-inflammatory Properties

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Abstract:

Nowadays, non-resolving inflammation is becoming a major trigger in various diseases as it plays a significant role in the pathogenesis of atherosclerosis, asthma, cancer, obesity, inflammatory bowel disease, chronic obstructive pulmonary disease, neurodegenerative disease, multiple sclerosis, and rheumatoid arthritis. However, prolonged use of anti-inflammatory drugs is usually accompanied with undesirable effects and hence more patients tend to seek for natural compounds as alternative medicine. Considering the fact above, there is an urgency to discover and develop potential novel, safe and efficacious natural compounds as drug candidates for future anti-inflammatory therapy. Genistein belongs to the flavonoid family, in the subgroup of isoflavones. It is a phytoestrogen that is mainly derived from legumes. It is a naturally occurring chemical constituent with a similar chemical structure to mammalian estrogens. It is claimed to exert many beneficial effects on health, such as protection against osteoporosis, reduction in the risk of cardiovascular disease, alleviation of postmenopausal symptoms and anticancer properties. In the past, numerous *in vitro* and *in vivo* studies have been conducted to investigate the anti-inflammatory potential of genistein. Henceforth, this review aims to summarize the anti-inflammatory properties of genistein linking with the signaling pathways and mediators that are involved in the inflammatory response as well as its toxicity profile. The current outcomes are analysed to highlight the prospect as a lead compound for drug discovery. Data was collected using PubMed, ScienceDirect, SpringerLink and Scopus databases. Results showed that genistein possessed strong anti-inflammatory activities through inhibition of various signaling pathways such as nuclear factor kappa-B, prostaglandins inducible nitric oxide synthase proinflammatory cytokines and reactive oxygen species. A comprehensive assessment of the mechanism of action in anti-inflammatory effects of genistein is included. However, evidence for the pharmacological effects is still lacking. Further studies using various animal models to assess pharmacological effects such as toxicity, pharmacokinetics, pharmacodynamics, and bioavailability

studies are required before clinical studies can be conducted. This review will highlight the potential use of genistein as a lead compound for future drug development as an anti-inflammatory agent.

Keywords: genistein, anti-inflammatory, nuclear factor kappa B, prostaglandin, reactive oxygen species, nitric oxide production, pro-inflammatory cytokines

IMC-2024 SSPU/Pharm/18

Evaluation of Antidiabetic Activity of *Barleria Grandiflora*

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Abstract:

Barleria grandiflora is a shrub belonging to the family Acanthaceae which is widely distributed in Amravati district in Maharashtra, Durg district in Chhattisgarh, shivamogga and Uttar kannad district in Karnataka and is native in India. It is commonly known as Shwet kesharia in Chhattisgarh, Dev korantiin Maharashtra region. In India decoction of leaves of *Barleria grandiflora* is used as household remedy for diabetes. This also forms a major constituent of many herbal formulations for diabetes. Significant antihyperglycemic effect of *Barleria prionitis* was reported earlier in albino rats. So the aim of this study is to evaluate the antihyperglycemic effect of *Barleria grandiflora* by using diabetic animal model. The results showed that *Barleria grandiflora* leaves extract significantly reduce the blood sugar level as compared to the diabetic control group. The results indicate the potential antidiabetic effect of *Barleria grandiflora* leaves extract against diabetic induced animal model.

Keywords: Hyperglycemic; Alcoholic extract; Animal models

Nanoparticle Based Approach for Nanogel Drug Delivery System: Application and Future Prospects

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Abstract:

Nanocomposite hydrogels or nanogels are nanomaterial filled, swollen nanosized networks of deliquescent or amphiphilic compound chains. It may be developed by drug - polymer interactions and to create 3D advanced networks. Nanogel may be ready by many strategies just like the particle gelation, Inverse mini emulsion, Dispersion, Chemical cross linking, fabrication of biopolymers and so on. It can be characterized by SEM, DSC, FTIR, Drug content, Particle size, Zeta potential and drug efficiency. Further, it can be evaluated by *in vitro* drug release and *in vivo* study in suitable animal modeling. In this review article, we have focused on basic methodology of nanogels, evaluation terms, and theirapplication in industry with future prospects for the researchers. Nanoparticle-based drug delivery systems, particularly nanogels, have emerged as a promising strategy for enhancing the efficacy and safety of therapeutic agents. This approach leverages the unique properties of nanoparticles, such as their high surface area, tunable size, and ability to encapsulate a variety of drugs, including hydrophobic compounds. Nanogels, which are three-dimensional polymeric networks, provide a versatile platform for controlled drug release, stability, and targeted delivery.This review discusses the various applications of nanoparticle-based nanogels in drug delivery, highlighting their use in cancer therapy, immunotherapy, and treatment of chronic diseases. Future prospects for this technology involve the development of multifunctional nanogels that can simultaneously deliver multiple therapeutic agents or combine drug delivery with diagnostic capabilities. Advances in nanotechnology, materials science, and personalized medicine are expected to further propel the adoption of nanoparticle-based nanogels in clinical settings, ultimately improving patient outcomes in various therapeutic areas.

Keywords: Nanogel; Methods of nanogel preparation; Evaluation parameters and their application

Formulation and Evaluation of Iron Containing Herbal Syrup for the Treatment of Sickle Cell Anemia

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Abstract:

A genetic disorder known as sickle cell anaemia causes red blood cells to become more malleable and can transform into sickle or crescent-shaped RBCs. is a disorder caused by anaemia, which occurs when the body does not have enough healthy blood cells to carry oxygen effectively. To study the biochemical, healthy, Nutri medical , and functional qualities of moringa and ashwagandha, as well as any possible adverse effects on blood iron levels and the immune system Moringa and ashwagandha methanol, hexane, acetone, propane, chloroform, benzene, ether, and ethyl acetate, petroleum ether, and toluene are the material used in Formulation of iron containing herbal syrup. Decoction method & Soxhlet method is for extraction of active constituents of moringa & ashwagandha. These results imply that the herbal syrup containing iron might represent a promising new sickle cell anaemia treatment option. Additional research is required to verify these results and look into the syrup's long-term effects. The conclusion is that herbal syrup containing iron might represent a new, risk-free therapeutic option for sickle cell anaemia.

Noval Drug Delivary Sysytem

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Abstract:

Noval drug delivery system (NDDS) is an advance technology which can be referred as the approaches formulation , technologies and system for transporting pharmaceutical compounds in the body to safely achieve its desired therapeutic effects as well as in a desired period of time it is a delivery of drug which is used for administrating drug through route other then conventional drug delivery system .There are different types of Noval drug delivery systems like Nano drug delivery , gastro retentive drug delivery , microencapsulation , ocular drug delivery, implantable drug delivery , intrauterine devices , transdermal drug delivery . NDDS release pattern relies on different physical and chemical factors like osmosis , diffusion, aqueous solubility, log P, acid hydrolysis which affect the absorption of drugs. biological half-life (t1/2) and also have different applications like Targeted Drug Delivery, Controlled/Sustained Release ,Gene Delivery Systems . NDDS also have different benefits as they are helpful in delivery of drug on a specific targeted area and have some challenges too like they are complex formulations which are complex for making . NDDS is a technique which is developing every single day for the improvement of the medicine delivery system. It also play an important role in delivery of herbal drugs as well.

Keywords: NDDS; Targeted drug delivery; Complex formulation; Nano drug delivery; Advance technology

Anti-Inflammatory Activity of B-Sitosterol

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Abstract:

Objective with Background: The predominant phytosterol is β-sitosterol, which can oxidize similarly to cholesterol producing β-sitosterol oxides. BS has been linked to several intriguing biological characteristics, like anti-inflammatory and immunomodulating effects. Thus, the objective is to assess its anti-inflammatory potential.

Methodology: To accomplish the goal, making a chloroform extract from a plant, carrying out different chromatographic separations on a silica gel column, and tracking the fractions on TLC constitute the standard isolation process. Techniques used involve the rat paw edema test and the rat pleurisy assay, based on the passive reverse Arthus reaction, the mouse ear edema test, and the mouse mieloperoxidase activity assay, two techniques associated with non-specific acute inflammation.

Result: The outcomes of every test showed that BS had a strong anti-inflammatory effect. In the rat paw edema test, a 50–70% inhibitory effect; in the rat pleurisy assay, a 46% decrease in pleural effusion volume and a 20% decrease in neutrophils compared to the control group are observed. Three dosages of BS significantly reduced mieloproxidase activity, and the mean inflammatory inhibition in the mouse ear edema test is 75%. Also, β-sitosterol was not able to inhibit the cyclooxigenase (COX) pathway responsible for prostaglandin E2 synthesis.

Conclusion: Through the study, a potent anti-inflammatory capacity of beta-sitosterol was found in specific and nonspecific types of acute inflammation.

Predicting Severity in Chronic Sinusitis: ACloser Look at Risk Factors

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Abstract:

Objective with Background: Chronic sinus disease, which is characterized by inflammationof the paranasal sinus mucosa, is among the most prevalent conditions. With a significant impact on health care, sinusitis is a highly frequent chronic ailment. The objective is to describe in advance the immunologic characteristics that are associated with severe chronicsinusitis.

Methodology: To achieve the objective, a full blood count with differential, a sinus coronal computed tomographic (CT) scan, and serum tests for total IgE, specific IgE, IgA, IgG, and IgG subclasses, as well as pneumococcal titers, were performed in adult patients with persistent sinus symptoms.

Result: (46%) of the patients indicated the outcomes of severe sinusitis. Accordingly, severe illness was highly linked with an eosinophil count and linked to extensive diseases that wereatopy, asthma, and age ≥50 years. However, age, atopy, or asthma had no bearing on the relationship between eosinophils and illness severity. The degree of illness visible on a CT scan did not correspond with levels of the IgG1, IgG2, or IgG3 subtypes.

Conclusion: The idea that chronic sinusitis can represent a condition of immunological activation of the TH2 type is supported by the correlation between severe illness on CT scan and asthma, atopy, eosinophilia, and high levels of IgE and IgG4.

Piper Longum L.: A Review on Phytochemistry, And Pharmacology Activities

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Abstract:

Piper longum (family Piperaceae), commonly known as “long-pepper” or “Pippali” grows as a perennial shrub or as an herbaceous vine. Originating in the Indo-Malaya region, it is found throughout the tropical and subtropical world, including the Middle East, America, Sri Lanka, and the Indian subcontinent. The fruits are primarily used as spices and preservatives in cooking, but they are also employed as a contraceptive and a powerful treatment for bronchitis, colds, coughs, snakebite, and scorpion stings in many traditional medical systems. Essential oils from the roots and fruits were reported to be antimicrobial, antiparasitic, anthelminthic, anti-inflammatory, analgesic, antioxidant, anticancer, neuro-pharmacological, anti-hyperglycaemic, hepato-protective, antihyperlipidaemic, antiangiogenic, immunomodulatory, antiarthritic, antiulcer, antiasthmatic, cardioprotective, and anti-snake venom agents. Other bioactive phytochemicals were identified from the plant extracts, including alkaloids, flavonoids, esters, and steroids. Its anti-inflammatory and antioxidative activities, as well as its capacity to alter certain enzymes and signaling pathways, were responsible for a large number of its pharmacological characteristics. To validate the traditional claims backed by particular scientific investigations, this paper thoroughly covers information on P. longum's habit, distribution, ethnobotany, phytochemistry, and pharmacology in addition to its therapeutic significance and health benefits.

Keywords: Pharmacological activity; Phytochemistry; Piper longum; piperlongumine

Formulation, Development and Evaluation of Bioactive Phytoconstituent Loaded Hydrogel for the Treatment of Diabetic Wounds

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Abstract:

A three-dimensional network of polymers holds water together to generate hydrogels, which are widely employed as drug formulation vehicles. Due to its maximum biocompatibility and capacity to offer continuous drug release, it becomes a popular choice for medication as a delivery mechanism. Hydrogel-based nanocomposite technology (HNT) is being evaluated since hydrogels by themselves might not have the required mechanical and biological qualities for drug delivery. To increase the hydrogel matrix's mechanical strength, drug load volume, and delivery rate, nanoparticles are added. Hydrogels are made with nanoparticles, including polymeric, magnetic, and metallic ones. Diabetes-related wounds affect 20% of individuals with diabetes globally. Diabetes mellitus (DM) is a metabolic condition marked by elevated blood glucose levels and impaired glucose metabolism. In diabetic individuals, even minor wounds like cuts or abrasions can result in infections and problems. The development of effective preventative interventions requires an understanding of the mechanism or mechanisms causing this delayed wound healing. Bioactive phytochemicals have been shown in several trials to have potential benefits for diabetic wound healing. Prior to the development of contemporary Western medicine, plant-based goods served as the foundation for medicine. Honey, curcumin, and other phytochemical-rich substances have long been utilized as wound dressings. The workings of several of these conventional treatments have just been revealed.

Keywords: Hydrogel-based nanocomposite technology; Curcumin

Zinc Oxide Nanoparticles Derived From Piper Nigrum for Anti-Arthritic and Antioxidant Activity

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Abstract:

Zinc oxide nanoparticles are among the most efficacious metallic oxide nanoparticles for biological purposes. ZnONPs exhibit potential anti-inflammatory and antioxidant properties, along with favourable biocompatibility, reduced toxicity, and cheap cost. The use of various plant extracts for the environmentally sustainable creation of metallic nanoparticles is superior to traditional chemical synthesis methods. This work is critical for the production of ZnONPs from an extract of Piper nigrum. The morphological characteristics of ZnONPs have been analysed using UV spectroscopy, DLS, SEM, and TEM. Additionally, it is examined for its anti-inflammatory properties and antioxidant capabilities. The synthesis of nanoparticles has been validated using visible spectroscopy, exhibiting a maximum absorbance at 350 nm, with a particle size of 80 nm and a zeta potential of +7.4 mV. SEM and TEM analyses indicated that the nanoparticles are spherical and organised compactly. Moreover, biogenic nanoparticles have significant anti-inflammatory properties by decreasing the activities of collagenase (68.72%), elastase (65.16%), lipoxygenase (58.098%), and protein denaturation (65.36%). It also demonstrates the potential to inhibit Superoxide radicals (64.87%), DPPH (65.46%), Hydrogen Peroxide (64.89%), Hydroxyl radicals (68.45%), and Nitric oxide radicals (71.343%), which contribute to the pathophysiology of several inflammatory illnesses. This indicates that P. nigrum Zinc nanoparticles may serve as a potential agent in the treatment of several inflammatory illnesses, including cancer, rheumatoid arthritis, psoriasis, and other inflammatory ailments.

Keywords: Zinc Oxide Nanoparticles; *Piper nigrum*; Antioxidant activity; Anti-inflammatory activity

Evaluation of Anti-Diabetic Activity of Root Extract of Solanum Virginianum on Streptozocin Induced Diabetic Rats

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Abstract:

Solanum virginianum, also known as Kantakari in Ayurvedic medicine, shows potential as a natural remedy for diabetes management. Traditional uses of its dried fruit extracts by indigenous communities in India, such as the Kondh tribe in Odisha, include treatment for diabetes, and recent scientific studies are exploring its bioactive components for therapeutic potential. The plant contains compounds like steroidal glycoalkaloids and various phenolic acids, which exhibit anti-inflammatory, antioxidant, and glucose-lowering effects that could support blood sugar control.

Objective: To evaluate the anti-diabetic activity of root extract of *Solanum virginianum* are on Streptozocin induced diabetic rats.

Rationale: The active compound those are responsible for treatment of diabetic which are present in very rich amount in root of the plant.

Materials and Methods: The root are collect clean and dried under shade, size reduce well to fine powder and place in soxhlet extractor for extraction using ethanol (60-80°C) as a solvent for 48 hrs. Formulation of S. virginianum extracts was Greenish brown and greenish black residues were obtained. Extracted drug and marketed drug (Glimepiride) of dose formulation were prepared with aqueous solution for anti- diabetic activity. Animals were divided into five groups comprise, five animals in each group and treated orally once a day. Group 1: Normal (vehicle), Group 2: control group (Streptozocin 60mg\kg single dose), Group 3: test group (Extracted drug 150mg\kg), Group 4 (Extracted drug 200mg\kg) And Group 5: standard group (Glimepiride 0.25mg/kg) respectively. Blood glucose level was measured by using Glucometer.

Results: The body weight, blood glucose and serum insulin levels in normal compared with the post-STZ injection level.

Conclusion: The extract formulation of roots of *Solanum virginianum* can help to decrease blood glucose level and showing anti-diabetic activity against streptozocin induced diabetic rats

Keywords: *Solanum virginianum; Glimepiride;* Anti-diabetic activity; Streptozocin

Molecular Docking Study of Pyrrolidine Derivatives as α-Glucosidase Inhibitors for the Treatment of Type 2 Diabetes Mellitus

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Abstract

Background: α-glucosidase inhibitors (AGIs) are important in antiglycation therapy because they reduce postprandial blood glucose, a key factor in the glycation process that leads to advanced glycation end-products (AGEs). This reduction in glycation can help mitigate complications associated with diabetes, such as neuropathy, retinopathy, and cardiovascular diseases.

Objective: To evaluate the efficacy of pyrrolidine derivatives as α-glucosidase inhibitors in a molecular docking study for treating Type 2 diabetes mellitus.

Materials and Methods: The three-dimensional structure of α-glucosidase enzyme was obtained from the RCSB - protein database and pyrrolidine derivatives were drawn in Chem Draw 2D & Chem Draw 3D Software, and docked with 3TOP using Molegro Virtual Docker v.6.0 (MVD) and PyMOL 2.4.0 molecular visualizer.

Results: Among twenty designed ligands, three ligands, P7, P13, and P15, exhibited the lowest binding energy of -153.109 kcal/mol, -151.121 kcal/mol, and -150.152 kcal/mol, respectively, which is better than the standard drug (Acarbose).

Conclusion: The molecular docking approach has identified a novel α-glucosidase inhibitor with a strong binding affinity for the target enzyme.

Keywords: Antiglycation (AGEs); α-glucosidase inhibitor; Miglitol, Pyrrolidine; Molecular Docking

Innovations in Lipid Nanoparticle Technology - Addressing Challenges in Topical Antifungal Delivery

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Abstract:

Lipid-based pharmaceutical systems, such as lipid nanoparticles (LNPs), offer significant potential for improving drug penetration into the skin's dermal layers. Solid lipid nanoparticles (SLNs) and nanostructured lipid carriers (NLCs) are effective drug delivery systems for topical applications, providing benefits like controlled release, enhanced bioavailability, and protection of labile molecules (e.g., retinol, peptides). These systems are particularly advantageous in topical antifungal formulations, as they enable localized drug delivery, reducing adverse effects and improving patient compliance. Topical antifungal formulations are often preferred over systemic antifungal agents for treating fungal skin infections because they allow localized drug delivery to the affected sites, decreasing adverse effects and increasing patient compliance. SLNs and NLCs' small particle size ensures prolonged drug release and enhanced skin absorption, with applications in topical drug delivery.

Keywords: Solid Lipid Nanoparticle; Nanostructured lipid carrier; Histopathology; Dermal drug delivery; Dermal bioavailability

Designing Hybrid Molecules of Oxymatrine for Improved Blood-Brain Barrier Delivery and Enhanced Anti-Alzheimer's Activity

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Abstract:

Objectives: Oxymatrine (OMT) shows potential in treating Alzheimer's by regulating matricellular deposition and reducing TNF-α and IL-1β, which damage nerve cells. However, its polar nature prevents it from crossing the BBB. We propose developing non-polar amino acid conjugated derivatives to facilitate BBB penetration for a potential therapeutic remedy.

Methods: First, docking studies were conducted to identify the best amino acid conjugated OMT derivatives by examining their interactions with the target protein TGF-β (PDB ID- 2WOT) and calculating the docking score. From these studies, the most promising compounds were selected, synthesized and characterized. Biological evaluation studies were conducted by inducing Alzheimer's disease in rats through a high-cholesterol diet and administering oral doses of the Oxymatrine derivatives. The compounds' effect on cognitive changes was evaluated through Hebbs Williams and radial mazes. ELISA analysis was performed to estimate Aβ and TGFβ levels, and alterations in antioxidant systems were assessed through UV spectroscopic methods.

Results: The experimental animals receiving 100mg/kg of compound 3a showed improved cognitive abilities. Additionally, there was an increase in the antioxidant systems, and a decrease in the levels of TGFβ and Aβ, which suggests that compound 3a may have therapeutic potential.

Conclusions: This study concluded compound 3a demonstrates the best potential as a treatment option for AD.

Keywords: Alzheimer's disease, Oxymatrine, amino acid derivatives, docking studies, biological evaluation

The Future of Rheumatoid Arthritis Treatment: Molecular Innovations in Anti-Rheumatoid Drug Development

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Abstract:

Over 100 different kinds of arthritis exist, including rheumatoid arthritis (RA). About 0.5% of persons have this chronic autoimmune disease, which damages the synovial joint lining and can cause significant joint deformity and impairment. RA affects people of all ages and genders. however, it is more common in women and the elderly. Over the past 20 years, significant progress has been made in understanding the mechanisms behind the onset of RA, improving early diagnosis, and creating new treatment choices. The most well-known therapies for RA are still corticosteroids, disease-modifying antirheumatic medications (DMARDs), and non-steroidal anti-inflammatory medicines (NSAIDs). However, not every patient reacts well to current medications, so finding new ways to treat the condition is crucial. We highlight new research on the many kinds of RA treatments, such as traditional and contemporary medication therapies, as well as recently developed alternatives like Phyto-cannabinoid and cell- and treatments based on RNA. Finding a specific target could be easier with a deeper comprehension of their pathways and mechanisms. preventing cartilage deterioration, inflammation, and arthritis adverse effects.

Keywords: Rheumatoid arthritis (RA); Disease-modifying antirheumatic medications (DMARDs); non-steroidal anti-inflammatory medicines (NSAIDs); Corticosteroids, Phyto-cannabinoid

Exploring Herbal Medicine as a Promising Therapeutic Approach for Leishmaniasis: Efficacy, Mechanisms, and Future Directions

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Abstract:

Leishmaniasis, a neglected tropical disease caused by protozoan parasites of the genus *Leishmania*, remains a significant global health concern. Current treatments, primarily relying on antimonial drugs, suffer from limitations such as toxicity, drug resistance, and high cost. This has prompted a growing interest in exploring alternative therapeutic approaches, particularly those derived from natural sources. Herbal medicine, with its rich history and diverse bioactive compounds, offers a promising avenue for developing novel anti-leishmanial agents. Numerous studies have investigated the efficacy of various plant extracts and their isolated compounds against different *Leishmania* species. These phytochemicals have been shown to exhibit potent anti-parasitic activity through diverse mechanisms, including inhibition of parasite growth, induction of apoptosis, and modulation of the host immune response. However, while herbal remedies hold great potential, rigorous scientific evaluation is essential to ensure their safety, efficacy, and standardization. Challenges such as variability in plant composition, lack of standardized extraction procedures, and limited clinical data hinder their widespread adoption. Future research should focus on identifying the active constituents responsible for anti-leishmanial activity, optimizing extraction methods, and conducting well-designed clinical trials to establish the therapeutic efficacy and safety of herbal interventions.

Keywords: Leishmaniasis; Protozoan parasites; Herbal medicine; Phytochemicals

A Reviwe on *Sida Cordata's* Phytochemistry, Traditional Use, and Pharmacological Significance

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Abstract:

For millennia, natural source-based drugs have been an essential component of medicine research. Many of the most popular medications available today come from natural origins. Traditional knowledge, often known as the traditional medicine system, is a useful tool in the hunt for novel lead compound and is frequently utilized to choose the best sources for drug discovery. ***Sida cordat*** **(SC)** is considered to be an extremely effective medicinal plant in ayurveda, and the majority of its components have long been used to cure a verity of illness. SC also called "Bala" in Hindi is regarded as a "Rasayana", meaning it has restorative qualities. Electronic resources and textbook were used to obtain all pertinent information on SC. The available material from past to present is included in this review. Alkaloids, flavonoids, steroids, fatty acids, and other kinds of secondary metabolites are prominent in SC, according to phytochemical research. Numerous in-vitro and in-vivo investigation have demonstrated the anti-inflammatory, anti-oxidant, anti-diabetic, anti-cancer, antiviral, wound healing and antibacterial qualities of SC extract and their phytochemical or isolated metabolism. The finding of pharmacological studies, traditional applications, and phytochemical presence that are included in this review will contribute to the expansion of its therapeutic potential and providing strong support for its possible future usage in contemporary medicine.

Keywords: ***Sida Cordata***; Phytochemicals; *In-vitro* activity; Pharmacological action; Secondary metabolites

Phytochemistry and Pharmacological Activity of Impatiens balsamina

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Abstract:

Impatiens balsamina is an annual herb, belongs to the family Balsaminaceae, commonly seen in India, China, and Korea. It is an erect plant commonly known as rose balsam and garden balsam. Studies shows that the plant contains many valuable phytoconstituents such as flavonoids, saponins, phenolics, naphthoquinones, and glycosides. The plant is used in traditional medicine for their antimicrobial, anti-inflammatory, anti-allergic and antidermatitic properties. The plant can also be used to treat burns, scalds, and lumbago. Flowers of the plant is used as dye in pastry. Seeds of this plant is edible. Leaves and stem are also edible when boiled. Leaves, stem, flowers are also having medicinal properties. Microscopical features of pollen grains shows that the pollen grains contain a vegetative and generative cell. Many studies have been done to identify the pharmacological properties of this plant. Some of the pharmacological actions of the plant include antipruritic, antidermatitic, antimicrobial, antitumor, wound healing, antidiabetic and antinociceptive. The present review summarizes information about the morphology, chemical constituents, and pharmacological actions of Impatiens balsamina for future works.

Keywords: Impatiens balsamina; Macroscopic Character; Microscopic Character; Mechanism of action; Flavonoids

Formulation and Application of Cold Cream

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Abstract:

Cosmetics are extensively used by both men and women to conduct beauty and to ameliorate their appearance. Demand for herbal cosmetics is now a days adding because they’re inoffensive. Also, they've less lateral goods as they're prepared by taking excerpt of natural sauces and shrubs. Because of its good convenience and provident with good quality norms it's largely accepted by numerous people. Herbal cosmetics are prepared in numerous forms like cold cream medications containing natural excerpt of crude medicines like neem, turmeric, fruit excerpt like Bombax Ceiba Fruit Pulpetc., by adding variety of constituents in expression. Cold cream is a conflation which when applied on the skin, a cooling effect is produced due to slow evaporation of water present in conflation. These phrasings can be estimated by using colourful evaluation parameters like pH, density, irritancy, spread ability, microbial growth, thermal stability, unity, acid value, saponification value, accelerated stability studies, patch test, smear test, after sense, washability, physical parcels, colour test, after sense, in vitro prolixity study etc.

Keywords: Herbal cosmetics; Natural extract; Cold cream; Neem; Turmeric; Fruit extract

Formulation and Evaluation of Herbal Face Pack

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Abstract:

The aim of this work is to formulate and evaluate an herbal face pack for glowing skin by using natural herbal ingredients. Majority of the cosmetic products available in market are of synthetic origin and causes numerous side effects when used for longer period of time. One of the solutions for this problem is use of herbal cosmetics. Herbal cosmetics are considered safe for routine use with minimal side effects. Acne, redness, wrinkles, dark circles, pimples, dry and dead skin is some of the major skin issues. All these problems can be minimized by using herbal cosmetics such as face mask, scrub, cream, etc. Present work focused on preparation of powder based herbal face mask using natural ingredient like cucumber, fenugreek seed, orange peel, multani mitti, turmeric etc. Cucumber and Fenugreek seed was used as core ingredient for its ability to reduce redness, sunburns and controls acne, wrinkles, fine lines etc. known as natural or herbal cosmetics. Other chemical excipient includes Polyethylene glycol, methyl paraben and talcum powder. Formulation was evaluated for its appearance, spreadability, smoothness, irritability, pH etc. from the results obtained from evaluation parameters, it can be concluded that the prepared face mask can be safely used.

Keywords: Herbal cosmetics; Face mask; Formulation; Evaluation; Cucumber

Cancer Therapeutics-Opportunities, Challenges and Advances in Drug Delivery

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Abstract:

Global cancer prevalence has continuously increased in the last decades despite substantial progress achieved for patient care. Cancer is no longer recognized as a singular disease but as a plurality of different ones, leading to the important choice of the drug administration route and promoting the development of novel drug-delivery systems (DDS). Due to their structural diversity, therapeutic cancer drugs present specific challenges in physicochemical properties that can adversely affect their efficacy and toxicity profile. These challenges are addressed by innovative DDS to improve bioavailability, pharmacokinetics and biodistribution profiles. Chemotherapy is one of the most important treatments currently available among the various approaches. The present status of chemotherapy is far from being satisfactory. Its efficacy is limited and patients have to suffer from serious side effects, some of which are life-threatening. The newer approaches to cancer treatment not only supplement the conventional chemotherapy but also aim to prevent damage to the normal tissues and overcome drug resistance. The innovative approaches of cancer treatment require new concepts of drug delivery in cancer. This concept requires the unique surface morphology which ultimately determines the fate of new drug delivery systems. NDDS appears to be promising in cancer chemotherapy especially via ligand/receptor mediated endocytosis as it possesses numerous properties (especially surface property) to target cancer.

Keywords: Cancer; NDDS; Drug Delivery; Chemotherapy

Enhancing Glimepiride Delivery: A Comparative Study of Nanoemulgel Transdermal Patches for Management of Diabetes

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Abstract:

This study explores the potential of nanoemulgel-based transdermal patches to enhance the delivery of glimepiride, a widely used antidiabetic drug. Glimepiride's poor water solubility and variable oral bioavailability necessitate alternative delivery systems. Nanoemulgels combine the advantages of nanotechnology and hydrogels, creating a promising platform for transdermal drug delivery. This research compared the physicochemical properties, drug release profiles, and permeation rates of nanoemulgel patches with conventional formulations. The nanoemulgel patches were prepared using a high-pressure homogenization technique and evaluated for particle size, zeta potential, and viscosity. In vitro and ex vivo skin permeation studies demonstrated significantly enhanced drug permeation and sustained release profiles compared to traditional formulations. Additionally, in vivo studies on diabetic animal models showed improved hypoglycemic effects with the nanoemulgel patches, indicating better therapeutic efficacy. The study concludes that nanoemulgel transdermal patches represent a viable and superior alternative for glimepiride delivery, potentially improving patient compliance and therapeutic outcomes in diabetes management.

Keywords: Glimepiride; Comparative Study; Transdermal Patches; Management of Diabetes

Molecular Docking Studies of Pyrimidinone Derivatives as Cholinesterase Inhibitors

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Abstract:

Background: Pyrimidinone derivatives pay attention in drug discovery due to their potential pharmacological activities, particularly as inhibitors of cholinesterase enzymes, which play a key role in neurodegenerative diseases such as Alzheimer's disease. Cholinesterase inhibitors (ChEIs) are essential for managing symptoms of these conditions, as they enhance cholinergic transmission by preventing the acetylcholine breakdown. Therefore, the development of potent and selective ChEIs from various chemical scaffolds, such as pyrimidinone, is of significant therapeutic interest.

Methodology: Pyrimidinone derivatives were chosen for their structural diversity and potential to inhibit cholinesterase enzymes. A Crystal structure of AChE was obtained from the Protein Data Bank. The target protein was optimized by removing water molecules and adding missing hydrogens. 3D structures were optimized using molecular modeling software (Chem 3D) and molecular docking studies were performed using free software like Argus Lab 4.0. The best pose was chosen based on the lowest binding energy and optimal interactions between the ligand and protein.

Result and Discussion: The molecular docking results revealed that several pyrimidinone derivatives exhibited strong binding affinities in the range of -12.50 to -15.90 kcal/mol) for acetylcholinesterase with favorable interactions such as hydrogen bonds, hydrophobic interactions, and pi-stacking with key enzyme residues. Some derivatives formed stable complexes with the active site, suggesting potent inhibition, compared to the standard inhibitor Donepezil (-11.58 Kcal/mol).

Conclusion: The result of molecular docking studies of pyrimidinone derivatives revealed that these compounds could serve as promising candidates for the development of cholinesterase inhibitors, suggesting their potential efficacy in treating neurodegenerative diseases such as Alzheimer's.

Keywords: Alzheimer's; Molecular Docking; Pyrimidinone; Cholinesterase Inhibitors

Forskolin: A Potential Phytochemical For Glaucoma Therapy

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Abstract:

Glaucoma is one of the main causes of permanent blindness in India, accounting for 5.5% of all blindness and causing blindness in 1.2 million individuals. Since many clinical therapeutic compounds that are utilised as primary or supplemental therapeutic agents in alternative medical systems across the world are derived from traditional medicinal plants, they play a significant role in contemporary healthcare. A traditional remedy for glaucoma, forskolin is an active ingredient derived from the plant Coleus forskohlii. This review explains the latest research that shows the medicine has improved over time with better therapeutic effects. Furthermore, this study will draw formulation scientists' attention to the problems and difficulties related to the drug's distribution as well as the likely strategies investigated to help patients get the most out of this potentially helpful medication. The potential regions in which this phytochemical ingredient may demonstrate its therapeutic activity in the treatment of glaucoma have been identified by a comparatively high number of studies. By creating an appropriate formulation that might get past the drug's innately limited bioavailability, its promise can still be realised.

Keywords: Forskolin; Ocular; Glaucoma; Phytochemical

Clinical Advances in Radiopharmaceutical Threapy in Cancer

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Abstract:

Radiopharmaceutical therapy (RPT) is emerging as a safe and effective targeted approach to treating many types of cancer. In RPT, radiation is systemically or locally delivered using pharmaceuticals that either bind preferentially to cancer cells or accumulate by physiological mechanisms. Almost all radionuclides used in RPT emit photons that can be imaged, enabling non-invasive visualization of the biodistribution of the therapeutic agent. Compared with almost all other systemic cancer treatment options, RPT has shown efficacy with minimal toxicity. With the recent FDA approval of several RPT agents, the remarkable potential of this treatment is now being recognized. This Review covers the fundamental properties, clinical development and associated challenges of RPT.

Keywords: Cancer; Clinical Advances; FDA; Radiopharmaceutical therapy

A Critical Review on Glycosaminoglycan Derived Polymers as a Novel Drug Delivery System in Tissue Engineering: Recent Advancement and Clinical Application

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Abstract:

Natural extracellular matrix constituents called glycosaminoglycans have a major impact on cellular activity and control the microenvironment around cells. Because of this trait, they are interesting candidates for therapeutic intervention in a variety of illnesses. Finding precise and focused medication delivery techniques to reduce side effects and improve the effectiveness of therapies for illnesses like wounds, cancer, and organ problems has long been a goal in the field of medical research. However, there are difficulties in putting a systemic delivery strategy into practice, especially for protein-based treatments. The creation of biocompatible polymers that can effectively encapsulate and release therapeutic proteins is necessary to address this difficulty because GAGs are bioderived and have the capacity to alter biological responses, they stand out as viable candidates with these desired qu alities.Different linear polysaccharides have different payloads and functions within the context of GA Gs.Particularly in the treatment of rheumatoid arthritis, hyaluronic acidand chondroitin sulphatehave be en employed as polysaccharidebased biomaterials for medication delivery.The ability of modified HA a nd CS to selfassemble into micellar nanoparticlesor micelles allows for precise and regulated drug admi nistration. This paper examines a variety of nanoparticle formulations derived from hyaluronic acid and chitosan, which include drug conjugates, polymers, small molecules, polyelectrolyte nanocomplexes, metals, and nanogels. The adaptability of these NP formulations applies to a wide range of therapeutic uses, such as cancer chemotherapy, gene therapy, photothermal therapy, photodynamic therapy, sonodynamic therapy, and immunotherapy. By utilizing the distinct properties of HA and CS, these NP-based systems present promising opportunities for enhancing therapeutic approaches across various clinical contexts.

Keywords: Glycosaminoglycans; Dermatan sulphate; Extracellular metrix; Hyaluronic acid; Keratan sulphate; Chondroitin sulphate

Impact of Hypertension and Diabetes on the Patients of Local Areas of Durg City

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Abstract:

Hypertension and diabetes are prevalent chronic conditions that significantly affect the health of individuals, contributing to morbidity, reduced quality of life, and increased healthcare costs. The research involved a cross-sectional survey of patients diagnosed with these conditions in various healthcare centers across Durg. Data was collected regarding demographic information, lifestyle factors, medical history, and treatment adherence. The findings reveal a high co-morbidity of hypertension and diabetes in the region, with a notable correlation between poor management and increased complications such as cardiovascular diseases, kidney dysfunction, and neuropathy. The study also highlights a lack of awareness and limited access to healthcare resources, which exacerbate the burden on affected individuals. These results underscore the need for targeted public health interventions, including awareness programs, better access to medical care, and lifestyle modification strategies to improve patient outcomes in Durg city.

Keywords: Hypertension; Diabetes; Durg City; Co-morbidity; Public Health; Healthcare Access

A Review on Development and Evaluation of Herbal Based Moisturizing Cream

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Abstract:

Herbal formulations have gained popularity as a result of the search for safe and effective skincare products because of their possible therapeutic advantages and low risk of side effects. With the use of well-known botanical extracts of Ginger, Honey, and Pomegranate -all of which are known for their numerous therapeutic benefits. this study aims to create and assess a multifunctional herbal cream. The rationale for choosing particular herbs and natural ingredients is highlighted, highlighting their verified medicinal qualities and historical use. It gives a detailed explanation of how to formulate the cream with Ginger, Honey, and Pomegranate to get the perfect texture and durability. Important information about the cream's possible uses in topical therapies and skin care will be revealed by the assessment of its safety and effectiveness. Evaluating the efficacy.

Keywords: Herbal cream; Herbal Cosmeceuticals; Ginger; Honey; Pomegranate; Formulation; Evaluation

Comparative Survey of Rosuvastatin and Atrovastatin on Constipation

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Abstract:

Statins, including rosuvastatin and atorvastatin, are widely used lipid-lowering agents that may cause gastrointestinal side effects such as constipation. While both effectively reduce cholesterol levels, their side effect profiles, particularly gastrointestinal (GI) disturbances like constipation, differ. Atorvastatin, primarily metabolized by the liver via cytochrome P450 3A4, is more commonly associated with constipation due to its influence on bile acid metabolism and intestinal motility. In contrast, rosuvastatin, with minimal hepatic metabolism and fecal excretion of its active form, tends to have a lower incidence of gastrointestinal side effects. The aim of the study helps to explores their differential impact on bowel habits by comparative study. A Comparative study of rosuvastatin and atorvastatin on constipation by doing survey on this by using google form. A comparative survey of rosuvastatin and atorvastatin on constipation would aim to understand evaluate how each of those statins' effects gastrointestinal symptoms particularly constipation. Rosuvastatin and atorvastatin being two of the most commonly prescribed. Clinical evidence suggests rosuvastatin is better tolerated in patients prone to constipation. Rosuvastatin may be preferable This study focus on the importance of individualizing statin therapy to optimize both efficacy and tolerability in patients, particularly those prone to GI disturbances.

Keywords: Statins; Lipids; Gastroinstentinal disturbance

Investigation of the Impact of Lead-Induced Gut Microbiome Dysbiosis and Its Effect on the Immune Function

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Abstract:

Lead is a non-essential heavy metal found in trace levels in the earth's crust. Lead can be acquired through contaminated drinking water and food. However, it has applications in a variety of sectors, including autos, battery recycling, boat construction, coal combustion, lead smelting, leaded gasoline, grids, paints, bearings, ceramics, and plastic. It can also be found in a range of organic and inorganic compounds that are used in protective coatings for iron and steel, explosives, rodenticides, solder, fishing weights, ceramics, glaze, and other applications. Lead-induced oxidative stress causes DNA damage, as well as gut microbiome dysbiosis. Due to the over-expression of lead dysbiosis in the gut alters gut physiological homeostasis, causing immune-inflammatory reactions, and increased permeability of the intestinal barrier in the digestive tract, resulting in apparent morphological issues, according to studies on the negative effects of lead on intestinal physiology. Lead exposure has been linked to alterations in the gut flora by weakening the gut barrier. Lead exposure has been associated with an inflammatory response in the intestine and an elevation in intestinal permeability. When rats were exposed orally to 10mg/kg lead for 28 days, as a result when comparing the lead-induced group to the control group, we observed an alteration of the level of I-FABP and β-defensin due to a significantly reduced number of microorganisms such as *firmicutes, lactobacillus Plantarum, streptococci,* and *E. coli.* These bacteria are commensal and have been shown to protect against immunological diseases. The disruption of the microbiota can cause an inflammatory environment in the gastrointestinal tract, disrupting intestinal homeostasis and as a result, unregulated NF-κβ can trigger the expression of pro-inflammatory mediators such as IFN-γ, IL-17 or TNF-**α** aggravating the inflammatory process and causing epithelium damage as well as intestinal and extraintestinal symptoms. The bacteria in the gut may operate as a biological barrier, competing with lead absorption in the intestine and therefore limiting hazardous metal bioavailability as demonstrated by histological alterations in the bowel and raised levels of inflammatory markers. The depth and the shape of the

crypt, the shape and height of the villi, and the number of goblet cells and excess lymphocytes scattered were significantly shown in lead-induced groups.

Keywords - Lead-Induced; Gut Microbiome Dysbiosis; Immune Function

IMC-2024 SSPU/Pharm/47

A Review on Herbal Sunscreen Lotion

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Abstract:

Natural substances extracted from plants have recently been considered as potential sunscreen. It's function is based on its capability to absorb, reflect or scatter the sun's rays. The herbal sunscreen showed good spreadability, good consistency, appear, ease of removal and no evidence of phase separation. The objective of this work is to formulate and evaluate a natural sunscreen which protects the skin from harmful sun's radiation and sun's effects like erythema. The sun protection efficacy was evaluated in terms of Sun Protection Factor (SPF) using in vitro spectrophotometric techniques. The efficacy when tested with standard was observed to be same as that of marketed sunscreen with SPF 55 and SPF 20. The natural herbs can play essential role in sun protection effect by their photoprotective activities such as coconut oil(used as sun block agent), aloevera (give cooling effect to the skin and work as skin barrier), lemon (used to protect the skin from sun burn and effective against harmful radiation). The herbal formulations is more advantageous than chemical formulation due to it's fewer side effects.

Keywords: Sun Protection Factor; Herbal; Aloevera; Radiation

Formulation of Herbal Soap

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Abstract:

The home grown cleanser was defined by utilizing leaf of neem, Aloe Vera, tulshi, vit-c, tocopheryl acetic acid derivation ayurvedic beauty care products is exceptionally accommodating and does not donate it side impacts. Ayurvedic beauty care products are too known as home grown beauty care products. All home grown fixings are esily avelabal advertise of encompassing ranges, todayes condition numerous contamination partical of IIV beams hurtful for the human body it's harm oure skin so beauty care products could be a portion of the watch out of the skin and body portion. The antioxidant properties of tocopheryl acetic acid derivation can offer assistance to anticipate damage to skin caused by free radicals from UV presentation as well because it gives antiinflammatory impact. tulshi deliver numerous benefits for the skin like beep cleanthe skin. Treat skin break out helps skin tone vit -c and turmeric moreover utilized. Home grown cleanser arrangement may be a medicire or sedate like restorative properties like antibacterial antifungal bring the skin and may property. Neem has gives more therapeutic properties neem. The plant utilized in cleanser planning is able to delicate the skin epiderms improve more noteworthy entrance expel skin break out as well as advance recuperating and determination in rapidly in time.

Keyword: Home grown Cleanser; Neem; Tulshi; Vit.C; VitE; Aloevera; Turmeric; Rose Water; Cleanser Base.

Formulation of Nutraceutical Tablet

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Abstract

Objective: The objective of this study is to formulate the Nutraceutical tablet prepared by the wet granulation method.

Methods: The crude drugs used in the formulation were Amla, Cinnamon, Ginger, Liqourice, Tulsi and Mentha. The combination of amla, ginger, liqourice, mentha, tulsi, cinnamon blended with ancient ayurvedic wisdom along with modern science. Each ingredient holds unique benefits and plays a vital role in formulation of nutraceutical tablet. Starch, lactose and magnesium stearate were used as exipients and then the granules were prepared. The granules were placed in tablet compression machine and compressed tablets were prepared.

Conclusion: From the above study, we conclude that the Nutraceutical herbal tablets were prepared by wet granulation method and gave the acceptable and adequate results. The tablet shows instantaneous drug release due to compressed tablet.

Results: All the parameters were found within the specification.

Keywords: Wet granulation method; Herbal tablet; Nutraceutical; Amla; Cinnamon; Ginger; Liquorice; Tulsi; Mentha

Review of Bioactive Loaded Ocular Drug Delivery Systems

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Abstract:

Ocular Drug Delivery is a significant challenge and captivating topic for pharmaceutical scientists because of the unique structure and function of the eye. Glaucoma, dry eye syndrome, keratitis, endophthalmitis, trachoma, and conjunctivitis are among the disorders that may impact the eye. For successful treatment of the eye, the right amount of active ingredients need to be given and kept in the necessary location. Traditional therapy is not effective because medicines are quickly eliminated before they can be absorbed properly. Static and dynamic obstacles also affect the bioavailability of a drug. To address the constraints of traditional treatment, significant initiatives are being made to develop innovative ways of delivering medication to the eyes. When a drop is placed into the eye, it goes through a sol-gel transition, leading to the formation of a cul de sac. This review specifically discusses the in-situ gel system, encompassing thermally triggered, pH-triggered, and ion cross-linking systems. A detailed manual is given for creating the pH-responsive system, along with evaluation criteria.

Keywords: Ocular drug delivery system; In-situ ocular gel

Exploring the Botanical, Economical and Pharmacological Potential of Manilkara Zapota

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Abstract:

In the present scenario, the demand for herbal products is growing exponentially throughout the world and major pharmaceutical companies are currently conducting extensive research on plant materials for their potential medicinal value. Manilkara zapota is a tropical evergreen tree known for its delicious fruit and versatile applications in various industries. This review explores the botanical, economic and pharmacological potential of Manilkara zapota. Manilkara zapota has a long history of traditional use in folk medicine for treating various ailments. Its parts, including the fruit, leaves, and bark, are reported to possess pharmacological properties with potential therapeutic benefits. These include antimicrobial, anti-inflammatory, antioxidant, and wound-healing activities, among others. Beyond its value as a fresh fruit, Manilkara zapota derivatives such as chicle gum, extracted from its latex, have been historically important in industries like chewing gum production. Moreover, the growing interest in natural products and traditional medicine has created new opportunities for the commercialization of Manilkara zapota -based products, ranging from dietary supplements to cosmetics. Manilkara zapota leaves, rich in antioxidants and nutrients, are gaining traction in cosmetics. With potential benefits ranging from skin hydration to anti-aging properties, Manilkara zapota leaf extracts are increasingly utilized in skincare formulations, promising natural solutions for healthier, more radiant skin.

Keywords: Manilkara zapota; Anti-aging; Antimicrobial; Anti-inflammatory; antioxidant; moisturizing

Formulation and Evaluation of Harbal Tooth Paste Form Java Plum Extract

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Abstract:

Toothpaste is widely utilized. Typically, toothpaste is used to clean the mouth. It is also used to treat additional dental conditions. Many dentists advise using toothpaste to treat conditions like chronic gingivitis, sensitivity, etc. Various herbal extracts of numerous crude medications with antibacterial and antimicrobial properties can be used to make herbal toothpastes. The teeth Commercially available herbs such as peppermint, java are used to make herbal toothpaste formulations. Tooth pastes made of herbs. The current study has evaluated the quality of commercial herbal toothpastes from Himalaya, Meswak, and Dent County. Using plant extracts like Java leaves along with additional ingredients like glycerine, pepper mint oil extract the current study aims to create herbal toothpaste.

Keyword: Harbal tooth paste pepper mint oil; Glycerine; SLS

Review on Novel Drug Delivery System on Treatment of Cancer (Microspheres)

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Abstract:

Cancer is a life-threatening disease which severely affects the overall quality of life of patients. Despite the availability of many conventional methods of treatment and cytotoxic drugs, their clinical outcomes are coupled with adverse effects due to their target unspecific nature. Nowadays, herbal anticancer agents are gaining special attention as an alternative system of therapy in cancer due to the benefits associated with them such as minimal adverse effects with high therapeutic efficacy. However, the barriers restricting their bioavailability warrant new drug delivery systems which may improve their pharmacokinetic profile. Recently, formulation of herbal products using novel drug delivery system (NDDS) has gained popularity due to the advantages offered by them in comparison to conventional formulations. The present study reviews the role of microspheres formulated with herbal anticancer extracts. Microspheres are one of the NDDSs with discrete spherical particle size of 1-1000 μm. Their integration to herbal anticancer agents have shown better patient compliance in terms of route and frequency of administration, improved efficacy, fewer adverse effects, better solubility and stability, targeted action on tumour cells and sustained drug release profile. Many studies also support the use of anticancer herbal microsphere technology in treatment of cancer by exhibiting various benefits.

Keywords: Cancer; Herbal; Microspheres; Plant extracts; Phytochemicals

Preparation, Optimization and Characterization of Targeted Delivery of Rituximab Conjugated Paclitaxel Loaded Bovine Serum Albumin Nanoparticles

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Abstract:

The development of multifunctional nanoparticles offers an innovative approach for targeted cancer therapy. Bovine Serum Albumin (BSA)-Paclitaxel-Rituximab (BPR) nanoparticles acts as a dual-functional nanocarrier designed for enhanced therapeutic efficacy against breast cancer. Paclitaxel, a commonly used chemotherapeutic agent, is conjugated with Rituximab, a monoclonal antibody that specifically targets the CD20 antigen on B-cells, through BSA nanoparticles which acts as a stable biocompatible carrier. This combination of BSA nanoparticles provides better drug-loading capacity, reduced toxicity, and increased stability, making it an ideal formulation for drug delivery. Targeted delivery of Paclitaxel loaded nanoparticles was prepared by desolvation method and then subsequently conjugated with rituximab. BPR nanoparticles were characterized by particle size, polydispersity index, surface charge, surface morphology (SEM), encapsulation efficiency, drug loading and in vitro drug release. The paclitaxel release profile showed controlled, sustained drug release, which can help reduce systemic toxicity and improved therapeutic outcomes. Moreover, Rituximab targeting provides synergistic action, ensuring better cellular uptake and retention in breast cancer cell. In conclusion, BSA-Paclitaxel-Rituximab nanoparticles shows promising therapeutic targeted delivery system with potential for clinical application in treating breast cancer.

Keywords: Targeted Delivery of Rituximab; Paclitaxel Loaded Bovine Serum; Albumin Nanoparticles

Current Trends and Concepts in the Design and Development of Nanogel Carrier Systems

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Abstract:

Nanotechnology, a relatively novel technique, has much potential in smart drug delivery. Developing novel nanosized particulate drug delivery systems (DDS) may help prevent, diagnose, and treat many important diseases. Nanogels have particle sizes in the 0–100 nm range, and the three-dimensional network is maintained by varying the solvent quality. This review article describes concisely the current trends and concepts involved in the design and development of nanogel DDS. This review also explores the various approaches to drug loading, release mechanisms, characterization, and biomedical applications. Optimized nanogel systems can be developed based on the site of action and pattern of drug release desired for improved therapeutic benefits. This can be achieved by using the appropriate method of preparation (physical or chemical) and drug loading mechanism by modifying the geometry and surface of the nanogels. The properties of nanogels are dependent on the constituent materials/components (synthetic or natural) and external stimuli (pH, temperature, ionic strength, or incorporation of hydrophilic residues) in the case of stimuli-sensitive nanogels. Due to the high stability, biodegradability, biocompatibility, large surface area, and minimal resources required for the manufacture of nanogels, their applications (such as in oral, pulmonary, nasal, ocular, and topical routes) have gained special attention in the development of pharmaceutical drug carriers.

Keywords: Nanotechnology; Drug delivery mechanism; Nanogel; Functionalized nanoparticles

Unlocking the Potential of Microbiomes in Drug Therapy

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Abstract:

The human microbiome is a complex ecosystem of microorganism that lives in our bodies and has an impact on many bodily processes, including how drugs work and breakdown. This review looks at the close link between gut microbes and drug response showing how the composition and variety of these microbiomes can change how drugs move through and act in the body. By bringing together findings from many studies, we highlight the main ways microbiomes affect how drugs are absorbed, metabolized, distributed and eliminated from the body. These include regulating immune responses, changing host enzymes that breakdown substances, and breaking down drugs themselves. Furthermore, we dive into how drugs and microbiomes interact, and what this means to tailored treatments new medicines, and ways to treat people. When we understand how microbiomes and drugs work together, we can make drug therapy better, cut down on adverse effects, and help patient gets better results. In the future, researchers should come up with new ways to describe and manipulate the microbiomes to make treatment more effective and efficient.

Keywords: Microbiomes; Drug therapy: Ecosystem

Development and Characterization of Poly-Herbal Formulation for Anti-Acne Activity

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Abstract:

Acne is a common skin condition which affects to everyone at least once in a life. It is caused due to sebum oil secreted by sebaceous gland which is mixed with dead skin and forms plug or clogged and this condition is known as Acne Vulgaris. It is caused by various factors such as environmental condition (i.e. air pollution and high humidity), heavy lotions and creams, stress, hormonal activity, etc. For managing and treating the acne there are various medicated products available in the market some are allopathic and some are herbal, from ancient times most of the people uses herbal medicines to prevent acne because it is safe and having mild side effects than the conventional medicines. In this experiment poly-herbal formulation for anti-acne activity has been performed by using some herbs because herbal preparations are naturally obtaining components which are safe, effective and having fewer side effects as compared to allopathic medicines. After the selection and collection poly-herbs extracts were extracted by the maceration process. The extracted poly-herbs was tested by the Agar-well diffusion technique. The characteristics of cream in terms of spreadability, photostability, softening, comfortability, greasiness and odour were found good. The result proved that the chosen formulation also having the effective anti-acne property so we can suggest that the experiment will help in further investigation and in-vitro studies for developing this formulation as marketed product.

Keywords: Acne; Acne Vulgaris; Poly-Herbal; Maceration process; Agar-well diffusion technique

Anti-Glycation Agents: A Potential Therapy for Metabolic Disorders

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Abstract:

Glycation is a degenerative biochemical reaction where reducing sugars bond to amino groups in proteins, lipids, or nucleic acids, forming advanced glycation end-products (AGEs). These AGEs can cause health issues and contribute to chronic diseases like neurodegenerative disorders and diabetes. Senescence, the aging process, increases susceptibility to diseases and lifespan. Current theories focus on molecular and cellular processes, with anti-glycation agents as a potential approach of treatment for aging and related pathologies, with natural compounds like flavonoids, tannins, and phenolic acids being abundant sources of anti-glycation agents. These agents exhibit dual activity against AGE formation and glycoxidation of proteins. Extensive clinical trials are needed to define and approve new anti-diabetic therapies, aiming to identify potent, nontoxic, and highly bio-available AGE inhibitors with substantial in vivo and tissue specificity. Synthetic compounds have been developed to target major pathways of glycoxidation, aiming to limit the formation of advanced glycation end products. These agents are grouped based on their mechanism of action, such as trapping/neutralizing methylglyoxal or metal chelation. New agents designed to inhibit specific stages of glycoxidation can be identified through structure-based approaches, rational design, or pharmacophore studies. Synthetic compounds are increasingly used to target anti-glycation activities, as they are potent, effective in micromolar concentrations, and can hinder glycation with concentration-dependent inhibition. Structure-activity relationships studies and computational modeling have developed anti-glycation agents, enhancing biological activity. Molecular docking studies and computational biology have shifted drug design paradigms. Nonenzymatic glycation research involves chemists, biologists, and medical specialists, using interdisciplinary approaches to develop therapies and reduce healthcare costs.

Keywords: Glycation; Glycoxidation; Computational; Diabetes; AGE

Co-Crystallization: A Green Approach for Enhancing Drug Solubility, Stability and Therapeutic Efficacy

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Abstract:

In recent years, pharmaceutical co-crystals have drawn a lot of interest as a potentially sustainable and environmentally friendly way to increase the solubility, stability, and bioavailability of poorly soluble medications. It is a very helpful technique in the field of drug development research because it doesn't require a lot of synthesis stages and uses little to no solvent, often none at all. By selecting appropriate co-formers and optimizing the co-crystallization process, researchers can tailor the properties of drugs molecules to meet specific therapeutic requirements. In this paper, the design, synthesis, characterisation and assessment of medicinal co-crystals are all thoroughly examined and the study focuses on investigating several co-crystal formation techniques, such as liquid-assisted grinding, solvent evaporation, and co-grinding. To verify the formation and structural characteristics of the co-crystals, a variety of characterisation methods are used, including SCXRD, PXRD, FTIR, and DSC etc.The importance of comprehending the intermolecular interactions inside co-crystals and how they affect their physicochemical characteristics is also emphasized in this review. The article also explores how pharmaceutical co-crystals may be used to improve oral bioavailability, drug solubility, and dissolution rate, all of which could result in increased therapeutic efficacy.This paper offers insightful information about the creation and design of pharmaceutical co-crystals, presenting a viable solution to the challenges posed by poorly soluble medications.

Keywords: Co-crystallization; Green Approach; Coformers; Drug solubility; Stability; Therapeutic efficacy

To Prepare and Evaluate Thermosensitive Gels Loaded With Clindamycin for Intraveginal Durg Delivery

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Abstract:

Background: Bartholin cysts are fluid-filled swellings in the Bartholin glands, often leading to discomfort, infection, and pain. Traditional treatments may require invasive procedures, making localized and non-invasive therapeutic options desirable. This study aims to develop and evaluate an in situ mucoadhesive thermosensitive gel loaded with clindamycin for treating Bartholin cysts. The gel formulation, based on thermosensitive polymers, remains in liquid form at room temperature but transforms into a gel upon contact with body temperature, ensuring prolonged retention at the application site. Mucoadhesive properties enhance the gel's adherence to vaginal mucosa, improving drug delivery and reducing the need for frequent reapplication. Clindamycin, a potent antibiotic, targets the bacterial infections often associated with Bartholin cysts, aiming to reduce inflammation and infection with minimal systemic absorption.

Methodology: Targeted delivery of clindamycin loaded thermosensitive gel was prepared by cold method.

Results: The formulation characterized by gelation time, gelation temperature, viscosity, surface morphology (SEM) and drug release.Preliminary in vitro studies indicate promising sustained drug release, high bioadhesion, and effective local antibacterial action, suggesting that this gel could offer a safe, non-invasive, and patient-friendly alternative for Bartholin cyst management.

Conclusion: Clindamycin thermosensitive gel shows promising therapeutic targeted delivery system with potential for clinical application in treating bartholin cyst.

Keywords: Thermosensitive Gels; Clindamycin; Traditional treatments; Durg delivery system

Design, Synthesis and Evaluation of Some New Semisynthetic Derivatives of Cinnamic Acid for Anthelmintic Activity

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Abstract:

Helminth's infections are the most common infections in man which affects the large proportions of the world's population. In the treatment of parasitic diseases, the anthelmintics drugs are used indiscriminately. Recently the use of anthelmintics produces toxicity in human beings. Hence the development and discovery of new substances acting as anthelmintics are being derived through plants which are considered to be the best source of bioactive substances. Various plants were used in general diseases, to promote healing of wounds, swellings, abscesses, rheumatism and treating pain in lower extremities, skin diseases, leucorrhoea, dysentery, dysuria and fever. Anthelmintics are those drugs that are used in expelling out the worms that are parasitic in nature by either stunning them or by killing them. They are also known as vermifuges or vermicide.

Result: In the present work deals with "Design, synthesis and evaluation of some new semisynthetic derivatives of cinnamic acid for anthelmintic activity". The work is proposed to synthesize, characterize and evaluate biological activity of newly synthesized, substituted benzimidazole and amination of carboxylic acid derivatives (1a-1b), (2a-2b) and (3a-3f) respectively.

Conclusion: The purpose of the research work is designing and synthesizing new molecules for the treatment of parasite and worm infection in human and reduce their toxicities. Cinnamic acid is will be new compound for the treatment of anthelmintic activity and the planed molecule is semisynthetic. It would be less harmful as allopathy.

Keywords: Synthesis; Evaluation; Cinnamic Acid; Anthelmintic Activity

Formulation and Evaluation of Gmelinol Micro Composite Gel Active Targeting the Wound Healing

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Abstract:

Wound healing is a complex biological process requiring effective therapeutic agents to ensure rapid recovery and minimize complications. Gmelinol, a bioactive compound derived from Gmelina arborea, is recognized for its potent anti-inflammatory, antimicrobial, and antioxidant properties, making it a promising candidate for wound healing applications. This study focuses on the formulation and evaluation of a Gmelinol-loaded micro composite gel designed for active wound targeting. The gel was prepared using a polymeric base, ensuring optimal drug release and skin adherence. The physicochemical properties, including pH, viscosity, and spreadability, were assessed to ensure compatibility with wound environments. In vitro drug release studies revealed sustained release profiles, promoting prolonged therapeutic effects. Additionally, the gel's antimicrobial efficacy and cytocompatibility were evaluated to confirm its safety and functionality. In vivo wound healing studies demonstrated accelerated tissue regeneration, reduced inflammation, and enhanced collagen deposition compared to conventional treatments. This innovative micro composite gel provides a promising strategy for efficient and targeted wound healing interventions, offering a novel approach to improving patient outcomes.

Keywords: Gmelinol; Micro composite gel; Wound healing; Active targeting; Sustained release; Anti-inflammatory; Antimicrobial

Formulation and Evaluation of Poly Herbal Based Shampoo

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Abstract:

The formulation of Polyherbal Shampoos incorporating natural ingredients such as Ginger, Amla, Shikakai, Hibiscus, Bhringraj, Senna, and Aloe Vera has gained significant attention due to their synergistic effects on hair and scalp health. These herbs are traditionally used in various cultures for their therapeutic properties, contributing to a holistic approach to hair care. Ginger is known for its stimulating effect on the scalp, improving circulation and promoting hair growth. Amla (Indian Gooseberry) is rich in vitamin C and antioxidants, helping to strengthen hair follicles and prevent premature graying. Shikakai has natural cleansing properties, effectively removing dirt and excess oils without stripping natural moisture, while Hibiscus nourishes the scalp and enhances hair texture. Bhringraj is renowned for its ability to support hair growth and reduce hair fall, while Senna has mild cleansing and conditioning properties. Finally, Aloe Vera offers hydration and soothes the scalp, preventing dryness and irritation. Together, these ingredients create a balanced formula that not only cleanses but also nourishes, strengthens, and rejuvenates the hair and scalp. This polyherbal shampoo is a promising natural alternative to synthetic hair care products, providing a safe and effective solution for various scalp and hair issues while reducing reliance on harsh chemicals.

Keywords: Polyherbal Shampoo; Hair Growth; Natural Ingredients; Scalp Health; Herbal Formulation

Review of Floating Tablet Treatment of Peptic Ulcer

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Abstract:

This article's main goal was to organize the most recent research on the floating drug delivery system (FDDS) using the fundamental mechanism of floatation in achieving gastric retention. By creating both effervescent and noneffervescent floating tablets, the buoyancy mechanism served as the foundation for the various approaches used in the development of FDDS. Drugs that are unstable in the lower intestinal environment, have a limited window for absorption in the upper gastrointestinal tract, are locally active, and have low solubility at higher pH levels can be delivered using FDDS. The design of single-unit and multiple-unit floating systems, the physiological and formulational variability influencing gastric retention, and the application of newly created and developed polymers. In light of the functionality and use of floating systems, this review also concentrates on a variety of in vitro methods and in vivo investigations. With the addition of appropriate ingredients and the gas-generating agent, floating dosage forms can be administered in traditional forms such as tablets or capsules. Along with discussing recent and innovative developments, this review also sheds light on the various methods utilized to create floating dosage forms.

Keywords: Floating Tablet; Peptic Ulcer; Gastric retention; Drug delivery system

Enhancement of Bioavailability of Cardiovascular Drugs by Nano-Carrier Delivery System

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Abstract:

A drug's aqueous solubility is defined as the ability to dissolve in a particular solvent, and it is currently a major hurdle in bringing new drug molecules to the market. Cardiovascular diseases (CVDs) have emerged as a major danger to human life and health. Despite the fact that numerous medicines working through various mechanisms of action are available in the market as traditional formulations for the treatment of CVDs, they are still far from adequate due to poor water solubility, limited biological activity, non-targeting, and drug resistance. With the advancement of nanotechnology, nano-drug delivery systems (NDDSs) provide a novel drug delivery mechanism for the treatment of CVDs, displaying significant advantages in tackling the aforementioned difficulties. Nonetheless, several issues with NDDSs, such as cytotoxicity, must be addressed. The kinds and targeting techniques of NDDSs were covered in this study, as well as recent research advancements in the diagnosis and management of CVDs. In order to give new ideas for the enhancement of cardiovascular medications, future prospects for nano-carriers in drug delivery for CVDs include gene therapy. Furthermore, its safety was addressed in the evaluation.

Keywords: Nano-drug Delivery System; Cardiovascular Disease; Targeting Strategy; Application Progress; Safety

Investigating the Hepatoprotective Potential of Flavonolignans: Integrating In Silico Docking, Preadmet Toxicity, and Dynamics

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Abstract:

Flavonolignans, a prominent class of plant-derived polyphenolic compounds, have garnered significant attention for their hepatoprotective properties. Among these, Silymarin, a standardized extract from Silybummarianum (milk thistle), and its primary constituents - Silibinin, Silybin A, Silybin B, Isosilybin A, Isosilybin B, Silychristin, Isosilychristin, Silydianin, and Taxifolin—exhibit notable potential for liver protection. This study explores their hepatoprotective mechanisms using an integrated in silico approach combining molecular docking, PreADMET toxicity assessment, and molecular dynamics simulations. Molecular docking was employed to evaluate the binding affinity of these flavonolignans toward key liver enzymes and receptors implicated in hepatoprotection, including antioxidant and anti-inflammatory targets. PreADMET toxicity profiling was conducted to predict pharmacokinetic parameters and safety profiles, ensuring their suitability as drug candidates. Furthermore, molecular dynamics simulations, particularly root mean square fluctuation (RMSF) analyses, provided insights into the structural flexibility and stability of ligand-protein complexes, elucidating the dynamic behavior of these compounds at the molecular level. The results reveal that all flavonolignans demonstrate high binding affinities and favorable pharmacokinetic profiles, with Silibinin and Silybin A showing particularly strong interactions with hepatoprotective targets. RMSF analyses confirmed the stability of these interactions, emphasizing their therapeutic relevance. Collectively, this study highlights the hepatoprotective potential of flavonolignans and provides a robust computational framework for future drug discovery. These findings pave the way for experimental validation and the development of flavonolignan-based therapies for liver diseases.

Keywords: Hepatoprotective; Flavonolignans; In-silico Docking; Preadmet Toxicity; Dynamics

A Review of Herbal Inhalation Pods

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Abstract:

The development and evaluation of herbal inhalation pods with natural components like mentha ,clove oil, camphor, ajwain oil , eucalyptus oil and thymol to treat allergic rhinitis and nasal congestion are the main topics of this study. Pectin was used as the polymer base in the preparation of the pods, and their weight variation and dissolving time were assessed. The formed pods appear to match the necessary requirements for weight fluctuation, as evidenced by the results, and they dissolve quickly in hot water. All these natural components work in concert to relieve congestion in the nose and symptoms associated with allergies. In order to meet the growing demand for natural medicines with fewer side effects, the study highlights the growing significance of combining medicinal plant elements in contemporary pharmaceutical dosage forms. All things considered, the herbal inhalation pods offer a secure, practical, and efficient remedy for respiratory problems, which is fueling the market's increasing demand for herbal products.

Keywords: Clove Oil; Mentha; Nasal Congestion; Allergies; Ajwain oil; Herbal Products

Ethnopharmacological Approaches for the Treatment of Parkinson's disease

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Abstract:

Parkinson's disease (PD) is the second most common neurodegenerative disease worldwide, affecting a significant number of individuals. This condition manifests through a diverse range of motor and non-motor symptoms, making it a challenging condition to manage effectively. Currently, drug treatments primarily focus on alleviating motor symptoms, but this approach often leads to the emergence of motor complications and debilitating non-motor symptoms as the disease progresses. In this sense, the discovery of new treatments to counterbalance the existing neuronal death process by using natural antioxidant compounds represents a powerful tool. Ethnopharmacology is a useful tool to discover new therapeutic approaches for PD. Finally, the combination of polyphenolic compounds with different animals has become known as a complementary tool to develop natural neuroprotective strategies that could allow PD symptoms and complications to be managed. The popular formula for treating Parkinson's disease, Ling-Guizhi-Wuhui-Banxia-Dahuo decoction, can improve odor sensitivity more effectively than Levodopa. Ethnopharmacological treatments will also require careful validation to ensure their safety and effectiveness for patients. Recognizing the value of traditional medicine and new ethnopharmacological approaches is crucial for developing new drugs and drug delivery systems. By integrating traditional health and therapies, ethnopharmacology can effectively utilize the wealth of information from nature to treat various human diseases.

Keywords: PD Disease; Traditional treatment; Mechanisms

Itraconazole and Terbinafine Proniosomes Formulation and Optimization for Onychomycosis Using a Box-Behnken Design

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Abstract:

The aim of our investigation was to study the combined impact of 3 independent variables on the development of itraconazole (ITR) and Terbinafine HCl proniosomes by using Box-Behnken design (BBD). BBD was implemented with 3 variable factors at 3 levels. The values of the factors and responses were exposed to multiple regressions to derive a second-order polynomial equation used to predict the values of optimized dependent variables (responses). The surfactant concentration, drug concentration and molar ratio (Span 60: cholesterol) were chosen as the independent variables. Fifteen proniosome formulae were prepared using the coacervation phase separation method and estimated for drug entrapment efficiency (DEE), vesicle size (VZ) and % drug released after 8 h. The insignificant terms of the equation that showed the probability value ($P > 0.05$), were excluded from the full-model equation to attain a reduced-model equation to ease expecting the different responses upon changing variables. The effect of the different variables was also shown by the construction of line and contour plots. Two optimized formulae; P1 (0.28, 0.91 and −0.91) for the maximized response of DEE and % drug released without restriction of VZ and P2 (0.5, −1, −1) with a minimum VZ were prepared and evaluated.

Keywords: Itraconazole; Terbinafine; Proniosome; Box-behnken; Onychomycosis

Pharmacognostic and Pharmacological Evalution of Synedrella Nodiflora

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Abstract:

In the presence study anti-inflammatory mechanism of methanol extract of S. nodiflora. and anti-oxidant mechanism of aquous extract of S. nodiflora. with the help of DDPH and CARRAGEENAN method the extract was increased the percentage of inhibitor . The present study evaluates the antioxidant and anti-inflammatory .This study focuses at investigation of the problem of method free radical scavenges effect and carrageenan method in anti-inflammatory. the total assay performed the with the help of extract and absorbance was studied. Phytochemical screening showed the presence of alkaloid, steroids, and tannis in alcoholic and aquous extraction. Natural antioxidants generated from plant material are also becoming more and more well – linked in today"s world. synedrella nodiflora is a asteraceae plant that in indigenous to india. The concentration of the sample extract was increasesd when the compared to the reference of concentration, which was used measure of antioxidant activity of DDPH free radical scavenging method. When compared to ascorbic acid to plant extract successfully scavenges free radicals. The ethanolic extract in used to measure of anti-inflammatory when the comprared of the different dosage form and different hours (1hr, 2hr, 3hr and 24hr) with compared of Diclofenac. It can be concluded from the discussion of the initial section previously of the intital sections previously mentioned and the findings of the research the syndrella nodiflora may be a good source for more investigation to identify a new pharmaceutical for the medical care.

Keyword: Synedrella nodiflora; Anti-inflammatory; Antioxidant; Phytochemical Testing; DDPH; Carrageenan; UV Spectroscopy

Cryotherapy Treatment for Athletes to Recovery from Injuries

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Abstract:

Cryotherapy, which involves using cold to treat an infection or injury, is a widely used practise in modern sports medicine. Although it is a planned approach for treating severe soft tissue wounds, there is a discrepancy between the clinical evaluations and the cryotherapy's logical justification. A variety of methods can be used, including ice packs, ice towels, ice kneads, gel packs, refrigerant gases, and inflatable braces. As part of the recovery programme following severe wounds and in the treatment of recurring wounds, cold is also utilised to shorten the healing time. In the post-employable period following reconstruction treatment, cryotherapy has also been shown to successfully reduce pain. Utilising ice's painkilling and moderating qualities to aid in healing is known as cryotherapy. Cryotherapy intervenes with these beneficial effects by reducing blood flow to the area of injury, down-regulating the production of Prostaglandins that cause provocation and anguish are released, decreasing the conductive ability of sensitive areas. Despite limited research on its ability to provide such beneficial benefits in clinical practise, it is typically used postoperatively in muscular health to reduce pain alleviating requirements and blood loss as well as to increase range of motion. When it comes to the treatment of injuries and the recovery after exercise, cryotherapy actually acts as an intervention. Ice is typically used to treat outer muscle injuries, whereas immersion in cold water or whole-body cryotherapy are used to speed up the healing process after exercise. The main benefit of conventional cryotherapy for humans is lessening pain after injury or sensitivity after exercise.

Keywords: Cryotherapy; Wounds healing; Infection or injury; Sports medicine

Nanoparticl-Based Drug Delivery System for Enhanced Bioavailability of Poorly Soluble Drugs

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Abstract:

The poor solubility of many pharmacologically active compounds presents a significant challenge in the development of effective drug formulations, particularly for oral administration. These drugs often exhibit limited bioavailability due to their low dissolution rates, which impede their absorption in the gastrointestinal tract. Nanoparticle-based drug delivery systems (NDDS) have emerged as a promising solution to overcome these limitations, enhancing the bioavailability of poorly soluble drugs. By reducing the particle size to the nanoscale, these systems increase the surface area available for dissolution, thus facilitating faster drug absorption. Furthermore, nanoparticles can be engineered to improve drug stability, provide controlled release, and target specific tissues, offering a significant advantage over conventional formulations. This review explores various types of nanoparticle-based systems, such as liposomes, polymeric nanoparticles, solid lipid nanoparticles (SLNs), and nanocrystals, and their applications in enhancing the bioavailability of hydrophobic drugs. Key factors influencing the success of these systems, including particle size, surface charge, and drug encapsulation efficiency, are discussed. Additionally, challenges related to scaling up production, toxicity, and regulatory hurdles are examined. Overall, NDDS offer a novel and versatile approach to improving the clinical outcomes of poorly soluble drugs, paving the way for more effective and patient-friendly therapeutic options.

Keywords: Particle size; Surface charge; Drug encapsulation efficiency

Early Clinical Exposure: Boon or Bane Perception of Medical Undergraduate Students: A Cross-Sectional Study

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Abstract:

Traditional curriculum of MBBS consisted of the three: phase framework of preclinical, Para clinical and clinical plus internship. It did not concentrate on the clinical aspect; it provided only one-way communication with little active participation. As a result of this when the students were promoted to clinical year, they lacked clinical experience. Taking into account, Early Clinical Exposure (ECE) was introduced giving students' opportunity to harness their clinical skills

Objective: To study the perception of medical students regarding ECE as a part of medical curriculum

Methodology: Cross-sectional study was conducted among 1st and 2nd year medical undergraduates of a medical college in Central India. Pretested Questionnaire was used to collect the data which consisted of 4 sections: Demographic profile, Knowledge, Attitude and Perception. The comparison of scores between batches was done with Test and Wilcoxon sign rank test.

Result: The majority of UG students (79%) were aware of early clinical exposure. Around 51.15% were satisfied with ECE. There was no significant difference in knowledge, attitude and perception of ECE between gender or batch of students.

Conclusion: ECE is beneficial for the students as it provides learning skills with practical knowledge with live visualization.

Keywords: Early Clinical Exposure; Boon Perception; Cross-Sectional Study

Unlocking the Nutritional and Therapeutic Potential of Sea Buckthorn

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Abstract:

Objective: The study aims to explore the nutritional, medicinal, and therapeutic potential of sea buckthorn (*Hippophae rhamnoides*), focusing on its application in nutraceuticals, cosmeceuticals, and feed. It also highlights the plant's bioactive compounds and their role in promoting health and treating various diseases.

Background: Sea buckthorn, an ancient plant known as "Sanjivani Buti" in Ayurveda, has recently garnered global attention for its unique nutritional composition. Rich in vitamins (A, C, D, E, F, K, P, and B-complex), omega-7 fatty acids, amino acids, and bioactive compounds, it exhibits diverse biological activities. These include antioxidant, immunomodulatory, anti-carcinogenic, hepatoprotective, cardioprotective, anti-atherogenic, and radioprotective properties. While traditionally consumed in its natural form, it has been widely adopted in nutraceutical and cosmeceutical formulations for its health benefits.

Methodology: A comprehensive review of existing literature was conducted to evaluate the nutritional composition, bioactive compounds, and therapeutic effects of sea buckthorn. Data from experimental studies, clinical trials, and product analyses were synthesized to assess its applications as food, medicine, and skincare products.

Results: Sea buckthorn demonstrates exceptional potential in human and animal nutrition due to its rich nutrient profile. It has shown effectiveness in managing cardiovascular disorders, gastrointestinal ulcers, and cancer. Its inclusion in cosmeceutical products has been proven beneficial for skin health, addressing conditions such as dryness, blackheads, and aging. The plant's bioactive compounds play a significant role in preventive and curative healthcare, enhancing its value as a nutraceutical and therapeutic agent.

Conclusion: Sea buckthorn is a promising multifunctional plant with applications in nutraceuticals, cosmeceuticals, and medicine. Its unique bioactive profile and therapeutic properties make it a valuable resource for addressing nutritional deficiencies and treating various diseases. Further research and product development can maximize its potential in promoting health and well-being.

Keywords: Nutritional value; Therapeutic action; Sea Buckthorn

Revolutionizing Health care: Artificial Intelligence in Diagnosis and Treatment

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Abstract:

By improving patient outcomes, simplifying clinical operations, and altering paradigms for diagnosis and treatment, artificial intelligence (AI) is completely changing the healthcare industry. AI has enormous potential uses ranging from personalized medication to medical picture analysis. . Additionally, early disease detection made possible by AI-assisted diagnostics permits prompt interventions. AI optimizes therapy and lowers side effects by customizing treatment plans based on each patient's genetic profile and medical history. By identifying high-risk patients, predictive analytics helps to improve population health management and avoid readmissions to hospitals. Clinical decision support systems powered by AI improve evidence-based medicine by encouraging best practices and reducing mistakes. AI integration in healthcare has produced impressive achievements, including better patient outcomes, increased productivity, and improved patient involvement. AI frees up clinicians to concentrate on patient care by automating administrative work. Future directions include creating explainable AI models to increase patient and clinician trust and merging AI with wearable technology and Internet of Things sensors for real-time monitoring. Delivering high-quality, patient-centered care will depend more and more on the integration of AI technology into healthcare as it develops. It will be crucial to address ethical issues related to AI-driven healthcare. Healthcare professionals may influence the future of healthcare by utilizing AI's promise to transform diagnosis, treatment, and patient outcomes.

Keywords: Artificial Intelligence; Healthcare; Diagnosis; Treatment; Personalized Medicine; Predictive Analytics

An Insight into Recent Trends in Herbal Medicine and Its Regulatory Prospectives

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Abstract:

Indigenous people employ ethnomedicines, a traditional medicinal system based on plants, to treat their basic medical conditions. Because of their varied phytoconstituents, medicinal plants present a wealth of prospects for the development of new drugs to treat a variety of chronic illnesses. The overuse of ethnomedicinal plants, improper post-harvest processing, and biopiracy of traditional knowledge are currently some of the main barriers to the widespread adoption of ethnomedicinal formulations, despite the fact that they are of great interest to medicos worldwide. It has been shown that improving therapeutic efficacy to provide health security requires the ethnomedicinal system to incorporate reverse pharmacology, polypharmacology, and nanotechnological approaches. The significance of Indian ethnomedicines is discussed in this article, along with a summary of some new medications made from these traditions, their difficulties, and their prospects for the future. Bioprospection of ethnomedicinal plants is given particular attention.

Keywords: Biopiracy; Ethnomedicines; Nanomedicine; Phytoconstituents

Immunotherapy for Breast Cancer

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Abstract:

One of the main causes of cancer-related fatalities globally is breast cancer. Given the shortcomings of conventional therapies, immunotherapy has become a viable strategy. Immunotherapy has become a viable treatment option for breast cancer, especially when traditional methods like radiation, chemotherapy, and surgery are ineffective. This method offers a new treatment option for breast cancer that is both early-stage and metastatic by using the body's immune system to target and eliminate cancer cells. Adoptive T-cell treatments, monoclonal antibodies, cancer vaccines, and immune checkpoint inhibitors are important methods. Immune checkpoint drugs, including CTLA-4 and PD-1/PD-L1 inhibitors, have shown promise in treating triple-negative breast cancer (TNBC), a subtype that frequently lacks specific therapies. Moreover, immune-mediated effects are also seen with HER2-targeted treatments such as trastuzumab, despite their primary usage in HER2-positive breast cancer. Even with encouraging outcomes, there are still issues, including as tumor heterogeneity, immune-related side effects, and resistance development. ongoing research studies and To improve therapeutic results, researchers are combining immunotherapies with conventional medications. In the fight against this diverse and complicated disease, this abstract outlines the current state of immunotherapy for breast cancer, emphasizing its promise, difficulties, and future possibilities.

Keywords: Immunotherapy; Chemotherapy; Immune checkpoint inhibitors; TNBC; HER2- targeted

A Review on *Moringa Oleifera* Extract for the Treatment of Diabetic Wound Healing

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Abstract:

Diabetic is a serious complication of diabetes, which affects a significant percentage (15%) of diabetics and up to 15%–24% of those affected may require amputation. The present study was conducted to evaluate antibacterial and in vivo wound healing activities of an aqueous fraction of Moringa oleifera on a diabetic condition. Treatment of wounds is essential as the wound can also be lethal at some point in time if not healed properly. *Moringa oleifera* is one of the popular plants that have shown significant health benefits. This includes effective control of blood glucose or insulin levels, enhancement of insulin tissue sensitivity, improvement of blood lipid profiles, and protecting against organ damage under sustained conditions of hyperglycaemia. Interestingly, as major complications implicated in the progression of diabetes, including organ damage, *Moringa oleifera* leaf and seed extracts could efficiently block the detrimental effects of oxidative stress and inflammation in these preclinical models. these extracts (especially leaf extracts) showed enhanced effects in strengthening intracellular antioxidant defences like catalase, superoxide dismutase, and glutathione to lower lipid peroxidation products and reduce prominent pro-inflammatory markers such as tumour necrosis factor-α, interleukin (1L)-β, IL-6, monocyte chemoattractant protein-1 and nitric oxide synthase Although limited clinical studies have been conducted on the antidiabetic properties of *Moringa oleifera*, current findings provide an important platform for future research directed at developing this plant as a functional food to manage diabetic complications.

Keywords: Diabetes complications; Oxidative stress; Inflammation; Moringa (*Moringa oleifera*); Therapeutic targets

Evaluation of Calcium Sennoside as a Potential Anti-hyperglycemic Agent: An In-silico Study

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Abstract:

Diabetes mellitus, a global health challenge, demands innovative therapeutic agents with minimal side effects and enhanced efficacy. This study explores the antihyperglycemic potential of calcium sennoside, a bioactive compound traditionally used for its laxative effects, through advanced silicon-based computational techniques. Molecular docking and dynamic simulations were employed to assess its interaction with pivotal enzymes implicated in glucose regulation, such as α-glucosidase and dipeptidyl peptidase-4 (DPP-4). The increasing prevalence of diabetes has necessitated the exploration of novel therapeutic agents with enhanced efficacy and reduced side effects. This study investigates the potential antihyperglycemic properties of calcium sennoside through a silicon-based computational approach. Molecular docking and simulation studies revealed a significant interaction between calcium sennoside and the active sites of these enzymes, suggesting its inhibitory potential. Furthermore, ADMET (Absorption, Distribution, Metabolism, Excretion, and Toxicity) profiling highlighted its favorable pharmacokinetic properties and low toxicity risk. These findings indicate that calcium sennoside may serve as a promising lead compound for the development of novel antihyperglycemic agents. Further in vitro and in vivo studies are required to validate these results and elucidate the underlying mechanisms of action.The analysis demonstrated strong binding affinities of calcium sennoside to these enzymes, suggesting its potential to inhibit their activity and regulate blood glucose levels. ADMET profiling further highlighted its promising pharmacokinetic characteristics and low toxicity. These results indicate that calcium sennoside could serve as a lead compound for developing novel antihyperglycemic agents. Further experimental studies are recommended to validate its efficacy and therapeutic potential in diabetes management.

Keywords: Calcium Sennoside; Anti-hyperglycemic Agent; In-silico Study

Herbal Drug Delivery Technologies to Enhance Efficacy and Bioavailability

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Abstract:

Herbal drug delivery systems have gained significant attention in recent years due to their potential to enhance the efficacy and bioavailability of phytochemicals. Conventional herbal formulations often suffer from limitations such as poor solubility, low bioavailability and inconsistent quality. Modern delivery systems including nanoparticles, liposomes, microemulsions and nanofibers have been explored to overcome these challenges. These advanced systems enable targeted delivery, controlled release and improved solubility, resulting in enhanced therapeutic outcomes. This study highlights the recent advancements in herbal drug delivery systems, emphasizing their design, development and applications. These challenges and future directions in this field are also discussed, underscoring the need for standardized quality control, toxicity assessments and regulatory harmonization.

Keywords: Herbal drugs; Drug delivery system; Nanotechnology; Phytochemicals; Bioavailability; Efficacy

Itraconazole and Terbinafine Proniosomes Formulation and Optimization for Onychomycosis Using a Box-Behnken Design

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Abstract:

The aim of our investigation was to study the combined impact of 3 independent variables on the development of itraconazole (ITR) and Terbinafine HCl proniosomes by using Box-Behnken design (BBD). BBD was implemented with 3 variable factors at 3 levels. The values of the factors and responses were exposed to multiple regressions to derive a second-order polynomial equation used to predict the values of optimized dependent variables (responses). The surfactant concentration, drug concentration and molar ratio (Span 60: cholesterol) were chosen as the independent variables. Fifteen proniosome formulae were prepared using the coacervation phase separation method and estimated for drug entrapment efficiency (DEE), vesicle size (VZ) and % drug released after 8 h. The insignificant terms of the equation that showed the probability value ($P > 0.05$), were excluded from the full-model equation to attain a reduced-model equation to ease expecting the different responses upon changing variables. The effect of the different variables was also shown by the construction of line and contour plots. Two optimized formulae; P1 (0.28, 0.91 and −0.91) for the maximized response of DEE and % drug released without restriction of VZ and P2 (0.5, −1, −1) with a minimum VZ were prepared and evaluated.

Keywords: Itraconazole; Terbinafine; Proniosome; Box-behnken; Onychomycosis

Development of Dissolution Methods

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Abstract:

Dissolution testing is a critical analytical technique used in pharmaceutical development to assess the release rate of active pharmaceutical ingredients (APIs) from dosage forms. The development of a robust dissolution method is essential for ensuring product quality, consistency, and performance. This process involves selecting appropriate dissolution media, apparatus, and test conditions to mimic physiological environments and meet regulatory requirements. Key factors considered include solubility, pH, agitation, and the nature of the dosage form (e.g., tablets, capsules, or modified-release systems). Advancements in dissolution technology have introduced tools such as biorelevant media and apparatus modifications to better simulate in vivo conditions, improving the prediction of drug behavior in humans. Regulatory guidelines by agencies such as the FDA, EMA, and ICH provide a framework for method validation, requiring precision, accuracy, and reproducibility. Dissolution testing plays a pivotal role in quality control, bioequivalence studies, and formulation optimization. Emerging trends include the development of in situ dissolution techniques, automation, and the integration of dissolution with pharmacokinetic modeling to establish in vitro-in vivo correlations (IVIVC). These advancements aim to enhance the predictability of clinical performance and streamline the drug development process. A well-developed dissolution method ensures the safety, efficacy, and therapeutic consistency of pharmaceutical products.

Keywords: Dissolution; Method development; In-vitro

Recent Advances in Nanoparticulate Controlled Release Systems in Ophthalmic Drug Delivery

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Abstract:

Eye diseases such as retinal disease, macular degeneration, diabetic neuropathy, and glaucoma are the leading causes of blindness worldwide today. Various biological barriers hamper the delivery of therapeutic agents in intra-cellular fluid. The ocular treatment application in a nanoparticulate controlled release system is a widely used preparation in eye treatment due to the unique properties of nano-materials such as higher bioavailability and fewer side effects. Nano treatments have greater advancement in loading & carrying ocular drugs in eye disease. At present, a wide variety of different types of nano-controlled release systems have been used to enhance the efficiency of ocular drugs including nano micelles, nanoparticles, nanosuspensions, liposomes and dendrimers. the current challenges encountered in ocular drug delivery for each administration route are provided, followed by a critical appraisal of various nanoparticulate drug delivery systems for retinal diseases, including their formulation designs, therapeutic merits, limitations, and future direction. It is supposed that greater consideration of the nano-bio contact in the eyes will lead to the development of more advanced drug delivery systems for eye diseases.

Keywords: Ophthalmic drug delivery; Nanoparticulate; Ocular barrier; Eye disease; Drug efficiency

Formulation, Development and Evaluation of Fast Dissolving Oral Film of Yohimbine Hydrochloride Drug and Validate By HPLC Method

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Abstract:

The present study was to formulate and evaluate oral fast dissolving films to overcome drawbacks of conventional dosage forms such as degradation by first-pass hepatic metabolism, decreased bioavailability and patient non-compliance. In the present work the taste masked Yohimbine HCL was formulated in the form of oral fast dissolving film. The main objective behind this formulation was to formulate taste masked oral fast dissolving film of Yohimbine HCL for maintaining patient compliance regarding adults to geriatrics. The oral fast dissolving films were prepared by solvent casting method using HPMC K15 as a film forming agent, PEG-400 as a plasticizer, citric acid as a salivary stimulating agent, mannitol as a sweetener and Aspartame flavour as a taste masking agent Glycerin as a hemectant. The 32 factorial designs was used to study the effect of independent variables and concentration of dependent variables such as in vitro drug release, folding endurance and disintegration time. Optimized formulation was evaluated for physical appearance, thickness, moisture content, weight uniformity, surface pH measurement and stability study. RP-HPLC is simple, fast, precise, sensitive, and reproducible (liquid chromatography) method was developed and validated for the analysis of yohimbine hydrochloride drug formulation. Taste masked complex of Yohimbine hydrochloride could be successfully formulated into oral fast dissolving film and validate by HPLC Method.

Keywords: Yohimbine Hydrochloride; Solvent Casting Method; Oral Film; Erectile dysfunction; HPLC

Molecular Docking of Various Chalcone Analogus for their Anti-hyperlipidemic Activity Using Molegro Virtual Docker and Schordenger: A Comprative Study

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Abstract:

Hyper-lipidemia is a condition in which there is high level of fat particles (lipid) in the blood. antihyperlipidemic agents aim to lower the levels of low density lipoprotein cholesterol some reduce triglyceride level and some helps raise the high density lipoprotein cholesterol. In this present work, we studied the different substituted chalconeanalogus. In this work, we evaluate the docking studies of substituted chalconeanalogus as the Anti- hyperlipidemic agent by the using molegro virtual docker software. Our work revealed that out of 650 compounds more than 10 compounds showed significant binding affinities with five types of proteins. The compounds 444, 419, 380, 366 and 234 are showed an excellent binding affinity with five types of protein receptor 1EZF, 1OSH, 2ZNN, 2ZNQ and 3LD6 respectively. From docking studies researchers can synthesize another potent compound as an Anti-hyperlipidemic agent.

Keywords: 1EZF; 1OSH; 2ZNN; 2ZNQ; 3LD6; Molegro virtual docker

Metallic Copper Nanoparticles' Synthesis and Its Antimicrobial Applications

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Abstract:

Nanoparticles are the most distinctive and significant tools in the broad field of nanotechnology. With several advantages, metallic nanoparticles are more preferable, like highly monodispersed nanoparticles of various sizes, geometries and chemical composition, as they are comparatively smaller in size. Now a day metallic nanoparticles are bio synthesized by using various plant resources which is called Green technology as they don't utilize any harmful protocols. In the past few decades, Copper nanoparticles have attained a special focus attributed to their biological applications, excellent biocompatibility, economic and low toxicity. Copper nanoparticles also have size and shape dependant optical, electrical and magnetic properties. The green synthesis using biological molecules obtained from plant sources are quite beneficial over other physical and chemical methods that have been used for copper nanoparticle synthesis and stabilization. This study therefore is focused on the plant based synthesis of metallic Copper nanoparticles and evaluation of their antimicrobial properties.

Keywords: Green technology; Metallic copper nanoparticles; Antimicrobial

Assessment of the anti-seizure efficacy of phytoactives for the management of epilepsy

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Abstract

Epilepsy is a chronic neurological disorder marked by recurring seizures, impacting millions globally. Seizures arise from irregular electrical activity in the brain, resulting in diverse physical and cognitive symptoms. Although conventional anti-seizure drugs have been crucial in epilepsy management for decades, a considerable number of patients persist in experiencing seizures despite therapy. Conventional anti-seizure drugs may be linked to negative consequences, such as cognitive deficits, behavioural problems, and systemic toxicity. In the last few years, many natural substances have been isolated from herbs and assessed for their anti-epileptic efficacy using various pharmacological screening methods. These studies revealed that phytoactives such as naringenin, silymarin, hesperidin, apigenin, quercetin, and morin have significantly reduced seizure in experimental animals. Findings suggested that phyto-actives could be more effective alternatives to conventional epilepsy therapies.

Keywords: Epilepsy, Alkaloid, phytochemical.

Ameliorative effects of theophylline in combination with curcumin on cyclophosphamide-induced oxidative stress and genotoxicity in rats

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Abstract

Cyclophosphamide-induced toxicity including oxidative stress and genotoxicity are the major concerns of cancer chemotherapy therapy. Additional antioxidant supplementation may prevent such risk. Therefore, in the present study, we assessed the ameliorative effects of theophylline in combination with curcumin on cyclophosphamide-induced oxidative stress and genotoxicity in rats. Wistar albino rats (150-200g) were randomly selected and treated with either distilled water (10 ml/kg), theophylline (20, 50, or 75 mg/kg/day, i.p.), or theophylline + curcumin (25 + 100, 50 + 100, or 75 + 100 mg/kg/day, i.p.) in their respective groups for seven days. After one hour of the last dosing animals received cyclophosphamide (10 ml/kg, i.p.) for induction of toxicity. Genotoxicity in animals was assessed by determination of micronucleated bone marrow cells, oxidative stress was assessed by determination of enzymatic antioxidant activity (catalase and superoxide dismutase) and level of lipoperoxidation (malondialdehyde), and liver toxicity was assessed by measuring the serum alanine aminotransferase and aspartate aminotransferase. The results showed that theophylline and its combination with curcumin had significant ($P < 0.05$) beneficial effects as compared to the cyclophosphamide control group. They considerably reduced the micronucleated bone marrow cells and restored the oxidative stress and serum liver biomarkers. Additionally, results indicated the potential beneficial effects in the combination group, especially in theophylline + curcumin (75+100 mg/kg) group to manage the cyclophosphamide-induced toxicity. These results suggest that the combination of curcumin and theophylline enhances the protective effects.

Keywords: Theophylline; Curcumin; Cyclophosphamide; Oxidative stress

Antihyperlipidemic Activity of Leaf Extracts of *Raphanus Sativus Var. Longipinnatus* in High Fat Diet Induced Rats

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Abstract

In this work, we assessed the antihyperlipidemic activity of the aqueous extract from the leaves of R. sativus var. longipinnatus in rats. This study involved the continuous administration of a high-fat diet to Wistar albino rats, resulting in the development of hyperlipidemia. Throughout this period, there was an observed increase in body weight and alterations in the lipid serum profile. Specifically, there was an elevation in total cholesterol (185±0.96), triglyceride (281±1.2), low-density lipoprotein (123±2.0), and very low-density lipoprotein (57±1.4), while the level of high-density lipoprotein decreased. The benchmark medicine utilized as a reference was Atorvastatin at a dosage of 10mg/kg. Administration of a 300 mg/kg dose of leaf extract to experimental rats for a duration of 14 days led to notable alterations in their body weight. The levels of total cholesterol, triglyceride, low density lipoprotein, and very low-density lipoprotein were significantly increased ($P < 0.001$) by a dosage of 300 mg/kg. Additionally, the level of high-density lipoprotein was significantly increased ($P < 0.001$) by a dosage of 200 mg/kg. A histological examination of the liver reveals the alterations in hepatic cells that occur throughout the course of therapy. The leaves extract also shown a significant reduction in the levels of SGOT, SGPT, and indicators of oxidative stress. Hence, the comprehensive investigation demonstrated that administering the extract from leaves resulted in enhanced body weight and better blood lipid profile.

Keywords: - Raphanus sativus, Extract, Hyperlipidemia, Atorvastatin, Lipoprotein.

A review on the impact of social stigma on neuropsychiatric disorder patients and its overcoming

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Abstract

Stigma as any characteristic or attribute by which a person was devalued, tainted, or considered shameful or discredited. Stigma is strongly influenced by cultural and contextual value systems that differ over time and across contexts. The main elements of stigma such as labeling, stereotyping, social isolation, prejudice, rejection, ignorance, status loss, low self-esteem, low self-efficacy, marginalization, and discrimination. Mental health-related stigma are self-stigma- refers to negative attitudes of an individual to his/her own mental illness and is also referred to as internalized stigma, public stigmarefers to negative attitudes towards those with mental illness by held by the general public, professional stigma-refers professionals hold stigmatizing attitudes toward their patients, which are often based on fear or misunderstandings of the causes and symptoms of mental illness, and institutional stigma-refers to an organization's policies or culture of negative attitudes and beliefs toward stigmatized individuals. Stigma stems from several sources (personal, social, or family) that work synergistically and can cause several complications throughout life. Addressing stigma requires comprehensive and inclusive mental health policies and legislations, sustainable and culturally-adapted awareness programs such as 'Time to Change' in the UK, 'Opening Minds' in Canada and 'Beyond Blue' in Australia that have demonstrated significant positive change. WHO's Mental Health Gap Action Programme (mhGAP) uses evidence-based technical guidance, tools and training packages which focuses on a prioritized set of conditions, directing capacity building towards nonspecialized health-care providers in an integrated approach that promotes mental health at all levels of care. The WHO mhGAP Intervention Guide 2.0 is part of this Programme, and provides guidance for doctors, nurses, and other health workers in non-specialist health settings on assessment and management of mental disorders Future directions efforts must be made to reduce stigma towards mental health to increase rates of presentation for commonly occurring mental health diseases. Antistigma interventions are effective in changing employees' knowledge, attitudes, and behavior towards people with mental health problems. In general with public efforts, tailored anti-stigma workplace interventions may be more promising as they could be longer-term, more intensive and made mandatory.

Title: Development and characterization of Nanostructured Lipid Carrier for the Effective Management of Dermatophytosis

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Abstract

Introduction:
Dermatophytosis, a fungal infection of the skin, requires effective topical drug delivery systems to ensure localized action and improved therapeutic outcomes. Nanostructured lipid carriers (NLCs) have emerged as promising vehicles for drug delivery due to their ability to enhance drug solubility, stability, and penetration into the skin. This study focuses on the formulation and optimization of NLCs for the treatment of dermatophytosis.

Methodology:
The NLCs were prepared via a high-shear homogenization technique, characterized for particle size, polydispersity index, zeta potential., A Box-Behnken design was employed to optimize the NLC formulation with three independent variables: lipid concentration, surfactant concentration, and sonication time. The responses, including particle size, and entrapment efficiency were analysed using statistical modelling.

Results and Conclusion:

The optimized NLC formulation demonstrated a particle size of 116 nm, an entrapment efficiency of 84.4%, The optimized NLC formulation offers a promising approach for improving the treatment of dermatophytosis by ensuring effective drug delivery, prolonged therapeutic action, and reduced side effects. Further in vitro and in vivo studies are warranted to validate its clinical efficacy.

Artimisia Pallens for the Management of Cataract

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Artemisia pallens Walls. ex DC, commonly known as Davana, is an aromatic herb found abundantly in humid habitats in the plains all over India. *Artemisia pallens* is found in Nilgiri hills, and has been used by the tribal people for various ailments. It has been widely used in Indian folk medicine for the treatment of diabetes mellitus. This plant is accredited with antihelmintic, antipyretic and tonic properties and also considered as a good fodder. The oil possesses antispasmodic, antibacterial, antifungal and stimulant properties. The plant has been screened for the antimicrobial, antidiabetic, antinociceptive and wound healing activity. The current study deals with the Phytochemical and Pharmacological evaluation of *Artemisia pallens for the management of Cataract.*

Keyword- *Artemisia pallens, Cataract*, Corticosteroids, SOD, MDA

Advances in Fundamental and Applied Research

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Abstract

The field of pharmaceutical sciences has witnessed significant advancements in both fundamental and applied research, driving progress in drug discovery, development, and therapeutic applications. Fundamental research in areas such as molecular biology, pharmacology, and biochemistry has provided critical insights into disease mechanisms, cellular pathways, and drug-receptor interactions. These discoveries have laid the foundation for applied research focused on developing novel therapeutics and improving drug delivery systems. Despite these achievements, challenges such as regulatory barriers, high development costs, and the need for equitable access to medicines persist. Collaborative efforts among academia, industry, and government are essential to overcome these hurdles and ensure the translation of research into impactful healthcare solutions. The synergy between fundamental and applied research continues to shape the future of pharmaceutical sciences, promising innovative therapies and improved patient outcomes.

Keywords: Pharmaceutical sciences, drug discovery, personalized medicine, pharmacogenomics, nanotechnology, biopharmaceuticals, targeted drug delivery, artificial intelligence, sustainable pharmaceuticals, green chemistry.

Answer the bell protein – An approaches for Cell to cell junction opening

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Abstract-

Delivering therapeutic drugs to specific target sites within the body remains a significant challenge in Pharmaceutical drug development and delivery of active ingredient. The primary barriers in successful drug delivery are the cell to cell junctions that exist between cells, which limit the diffusion and penetration of drugs. These cell to cell junctions play a very important role in maintaining the integrity of outer epithelial cell and inner endothelial barriers, such as the blood-brain barrier (BBB), and preventing the uncontrolled pass of drugs and other molecules. To overcome this barrier, researchers have explored various strategies for opening cell to cell junctions and enhancing drug permeability. One promising approach is the use of liposomal drug delivery systems, which can help increase the bioavailability and targeting of therapeutic agents. Liposomes are lipid-based nanoparticles that can encapsulate both water loving hydrophilic and oil loving hydrophobic drugs and protecting them from degradation and facilitating their delivery to target sites. Additionally, the surface of liposomes can be modified with targeting ligands or cell-penetrating peptides to further enhance their ability to cross cell to cell junctions and reach their intended targets.

Keywords: Absorption enhancer, Adherens junction, Blood-brain barrier, Paracellular transport, Permeability enhancer, Cell to cell junction, Cell to cell junction modulator.

The Hidden Biodiversity: Uncovering the Aquatic Insect Communities of Bhelwa and Nagar Nigam during Monsoon Season

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Abstract:

Among the many ecological characteristics of water bodies, diversity of aquatic insects during the monsoon season in ponds of Bhilai, Durg, Chhattisgarh, India has its ecological significance. Here, we present an overview of studies carried on this topic and analyses were focused on two ponds: Bhelwa Pond, and Nagar Nigam Pond, Aquatic insects provide essential functions in freshwater ecosystems. There has been scant attention paid to diversity and abundance of aquatic insects of ponds during monsoon season in this area. To address this knowledge gap, field surveys were conducted at Bhelwa Pond and Nagar Nigam Pond during the monsoon season over a period of three months. Different statistical approaches were used to analyze the biodiversity and abundance of aquatic insects in the systems studied. Species richness was assessed with the Shannon-Wiener diversity index, while Simpson's index was employed to estimate species evenness. Both ponds yielded insects in great diversity during monsoon season, according to results indicated that Nagar Nigam Pond hosted 52 species, while Bhelwa Pond had 48 species, representing a total of 18 different orders, including Odonata, Orthoptera, Coleoptera, Mantodea, Hemiptera, Lepidoptera, Testudines, Squamata, Anura, Decapoda, Architaenioglossa, Littorinimorpha, Anseriformes, Cypriniformes, Cichliformes, Siluriformes, Anabantiformes, and Cyprinodontiformes. Community composition analysis using NMDS of community composition showed that difference in assemblages between ponds (Bhelwa Pond and Nagar Nigam Pond) is high which may indicate that different environmental factors shape insect assemblages in each pond. The idea presented here does not mean that extrapolated patterns based on the winter months are not useful for other periods, but suggests separate broader studies of seasonal changes and anthropogenic impacts on insect communities would provide a more complete overview to inform management strategies in sustainable conservation efforts.

Keywords: Aquatic Insects, Biodiversity, Monsoon Season, Freshwater Ecosystems, Conservation Efforts.

The Hidden World of Insects

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Abstract:

Insects are most diverse, successful and dominant taxon of the animal kingdom. They are found in almost every habitat across the globe. It is due to their diverse body size, habit, fecundity, different modes of respiration, food diversity etc. Because of these diverse characteristics, they became an important component of our ecosystem. They have significant influence on agriculture, human health and natural resources. This was the main reason for analysing the status of insects. But due to some reasons,the survival of insects are in danger,the main one being human interference with nature.There are lot of reasons and causes of insect decline. The main causes of insect decline is attributed to habitat destruction, land use changes, deforestation, intensive agriculture, urbanization, pollution, climate change, introduction of invasive insect species, application of pesticidesetc.

Insects play a very vital role in divergent ecosystems and have gained great economic and medical importance as pollinators, pests, predators, parasitoids, decomposers and vectors. Alternative steps for insects conservation should be employed to replace the toxic pesticides and implementation of integrated pest management (IPM) should be put forward to reduce the overuse of synthetic pesticides and fertilizers, which have a great impact on beneficial insects as well as birds, aquatic organisms, and also on human health. The present study aims to create awareness among the researchers and general public by providing a brief review of insect importance, decline and conservation strategies.

Key Words: Insects, dominant, survival, conservation etc.

Entrepreneurship Opportunity For Women's Through New Varieties of Mushroom Cultivation in Chhattisgarh

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Abstract:

Aim: Mushrooms are globally recognized as a food ingredient and can be cultivated at a low cost, making them easily available. This presents an opportunity for women to engage in entrepreneurship through mushroom cultivation. In the villages of Chhattisgarh, women are often unaware of the new varieties of mushroom cultivation and only depend on locally grown mushrooms.
Background: Women's constitute almost half of the total population of the world, and out of this, two-thirds of world adult illiterates are women's. Entrepreneurship development and income-generating activities are a possible solution for empowering women. In the present era, new varieties of mushroom cultivation are a profitable enterprise, as the mushroom productivity per unit is several times higher than of any other crop. In Chhattisgarh, India, mushroom cultivation addresses agriculture resource, economy, employment generation, sustainability,malnourishment, medicine, and nutrition. Cultivation of mushrooms involves various stages such as substrate preparation, spawning, incubation, fruiting, and harvesting. The entire process takes 25–30 days to produce a good and healthy yield. This practice can increase small-scale farmer's revenue to a high level. Mushrooms are fleshy, spore-bearing fruiting bodies of fungi and are members of the Agaricaceae family. The new edible mushrooms that can be grown in the Chhattisgarh region are *Pleurotus spp.* (oyster mushroom), *Agaricus bisporus (*button mushroom), *Volvariella volvacea* (paddy straw mushroom), *Calocybe indica* (milky mushroom), etc. They have high proteins, fiber, carbs, fatty acids, vitamins, etc. They can be an important ingredient in food and, in turn, can reduce the risk of various lifestyle disorders like diabetes, obesity, cardiovascular disease, etc.
Study: Research was conducted on simple, easy techniques for mushroom cultivation, and visits were made to nearby villages in Chhattisgarh, where women's collect locally grown mushrooms from the forest during the monsoon season, relying on this resource for both their consumption and for sale.
Conclusion: Novel mushrooms such as oyster, button, paddy straw, and milky mushrooms can be cultivated using innovative techniques in Chhattisgarh. This approach not only offers self-employment opportunities but also generates income and enhances the socio-economic status, thereby empowering women in the region.

Keywords: Empowerment,entrepreneurship, malnourishment, *Agaricaceae*,nutraceuticals

Microscopic Analysis And FESEM-EDAX Profiling Of *Cordia Macleodii* (T. Hook) Leaf: A Study Of Structural And Elementalcomposition

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Abstract:

Cordia macleodii (T. Hook) is an endangered medicinal plant known for its pharmacological benefits and resilience in diverse environments. Understanding its anatomical and elemental features is crucial for both conservation and therapeutic applications. This study aims to investigate the anatomical and elemental characteristics of *Cordia macleodii* leaves and stems to contribute to ecological preservation efforts and the development of plant-based therapies.

Leaf and stem samples were analyzed using light microscopy and Field Emission Scanning Electron Microscopy (FESEM) to examine microstructural characteristics such as trichomes, vascular tissues, and cell wall patterns. Energy Dispersive X-ray Analysis (EDAX) was conducted to determine the elemental composition, focusing on essential minerals and trace elements.

Microstructural analysis revealed specific features in trichomes, vascular structures, and cell walls that enhance the plant's resilience and medicinal potential. EDAX results indicated the presence of critical minerals and trace elements, supporting the plant's pharmacological efficacy and environmental adaptability. The integration of anatomical and elemental data deepens our understanding of *C. macleodii*'s functional morphology, offering insights valuable for ecological conservation and therapeutic research. This study highlights the importance of preserving *Cordia macleodii* for its environmental and pharmacological contributions.

Keywords: *Cordia macleodii*, microstructure, elemental analysis, FESEM, conservation.

Therapeutic Applications of *Cuscuta reflexa* Roxb. : A Comprehensive Review of Pharmacological Studies and Research Gaps

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Abstract:

Cuscuta reflexa Roxb., commonly known as dodder, is a golden yellow leafless perennial and parasitic herb of the family Convolvulaceae. It has been used as an important constituent of various medical compositions in ayurvedic, Unani and folk medicines in the Indian subcontinent including Bangladesh, China, Thailand for treating ailments such as liver disorders, jaundice, inflammation, and diabetes. Recent pharmacological studies have explored its bioactive compounds, including flavonoids, alkaloids, and phenolics, which exhibit a range of therapeutic activities such as anti-inflammatory, antimicrobial, antioxidant, and hepatoprotective effects. However, there exists a gap in systematic and comprehensive evaluations of its therapeutic potential and the need for more robust experimental and clinical studies to confirm these traditional uses. This review aims to critically assess existing pharmacological studies on *Cuscuta reflexa*, analyze the efficacy and mechanisms underlying its therapeutic properties, and identify research gaps for future exploration. A systematic methodology was adopted, including a literature survey of articles from reputable databases such as PubMed, Scopus, and Google Scholar, focusing on preclinical and clinical evidence. This study also highlights the scarce research from the agronomic perspective regarding domestication, production or genetic or biotechnological research on breeding of the plant. In summary, it has been observed that the trend in global research on *Cuscuta reflexa* Roxb. is focused more on the search for new medicines or active compounds rather than on the cultivation or domestication of the parasitic plant species. Developing ecologically responsible cultivation methods could help balance its medicinal potential with minimal environmental impact.

Keywords: Anti-inflammatory, antimicrobial, antioxidant, therapeutic, parasitic plant.

Mechanism of Heavy Metal Biosorption by*Bacillus cereus* and Optimization Study of Biosorption

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Abstract:

Heavy metal contamination has become a major source of environmental pollution due to industrialization. Bacterial remediation is a capable technique to remediate heavy metal contaminated environments due to its eco-friendly and cost-effective properties. In this study, the heavy metal biosorption ability of *Bacillus cereus* was examined to optimize biosorption potential as well as functional mechanism was evaluated using scanning electron microscopy, and energy spectrum. The arsenic, lead, and mercury biosorption efficiency of the strain at 300 µg/L ion concentration was 67%, 82%, and 89% respectively. One factor at a time analysis revealed the optimal parameters for heavy metal biosorption by *B. cereus* with the biosorption rate reaching for arsenic 84.2%, lead 93.6%, and mercury 94.58%. Scanning electron microscopy of *B. cereus* cellsshowed adherence of huge amountof granular to the cell surface after heavy metals adsorption, providing speculative support for employment of *B. cereus* in heavymetals remediation.

Keywords : *Bacillus cereus*, Biosorption, Remediation, Heavy Metal, Microscopy.

Nanotechnology-based strategies for topical treatment of psoriasis

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Abstract:

Psoriasis is a chronic inflammatory illness that causes reddish plaques and pale scales over the body. Still there is no cure for psoriasis and efforts are underway to develop safer and more effective therapies. Nanotechnology is emerging as a possible tool for studying dermatological illness. Using nanocarriers aims to reduce adverse effects and improve the effectiveness of traditional therapy. Nanotechnology enhances medicine solubility, distribution, and tolerance to disease. Topical treatments for skin illnesses like psoriasis have little medication penetration and systemic absorption, which can cause unwanted side effects.

Background – Psorias is with accelerated keratinocyte proliferation and aberrant immune system activation, forming thick, scaly plaques on the skin. Some known treatments such as topical corticosteroids, vitamin D analogs, retinoids, and phototherapy exist, these therapies often have limitations in terms of efficacy, side effects, and long-term use. Recent advancements in **nanotechnology** have opened new avenues for improving the topical treatment in psoriasis.

Study–Some studies show better results fortheefficacy and safety of a nano-structured lipid carrier (NLC)-based formulation for the topical delivery of a potent anti-inflammatory agent in patients with moderate to severe psoriasis.

Conclusion- With ongoing advancements in nanomaterials and drug delivery systems, nanotechnology will likely play an increasingly important role in the management of psoriasis, offering more effective, targeted, and patient-friendly therapeutic options.

Keywords : Psoriasis, nanotechnology, Inflammatory disease, nanocarrier, NLC.

A Review Paper on Biomedical Anticancerous activity of Secondary Metabolites of Chilli (Capsaicin)

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Abstract :

Secondary metabolites are produced by all plants and have a variety of characteristics, some of which include biomedical qualities including antibacterial and anticancer effects. Scoville heat units can be used to quantify the degree of pungency in the spicy secondary metabolites known as capsaisinoids that are found in the fruits of chili plants. High Scoville heat units are said to produce a significant level of antibacterial and anticancer activity within the body.

Capsaicinoids extraction by ethanol can be useful for edible purpose, generally with the acetone capsaicinoids extract in high amount in comparison to ethanol nut this acetone exatracted material cant not useful for the pharmacological company. It is also noted that capsaicinoids have pungent feature so we can also use it in formulation of pain killer lotion or cream, when we higher the pungent amount the lotion/ cream/balm will affectively work on the affected area.

Uptake of chilli on daily routein is not possible in high amount, so if we are extracting it by the help of ethanol and after this extraction we can make a concentration of this substance, it is noted that with 90% ethanol we can extract more amount of capsaicinoids. After words can make a formulation of it or can make some cream or balm from this capsaicinoids.

Specially we are taking the Guntur Red chilli because its production is higher in Andra Pradesh and every year this chilli rotten soon. So if we are using this, it will be commercially benefits, and requiring less man power its method is also easy and only ethanol is main chemical which we are using in this technique.

Keywords: Chilli, Secondary Metabolites, Capsaicinoids, Scoville heat unit, extraction, Antimicrobial, anticancerous,

Analysis of Groundwater Quality Using Remote Sensing and GIS in Durg District, Chhattisgarh: Implications for potable and Irrigation Purposes

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Abstract:

Geographic Information Systems (GIS) are vital instruments in groundwater management, employed to evaluate groundwater quality. This mapping delineates potentially contaminated areas and assesses the water's appropriateness for consumption and irrigation. Groundwater is crucial for achieving sustainable development across various dimensions. Groundwater resources comprise two fundamental components: quality and quantity, which are interconnected and vital for efficient comprehension and management. The groundwater quality in the semi-critical blocks of Chhattisgarh State is deteriorating, presenting a health risk to the local populace. This study seeks to assess the groundwater quality in the Durg district of Chhattisgarh, classified as a semi-critical block with a groundwater development rate of 78%. In the post-monsoon season, ten groundwater samples were obtained to assess their suitability for drinking and agricultural purposes. These selections exemplified the entire block. At CGWB, NCCR Raipur, diverse groundwater quality parameters were assessed, including fluoride, calcium, magnesium, sodium, potassium, sulphate, carbonate, arsenic, and pH. Electrical conductivity (EC), concentration, total dissolved solids (TDS). The permeability index (PI) was calculated. The sodium absorption ratio (SAR), soluble sodium percentage (SSP), residual sodium carbonate (RSC), permeability index (PI), and sodium percentage were calculated to evaluate irrigation appropriateness. Water Quality Index (WQI), assessing the efficacy of remedial actions, and ascertaining the potability of groundwater. It also assists in evaluating the potability of groundwater. The World Quality Index assessment indicated that 10% of the samples were rated as exceptional, 70% as satisfactory, and 20% as deficient. The index map offers a lucid perspective that is readily comprehensible to decision-makers, so improving the planning and management of water resources for potable and agricultural uses.

Key words: GIS, Water quality index (WQI), soluble sodium percentage (SSP), residual sodium carbonate (RSC) and sodium absorption ratio (SAR).

Decoding Long COVID: Addressing Challenges and Exploring Solutions

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Abstract:

The prolonged and debilitating effects of Long COVID have drawn significant attention as a major post-pandemic healthcare burden. Defined by persistent symptoms lasting weeks to months after the acute phase of SARS-CoV-2 infection, Long COVID presents with a wide spectrum of manifestations, including fatigue, cognitive dysfunction, cardiovascular abnormalities, and respiratory challenges. This review aims to decode the complexities of Long COVID by addressing its underlying mechanisms, identifying key risk factors, and exploring potential solutions for effective management. Emerging evidence underscores the influence of host genetics, pre-existing conditions, and environmental factors in shaping individual susceptibility and disease progression. Diagnostic challenges, including the need for standardized criteria and reliable biomarkers, are critically examined. Current management strategies, encompassing symptom-targeted therapies, comprehensive rehabilitation programs, and potential novel interventions such as immunomodulators and antivirals, are evaluated in light of recent clinical findings. By synthesizing the latest advancements, this review aims to provide a detailed understanding of Long COVID's mechanisms and offer guidance for improving patient outcomes and shaping future research directions.

Keywords: COVID-19, SARS-CoV-2, Long COVID, Corona Virus, Post-COVID

A Review Paper on the Role of Microbes in Bioremediation

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Abstract

Bioremediation is the process of using microorganisms to either eliminate or lower the concentration of hazardous pollutants on a contaminated site. Since, the Green Revolution, the aggressive use of chemicals and advanced agricultural technology have depleted the community of useful microbes in the soil. Factors like temperature, pH and moisture and nutrients, fluctuate a lot due to various human activities, which eventually prevent microbes from acting against pollutants. Thus, bio-stimulation is used which acts as a catalyst for the natural attenuation process by adding indigenous microbes, nutrients and other substances. Bioremediation is the best method to naturally improve the condition of the soil and clean up the environment. Microbes feeds on chemical pollutants by using metabolic mechanisms. The oxidation-reduction process turns it into energy for microbes. Numerous bioremediation procedures have made use of naturally existing microbial consortia. New techniques for molecular studies of microbial populations in contaminated and bioremediated sites have been made possible by recent advancements in molecular microbial ecology. The scientific literature has shown how different bioremediation approaches have gradually emerged.

Keywords: Bioremediation, Solid waste management, Microorganism, Recombinant Cells, Waste Treatment.

Plants as eco-sustainable filter for suspended particulate matter in the urban environment

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Abstract:

Due to rapid industrialization, population growth and heavy traffic urban air constitutes various size ranges of solid particles commonly recognized as Particulates Matter or Dust. The deposited particulate matter is a chemically heterogeneous substance of many different types such as sulphuric acid mist, sulphates, or other reactive substances like specific carcinogenic compounds in the organic fraction of particulate matter. Despite concerted efforts for controlling air pollution, the particulate matter problem still persisting in urban areas.Many study shows that plant species have an efficient eco-sustainablefilter forsuspended particulate matter in surrounding urban environment.Different types of plants tend to have differences in morphological features of leaf surfaces. Some types of leaves have greater surface rigidity or roughness than otherleaves, which may affect their stickiness or particle solubility. Based on this concept,the study has been undertaken to identify the plant species(herb, shrubs and trees), which have higherpotential of dust capturing from environment while sustaining their well being.. The result shows that the plants like Crape Jasmine (*Gardenia jasminoides*) ; Crown Daisy (*Chrysanthemum species*) ; Lily (*Lillium species*) ; Sunflower (*Helianthus annuus*) ; Genda (*Tagetespatula*) ; Crape Myrtle (*Lagerstroemia indica*) ; Pink Kaner (*Nerium*indicum) ; Croton (*Codium variegates*) ; Yellow Kaner (*Thevetiaperuviana*) ; Dudhi (*Wrightiaarboriea*) ; Rose (*Rosa indica*) ; Beshram (*Ipomea nil*) ; Chandani (*Tabernaemontanadivaricata*) ; Copper leaf (*Acalyphahispida*) ; Temple Tree(*Plumeria acuminate*) ; Gurhal (*Hibiscus rosasinensis*) and Bougainvillea (*Bougainvillea glavra*) and trees like *Delonixregiosa*(Gulmohar), *Accacianelotica*((Babul), *Azadirectaindica*(Neem) *Meliaazedarch*(Melia) are more valuable to fulfilthese requirements apart from playing role in dust capture from environment.

Key Words: Particulate matter, dust capturing capacity, plant species, Eco-sustainablefilter, urban environment.

Ecological study of roadside plantation in Parsada area of Bilaspur Chhattisgarh

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Abstract:

Bilaspur city is known as the mini capital of Chhattisgarh and comes under tire 3 cities of the country. The city under smart City project of Government of India has a good vegetation cover. The different vegetation forms of this city are road side tree species.

The village Parsada is located at a distance of 10 km from Bilaspur district. it's total geographical area is 712.96 hectare. After Bilaspur sakri we turns towards Parsada there is a canopy of beautiful trees. the present study focus in the diversity of trees and their ecological status such as density, frequency etc. in road side of Bharani region of Parasda in Bilaspur city. Most of the roads are planted on both sides with gulmohar (Delonix regia family fabaceae) and yellow flame(Pelpophorum pterocarpum) karanja(Pongamia pinnete) trees whose flowers falling on the road inhance the beauty of the road manifolds. This Makes the old rural environment more beautiful and clean. These trees clean the environment as well as reduce pollution, increase the level of oxygen, provide fresh air and provide coolness and sunshine to the passerby in the summer days.

Keywords: Gulmohar, karanja, yellow flame.

The Study of Medicinal Trees at Tribal Area of Balod District Chhattisgarh

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Abstract:

The state of Chhattisgarh is rich in natural resource so, Chhattisgarh is also known as herbal state. There are 33 districts in Chhattisgarh. Balod is a tribal district of herbal state (Chhattisgarh). Balod is located at 20.73*N 81.2*E (1). It has an average elevation of 324 meters (1063 feet) Jump up ^ Falling Rain Genomics, Inc- Balod. The tribal's & traditional healers of Balod district have good knowledge of herbal & food plants. In present study we gathered traditional knowledge of tribal's & healers about the use of plants against the remedy of various ailments.

In present study 05 villages of Balod district has been surveyed, interview, interaction & discussion was conducted with tribal's & traditional healers of the villages. Total 56 plant species was found to be used by tribal's & healers individually and in combination (mixture form) against various diseases such as skin disease, jaundice, tuberculosis, leprosy, asthma, Vata, pitta, diarrhea, itching, rheumatism & dysentery, hypertension, sickle cell anemia etc. In present study 37 herbal plants and 19 food plants which are used by the tribal's and traditional healers of 15 village of Balod district in their daily life for the treatment of various ailments. It is also studied was done through structured questionnaires in consultation with the tribal ethno-medical practitioners and has resulted in the documentation of 75 medicinal plant species belonging to 42 families. For curing the skin disease, the use of aboveground plant parts, underground plant parts, leaves, as roots and rhizomes, whole plants. The study thus underlines the potentials of the ethno-botanical research and the need for the documentation of traditional ecological knowledge pertaining.

Mg complex of 8-hydroxyquinoline Organic phosphor for OLEDs: Synthesis, Characterization, Photoluminescence Studies & Thermodynamic stability

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Abstract:

OLEDs are light-emitting devices containing a thin flexible film of an organic electroluminescent compound used in the digital display screen. These materials are proven to be sustainable and more promising than inorganic phosphors. This study emphasizes the synthesis of the Mg complex of 8-hydroxyquinoline Organic Phosphors by the green approach. The synthesized organic phosphor was characterized by X-ray diffraction studies and Photoluminescence properties were studied and compared by photoluminescent analyzer. The stability of these complexes is compared by determining their formation constant using UV-visible spectroscopy.

Keywords: 8-hydroxyquinoline, Organic Phosphors, Photoluminescence, X-ray diffraction, UV-visible spectroscopy.

A Study on Application of Cyclodextrin based Adsorbents for Removing Various Water Pollutants

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Abstract:
Every living thing on earth requires water to survive. However, population growth has interrupted the natural phenomenon of life due to industrial growth to meet ever-increasing needs, resulting in an exponential increase in environmental degradation over the last few decades. Cyclodextrins (CDs) are naturally occurring cyclic oligosaccharides created by bacteria that breakdown starch. The most essential CDs have well-defined cavities that enable host-guest interaction with molecules of different sizes and polarity. Cyclodextrin based adsorbents for wastewater treatment target heavy metals, dyes, and organic contaminants such as pharmaceuticals, endocrine disruptors, phenolic compounds and water pollutants. Cyclodextrin (CDs)-based adsorbents have recently garnered a lot of interest for water pollution treatment due to their good features, such as quick adsorption kinetics, ease of regeneration, and high mechanical stability.

Keywords: Cyclodextrin, adsorbents, heavy metals, dyes, phenolic compounds, water pollutants.

Prediction of Air Quality Index and post processing of the results using Principal Component Analysis Technique

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Abstract:

In India, the rate of urban air pollution has increased to a concerning level. The majority of cities struggle with inadequate air quality, which falls short of healthy air standards. Governmental organizations utilize the air quality index (AQI), which is a numerical representation, to inform the public about the current and projected levels of air pollution. A significant portion of the populace is anticipated to suffer from progressively severe unfavorable health impacts as the AQI rises. In this paper we have used Statistical analysis model, ARIMA (Autoregressive Integrated Moving Average) and PCA (Principal component analysis) and Z-Score variability to understand the dataset and for sequential prediction of AQI data of Amravati region of Maharashtra.

Key Words: Statistical prediction, ARIMA, PCA, Air quality Index, Z-Score, Air Pollution, AQI.

A Study on the Low Cost Adsorbents for Elimination of Surfactants from Waste Water

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Abstract:

Surfactants, which are chemicals found in soaps and cleaning products, are one of the pollutants that need urgent attention. Surfactants are widely used in various products and processes but can be harmful to the environment when released into water bodies. A surfactant, short for surface-active agent, is a substance that reduces the surface tension of a liquid, making it easier to spread. Methods for removing surfactants include adsorption, coagulation and flocculation, membrane-based purification, chemical oxidation, microfiltration, and electrolysis. Cleaning water contaminated with surfactants using adsorption (where pollutants stick to a material) works better than other methods. This study focuses on using inexpensive materials as adsorbents to remove surfactants from waste water.In general, low-cost adsorbents are waste products from manufacturing processes, agricultural waste, household organic waste, and other plant/animal based materials that may be used as an adsorbent. These materials are promising, but more research is needed to make them more effective.

Keywords: Surfactants, adsorption, adsorbate, adsorbent, aquatic environment.

Nanoparticles Prologue, Relevance and its Lethal Belongings: A Review

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Abstract:

Nanotechnology is one of the promising, newly, but highly expanding technology. In many fields it is benefited worldwide that is improving and working efficiently in various areas. It is accommodating in the agricultural fields (in the form of fertilizers, herbicides and pesticides, soil feature regulation, wastewater management, and pathogen detection), industrial food processing field (with enhanced food production having excellent market value, elevated nutritional and sensing property, improved safety, and better antimicrobial protection), in the field of electronics (for developing the sensors to measurement of the molecular level, reduce the size of electronic circuit and complexity, reduce in total power consumption), in the field of medical (in the form of nanomedicine, nanoelectronic biosensors, clinically helpful devices, in the pharmaceutical industry that may include advanced drug delivery systems, new therapies, and in vivo imaging), in the environmental safety fields through Green nanotechnology (having two goals: producing harmless nanomaterials, and producing nano-products that provide solutions to environmental problems and to make nanomaterials and nano-products without toxic ingredients, at low temperatures using less energy and renewable inputs wherever possible, and using lifecycle thinking in all design and engineering stages), in the textile fields (as the understanding, manipulation, and control of matter such that the physical, chemical, and biological properties of the materials that can be engineered, synthesized, and altered to develop the next generation of improved materials, devices, structures, systems and to develop desired textile characteristics, such as high tensile strength, unique surface structure, soft hand, durability, water repellency, fire résistance, antimicrobial properties etc.), in the daily life as consumer product applications, cosmetics industry, energy production, defense, rocketry and so on. Of course nanotechnology is a blessing of mankind but we can't ignore the lethal impact of nanomaterial's. The world is facing lots world is facing lots of pollution oriented troubles right now and in among our negligence concerning nanomaterials is playing a havoc role as a pollutant. On this assessment, we discuss their applications in daily lifestyles, diverse entry routes of nanomaterials within the human body, and their toxicity. Furthermore, this paper discusses our duty to make certain and comfortable disposal of nanowastes to reduce or put off untoward environmental and health influences. At the end, we scrutinize international and national regulatory dispositions, hurdles, and efforts to make bigger higher regulatory system in the area under discussion of nanomaterial as a pollutant.

Keywords: Nanotechnology, Sustainable Development.

Viscosity and its related parameters of trigonelline in 50%DMSO-water system

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Abstract:

A thorough understanding of a chemical's thermodynamic and transport properties requires knowledge of qualities like density ,viscosity and its parameters in their binary liquid mixes across the broad composition range tested at different temperatures. Trigonelline degrades to niacin at higher temperatures. The current study analyzes density ,viscosity and its parameters in the DSMO-water system at room temperature as a function of concentrations.

Keyword:.Density,viscosity , Excess molarvolume.

Refractive Index and related parameters of potassium oxalate in 15% DMSO-water system

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Abstract:

One of the fundamental property is the refractive index. This describes characteristics of pure liquids and their mixture with other solvent. The current study examines the relationship between potassium oxalate and its concentration in a binary solvent system consisting of DMSO and water. Refractive index, density, and associated parameters are computed in this paper. Shedding light on the interaction between a solute and a solvent in a binary solvent system. Numerous physical chemical qualities can be ascertained using the data obtained from this experiment. Spectroscopic data interpretation is based on its value.Many industry sectors use all of this data.For biochemical data, the DMSO-Water solvent system is employed.

Keywords: Density, Refractive Index, Molar. Volume.

Synthetic Macrocyclic Complexes: Unlocking New Frontiers In Biomedical Applications And Diagnostics

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Abstract:

In recent years, there has been a significant increase in the exploration of various features of new macrocyclic ligands and complexes. Synthetically developed macrocyclic complexes have numerous applications, including photochemical activity, dye-stuff production, and also used as MRI contrasting agents and in other biomedical applications. Macrocyclic complexes are synthesized by combining metal ions and macrocyclic ligands. These complexes can be synthesized either by template method or by non-template method. In template method metal ions are present during the synthesis of the macrocyclic complexes where as in non-template method i.e. in the absence of the metal ion, the same organic reactants may produce different polymeric products.Synthetically developed macrocycles, such as gadodiamide and phthalocyanine complexes, mimic naturally occurring macrocycles and have numerous applications, including photochemical activity and also used as MRI contrasting agents and in other biomedical applications. Poly aza macrocycles have become particularly important due to their ability to interact with both cations and anions and their versatility as ion sensors also they are effective as antimicrobial, antioxidant, and anti-cancerous, DNA binders, and DNA cleaving agent. These reviews will be supportive for researchers to establish new deliberations in the expedition for designing novel macrocyclic complexes for pharmaceutical and diagnostics purposes.

Keywords: macrocyclic complexes, MRI contrasting agents.

New pigments from the stem bark of Aegle marmelos

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Abstract:

Aegle marmelos (N.O. Rutaceae) is employed in Indian indigenous system of medicine. The isolation and structure elucidation of two new compounds marmesin-1”-O-alpha-L-rhamnopyranoside and 1,5-dihydroxy-6-methoxy-2-methyl anthraquinone which occur together with lupeol and beta-sitosterol in the stem of this plant. Structures of these compounds elucidate on the basis of colour reaction, chromatographic methods (TLC and Column chromatography), spectroscopic data specially UV, IR, NMR and chemical methods like acetylation, methylation, hydrolysis and oxidation.

Keywords: IR/UV, spectra/marmesin--1”-O-alpha-L- rhamnopyranoside and 1,5-dihydroxy-6-methoxy-2-methyl anthraquinone/Aegle marmelos/rutaceae

Kinetics and mechanism of Os(VIII) catalyzed oxidative decolourization of aniline blue (AB) dye by chloramine-T (CAT) in alkaline medium – A spectrophotometric approach

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Abstract:

Aniline Blue (AB) dye causes negative impact on natural environment as well as health due to their toxicity and ability to long sustain in the nature. The kinetics of a triarylmethane dye, aniline blue (AB) by sodium *N*- chloro *p*-toluenesulfonamide or CAT catalyzed by Os(VIII) was studied spectrophotometrically in alkaline media at 298 K. Under identical experimental conditions, the rate law was $-d[AB]/dt = k[AB]\,[CAT]^{.51}\,[OH^-]^{.74}\,[Os(VIII)][PTS]^{-.62}$. Variation in ionic strength of the medium had no effect on the oxidation velocity. Addition of p-toluenesulfonamide, the reduction product of CAT exhibited negative influence on the rate of reaction. Additions of salts (KCl and KBr) were found to exhibit insignificant effect on the reaction rate. The values of rate constants observed at four different temperatures (293, 298, 303 and 313K) were utilized to calculate the activation parameters. The observed results have been explained by a general mechanism and the related rate law has been observed. The process demonstrated in this study is cost effective, which holds great promise in potential application for pollutant control.

Keywords: oxidation kinetics, Aniline Blue, Chloramine-T, Sodium hydroxide, Os(VIII).

Spectrophotometric Determination of Iodate in Common Salt Using Metol

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Abstract:

Iodine appears to be a trace element essential to living beings. It occurs naturally not only as iodide but also as iodate in some minerals. An essential element in nutrition, it is required by the thyroid gland for the synthesis of thyroxine hormone that plays a significant role in the development of brain and metabolic function. Goiter and cretinism are two major clinical manifestations of iodine deficiency, whereas excess of iodine and iodide can cause hypothyroidism and hyperthyroidism. A rapid, simple and sensitive method for the determination of iodate is described. The proposed method is based on the oxidation of metol by Iodine, which is liberated by the reaction of iodate and potassium iodide in phosphoric acid medium. Then its oxidized product is subsequently coupled with p-aminoacetophenone. The absorbance of the yellow brown dye is measured in an aqueous medium (pH 2.5-3.5) at 430 nm. Beer's law is obeyed in the concentration range 0.25 to 2.0 µg ml^{-1} of iodate. The molar absorptivity and Sandell's sensitivity were found to be 4.46 x 104 l mol^{-1} cm^{-1} and 0.0085µg cm^{-2} respectively. The optimum reaction condition and othe analytical conditions were evaluated. The effects of interfering ions on the determination of iodate are discussed. The proposed method has been successfully applied for the determination of iodate in the various sample of commercial table salt.

Keywords: Iodine appears, p-aminoacetophenone.

A survey Design of Intelligent Model for Stock Market Forecasting and Management Using Machine Learning Techniques

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Abstract:

The stock market is known for its volatile and unstable nature. A particular stock could be thriving in one period and declining in the next. Stock traders make money by buying equity when it is at its lowest and selling when it is at its highest. The logical question would be: 'What causes stock prices to change?' At the most fundamental level, the answer to this would be demand and supply. So we can say that the stock market is based on demand, supply, buyers, and sellers. Stock market prediction is regarded as a challenging task in financial time-series forecasting. This is primarily because of the uncertainties involved in the movement of the market. Many factors interact in the stock market, including political events, general economic conditions, and traders' expectations. Therefore, predicting market price movements is quite difficult. Increasingly, according to academic investigations, movements in market prices are not random. Rather, they behave in a highly non-linear manner.

Keywords: Stock Market, Stock Traders, Stock Market Prediction, General Economic Conditions, Financial Exchange, Financial Instrument, Machine Learning, Intelligent Systems, Statistical Analysis.

Cybersecurity and Cyber Crime: Recognizing Risks and Ramifications through a Case Study of High-Profile Hacks

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Abstract:

As the complexity and scope of cyberattacks increase, cybersecurity continues to be a major worry in a society that is becoming more digital and linked. The risks and difficulties that both the military and the civilian sectors encounter are the main topics of this paper's exploration of the aspects of cybersecurity and cyberhacking. We examine the possible methods of cyber intrusion, find weaknesses in defense-grade software, and talk about the ramifications for national security through a theoretical case study on a hacking incident affecting the aircraft system of a high-ranking figure, General Vipin Rawat. The purpose of this study is to clarify technical countermeasures, strategies, and preventive actions that can lessen such dangers in the future. This study highlights the necessity of a comprehensive cybersecurity framework to protect against advanced cyberattacks by examining the relationship between cyberthreats and vital infrastructure.

Keywords: Cybersecurity, Cyber Hacking, Defense Vulnerabilities, Aircraft Software Security, National Security, Cyber Intrusion, Defense-Grade Systems, Incident Analysis, Countermeasure.

Grey Fuzzy Controller Vs PID Controller: A Case Study

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Abstract:

Two important performance measures i.e., surface roughness (Ra) as a parameter for job quality and material removal rate (MRR) for economic production of the components were optimized. The grey output is fuzzified into eight membership functions and 27 rules were developed. The highest grey fuzzy reasoning grade (GFRG) obtained. The proposed grey fuzzy logic approach found more effective to evaluate the multiple performance characteristics and simplifies the optimization procedure in optimizing complicated process responses.

Keywords: Fuzzy logic, Grey fuzzy logic, polycrystalline diamond tool (PCD).

The Social, Psychological and Mental Health Effects of Online Gaming

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Abstract:

Multiplayer and Internet gaming is nowadays one of the "unkillable" entertainment media, and therefore definitely not without social aspect, psychological aspect, or mental health. This paper discusses the balanced effect of such impacts and discusses positive and negative impacts. Not only are interpersonal social stimulation, collaboration, and intergroup diversity assets of multiplayer games, patients in games are also likely to socially withdraw and also to develop antisocial behavior. From a psychological perspective, among others, gaming has cognitive, a procedural effect (i.e., skills in problem solving and skills in decision–making), and a reason of ID exploration and regulation of emotion. However, addictive tendencies, risk of not taking responsibility, stress and pressure resulted from stress and competition are some of the dangers. Playing games is not only stress relieving but also clinical treatment for mental illness, however Excessive gaming may aggravate symptoms of anxiety and depression. BA can be achieved through gaming and real activities of daily living, to promote social reinforcement practice for positive peer relations and to improve attentional alertness during gameplay. For this discussion, the relevance of critical thinking to Internet and multiplayer gaming for functioning is highlighted.

Keywords : Multiplayer gaming , Internet gaming , Social impact , Psychological impact, Mental health, Cognitive development, Problem-solving skills, Emotional regulation Identity exploration, Social withdrawal .

Role of IoT in Sustainable Agriculture Using Drone Technology

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Abstract :

The integration of the Internet of Things (IoT) with drone technology has transformed sustainable agriculture by enabling real-time monitoring, data collection, and precision farming practices. IoT-powered drones provide farmers with critical insights into crop health, soil conditions, moisture levels, and pest presence, facilitating efficient resource management and reducing the environmental impact of agricultural practices. This paper explores the role of IoT in sustainable agriculture through the application of drone technology, discussing how IoT-enabled drones enhance crop productivity, optimize water usage, and support sustainable pest and disease control methods. The study highlights the benefits of IoT in agriculture, including improved crop yield, reduced resource wastage, and lower carbon footprint, contributing to a more resilient and eco-friendly agricultural system. Challenges such as data security, cost, and infrastructure requirements are also addressed, along with potential solutions to further enhance the adoption of IoT and drone technology in sustainable agriculture.

Keywords: IoT, sustainable agriculture, drone technology, precision farming, crop monitoring, resource management, environmental sustainability, smart farming, data collection, pest control.

Quantum Computing: A New Frontier in Computational Technology

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Abstract:

Quantum computing represents a paradigm shift in computational technology, harnessing the principles of quantum mechanics to solve problems that are intractable for classical computers. Unlike traditional computing, which relies on bits that can either be in the state of 0 or 1, quantum computing uses quantum bits, or qubits, which can exist in multiple states simultaneously, thanks to quantum superposition and entanglement. This paper provides an overview of quantum computing, discussing its fundamental principles, key technologies, and potential applications. The challenges of building scalable quantum computers, along with the recent advancements in the field, will also be addressed. The paper concludes by exploring the future impact of quantum computing on industries such as cryptography, artificial intelligence, and optimization problems.

Keywords: Quantum Computing, Qubits, Superposition, Entanglement, Quantum Algorithms, Quantum Cryptography, Quantum Hardware, Scalability, Quantum Supremacy, Computational Complexity

Robotics in Education: A Smart and Innovative Approach to the Challenges of the 21st Century

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Abstract:

Robotics is defined by the Bureau of Indian Standards (BIS) as the study, design, manufacture, and use of robots. Robot design, building, operation, and use are all included in robotic technology. The science and study of robots is known as robotics, and it is an interdisciplinary field that combines engineering and science. A wide range of applications are covered under the umbrella term of Robotics in Education (RiE). Not only can robots improve education and learning, but they can also benefit those with social and physical disabilities. The lack of a well-established set of best practices, experience evaluation methods, and resources hinders the adoption of new technology in schools, despite the obvious benefits. The purpose of this chapter is to draw attention to the main ideas that arise from the most recent improvements in RiE.First, research and the market are always creating new tools for schools in an effort to cater to demands and customize goods. Second, there are a lot of formal and informal experiences in school activities and reading. Third, research is now testing methods and instruments to evaluate the effects of integrating robotics into the classroom. Even with the abundance of resources and experiences, there is still some ambiguity about how to use technology in the classroom and assess the results of such endeavours. The growing exchange of ideas between academic institutions and researchers from all disciplines is creating worthwhile experiences that will soon bridge the divide. Innovative teaching methods are being incorporated into classrooms to better prepare students for the future as education changes quickly. Among these, robotics education has become a popular strategy. Students get a lot from robotics education since it blends creativity, engineering, and technology. This article will examine the value of robotics in education, as well as its advantages, curriculum integration, and the ways it fosters (Science, Technology, Engineering, and Mathematics,) STEM education, critical thinking, problem-solving abilities, and teamwork.

Keywords: Robotics, STEM education.

Application of UAV/Drones: Revolutionizing Modern Industries

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Abstract:

As drones or Unmanned Aerial Vehicles (UAV) become increasingly versatile and cost-effective with technological supremacy, they find applications in a wide number of sectors. This paper explores the broad spectrum of applications of UAVs and discusses their transformative impact on agriculture, healthcare, logistics, construction, public safety, and entertainment industries. Emerging innovations in artificial intelligence, machine learning, and sensor technology make UAVs much more promising for precision agriculture, disaster response, and urban planning applications. Still there are hurdles: significant regulatory barriers, privacy issues, and technical limitations. The paper concludes with a glimpse of future directions targeted at achieving sustainable drone solutions and integrating these into smart city infrastructures.

Keywords : UAV, drones, precision agriculture, logistics, disaster response, smart cities, sensor technology, regulatory frameworks.

Modelling for precipitation forecasting by various deep learning techniques

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Abstract:

This article reports the comparative study of results obtained for the rainfall prediction using various deep learning approaches. Keeping this objective, prediction of rainfall in Durg (Chhattisgarh) India was done using different deep learning techniques such as Bidirectional Long Short-Term memory (Bi-LSTM), long short Term Memory (LSTM) and Gated Recurrent Unit (GRU) method. Random window sizes were used for prediction in each of the deep learning algorithms. The performance and the efficiency were evaluated using factors like Mean Square Error (MSE), Root Mean Square Error (RMSE) and Cosine Similarity (CS). The Cosine Similarity which was considered as an index to judge the closeness of actual and predicted data was found to be the maximum for window size 5, 10, 15 and 25 for Bi-LSTM algorithm. The corresponding CS values were 0.9685, 0.9676, 0.9658 and 0.9663 respectively. Whereas, the CS value in case of LSTM and GRU was found maximum for window size 20 and 30 respectively. Therefore, Bi-LSTM may be recommended as the method to be adopted for prediction with smaller window sizes.

Keywords: Forecasting, Bidirectional Long Short-Term memory (Bi-LSTM), long short-term memory (LSTM), recurrent neural networks, Time series, Gated Recurrent Unit (GRU), Performance Evaluation.

Quantum Computing: A New Frontier in Computational Technology

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Abstract:

Quantum computing represents a paradigm shift in computational technology, harnessing the principles of quantum mechanics to solve problems that are intractable for classical computers. Unlike traditional computing, which relies on bits that can either be in the state of 0 or 1, quantum computing uses quantum bits, or qubits, which can exist in multiple states simultaneously, thanks to quantum superposition and entanglement. This paper provides an overview of quantum computing, discussing its fundamental principles, key technologies, and potential applications. The challenges of building scalable quantum computers, along with the recent advancements in the field, will also be addressed. The paper concludes by exploring the future impact of quantum computing on industries such as cryptography, artificial intelligence, and optimization problems.

Keywords: Quantum Computing, Qubits, Superposition, Entanglement, Quantum Algorithms, Quantum Cryptography, Quantum Hardware, Scalability, Quantum Supremacy, Computational Complexity.

The Social, Psychological and Mental Health Effects of Online Gaming

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Abstract:

Multiplayer and Internet gaming is nowadays one of the "unkillable" entertainment media, and therefore definitely not without social aspect, psychological aspect, or mental health. This paper discusses the balanced effect of such impacts and discusses positive and negative impacts. Not only are interpersonal social stimulation, collaboration, and intergroup diversity assets of multiplayer games, patients in games are also likely to socially withdraw and also to develop antisocial behavior. From a psychological perspective, among others, gaming has cognitive, a procedural effect (i.e., skills in problem solving and skills in decision–making), and a reason of ID exploration and regulation of emotion. However, addictive tendencies, risk of not taking responsibility, stress and pressure resulted from stress and competition are some of the dangers. Playing games is not only stress relieving but also clinical treatment for mental illness, however Excessive gaming may aggravate symptoms of anxiety and depression. BA can be achieved through gaming and real activities of daily living, to promote social reinforcement practice for positive peer relations and to improve attentional alertness during gameplay. For this discussion, the relevance of critical thinking to Internet and multiplayer gaming for functioning is highlighted.

Keyword: Multiplayer gaming , Internet gaming , Social impact , Psychological impact , Mental health , Cognitive development, Problem-solving skills , Emotional regulation Identity exploration , Social withdrawal .

A Survey on Deep Fake Detection Techniques

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Abstract:

Deep learning has been successfully applied to solve various complex problems ranging from big data analytics to computer vision and human-level control. Deep learning advances however have also been employed to create software that can cause threats to privacy, democracy and national security. One of those deep learning-powered applications recently emerged is deepfake. Deepfake algorithms can create fake images and videos that humans
cannot distinguish them from authentic ones. The proposal of technologies that can automatically detect and assess the integrity of digital visual media is therefore indispensable. This paper presents a survey of algorithms used to create deepfakes and, more importantly, methods proposed to detect deepfakes in the literature to date. We present extensive discussions on challenges, research trends and directions related to deepfake technologies. By reviewing the background of deepfakes and state-of-the-art deepfake detection methods, this study provides a comprehensive overview of deepfake techniques and facilitates the development of new and more robust methods to deal with the increasingly challenging deepfakes.

Keywords: Deep learning, Deepfake algorithms.

Three distinct analysis techniques are used for sentiment analysis in social media based on English language multilingual processing

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Abstract:

The internet has been used by countless businesses to sell their goods and services. Online shoppers consistently read other consumers' opinions about a product or service before deciding to purchase it or watch a movie. Based on their comments, the business must analyze the mood and feelings of its customers. Businesses can quickly determine whether user expressions are more favorable or negative based on the sentiment analysis results. There are several different sentiment analysis methods on the market right now. However, this study will only employ three (3) methods: Meaning Cloud, Miopia, and Python NLTK Text Classification. These methods are employed to analyze the sentiment of English-language reviews and comments on social media.

2400 datasets from IMD, Amazon, and Kaggle were utilized to examine how accurate various methods were. According to these analyses, the average accuracy for sentiment analysis utilizing the Python NLTK Text Classification method is 74.5%, while the Miopia technique only achieves 73% accuracy. When compared to other methods, the Meaning Cloud methodology yields the best accuracy of 82.1%. This demonstrates that the hybrid approach provides the highest level of accuracy for social review sentiment analysis.

Keywords: Multilingual Sentimental Analysis, English Language, Social media, Gmail, WhatsApp.

A New and Sturdy Geolocation-Based Multi-Factor Verification System Technique for Safeguarding ATM Transactions

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Abstract:

These days, credit and debit cards are widely used for payments. Compared to cash, they provide several benefits, including as ease of use, security, and fraud prevention. However, due to the intrinsic weaknesses of credit/debit cards and transaction processes, numerous payment institutions have to concentrate on making these electronic payment systems more secure. Additionally, the growing quantity of global electronic payment transactions has resulted in a commensurate rise in the sum of money lost as a result of cybercrime and fraud. This financial loss significantly affects companies and customers, and it calls for the creation of strong and inflexible security designs. for protecting the underlying mechanisms of electronic transactions. In light of this, this study presents a innovative multi-factor authentication technique based on geolocation to increase the security of electronic.

Keywords: Security, Data Privacy, Authentication, Multi-factor Authentication, One-time Password, Electronic Payments, Transaction Security.

Evaluating Throughput and Efficiency in WSNs: A Study of Sensor Nodes Using Contiki Cooja

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Abstract:

This paper presents a comparative study of throughput and efficiency in wireless sensor networks (WSNs) utilizing large-scale sensor nodes simulated within the Contiki operating system and Cooja simulator. The primary objective is to analyze the performance metrics under varying network conditions, including different traffic loads and topologies. We implement a series of experiments to evaluate the impact of protocol configurations on data transmission rates and energy consumption. The results indicate significant variations in throughput and efficiency, highlighting the strengths and weaknesses of various routing protocols employed in Contiki. Our findings contribute to optimizing WSN designs for applications in smart cities, environmental monitoring, and industrial automation by providing insights into the trade-offs between throughput, energy efficiency, and scalability in large-scale sensor networks. Future work will explore enhancements to existing protocols to further improve network performance.

Keywords: WSN, Adaptive Clustering, Contiki Cooja, energy saving, Sink Mobility.

EEG-based Emotion Recognition Using Transfer Learning and Convolutional Neural Network

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Abstract:

In this paper, we present an innovative approach for EEG (Electroencephalography)-based emotion recognition utilizing advanced techniques in transfer learning and deep learning. Our method extracts features from multichannel EEG signals using transfer learning and organizes them into an **8×9 spatial map,** which reflects the topographical arrangement of EEG electrodes on the scalp. This spatial representation preserves critical inter-channel relationships.The process begins by converting raw EEG signals into **spectrograms,** capturing their temporal and spectral characteristics. These spectrograms are passed through a pre-trained image classification model, such as **Inception V3**, to extract feature vectors. These extracted features are then spatially mapped and fed into a custom-designed **Convolutional Neural Network (CNN).** The CNN is trained to identify spatial dependencies among EEG channels and classify emotions accurately.Finally, the CNN outputs are flattened and passed through dense layers to predict the emotion classes. Our approach was validated on benchmark EEG datasets **SEED-IV** achieving robust performance. Notably, the proposed method attained a classification accuracy of **29.51% on SEED-IV**, demonstrating its potential for reliable emotion recognition and applications in brain-computer interfaces (BCI) and affective computing. Future work aims to refine the architecture and incorporate real-time analysis for practical deployments.

Keywords: Electroencephalography based emotion recognition**,** an **8×9 spatial map, SEED-IV.**

Advanced Queuing Theory Applications in Traffic Engineering: Mathematical Strategies for Optimizing Traffic Flow

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Abstract:

The advanced applications of queuing theory in traffic engineering are examined in this work, with an emphasis on mathematical techniques for improving traffic flow. The project intends to solve the intricacies of urban transportation networks, lessen congestion, and improve overall efficiency by utilizing advanced mathematical models and algorithms. The study emphasizes how theoretical theory may be combined with simulation and real-time data analytics to create prediction models that can adjust traffic patterns on the fly. Important discoveries show how these mathematical techniques can be used to strengthen traffic control systems, resulting in shorter commutes, lower emissions, and happier commuters. The study also highlights the necessity of interdisciplinary cooperation and ongoing innovation in traffic engineering while examining the ramifications of these developments for upcoming urban planning and smart city projects.

Keywords: Queuing Theory, Traffic Engineering, Mathematical Optimization.

FIXED POINT THEOREMS VIA W F-CONTRACTIONS WITH APPLICATIONS

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Abstract:

In this paper we prove a unique fixed-point theorem for F- Contractive mapping in b-metric spaces, which is a generalization of b-metric spaces introduced by Wardowski. The b-metric spaces were originally coined by Bakhtin. And a new class of contractions which remains a mixed type of weak and F-contractions but not any of them. The paper discusses sustained efforts in understanding b-metric spaces and their properties, culminating in the establishment of a unique fixed-point theorem for F-Contractive mappings within this context.
The result presents in this paper generalize the well-known comparable results in the literature and support the assertion with a relevant example to demonstrate the applicability and significance of the result.
The unique fixed-point theorem for F-Contractive mappings in b-metric spaces is likely to contribute to the broader understanding of the properties and applications of such spaces within mathematics and potentially in other fields where such concepts find relevance.

Keywords: Banach space, b-metric space, Complete metric spaces, F-Contraction, Fixed point.

New Generalized Trigonometric, Hyperbolic and Exponential Measures of Fuzzy Entropy and Fuzzy Directed Divergence

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Abstract:

In this paper, we introduce novel generalized measures of fuzzy entropy and fuzzy directed divergence that leverage trigonometric, hyperbolic, and exponential functions. Traditional measures often fall short in capturing the complexities of uncertainty and information in fuzzy systems. Our proposed measures extend the foundational concepts of fuzzy entropy by incorporating these mathematical functions to enhance sensitivity to the underlying distribution of fuzzy sets. We explore the theoretical framework underpinning these measures and demonstrate their applicability in various scenarios, including decision-making and information retrieval. Comparative analyses with existing entropy and divergence measures highlight the advantages of our approach in terms of flexibility and robustness. The results suggest that these new measures can provide deeper insights into fuzzy systems and improve performance in applications involving uncertainty. Here are several applications of generalized trigonometric, hyperbolic, and exponential measures of fuzzy entropy and fuzzy directed divergence. These measures can help evaluate and rank alternatives by assessing the uncertainty and divergence in fuzzy preferences, leading to more informed decisions. By quantifying the fuzziness in document representations, these measures can enhance search algorithms, improving the retrieval of relevant documents based on user queries. The measures can be used to assess the information content in different segments of an image, aiding in distinguishing between various features based on their fuzzy characteristics. Utilizing these entropy and divergence measures can improve the classification accuracy of fuzzy patterns in various fields, such as handwriting recognition and facial recognition. In complex networks, these measures can assess the information flow and divergence between nodes, helping to identify critical pathways and vulnerabilities. In fuzzy logic controllers, these measures can optimize system performance by assessing the uncertainty in input data and refining the control strategies accordingly. The measures can be applied to analyze the divergence in gene expression data, aiding in the identification of significant biological markers in fuzzy datasets. In financial modeling, these measures can quantify uncertainty in market behaviors, improving risk management strategies and portfolio optimization. Enhancing clustering algorithms by measuring the entropy of fuzzy clusters can lead to better data grouping and representation in AI applications. The measures can help in understanding the uncertainty in ecological data, improving models that predict environmental changes and biodiversity. These applications illustrate the versatility and utility of the proposed measures across various domains, enabling enhanced analysis and decision-making in the presence of uncertainty.

Keywords: Fuzzy entropy, fuzziness.

Common Fixed Point Theorem Satisfying CLR-property in Gp-Metric Spaces with Application

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Abstract:

The goal of our manuscript is to establish the existence and uniqueness of common fixed point theorem for Integral type contractive condition satisfying common CLR-property in Gp-metric spaces. We provide an example to highlight the utility of our result. Our result is utilized to find the common solution for system of functional equations arising in dynamic programming.

Keywords: Common fixed point, Weakly compatible mappings, Common CLR-property, Gp-metric spaces.

Certain common fixed-point and fixed-figure results in symmetric S-multiplicative metric space

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Abstract:

In this paper, we introduce symmetric S-multiplicative metric space and establish a common fixed point theorem for four self-mappings with a family of functions in this space. In addition, we investigate some geometric interpretation to fixed-point theorems.

Keywords: Fixed point, common fixed point, S-metric space, symmetric S-multiplicative metric space.

ITERATIVE ALGORITHM FOR GENERALIZED (α, β)-NONEXPANSIVE MAPPINGS IN AN ORDERED CAT(0)

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Abstract:-

This paper examines the iterative algorithm, which approximates fixed points of monotone multivalued generalized (α, β)-nonexpansive mappings in the setting of an ordered CAT(0) space. We establish convergence results for the SR iterative algorithm applied to monotone generalized (α, β)-nonexpansive mappings. Additionally, we demonstrate the application of these results to fractional differential equations and equivalent nonlinear integral equations.

Keywords: fixed points , ordered CAT(0) space, SR iterative algorithm.

CONVERGENCE OF FIBONACCI ITERATION FOR HYPERBOLIC METRIC SPACE

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Abstract

In this paper, we introduce a new iteration process for monotone non-Lipschitzian mapping (i.e. nearly asymptotically nonexpansive mapping) in partially ordered hyperbolic metric space and prove strong and Δ-convergence theorem. Further, we construct a numerical example to demonstrate that our iteration process is faster than the Fibonacci Mann iteration process [2]. Our results generalize, extend, and unify the corresponding results of Agrawal et al. [1, 2], Alfuraidan and Khamsi [3], and many more results in this direction.

Keywords: monotone non-Lipschitzian mapping, ordered hyperbolic metric space.

The Role of Digital Transformation in Enhancing Business Efficiency in Emerging Markets

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Abstract:

The role of digital transformation within the context of business efficiency in emerging markets with regard to fast technological growth in which no stone is left unturned, the digital transformation has become one of the major directions toward more business efficiency in emerging markets. The current study focuses on the impacts of the implementation of digital technology on operations, cost management, and customer interaction with SMEs. A mixed-method approach for this study enables the use of quantitative data based on financial metrics together with qualitative insights obtained from interviews with business managers of different sectors. The findings uncover a significant positive correlation between the implementation of digital tools, such as ERP systems and CRM, and operational productivity. Furthermore, this paper identifies challenges within the SME sector and some related difficulties in the adoption of digital solutions, for example, financial constraints, lack of relevant skills, and resistance to change. Such a research study proves helpful in providing practical recommendations for policymakers, financial institutions, and business owners, discussing a framework to mitigate these challenges. The paper hereby puts at the forefront a kind of transformative potential of digitalization towards promoting sustainable business growth in emerging economies, thus calling for strategic investments both in technology and training. This paper contributes to the current literature by particularly highlighting the nature and dynamics of digital transformation in resource-constrained environments and offering some practical insights for stakeholders in commerce and business administration.

Keyword: Digital Transformation, Business Efficiency in Emerging Markets, Small and Medium Enterprises (SMEs), Technology Adoption, Operational Productivity, Sustainable Growth

Overcoming Challenges in Mobile Commerce: Security, Scalability, and UX

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Abstract:

Mobile commerce (m-commerce) has revolutionized the way businesses and consumers interact, offering unprecedented convenience and accessibility. However, the adoption and growth of m-commerce are hindered by significant challenges related to security, scalability, and user experience (UX). This study aims to explore these challenges comprehensively, proposing strategies to mitigate their impact and facilitate sustainable growth in the m-commerce sector. However, its growth is accompanied by significant challenges that must be addressed to ensure sustainable development. This paper explores three critical aspects of m-commerce: security, scalability, and user experience (UX). Security concerns, including data breaches and fraud, necessitate robust encryption, secure payment gateways, and user authentication mechanisms. Scalability becomes crucial as businesses strive to accommodate growing user bases and fluctuating demands, requiring efficient infrastructure and cloud-based solutions. Finally, optimizing user experience is essential to enhance customer satisfaction and retention, emphasizing intuitive interfaces, seamless navigation, and personalized interactions. By addressing these challenges through innovative technologies and strategic practices, businesses can harness the full potential of mobile commerce, fostering trust and engagement among users while maintaining competitive advantage.

Keywords: Mobile Commerce (M-Commerce), Security, Scalability, User Experience (UX), Digital Transactions, Mobile Applications, Data Privacy, Customer Engagement, E-Commerce Evolution

A Study On Challenges Towards Online Shopping

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Abstract:

Internet is changing the way consumers can shop and buy goods and services, and has rapidly evolved into a global phenomenon. Many companies have started using the internet with the aim of cutting marketing costs, thereby reducing the price of their products and services in order to stay ahead in highly competitive markets. Without doubt internet has influenced consumer lives deeply in which it plays an indispensable and irreplaceable role. Many experts are optimistic about the prospect of online business. The following objective framed by researcher Toanalyse the problems faced by the online consumer. Methodology consists of data, sampling and framework of analysis. For the purpose of the study both primary and secondary data are utilized. Primary data have been collected from online consumers by distributing questionnaires. Secondary data have been collected from journals, magazines, newspaper, books and websites. Convenient sampling method has been adopted for collecting primary data. Totally 100 samples were considered for the study**.** The various statistical tools employed to analyze the data are simple percentage. It is concluded that the consumers are take more conscious while purchasing the products through online.

Keyword: Shopping Internet, Customer .

Digital Disruption in Finance: Evaluating the Impact of FinTech on Traditional Banking Systems

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Abstract:

Traditional banking institutions' supremacy has been challenged by the emergence of financial technology, or FinTech, which has completely changed the global financial environment. With an emphasis on cutting-edge technologies like blockchain, mobile banking, peer-to-peer lending, and artificial intelligence, this study explores how FinTech is revolutionising traditional banks. These developments are changing consumer expectations and industry practices by propelling a change towards financial services that are more affordable, more available, and focused on the needs of the customer. This study examines the ways in which banks are adjusting through digital transformation tactics, such as technology acquisitions, business alliances, and the use of cutting-edge platforms. FinTech promotes operational effectiveness and financial inclusivity.

This study illustrates the advantages and disadvantages of FinTech for conventional banking by analysing industry data. It highlights how crucial it is for banks and FinTech businesses to work together in order to navigate this quickly changing environment. In order to provide insights for stakeholders in the age of digital disruption, the paper ends by talking about future trends and the crucial role that regulatory frameworks play in encouraging sustainable innovation within the financial industry.

Keywords: FinTech, Digital Disruption, Traditional Banking, Financial Technology, Innovation in Finance, Blockchain, Financial Inclusion.

India's Vision Viksit Bharat @2047: Exploring attributes

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Abstract:

Global leader India enjoys a demographic dividend of 29 years blessed with a young, dynamic force working towards emphasizing potential in each attribute of development be it infrastructural development, digital revolution, rural connectivity, structural and institutional reforms by GST and Insolvency Bankruptcy Code 2016, direct business transfer exemplary performance in Global Innovation Index, revolutionary startups programs and creating more jobs in every corner. Visit Bharat an ambitious vision towards transformational socio-economic changes. Transforming a culturally diverse nation into a viksit stage where benefits are reached to all the sections of society; requires a bold and assertive step to flourish economy effectually.

Keywords: Global Innovation Index,digital revolution.

The Role of Women in Agriculture: A Path to Empowerment and Sustainable Development

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Abstract:

Women, particularly in rural areas, have long been fundamental to agricultural work, contributing immensely to food production and household economies. Despite their essential role, they often encounter significant challenges, including limited access to land, financial services, education, and modern technology. Addressing these obstacles and empowering women in agriculture is crucial not only for achieving gender equality but also for enhancing agricultural output and overall economic growth. Women often struggle to obtain loans or credit, preventing them from purchasing essential agricultural inputs such as seeds, fertilizers, and machinery. Microfinance initiatives and rural lending programs focused on women can help overcome this barrier, enabling women to invest in their farms, enhance production, and become more resilient to economic and environmental challenges.Education and skill development are also vital for empowering women in agriculture. Technological access is a key factor in agricultural productivity. Modern tools, such as mobile phones that provide information on weather forecasts, market prices, and farming advice, can significantly improve decision-making. Governments and organizations must focus on creating policies that ensure women's equal access to land, financial resources, and education. Additionally, policies that protect women's land rights and promote their participation in agricultural decision-making processes are crucial for closing the gender gap in farming.Empowering women in agriculture results in numerous positive outcomes. It enhances farm productivity, increases household incomes, and improves food security. Women typically reinvest their earnings into their families, improving education, healthcare, and the overall well-being of their communitiesIn summary, empowering women in agriculture is a key driver of sustainable development. By improving women's access to resources such as land, finance, education, and technology, and by creating policies that support their participation in agricultural leadership, we can unlock their full potential. Empowering women in agriculture contributes to stronger communities, greater food security, and long-term economic prosperity.

AI-Driven Transformation in Petroleum Retail: Enhancing Efficiency, Customer Retention, and Brand Image

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Abstract:

The modern world is vastly growing with the connectivity of Artificial Intelligence(AI) in every stream of our daily life whether it may be the Health sector, Finance sector, Education stream, Automation Industry or any other. In past few years, petroleum sector has also significantly evolved with the advancements of AI techniques that are greatly enhancing the workflow system as well as contributing in the resource utilization of this crucial and limited product. The AI techniques are not only contributing in the enhanced efficiency but also improving the customer retention and overall brand image of various petroleum retail companies. The lesser time, faster service and effectual output are key reasons why AI is rapidly been adopted by many petrol pumps all over the world. AI analyses the need and supply gap of various services provided at petrol pumps and successfully implements the better performance with its numerous techniques. These AI techniques are not only reducing the chance of human errors but also making petrol pumps self-functionable. The interaction of the customers with the petroleum brands are taking place on daily basis and through the revolutionized techniques, petrol pumps are converting into Smart fuel stations. In this study, we will propose significant framework combining AI techniques with the current working models of various petrol stations. Analysis of most robust AI techniques will be merged with the customer perception and brand image perspectives of fuel industry and hence the relative impacts will be recorded.

Keywords: Petrol Pumps, Artificial Intelligence, Consumer Retention, Brand Image.

THEORIES OF CONSUMER BEHAVIOUR IN DIGITAL AGE

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Abstract:

Digital consumer behaviour is a branch of marketing that emphases on knowing how consumers perform on digital platforms. Consumer behavior in today's digital landscape is multifaceted, shaped by diverse influences including technological advancements and societal changes. This chapter provides an extensive overview of theoretical models that throw light on the complexities of customer behavior in online realms. By examining established theories like the Theory of Planned Behavior and newer frameworks such as Networked Individualism theory, we delve into how individuals navigate digital spaces and make decisions. Synthesizing these theories, we aim to develop our understanding of digital customer behavior, touching on concepts like online trust, privacy, social influence, and digital identity. Furthermore, we discuss the practical implications of these theories for marketers and policymakers, emphasizing the need for adaptive approaches to engage with consumers in the ever-evolving digital environment. Through this theoretical exploration, we contribute to advancing discussions on customer behavior in the digital age and suggest avenues for future research.

Keywords: Digital Consumer Behaviour, Omni-Channel Integration, digital marketing, Personalization.

मीडिया शोध में मौलिक और अनुप्रयुक्त अनुसंधान का महत्व

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शोध सारांश:

मीडिया में अनुसंधान का महत्व यह है कि वह संचार प्रक्रिया पर ध्यान केंद्रित करता है और मीडिया संगठनों तथा दर्शकों के बीच संबंधों की जांच करता है । मीडिया अनुसंधान के ज़रिए, मीडिया के विभिन्न माध्यमों के सामाजिक और मनोवैज्ञानिक पहलुओं और प्रभावों का अध्ययन किया जाता है । मीडिया संगठन अपने सभी प्रमुख फ़ैसलों के लिए शोध के नतीजों पर निर्भर करते हैं ।
मौलिक अनुसंधान का मकसद किसी सिद्धांत या नियम को स्थापित करना होता है । यह किसी खास क्षेत्र में ज्ञान का विस्तार करने के लिए किया जाता है तथा इसका मकसद सिद्धांतों को बेहतर बनाना होता है । मौलिक अनुसंधान को बुनियादी अनुसंधान, शुद्ध अनुसंधान, मूल विज्ञान, या शुद्ध विज्ञान भी कहा जाता है ।
अनुप्रयुक्त अनुसंधान का मकसद किसी व्यावहारिक समस्या का समाधान करना होता है । इसमें उस क्षेत्र के सैद्धांतिक ज्ञान का इस्तेमाल किया जाता है । अनुप्रयुक्त अनुसंधान में, मौजूदा समस्याओं के लिए व्यावहारिक समाधान खोजा जाता है । मूलभूत अनुसंधान मौजूदा ज्ञान का विस्तार करता है, जबकि अनुप्रयुक्त अनुसंधान विशिष्ट वास्तविक जीवन के मुद्दों पर ध्यान केंद्रित करता है। मौलिक अनुसंधान की तुलना में अनुप्रयुक्त अनुसंधान अधिक व्यावहारिक है । मौलिक अनुसंधान का दायरा व्यापक होता है और इसे किसी भी संदर्भ में लागू किया जा सकता है, जबकि अनुप्रयुक्त अनुसंधान अपने अनुप्रयोग में अधिक विशिष्ट होता है। मूल अनुसंधान का उद्देश्य वैज्ञानिक ज्ञान विकसित करना और भविष्यवाणियां करना है, जबकि अनुप्रयुक्त अनुसंधान वास्तविक दुनिया की समस्याओं को सुलझाने पर केंद्रित है। मूल अनुसंधान का उद्देश्य ज्ञान में सुधार करना है, जबकि अनुप्रयुक्त अनुसंधान का उद्देश्य विशेष समस्याओं का समाधान करना है। ग्राहक की आवश्यकताएं अक्सर अनुप्रयुक्त अनुसंधान को प्रेरित करती हैं, जबकि बुनियादी अनुसंधान जिज्ञासा और सीखने की इच्छा से प्रेरित होता है। अनुसंधान दो प्रकार के होते हैंमौलिक और अनुप्रयुक्त :, अनुप्रयुक्त अनुसंधान अधिक व्यावहारिक होता है और सैद्धांतिक अनुसंधान परिकल्पना विकास में सहायता करता है। मौलिक और अनुपयुक्त के गुना को देखा जाए तो दोनों ही मीडिया के लिए अति आवश्यक है दोनों का प्रयोग समय के हिसाब से मीडिया में किया जाना चाहिए।

आदिवासी महिलाओं के प्रजनन स्वास्थ्य और निजता के अधिकारएक : (बैगा आदिवासी के विशेष संदर्भ में) विश्लेषण

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शोध सारांश:
भारत में आदिवासी समुदायस्वास्थ्य सेवाओं और निजता के अधिकारों ,विशेष रूप से आदिवासी महिलाएं , तक पहुंचने में कई चुनौतियों का सामना करती हैं। इस लेख में हम बैगा आदिवासी समुदाय के विशेष संदर्भ में आदिवासी महिलाओं के प्रजनन स्वास्थ्य और निजता के अधिकारों का विश्लेषण करेंगे। बैगा आदिवासी भारत के मध्य प्रदेशउत्तर प्रदेश और झारखंड जैसे राज्यों में निवास करने वाला एक ,छत्तीसगढ़ , प्रमुख जनजातीय समुदाय है। ये जनजाति मुख्य रूप से अपनी विशिष्ट परंपराओंऔर ,सहन-रहन , जीवनशैली के लिए जानी जाती है। बैगा आदिवासी खुद को प्रकृति के संरक्षक मानते हैं और अपनी जीवनशैली को प्राकृतिक संसाधनों से गहराई से जोड़कर रखते हैं। उनकी महिलाएं भी इस संस्कृति और समाज का एक महत्वपूर्ण हिस्सा होती हैं।
दीर्घकालीन विकास का अवसर मिलने पर जिले में निवास करने वाली और बारबार चर्चा के केन्द्र में रही बैगा - जनजाति की महिलाओं की ओर मेरा ध्यान आकर्षित हुआ। मैंने जब शोध करने का निश्चय किया तब सबसे रीति नीति के अध् ,सहन -रहन ,पहले बैगा जनजाति की महिलाओं की परम्परायेंयन की बात मेरे ध्यान में आई। मुझे यह भी ज्ञात हुआा कि बैगा जनजाति की महिलाओं के विकास और उनके अस्तित्व को सुत्र होने से बचाने के लिए राज्य शासन द्वारा बैगा विकास प्राधिकरण की स्थापना की गई है। मैं इस तथ्य से भी परिचित हुआ कि जनजातियों में बैगा समुदाय ही एकमात्र ऐसी जनजाति है जिसे परिवार नियोजन कार्यक्रम से पृथक रखा गया है। इसके पीछे कारण यह है कि इस जाति की जन्म विकास दर बहुत न्यून है और इसका अस्तित्व लुप्त होने के कगार में आ गया है। विकास प्राधिकरण का एक मुख्य लक्ष्य विकास के साथ इस जनजाति को लुप्त होने से बचाना है। यह जनजाति कवर्धाबिलासपुरराजनांदगांव जिलों में बहुतायत से निवास करती है। , इनकी अपनी स्वतंत्र परम्परायें हैं। प्राप्त जानकारी के अनुसार यह जनजाति नवप्रस्तर युग से अस्तित्व में है। इनका मूल व्यवसाय खेती है और वे लोग स्थाई निवास बनाकर खेती नहीं करते बल्कि स्थान बदलबदल कर - इनके द्वारा कृषि कार्य किया जाता है। ये जंगल में खेती योग्य स्थान देखकर कृषि कार्य करते हैं। इसमें संदेह नहीं कि बैगा जनजाति की महिलाओं का अध्ययन वर्तमान संदर्भ में अत्यंत आवश्यक है। बैगा जनजातियों की महिलाओं का विस्तृत अध्ययन इसपुस्तक के माध्यम से प्रथम बार सामने आ रहा है। लेख में इस जनजाति की महिलाओं से संबंधित अनेक अनछुए पहलुओं को उद्द्घाटित करने का प्रयास किया गया है

STUDY OF STREET AFFIXATION OF STREET CHILDREN

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Abstract:

Street affixation is a common practice among street children for various reasons. Some people use it to ensure their well-being and physical safety. Others use it to provide for their fundamental needs, such as food and shelter. Street affixation can also give homeless kids a feeling of identity and community.

For street children, however, street affixation can potentially have unfavorable effects. For instance, it may increase their susceptibility to abuse and exploitation. Additionally, it might make it more challenging for them to have access to important services like schooling. Understanding the experiences and difficulties street children face is possible by researching street affixation. Additionally, it can aid in the creation of more efficient street kid support programs and street affixation risk reduction strategies.

The process by which street children cling to objects and people in their immediate surroundings is known as "street affixation." Several ways exist to accomplish this, including sleeping in a specific location, begging from frequent clients, or working for a particular vendor. Building ties with adults, companies, and other street children is another aspect of street affixation.

keywords: exploitation, susceptibility, potentially.

Advances in Fundamental and Applied Research in Medical Science: A Vedic Perspective for Present and Future Challenges

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Abstract:

Ayurveda, the ancient Indian system of medicine, offers a comprehensive approach to health and well-being by integrating physical, mental, and spiritual dimensions of life. This paper explores the advances in fundamental and applied research within the context of Ayurveda and medical science,emphasizing its relevance in addressing contemporary health challenges such as deteriorating health standards, lifestyle disorders, and decreasing life expectancy. Key Ayurvedic principles like Tridosha, Dinacharya(dailyregimen), Ritucharya(seasonal adaptation),and Rasayana (rejuvenation therapy) are analyzed for their potential to contribute to modern health care.The paper examines Ayurveda's holistic approach to mental health, emphasizing the use of Sattvavardhaka practices and herbs like Brahmi and Jatamansi. It also highlights the role ofAgni (digestive fire) and Ama(toxins) in maintaining metabolic balance, drawing parallels with modern concepts of gut health and microbiota. Case studies and empirical evidence from the COVID-19 pandemic demonstrate the utility of Ayurvedic interventions in boosting immunity and managing diseases.

Furthermore, the integration of Ayurvedic principles with contemporary medical research,such as precision medicine, anti-aging therapies, and environmental sustainability, is discussed. The paper underscores the global relevance of Ayurveda in fostering preventive healthcare and it salignment with modern scientific advancements. By advocating for rigorous research, educational initiatives, and policy support, this study envisions Ayurvedaas a cornerstone of future healthcare systems, promoting longevity and holistic well-being for humanity.

Keywords:Ayurveda,Tridosha,Rasayana, Dinacharya ,mentalhealth,immunity,modernmedicine, holistichealthcare

Assessing the Efficacy of Digital Platforms in English Language Skill Development for Employment

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Abstract:

With the increasing demand for English proficiency in the global job market, digital platforms have emerged as accessible tools for developing language skills aimed at enhancing employability. This study examines the effectiveness of these platforms in preparing non-native English speakers for employment by improving key language competencies. The objective is to assess whether digital language learning tools can bridge the skills gap for job readiness, focusing on areas such as vocabulary, verbal communication, and writing proficiency. Methodologically, a mixed-methods approach was applied, combining quantitative analysis of user progress data from popular platforms and qualitative interviews with learners and employers. Metrics such as engagement time, skill assessment scores, and user feedback were analyzed to determine how well digital platforms meet employment-focused language needs.

Results indicate that while digital platforms support flexible and self-paced learning, their effectiveness in skill development is influenced by factors like learner motivation, the specific language areas targeted, and the inclusion of real-world employment contexts. Although participants reported improvements in general language skills, the study found limitations in workplace-specific vocabulary and practical communication exercises. In conclusion, while digital platforms offer substantial benefits for initial language acquisition, targeted enhancements—such as industry-specific modules and practical communication simulations—are recommended to maximize their utility for employment purposes. This research highlights the need for more focused integration of job-related language skills in digital learning tools, providing valuable insights for educators, developers, and policymakers invested in aligning language learning solutions with workforce demands.

Keywords: Digital platforms, English proficiency, communication simulation.

Morphometric analysis of Kharun River Basin in Chhattisgarh, India

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Abstract:

Land, water and soil are limited natural resources and their wide utilization with increasing population is a major area of concern. To mitigate the demand and supply gap between resources and ever-increasing demand, it is of prime importance to conserve the natural resources with proper prioritization for its sustainable development. Morphometric analysis is a quantitative and mathematical analysis of a drainage basin in terms of the terrain feature and its flow patterns. Morphometric analysis of watershed is the best method to identify the relationship of various aspects in the area. The morphometric characterization of the drainage system is essential to study the detailed hydrological behavior of each river basin. In the present study, an attempt has been made to determine the morphometric characteristics of Kharun river basin, a watershed of Sheonath River that constitutes a part of the Mahanadi River Basin. The Kharun river basin has been various linear, areal and relief carried out to understand the spatial variations in morphometric parameters and evaluate the hydrological, topographical and geological properties. The study will be helpful for management of water catchment areas, agricultural land use planning, sustainable water utilization by industrial facilities as well as for studies on hazard management .

Keywords: Demand and supply, Morphometric analysis.

मन्नू भंडारी की आत्मकथाओं में समाजिक यथार्थ

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मन्नू भंडारी हिंदी साहित्य की महत्वपूर्ण रचनाकारो ने से एक है उनकी एक महत्वपूर्ण रचना "**एक कहानी यह भी**" हिन्दी साहित्य की एक महत्वपूर्ण रचना है। मन्नू भण्डारी इस रचना के द्वारा अपना नाम अमर कर चुकी है ।मन्नू भंडारी की सुप्रसिद्ध आत्मकथा 'एक कहानी यह भी ' हिंदी साहित्य की एक सार्थक कृति है | जिसमे एक स्त्री की पीड़ा , व्यथा , वैवाहिक जीवन के कष्ट , स्त्री की घुटन इत्यादी का विस्तृत रूप से विश्लेषण किया गया है | यह आत्मकथा एक दयनीय जीवन की वास्तविकता को उजागर करने वाली आत्मकथा है | '**एक कहानी यह** भी' में लेखिका ने अपने सम्पूर्ण जीवन का व्याख्यान किया है | लेखिका ने अपने जीवन काल में हर तरह की रचनाओं को प्रकाशित किया है जैसे की – कहानी , नाटक, आत्मकथा ,उपन्यास इत्यादी | इनकी सर्वश्रेष्ठ उपन्यास रचनाओं में से **महाभोज** और **आपका बंटी** प्रमुख है | एक महत्वपूर्ण रचनाकार के रूप में इनकी जीवन गाथा सराहनीय योग्य है | एक सफल लेखिका के तौर पर इन्होने अपनी लेखिन के द्वारा एक महान मुकाम हासिल किया है | एक कहानी यह भी में स्त्री की संघर्ष , पीड़ा , उत्पीडन उसकी व्यथा को उजागर कर उसकी सम्पूर्ण जीवन शैली की व्यथा को समाज के सामने उजागर किया है |

मध्यप्रदेश के भानपुर में जन्मी मन्नू भंडारी का जन्म एक मध्यवर्गी परिवार में हुआ था | इनके परिवार में सभीलोग शिक्षित और सुशील थे | मन्नू भंडारी कुल पांच भाई बहन थे जिसमे वे सबसे छोटी थी | हमारा समाज एक पितृस्तात्मक समाज है इनके पिता को आर्थिक तौर पर काफी मुश्किलों का सामना करना पड़ा था जिससे इनके पिता की मानसिकता काफ़ी कुंठित हो चुकी थी | पिता के भय से पूरा परिवार काँपता था | इनकी माता काफ़ी गम्भीर और धैर्यवान थी | पिता के द्वारा बड़ी बहन से तुलना मन्नू के आंतरिक हृदय में घाव कर देता हमारे समाज में लड़कियों और स्त्रियों को तभी महत्व दिया जाता है जब वे सुन्दर हो , सुन्दर होने का अर्थ यह नहीं की वह मन से सुन्दर हो बल्कि शारीरिक तौर पर और उनके रंग के आधार पर ही उनको महत्व दिया जाता है | हमारे भारतीय समाज में यह एक बहुत बड़ी विडम्बना है की लडकियों का आकलन उनके रंग के आधार पर होगा इस मामले में मन्नू जी **काली** थी जिस कारण वे पिता की प्रिय नहीं थी| एक कहानी यह भी में मन्नू जी ने १९४६-१९४७ तक की देश में होने वाली स्वतंत्रता की घटनाओं का व्याख्यान किया है | मन्नू जी भी धीरे – धीरे युवा हो रही थी , उस समय देश में स्वतंत्रता के लिए होने वाली जो भी आन्दोलन हो रहे थे मन्नू जी उनमें भाग लेती और स्वाधीनता संग्राम के नारे लगाने लगती जब यह बात उनके पिता को पता चली तो उनके पिता को यह सहनीय नहीं था |

उस समय एक स्त्री का लडकों के साथ उठाना , बैठना , उनके साथ सड़कों पर खुले आम नारे लगाना यह कोई आम बात नहीं थी फिर भी मन्नु जी ने इन सबकी परवाह किये बिना पुरुषो के संग कन्धा से कन्धा मिलाकर चलती है |

एक कहानी यह भी में मन्नू जी अपने जन्म से लेकर मृत्यु तक सामाजिक बन्धनों , सामाजिक कुरीतियों , पितृस्तात्मक बन्धनों को अपनी लेखनी द्वारा महिलाओं का समाजिक स्तर पर किस तरह शोषण कियांगया है इसका इन्होने समाजिक तौर स्पष्ट रूप से अपनी लेखनी में में प्रस्तुत किया है | इस आत्मकथा में स्त्री को सहनशीलता का प्रतिक माना गया है अगर स्त्री सह रही है तभी उसका गृहस्थ जीवन भी सुखी होगा अथार्थ इनका अपना कोई वजूद नहीं था | इन सभी घटनाओं को लेखिका ने अपनी लेखनी में चित्रित किया है इससे यह ज्ञात होता है की लेखिका अपनी लेखनी में काफ़ी गंभीर रही है | अपने लेखन काल के समय मन्नू **भंडारी जर्मनी की लेखिकाओं के साथ साउथ ईस्ट एशिया के सम्मेलन में जाया करती थी जो की उस समय एक महिला के लिए आम बात नहीं थी |**

और राजेन्द्र यादव जी के परिचय से उपजे प्रेम के विषय में डॉ अर्जुन चौहान ने अपनी पुस्तक राजेन्द्र यादव के उपन्यासों में मध्यवर्गीय जीवन मे अपना मत देते लिखते है की लेखन की वजह से राजेन्द्र यादव था मन्नू भण्डारी का परिचय घननिष्टता में बदल गया और घनिष्टता प्रेम में परिववर्तित हो गई लेखनी दोनों के बीच सेतु बन कर आया दोनों एक दूसरे को अपना जीवन साथी बनाना चाहने लगे मन्नू जी की एक पुत्री भी थी जिनका नाम **रचना** था |

इस प्रकार हम देखते है की किस प्रकार मन्नू जी अपने जीवन के सभी उत्तार – चढाव में भी खुद को एक सशक्त महिला के रूप बनाएं रखती है |