Bharati Vidyapeeth's

Dr. Patangrao Kadam Mahavidyalaya, Sangli

Accredited with 'B++' Grade by NAAC,Bengaluru. (CGPA 2.96)
DST - FIST Funded College (Level - 0) | Affiliated to Shivaji University, Kolhapur

6th National Conference on
Recent Trends in Pure and Applied Sciences
(RTPAS-2024)

Saturday, 17th February 2024

Organized by

INTERNAL QUALITY ASSURANCE CELL

Souvenir

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About Bharati Vidyapeeth:

During the last 50 years, Bharati Vidyapeeth has made astonishing strides in the field of education, particularly, higher and professional education. Today Bharati Vidyapeeth conducts more than 180 educational units of various kinds' right from pre-primary schools to postgraduate institutions and a fully-fledged professional university (BVDU). Among these are colleges of Medicine, Dentistry, Ayurved, Homeopathy, Nursing, Pharmacy, Law, Biotechnology, Engineering, Management, Hotel Management & Catering Technology, Environment Science, Agriculture, Physical education and more. With a view to promote research activities and to create a research culture on its campuses, Bharati Vidyapeeth has established five specialized research institutes in the areas of Health-Related Sciences, Biotechnology, Information Technology, Applied Chemistry and Social Sciences. Today, Bharati Vidyapeeth has its major campuses in New Delhi, Navi Mumbai, Pune, Solapur, Kolhapur, Sangli, Karad, Satara, and Panchgani and at quite a few other places.

About the College:

The College was established on 16th September 1985, as Arts, Science and Commerce College, Sangli, and it was renamed as Dr. Patangrao Kadam Mahavidyalaya, Sangli on 8th January 1999. The college boasts of a spacious, beautiful. The college is trying to bridge disparity between the rural and urban culture. Recently, UGC, New Delhi grants two Diploma courses under Community College Scheme. College also selected by DST, India to develop Instrumentation facilities under FIST scheme. In 2016-17, our college has been selected as a "Lead College" by Shivaji University, Kolhapur, for two academic years, for the second time, taking into account our academic, social and sports achievements. NAAC committee Re-accredited it with 'B^{++}' grade, in August 2018. We are the proud recipients of the Maharashtra State Award for our substantial work through N.S.S.

Theme of Conference:

This conference will provide an excellent forum for sharing knowledge and results in theory, methodology and applications of pure and applied sciences. The conference looks for significant contributions to the applied science in theoretical and practical aspects. The theme of conference is related to Chemistry, Statistics, Physics, Botany, Zoology, Microbiology, Engineering, Mathematics, Computer and Information Sciences, Environmental Sciences, Biomedical Engineering, Nanotechnology, and many other topics in related areas. Conference is expected to provide an opportunity for an interchange of ideas among researchers and practitioners in different fields of Sciences.

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Recent Trends in Pure and Applied Sciences
(RTPAS-2024)

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Souvenir

Editorial Board

Chairman

Prin. Dr. D. G. Kanase

Editor

Dr. A. R. Supale
Dr. T. R. Lohar
Ms. B. K. Bhavikatti
Mr. H. V. Wangikar

Message from Secretary

We are happy to host the 6th National Conference on “Recent Trends in Pure and Applied Sciences (RTPAS–2024)” organized by Internal Quality Assurance Cell, Bharati Vidyapeeth's Dr. Patangrao Kadam Mahavidyalaya, Sangli on 17th February 2024. The main objective of this conference is to provide a platform for researchers, scientists and industrialists to explore, cooperate, promote and motivate the participants towards the pure and applied sciences to achieve sustainability goals.

I welcome all the delegates to the Bharati Vidyapeeth's Dr. Patangrao Kadam Mahavidyalaya, Sangli for the national conference and wish the organizers all the very best. I believe that the outcome of the conference will help to apply the findings to live a better life and benefit humanity at large.

I extend my best wishes for a grand success of this conference.

- Dr. Vishwajeet Kadam
Secretary, Bharati Vidyapeeth, Pune
Pro-Vice Chancellor,
Bharati Vidyapeeth (Deemed to be University),
Pune

Message from Chancellor

I am happy to note that the Internal Quality Assurance Cell of Bharati Vidyapeeth's Dr. Patangrao Kadam Mahavidyalaya, Sangli, has taken this initiative in organizing the Sixth National Conference on Recent Trends in Pure and Applied Sciences (RTPAS-2024). I believe that all the delegates will find attending the conference a valuable addition to their pursuit of a career. In recent times, humanity has struggled with issues on how to make our livelihood more comfortable.

I am very grateful to the organizers for the selection of a conference based on multidisciplinary sciences. Exploration of the theme regarding pure and applied sciences holds promising opportunities not just for academicians but also for making our human life better and more viable on earth. In this regard, I believe that the conference will serve as a channel to bring experts and scholars together. Through their contribution, ideation, and paper presentations, these scholars will give us something valuable to look forward to and fortify our trust in a world that holds hope and a better future.

- **Dr. Shivajirao Kadam**
Chancellor,
Bharati Vidyapeeth (Deemed to be University),
Pune

Message from Vice Chancellor

प्रा. (डॉ.) डी. टी. शिर्के
एम.एस्सी., पीएच्.डी.
कुलगुरू

Prof. (Dr.) D. T. Shirke
M.Sc.,Ph.D.
Vice-Chancellor

Estd. 1962
NAAC 'A++' Grade
शिवाजी विद्यापीठ,
विद्यानगर, कोल्हापूर - ४१६ ००४.
SHIVAJI UNIVERSITY,
Vidyanagar, Kolhapur - 416 004.

दूरध्वनी : कार्यालय - (०२३१) २६०९०६०
निवास - (०२३१) २६०९०५३
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MESSAGE

I am pleased to know that Dr. Patangrao Kadam Mahavidyalaya, Sangli of Bharti Vidyapeeth, has organised the 6th National Conference on Recent Trends in Pure and Applied Sciences (RTPAS-2024) on 17th Fcbruary, 2024.

Today the world is changing in rapid strides. Technology, Science and Communication have an impact on our lives like never before. As a human being, we have the choice to change and adapt to the changes for survival. I am sure that fruitful deliberations will take place in the conference which will be highly beneficial to the students, participants and society.

My heartiest wishes for the grand success of the conference.

With best regards.

Shirke

(D. T. Shirke)

13 FEB 2024

Message from Vice Chancellor

Prof. Dr. Shivajirao Kadam
M.Sc., Ph.D.
Chancellor

Prof. Dr. Vivek A. Saoji
M.B.B.S., M.S.(Surg.)
Vice Chancellor

Bharati Vidyapeeth
(Deemed to be University)
Pune, India.
Founder Chancellor : Dr. Patangrao Kadam
★ Accredited with 'A+' Grade (2017) by NAAC ★
★ Category-I University Status by UGC ★
★ NIRF Ranking - 76 ★
"Social Transformation Through Dynamic Education"

Celebrating and Beyond
BHARATI VIDYAPEETH

Dr. Vishwajeet Kadam
B.Tech., M.B.A., Ph.D.
Pro Vice Chancellor

G. Jayakumar
M.Com., Dip.Pub.Admn.
Registrar

Message from Vice Chancellor

I am happy to note that Bharati Vidyapeeth's Dr. Patangrao Kadam Mahavidyalaya, Sangli is organizing 6th National Conference on Recent Trends in Pure and Applied Sciences (RTPAS-2024). At the outset, I complement and congratulate the Principal, Dr. D. G. Kanase and the organizing team for organizing this Conference in line with achieving societal sustainable goals, which I am sure will be a grand success.

Bharati Vidyapeeth, Pune is always at the forefront of organizing various knowledge events and we believe that these conferences, seminars, workshops etc. not only give an opportunity for sharing the knowledge, learning from the experts but also for networking and fostering collaborations.

The progress of science and technology is happening at a very rapid pace. Artificial Intelligence (AI) and Machine Learning (ML) are the buzz words. With the advances in biotechnology, information & communication technology and enormous computing power, new techniques and bio-medical devices are being developed. We in academia not only have to keep pace with these but also educate the learners about the changing situations. I am sure these type of conferences will help participants and learners get meaningful insights.

I am also sure the participants will immensely benefit from the deliberations and discussions in this conference and will go back enriched with new knowledge in the field of pure and applied sciences for societal sustainability goals.

I wish everyone the very best and hope you carry pleasant memories from here.

My sincere best wishes

Dr. Vivek Saoji
Vice Chancellor

Bharati Vidyapeeth Bhavan, Lal Bahadur Shastri Marg, Pune - 411 030 (INDIA)
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Message from Vice Chancellor

D. Y. PATIL EDUCATION SOCIETY (DEEMED TO BE UNIVERSITY), KOLHAPUR

(Declared u/s 3 of the UGC Act 1956 vide Notification No. F.9-26/2004- U.3 dt. 01-09-2005 of the GOI)
NAAC 'A+' Grade in 3rd Cycle

Dr. Rakesh Kumar Mudgal
Vice-Chancellor

Message

In this era of rapid change, our world is witnessing unprecedented transformations propelled by the relentless march of technology, the ever-evolving landscape of scientific discovery, and the seamless interconnectedness facilitated by communication networks. These forces are revolutionizing every aspect of our lives, presenting both challenges and opportunities on a scale never before imagined.

As individuals navigating this dynamic landscape, we are faced with a crucial choice: to resist change or to embrace it, to stagnate or to evolve. It is our adaptability, our willingness to learn and grow alongside the changing tide, that ultimately determines our ability to thrive in this fast-paced environment.

Against this backdrop, Bharati Vidyapeeth's Dr. Patangrao Kadam Mahavidyalaya, Sangli, beacon of progressive thinking and academic excellence, is organising the 6th National Conference on **"Recent Trends in Pure and Applied Sciences (RTPAS–2024)"**, on February 17, 2024. This conference is going to serve as a wonderful platform for scholars, researchers, and practitioners to converge, exchange ideas, and explore the latest developments in the field of pure and applied sciences.

I am confident that the deliberations at RTPAS–2024 will be characterized by depth, insight, and innovation, paving the way for transformative breakthroughs that will benefit not only the academic community but also society at large. The exchange of knowledge and ideas that will occur during this conference would have the potential to shape the future trajectory of scientific inquiry and technological innovation.

Best wishes from D. Y. Patil Education Society Deemed to be University, Kolhapur, for the grand success of the conference.

Rakesh Kumar Mudgal

Address : 869, 'E', D.Y.Patil Vidyanagar, Kasaba Bawada, Kolhapur - 416 006 I **Phone :** (0231) 2991436
☎ (0231) 2601595 I **Email :** info@dypatilkolhapur.org I **Website :** www.dypatilunikop.org

Message from Principal

As a principal of Bharati Vidyapeeth's Dr. Patangrao Kadam Mahavidyalaya, I take great pride in welcoming all to the Sixth National Conference on Recent Trends in Pure and Applied Sciences (RTPAS-2024). Research in pure and applied sciences has become a necessity, as it is associated with every element of life in the universe. This conference is organized to find a concrete solution with perfect planning for various problems in the basic sciences.

We have called eminent scientists from the state, and it will be a great feast for participants and delegates. I appreciate our team of organizers for taking such a praiseworthy initiative. I am very happy to inform you that not only invited speakers will deliver their thoughts, but also many researchers will be presenting their work with posters at this conference. Our Dr. Patangrao Kadam Mahavidyalaya Sangli organized this scientific get together from last 5 years and we are receiving great response year by year. All of your contribution towards this conference is real backbone of organization.

The national conference will provide the best podium in the interdisciplinary field of pure and applied sciences for young researchers. Henceforth, as well, we will strive to encourage youth and motivate them to achieve societal sustainability goals. I am honoured to be the organizing chairman of RTPAS-2024 and welcome you all.

Have a great time.

- **Prin. Dr. D. G. Kanase**
Organizing Chairman
Former Member,
Management Council,
Shivaji University, Kolhapur

Message from IQAC Coordinator

It gives me immense pleasure to welcome all participants, delegates, and dignitaries to the Sixth National Conference on Recent Trends in Pure and Applied Sciences (RTPAS-2024). I feel very proud to inform you that this is the sixth consecutive national conference that has been organized by the Internal Quality Assurance Cell (IQAC) of Bharati Vidyapeeth's Dr. Patangrao Kadam Mahavidyalaya, Sangli. I am so honoured to be the coordinator of IQAC. Our team's tireless efforts paid off, and researchers from all over the country have participated in this national conference, RTPAS-2024. We wish to continue the same practice in the coming years. We will provide a forum for the exchange of knowledge, ideas, and learning experiences among the participants and speakers.

Thank you all for your cooperation and support.

- **Dr. A. R. Supale**
Vice Principal
Coordinator, IQAC

Message from Convener

It gives me a great pleasure as the convener of this conference to welcome the chief guests, invited speakers, chairpersons, experts, participants, and my colleagues to have a great time and edifying experience at the Sixth National Conference on Recent Trends in Pure and Applied Sciences (RTPAS-2024). I am very happy to inform you that 331 participants have registered for this conference including 92 faculty and 239 research students.

We aimed to bring all science disciplines together and provide a unique platform where researchers will discuss the interdisciplinary possibilities in pure and applied sciences. This Conference has brought together relevant field experts, professors, industry representatives, postdoctoral fellows, and research students from all over India, providing them with opportunity to report, present, share, and discuss scientific questions, achievements, issues and challenges in the field. Poster exhibition presented during this Conference has highlighted some of the exciting developments in the fields of basic and applied sciences.

I am very grateful to our management for giving me this opportunity to organize this conference.

- **Ms. B. K. Bhavikatti**
Convener, RTPAS - 2024

Message from Organizing Secretary

Greetings from Bharati Vidyapeeth's Dr. Patangrao Kadam Mahavidyalaya, Sangli. It gives me great pleasure to place before you the Abstracts Book of the Sixth National Conference on Recent Trends in Pure and Applied Sciences (RTPAS-2024). The abstract book contains 101 abstracts. As the secretary, I welcome all participants to celebrate the marvels of science and innovation.

We thank the participants for their valuable contributions to making the conference successful. We sincerely thank all the members of the advisory committee for their valuable guidance. I am very grateful to all committee members for their hard work and passions.

Once again, thank you for being a part of the RTPAS- 2024.

- **Dr. T. R. Lohar**
  Organizing Secretary,
  RTPAS - 2024

Message from Treasurer

It is with great pleasure and honour that I extend my warmest greetings to each and every one of you on behalf of the organizing committee of 6th National Conference on Recent Trends in Pure and Applied Sciences-2024. Each and every member of organizing committee has put their best of efforts to give this conference a memorable one in all good ways! The Conference has also provided attendees the opportunity to make and renew friendships, to network, and to collaborate on future endeavours and research projects.

As the Treasurer of this remarkable event, I welcome all the participants to this RTPAS-2024.

Thank you.

- **Mr. H. V. Wangikar**
Treasurer, RTPAS - 2024

Bharati Vidyapeeth's

Dr. Patangrao Kadam Mahavidyalaya, Sangli

6th National Conference on

Recent Trends in Pure and Applied Science

(RTPAS-2024)

Organized by

Internal Quality Assurance Cell

(Saturday, 17th February 2024)

DAY PROGRAMME SCHEDULE

09:00-10:30 am	Registration, Breakfast & Tea	
10:30-11:00 am	***Inaugural Function***	*Chief Guest* **Hon. Prof. Dr. R. K. Mudgal** Vice Chancellor, D. Y. Patil Education Society Deemed to be University, Kolhapur
		Chairperson **Hon. Prin. Dr. H. M. Kadam** Regional Director, Bharati Vidyapeeth, Pune
		Organizing Chairman **Hon. Dr. D. G. Kanase** Principal, Dr. Patangrao Kadam Mahavidyalaya, Sangli
11:00-11:30 am	***Key Note Address***	Speaker: **Prof. Dr. R. K. Mudgal** Vice Chancellor, D. Y. Patil Education Society Deemed to be University, Kolhapur
11:45-12:30 pm	***Technical Session I***	Resource Person: **Prof. (Dr.) G. S. Rashinkar** Department of Chemistry, Shivaji University, Kolhapur Subject: Supported Ionic Liquid Phase Catalysis Chairperson: **Dr. R. V. Kupwade** Associate Professor, Smt. Kasturba Walchand College, Sangli
12:30-01:15 pm	***Technical Session II***	Resource Person: **Dr. B. V. Kumbhar** NMIMS Deemed to be University, Mumbai Subject: Addressing the Rubella Outbreak : Strategies for effective mitigation Chairperson: **Dr. B. B. Ballal** Associate Professor, Dr. Patangrao Kadam Mahavidyalaya, Sangli
01:15-02:00 pm	***Lunch***	
02:00-04:00 pm	***Technical Session III***	**Poster Presentations**
04:15-04:30 pm	***Tea***	
04:30-05:00 pm	***Valedictory Function***	*Chief Guest* **Hon. Prin. Dr. D. G. Kanase** Former Member, Management Council, Shivaji University, Kolhapur

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Invited Lectures

Supported Ionic Liquid Phase Catalysis

Prof. Dr. G. S. Rashinkar
Department of Chemistry, Shivaji University, Kolhapur, 416004, M.S., India
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Abstract:

The advent of green chemistry principles has raised strong attention in redesigning synthetic processes so that use of hazardous substances and the generation of toxic waste can be avoided.[1] A number of strategies and scientific tools have been explored to realize sustainable chemical processes. With this regard, much attention has recently been focused on the concept of immobilized ionic liquids also called as supported ionic liquid phase (SILP) catalysis involving immobilization of ionic liquids (ILs) onto a surface of a porous high area support material.[2] This novel class of advanced materials constitutes one of the powerful green tools for catalysing sustainable chemical processes. The interest in immobilized ionic liquids stems from their interesting properties such as environmentally benign nature, high activity and selectivity, easy handling, ease of product separation and the efficient catalysts recycling. In addition, the processes applying immobilized ionic liquids can be performed in continuous mode using fix bed reactors. The concept of immobilized ionic liquids has significantly progressed in the last few years, resulting in new applications for various organic transformations.[3]

We have synthesized variety of SILP catalystsby depositing ILs on the surface of high area porous material such as aerogel and hemicucurbituril by adsorption interactions. In addition covalent bonding approach for anchoring IL like units on supports has been employed. Graphene, magnetic nanoparticles (MNPs), Merrifield resin, silica, cellulose have been employed as support for the synthesis of SILP catalysts.[4] The SILP catalystshave been characterized on the basis of various analytical techniques. The synthesised SILP catalysts are employed for carrying out synthetically important organic reactions under environmentally benign conditions to achieve the goal of sustainability

References:

[1] I. T. Horváth, P. T. Anastas, Chem. Rev., 107 (2000) 2169.

[2] A. Riisager, R. Fehrmann, M. Haumann, P. Wasserscheid, Top. Catal., 40 (2006) 91.

[3] B. Karimi, M. Tavakolian, M. Akbari, F. Mansouri, ChemCatChem., 10 (2018) 3173.

[4] R Kurane, J Jadhav, S Khanapure, R Salunkhe, G Rashinkar, Green Chem., 15 (2013) 1849.

Addressing the Rubella Outbreak Strategies for Effective Mitigation

Dr. B. V. Kumbhar
Sunandan Divatia School of Science, NMIMS University, Mumbai
Email: bajarang.kumbhar@nmims.edu

Abstract:

The Rubella virus, classified within the Rubivirus genus and the matonaviridae family, is the causative agent of Rubella, commonly known as German measles. This viral infection manifests with characteristic symptoms such as rashes, lymphadenopathy, and fever, defining the acute viral illness called Rubella. Rubella virus, or RUBV, poses a significant risk during pregnancy, particularly in the first trimester, as it can lead to Congenital Rubella Syndrome (CRS). CRS, associated with a variety of birth defects and developmental abnormalities, including blindness, hearing defects, and mental deficits, affects an estimated 110,000 babies worldwide each year. In 2021, there were approximately 128,000 measles-related deaths globally. In 2018, the Sangli district of Maharashtra, India, witnessed three unusual cases of Rubella in siblings. These cases presented with asymptomatic acute rubella-associated encephalitis, and while the surviving sibling (a 7-year-old female) tested positive for IgM rubella in serum, while her siblings (an 8- year-old female and a 2-year-old male) passed away due to a severe condition called meningoencephalitis, which is an inflammation of the brain and its surrounding tissues. For RUBV replication, the rubella papain-like protease (RubPro) must cleave the non-structural polyprotein p200 into the multifunctional proteins p150 and p90. Therefore, RubPro becomes an attractive target for anti-viral drug design. The binding of host calmodulin 1 (CaM) to RubPro modulates the protease activity and infectivity of RUBV. However, the exact binding mode of CaM and RubPro remains unclear. Therefore, our investigation seeks to understand the interaction between CaM and RubPro and identify the allosteric site for developing antiviral protease inhibitors. By focusing on the allosteric binding site of RubPro, we employed a computational modeling approach to identify potential antiviral compounds. Using the ChemDiv protease inhibitors Database, we applied computational structural biology techniques to investigate the potential anti-viral protease inhibitor. Furthermore, the identified drug compounds show promise for managing RUBV infections, suggesting the potential for groundbreaking antiviral treatments. This study may contribute to improved methods for managing or controlling rubella infections.

Keywords: Rubella, Congenital Rubella Syndrome, Papain like protease, drug discovery, Simulation

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Abstracts

PP-1

STRUCTURAL AND BIOLOGICAL STUDY OF LANTHANIDE COMPLEXES

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Abstract:

Lanthanide complexes have attracted researchers from various fields for their unique structural features and interesting magnetic, catalytic, and optical properties. Thus, these materials have become very important as magnetic probes, nuclear medicine, optical amplifiers, and sensors, where modulation of the structures of lanthanide complexes is found to be the key to their application in such fields.

The photoluminescence properties of rare-earth (lanthanide) compounds have been fascinating researchers for decades. Lanthanide complexes is actively studied to get alternative classes of chemotherapeutics in recent times which has been highlighted in the current review and providing a positive hope for developing effective anticancer agents in near future.

Lanthanum complexes (8-hydroxy quinoline) bis (1, 10-Phenanthrolin) and (3-carboxypyridine) bis (1, 10-Phenanthrolin) has been synthesized and characterized by different techniques. Lanthanum complexes was characterized for structural and thermal analysis. Structural analysis of this material was done by Fourier transformed infrared spectroscopy (FTIR), Energy-dispersive X-ray Spectroscopy (EDX) and Scanning Electron Microscope (SEM).

Lanthanide metals/ions on complexation with different ligands was reported as more biologically active compounds. The study of microbial activity showed that Ln complexes revealed the better Antimicrobial, Antifungal and Antimalarial.

Keywords: Metal complex, thermal stability, Material Science, IR, lanthanide

PP-2

REPURPOSED-MEBENDAZOLE LOADED NANO-STRUCTURED LIPID CARRIERS-BASED GEL: A PROMISING APPROACH IN SKIN CANCER TREATMENT

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Abstract:

Mebendazole (MBZ) is now being considered as a repurposing candidate that may be able to successfully treat skin cancer (SC). Its limited solubility, dose-related toxicity, and adverse effects in the treatment of SC, however, restrict its usefulness. Localized MBZ distribution via appropriate nanocarriers is essential to overcoming these challenges. In order to improve patient adherence and enable localized distribution in the fight against SC, this study aimed to develop an MBZ nanostructured lipid carrier (NLC)-based gel using carbopol-934 as a gelling agent. MBZ loaded NLCs are prepared by using hot emulsification ultra-probe sonication technique by utilizing different concentrations of Surfactant and co-surfactant along with the solid and liquid lipids. The resultant MBZ-loaded NLCs had a particle size of 143.3 ± 3.6 nm and % EE of 82.33 ± 4.2%, whereas MBZ-NLC's incorporated gel having pH5.35 to 5.65, and viscosity 4.00 to 6.30 Pa.S. Importantly, compared to traditional MBZ gel, NLC-based gels showed significantly greater MBZ release in pH 6.8, and 5.5 after 48 hours. *Ex vivo* investigations showed that MBZ-NLC-based gel has3 times better permeation than traditional gel. Notably, MBZ NLC's and NLC-based gel showed excellent *in-vitro* cytotoxicity than plain MBZ against cancer cell line along with better 6 months' stability. Therefore, NLC-based gel provides a novel, safe, and efficient option for SC treatment.

Keywords: mebendazole; nanostructured lipid carrier-based gel; ex-vivo skin permeation, *in vitro* cytotoxicity

PP-3

CATALYST FREE SYNTHESIS OF 5-ARYL-1,2,4-TRIAZOLIDINE-3-THIONE DERIVATIVES IN AQUEOUS HYDROTROPIC MEDIUM

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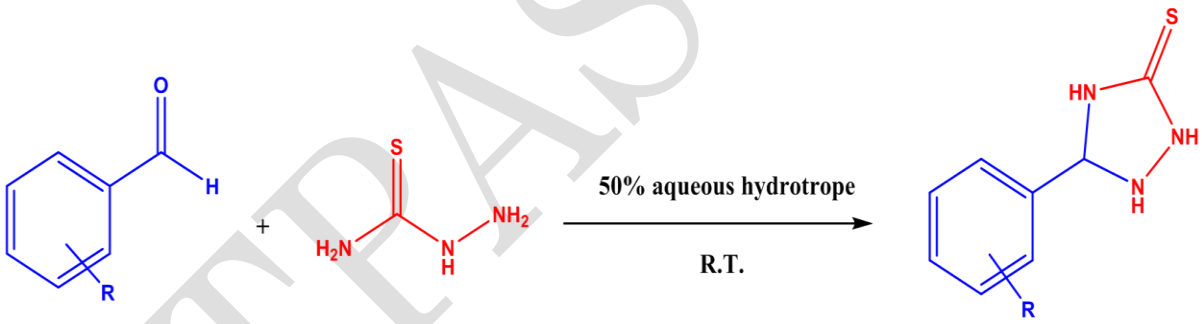
Abstract:

Here, we have demonstrated a green and efficient protocol for the synthesis of biologically and pharmaceutically important 5-aryl-1,2,4-triazolidine-3-thione derivatives in excellent yields (92–98%) *via* two components reactions of aryl aldehydes and thiosemicarbazide at room temperature using aqueous hydrotropic medium. The remarkable features of the new procedure are shorter reaction time, excellent yields, catalyst free condition, aqueous medium, simple experimental and workup procedure.



Keywords: 5-aryl-1,2,4-triazolidine-3-thione, Aqueous hydrotropic medium

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PP-4

OXIDATION OF ORTHO-FLUORO BENZOIC ACID HYDRAZIDES BY USING THALLIUM (III) IN ACIDIC MEDIUM-A KINETICS AND MECHANISTIC APPROACH

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Abstract:

In perchloric and hydrochloric acid medium mixture, thallium (III) reacts with ortho-fluoro benzoic acid hydrazide. The process of the reaction begins with the creation of a complex with the reactant, which breaks down later to produce the product. Acrylonitrile's reaction indicates that no free radicals are produced. As $[H^+]$ and $[Cl^-]$ rise, the reaction's rate decreases. A rise in ionic force has no impact on the velocity of reaction. At four various temperatures ranging from 288K to 303K, temperature effects were examined. A mechanism has been investigated, as well as the activation parameters.

Keywords: Thallium (III), Oxidation, *Ortho*-Fluoro Benzoic Acid Hydrazide(o-FBAH), Kinetics, Thermodynamic Parameter.

PP-5

DEVELOPMENT AND VALIDATION OF A STABILITY-INDICATING HPLC METHOD FOR ANALYSIS OF 5-(4-NITROPHENYL)-1,2,4-TRIAZOLIDINE-3-ONE

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Abstract:

In this study, we present the establishment and validation of a novel reversed-phase high-performance liquid chromatography (RP-HPLC) method designed for precise analysis of 5-(4-Nitrophenyl)-1,2,4-Triazolidine-3-one, emphasizing sensitivity, clarity, accuracy, and robustness. The chromatographic separation employed a Cosmosil C18 column (250mm*4.6ID, 5-micron particle size), with a mobile phase composition of methanol and water, operating at a flow rate of 0.8 ml/min. Detection was performed at a wavelength of 331 nm. The optimized RP-HPLC method demonstrated a favourable retention time of 4.374 minutes for 5-(4-Nitrophenyl)-1,2,4-Triazolidine-3-One. Method linearity was ascertained through a correlation coefficient (r2) of 0.9995 within the concentration range of 10 ppm to 50ppm. Precision analysis exhibited a percentage relative standard deviation (% RSD) below 2.0%, attesting to the method's reliability. Recovery studies indicated a percentage recovery of 99.79%. The limits of detection (LOD) and quantification (LOQ) were determined to be 0.8247 ppm and 2.4992 ppm, respectively. The developed and validated RP-HPLC methodology offers a time-efficient solution suitable for routine quality control and analysis of 5-(4-Nitrophenyl)-1,2,4-Triazolidine-3-One in industrial settings.

PP-6

ISOLATION AND CHARACTERIZATION OF HALOTOLERANT PGPR FROM SALINE SOIL FOR THEIR USE AS BIOINOCULANT FOR SUSTAINABLE AGRICULTURE

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Abstract:

To feed growing global population, we have to increase food production & Agriculture is the main sector of food production. The use of chemical fertilizers to increase the plant growth is harmful to ecosystem. Adverse environmental conditions like salt, drought, heat, cold have detrimental effects on plant growth and productivity. Plant growth promoting *Rhizobacteria* (PGPR) has emerged as pivotal players in sustainable agriculture due to their multifaceted contributions to plant health and soil fertility. PGPR applications contribute to sustainable agriculture by reducing the need for chemical fertilizers and pesticides and fostering environment friendly approaches. Their applications include enhancing nutrient availability, promoting plant growth, improving soil structure, protecting against pathogens & overall crop productivity. PGPR from saline soil are particularly interesting for their potential to assist plants in dealing with salt stress. PGPR from saline soils demonstrate unique adaptations, offering a promising solution for crops facing salinity stress. These bacteria not only tolerate high salt concentrations but also assist plants in mitigating the adverse effects of salinity. This abstract delves into the process of isolating and characterizing PGPR strains from agriculture soils, highlighting their potential applications in sustainable agriculture. The isolation process involves collecting soil samples from diverse agricultural ecosystems and selecting bacterial colonies based on their ability to promote plant growth. Subsequent characterization involves assessing various traits such as nitrogen fixation, phosphate, zinc solubilization, Ammonia, Cellulose, IAA production and antagonistic activity against plant pathogens. The results of isolation and characterization reveal a diverse array of PGPR strains with unique attributes suited for different agricultural environments and crops. These strains hold promise for applications in biofertilization and biocontrol contributing to sustainable agricultural practices.

Keywords: Halotolerant PGPR, Bioinoculant, Sustainable agriculture

PP-7

IMPACT OF NI DOPING ON Cu-BTC MOF FOR ELECTROCATALYTIC OXYGEN EVOLUTION REACTION

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Abstract: Metal-organic frameworks (MOFs) are an emerging class of porous crystalline materials, synthesized by combining organic linkers and secondary building blocks. Their remarkable designs and flexibility facilitate functional linkers and engineering synergies between the metal nodes, making them appropriate platforms for various applications. The high surface area, controllable porosity, and good stability make them promising materials. The oxygen evolution reaction (OER) is the important half-cell reaction that plays a key role inwater splitting, which is a promising way to achieve highly efficient and clean energy. However, the efficiency of the water splitting is limited by the sluggish kinetics and large overpotential. The development of sophisticated electrocatalysts with high activity and stability based on non-noble metal elements remains a great challenge. In this communication, we report a Ni-doped MOF, the incorporation of another metal to enhance the catalytic properties of MOF materials. The Cu-BTC MOF doped with Ni with different percentages, such as NiCuBTC 10%, NiCuBTC 20%, and NiCuBTC 30%. The CuBTC MOF and Ni-doped MOF nanomaterials were highly efficient and superior electrocatalysts for OER in 1.0 M KOH electrolyte solution. The Ni-doped CuBTC MOF electrocatalyst enhances the electrocatalytic activity and the conductivity towards the OER. The obtained NiCuBTC 20%, material shows a low overpotential of 290 mV @10 mA/cm^2 and Tafel slope (67 mV dec^{-1}), as well as good long-term stability. The present work shows a facile strategy to design and synthesize a Ni-doped CuBTC MOF-based electrocatalyst, which offers superior electrocatalytic performance towards water electrocatalysis.

Keywords: Metal-organic frameworks, oxygen evolution reactions, catalysis.

PP-8

DEVELOPMENT OF BENCHTOP SEMI-AUTOMATED COCOON SORTING AND CLEANING MACHINE

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Abstract:

Extraction of silk from silk cocoon is known as reeling. Silkworms spin the cocoons at the end of larval period. Silk cocoons has soft and loose white layer of silk filaments, which is called floss. Removing of the flossy layer from the cocoon is called deflossing which is pre-requisite for reeling process. Generally silk cocoons have particular size and shape because these are genetic characters, even though we will find some defective cocoons. Defective cocoons affect the reeling performance and quality of the silk. Therefore, unsuitable and defective cocoons should be sorted out from the good cocoons to get optimum result during reeling. Keeping this view in mind we have developed "**Benchtop semi-automated cocoon sorting and cleaning machine."**By using this machine, we can sort silk cocoons into- Good, Double, Uzi pierced, Flimsy or thin shelled, Melted or stained and Thin-end cocoons. After sorting of silk cocoons the good cocoons proceed further for deflossing process. This machine includes three metal shafts which get rotating by using motor. Shafts catch the flossy layer of silk and defloss the cocoons efficiently at the rate of 25-30 Kg Cocoons/ hour.

Keywords: Deflossing, Shafts, *Bombyxmori,* Reeling

PP-9

SOURSOP LEAVES DERIVED FLUORESCENT CARBON DOTS: AN ANALYTICAL PROBE FOR SENSING OF 5FU BY UV SPECTROMETRY

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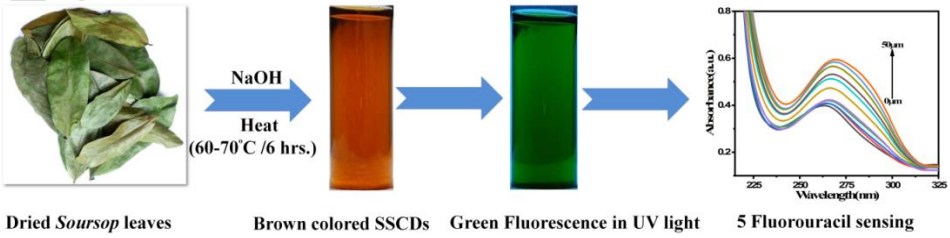
Abstract:

Carbon dots (CDs), are a type of carbon-based material that contain particles smaller than 10nm.They exhibits outstanding properties, which include strong photoluminescence, chemiluminescence, low toxicity, good biocompatibility, cheap cost, photoinduced electron transfer, and bright photoluminescence, and also having dynamic photophysical properties, resistance to photoleeching, and photocatalytic properties, CDs are luminous materials. With the development of non-toxic CDs, the use of toxic nanomaterials for bioimaging and biosensing has decreased during the past several years. Green fluorescent CDs are prepared by simple bio-derived synthetic method by *Soursop (Annona Muricata)* leaves. The leaves are having antioxidant, anticancer, anticonvulsant, anti-arthritic, anti-parasitic, anti-malarial and anti-diabetic effect properties. The *Soursop* carbon dots (SSCDs) were characterized by different analytical techniques. The XRD analysis showcased that the SSCDs exhibits polycrystalline structure, with particle size 4-8 nm. This data is also confirmed by the HR-TEM analysis. The SSCDs are applied as a sensing probe for the analysis of an anti-cancer drug 5 Fluorouracil specrophotometrically.

Keywords: Carbon Dot, SSCDs, *Annona Muricata*, 5 Fluorouracil.



Dried *Soursop* leaves | Brown colored SSCDs | Green Fluorescence in UV light | 5 Fluorouracil sensing

PP-10

ISOLATION AND CHARACTRIZATION OF SIDEROPHORES BY BACILLUS MEGATERIUM NCIM 2634

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Abstract:

Siderophore produced by bacteria, fungi and plants, siderophores are low-molecular-weight chelating agents (200–2,000 Da) to facilitate uptake of iron (Fe). Iron is an essential element in variety of metabolic and signallingpathway. More than 100 enzymes acting in primary and secondary metabolites puses iron as cofactor.They play an important role in extracellular Fe solubilization from minerals to make it available to microorganisms. Some antibiotics (i.e.,albomycins, ferrimycins, danomycins, salmycins, and tetracyclines) can bind Fe and some siderophores showed diverse biological activities. Functions and applications of siderophoresderived from Bacillus megateriun NCIM 2634 were reviewed to better understand the diverse metabolites.

Keywords : Siderophore, Fe solubilization

PP-11

DESIGN AND EVALUATION OF CANDESARTAN CILEXETIL LOADED NANOCRYSTAL BASED SOLID DISPERSION FOR ENHANCEMENT OF ORAL BIOAVAILABILITY

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Abstract: The aim of the present investigation was to formulate and characterize nanocrystal based solid dispersion of Candesartan Cilexetil (CC). In the preparation, CCloadednanosuspension was prepared employing Eudragit RLPO and PVA as a stabilizer by using solvent precipitation method. Secondly, RLPO loaded nano sized lyophilized powder was incorporated in solid dispersion using kneading method using Cross povidone as super-disintegrate. For optimization of final formulation, 3^2 factorial design was used and amount of nanosuspension powder (X1) and concentration of superdisingrate agent (X2) as dependent variables were considered. The drug content (%), in vitro drug release (%) and zeta potential were performed for all formulations. Optimized formulation (CCSD2) showed particle size of 221 nm, zeta potential of 30.4 mv, and % drug release of 95.58% and it was used for further study. Polydispersityindex (PDI) Analysis of optimized formulation were found to be 0.218. SEM showed nanocrystal aggregation of drug, may be due to water removal process. DSC showed slight change in crystallinity, may be due to the presence of lactose. Stability study was carried out for 6 months.The solvent precipitation method is an efficient way to create Candesartan Cilexetilnanocrystal based solid dispersion with lower particle size. DSC thermogram confirmed no interaction between drug and excipients. The *in vitro* drug release study of candesartan cilexetil nanosizing method. Candesartan cilexetil was efficiently and successfully confined inside the polymer. Candesartan cilexetil and other class II medicines may therefore find a promising carrier in the nanocrystal method.

Keywords: Candesartan Cilexetil, Nanocrystalline Solid Dispersion, Factorial Design

PP-12

BIOGENIC SYNTHESIS OF SELENIUM NANOPARTICLES IN HIBISCUS PLANT EXTRACT AND THEIR CHARACTERIZATIONS

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Abstract:

Se Nanoparticles were synthesized by wet chemical method. These nanoparticles were characterized by using UV-Vis., FTIR, PL emission spectroscopic techniques to confirm formation of nanostructures. The FTIR spectrum confirms the presence of functional Groups. The structure and phase purity were confirmed by analyzing the X-ray diffraction pattern.The particle size was determined by transmission electron microscopic (TEM) techniques. The oval and rod shape of nanoparticles were found by SEM technique.

Keywords: Selenium nanoparticles, FTIR, XRD, TEM, SEM.

PP-13

DIVERSITY, POPULATION STRUCTURE OF BIRDS ASSOCIATED WITH BHIMA RIVER, PANDHARPUR, DISTRICT SOLAPUR, MS

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Abstract: The present communication reports the diversity of birds associated with river Bhima along Pandharpur city, District Solapur. The study sites consist of 5 different locations along a stretch of the Bhimariver approximately 10 km in length.The observations were carried during June 2022 to March 2023. The study reports presence of 79 species belonging 42 families of 15 orders. Out of 79 species, 24 are aquatic and remaining 55 are wetland dependant and terrestrial birds.Out of these, 10 species were winter migrants (WM), 1 was a breeding migrant (BM), 10 were local migrants (LC), and 58 were resident (R) species. The status of 1 species could not be determined. 53 % of all occurring species are common, 25 % are occasional, 3 % are single record, and 19 % are uncommon. Considering population size of all 42 families, Columbidae, Sturnidae and Anatidae are the most dominant families.Anthropogenic activities such as unchecked sand mining endanger the nesting sites which could be suitable for ground nesting birds. The study also reports population structure of these birds which are largely dependent on the stretch of Bhimariver from the Pandharpur Tehsil.

Keywords: Bird Diversity, Population, Community, Population Structure, Bhima River, Pandharpur

PP-14

DEVELOPMENT OF LIQUID BIO -FERTILIZER FROM FISH EXCRETA

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Abstract:

The article examines appropriate studies on the creation and applications of bio fertilizer made from fish waste and excreta, with an emphasis on agricultural crops and horticultural plants, which is useful in organic farming. The current article focus on fish excreta of Genetically Improved Farmed ***Tilapia*** (GIFT) Tilapia from Bio-floc Fish Farm. The fish excreta collected in the form of slurry and was analysed for its nutritional values. The analysis of 1 litre sample confirmed presence of 14different nutrients *viz.* Nitrogen, Organic carbon, Phosphorus, Potash, Calcium, Sulphur, Magnesium, Iron, Copper, Manganese, Zinc, Boron, Sodium and Chloride. Out of these, Nitrogen is 448 ppm, Phosphorus 446 ppm, Potash 50 ppm. There are 13 different agricultural crops and 3 horticultural crops are selected to find out the effect of fish excreta. The present study was focused on the vegetative growth of the selected plants. During study two sets of same crops are taken as control and treatment to know the difference.

Keywords-Bio fertilizer, Crops, Fish excreta, GIFT, Horticulture, Plants, Root, Shoot

PP-15

IN VITRO DRUG RELEASE AND KINETIC STUDY OF MESALAMINE, VITAMIN D_3 AND ZINC TABLET IN TREATMENT OF ULCERATIVE COLITIS

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Abstract : Mesalamine (5-amino salicylic acid) is commonly used drug for the treatment of inflammatory bowl disease, such as ulcerative colitis and crohn's disease .Ulcerative colitis patients are also suffering from vitamin D3 and zinc deficiency. Zinc also acts as anti-inflammatory agent and essential for immunological response , tissue regeneration and wound healing . Evidences suggests that the vitamin D3 also plays vital role in immune function and offers potent anti –inflammatory effect. Attempts has been made to formulate sustain release tablet containing mesalamine, vitamin D_3 and zinc and investigated in vitro drug release and kinetic study. This study supported the sustain release profile of tablet in 2 hours. The release data and kinetic models generated in study will serves as foundation for further in vitro studies and facilitate the development of more effective and potent-friendly mesalamine delivery system.

Keywords: kinetic models, mesalamine delivery system, inflammatory bowl disease

PP-16

RP-HPLC METHOD DEVELOPMENT FOR ESTIMATION OF CARMUSTINE FOR BULK AND FORMULATION

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Abstract:

The isocratic RP-HPLC was used for method development of carmustine and simultaneous estimation of carmustine by using 4.6 mm X 250 mm, 5-µm Shim-Pack solar (C18) column. Mobile phase was used contained a combination of Acetonitrile, water & buffer at the ratio of 4:5:1 respectively, flow rate was 1.0 ml min^{-1} with a total run time of 20 minutes, column temperature was 37℃, observation was carried out at 254 nm using photo diode-array detector. Retention time found to be 13.27 & 13.10 minutes for pure carmustine and carmustine nanosuspension respectively and area for pure carmustine drug and carmustine nanosuspension was found to be 287059 & 287056 respectively. And linear regression coefficient was found to be 0.9972. Assay method was established for quantitative estimation of Carmustine from bulk drug & formulation.

Keywords: RP-HPLC, carmustine, acetonitrile

PP-17

PROTECTIVE EFFECTS OF VANILLIC ACID ON LETROZOLE-INDUCED POLYCYSTIC OVARIAN SYNDROME: A COMPREHENSIVE STUDY IN FEMALE WISTAR RATS

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Abstract:

Polycystic Ovarian syndrome (PCOS) is one of the known causes of anovylatory fertility in the world. Previous research has linked oxidative stress could contribute to PCOS,andvanillic acid has shown antioxidant potential. Hence, the present study evaluated the effect of vanillic acid on letrozole-induced polycystic ovarian syndrome in female rats.

Materials And Methods:-PCOS was induced in wistar female rats with letrozole (1mg/kg,orally) in carboxymethoxycellulose (1%w/v), administered for 21 days. After induction, the standard group received clomiphene citrate (1mg/kg,orally) while other treatment groups were administered with vanillic acid at doses 25,50 and 100 mg/kg, orally foe 15 days, and without treatment was considered a negative control group. Different parameters studied were body weight, ovary weight, blood glucose, lipid profile, hormonal levels (LH, FSH and testosterone), markers for oxidative stress (superoxide-dismutase, Reduced glutathione, catalase and malonaldehyde), and histopathology of the ovary. Statistical analysis was done for thr results and $p<0.05$ was considered to indicate the significance.

Result:

Vanillic acid-treated animals showed a concentration-dependent activity on the tested parameters. The highest tested dose(100mg/kg) produced a more prominent effect in significantly ($p<0.001$) decreasing the body weight and ovary weight and improving the hormonal imbalance. Also Vanillic acid significantly ($p<0.01$) reduced elevated blood sugar and lipid levels. Additionally, Vanillic acid reduced oxidative stress significantly ($p<0.001$) in the ovaries of female rats. Histopathological reports showed a reduction in cystic follicles and appearance of normal healthy follicles at different stages of development after the administration of vanillic acid. Furthermore, these effects were observed to be comparable with those recorded for standard drug, clomiphene .

Conclusion:

The current study data suggests that vanillic acid has protected the letrozole – induced polycystic ovarian syndrome. In the event of several side effects associated with conventional treatments used for PCOS, the findigs of this study suggest the promising role of vanillic acid. More research in this direction might indentify the true potency of vanillic acid in the treatment of PCOS.

Keywords: PCOS, vanillic acid

PP-18

FORMULATION AND EVALUATION OF EFFERVESCENT TABLET OF "VALSARTAN"

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Abstract:

The oral dosage forms are the most popular way of taking medications despite having some disadvantages like slow absorption and thus onset of action is prolong. The tablets were successfully prepared by direct compression method. The preparation process was simple, reliable and inexpensive. The flow properties of all the prepared formulations were good as indicated by low angle of repose and low compressibility index. The hausner's ratio of the all formulations is less than 1.18 which indicates that good flow properties. The good flow properties suggest that the powder produced were nonaggregate. The same concentration of gas generating agent like sodium bicarbonate and three different formulation contain three different polymers (F_1-HPMC K15M, F_2HPMCK100M, F_3CARBAPOL934P) were Found to affect on the tablet evaluation parameters like in vitro drug release. FTIR Valsartan with excipients shown good compatibility and finally FTIR of optimized formulation showed no changes in the functional group of Valsartan. In vitro drug release of effervescent tablet of valsartan shown that the formulation F1 was found to be the best formulation as it releases 83.49% .

Keywords: Valsartan, Effervescent Tablet, HPMC, K15M, HPMCK100M , CARBAPOL934P .

PP-19

NANO-MAGNETIC COPPER COMPLEXES AS DOUBLE-EDGED SWORD AGAINST MCF-7 BREAST CANCER CELLS

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Abstract:

A multi-step synthesis and characterization of nano-magnetic copper complexes [Nano-magnetite-Lys@Cu(PPh_3)I] and [Nano-magnetite-Arg@Cu(PPh_3)I] with size of ~ 12 nm and ~ 15 nm is reported. Complexes displayed significant anti-cancer activity against MCF-7 breast cancer cells with IC_{50} of 104.38 µg/mL and 95.81 µg/mL respectively as compared to the standard drug cis-platin (IC_{50} = 88.91 µg/mL). The hyperthermia studies of both the complexes revealed remarkable specific absorption rate (SAR) values of 36.83-85.81 W/g and 97.67-125.58 W/g with therapeutic temperature of 48 °C and 43 °C respectively. The studies revealed that both the complexes can act as a double edged sword in anti-breast cancer therapy through combined effect of hyperthermia and chemotherapy.

Keywords: Amino acids, cancer, copper, cytotoxicity, magnetic hyperthermia, nano-magnetites

PP-20

DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATION OF SOME ANTITUBERCULAR AGENT TARGETING CELL WALL SYNTHESIS INHIBITION

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Abstract:

A novel series of Pyrrole -2- carbohydrazide derivatives were synthesized and docking study was performed to rationalize the possible interactions between the synthesized compounds and active site. Pyrrole -2- carbohydrazide derivatives were designed as Enoyl-acyl carrier protein reductase inhibitors. All compounds were screened for antimycobacterial activity against M. Tuberculosis H37Rv using Microplate Alamar Blue Assay. Isoniazid is employed as the reference standard for antimycobacterial agents. Among the series GS4 found to be most potent.

Keywords: Isoniazid, Pyrrole -2- carbohydrazides

PP-21

DIVERSITY OF SPIDER FAUNA IN K.V.M COLLEGE CAMPUS WAI, MAHARASHTRA, INDIA

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Abstract:

The Spiders are more abundant, predatory groups in world of arthropod. They act as indicator of environmental conditions and act as biological control agent in agricultural ecosystem. We study the Diversity of spiders fauna in K.V.M. College campus. The Study was carried out during period of six months from December 2022 to May 2023. Total 15 species belonging to 5 families have been observed. The families described are Salticidae, Araneidae, Oxyopidae, Lycosidae, and Thomisidae. The described families Salticidae is presiding family having 6 species. The second presiding Araneidae family having 5 species, Oxyopidae having 2 species, and Lycosidae and Thomisidae are 1 species each. The family Salticidae constitute most predominant family (40%), followed by Araneidae (33%), Oxyopidae (13%), and Lycosidae and Thomisidae (7%). The abundance of families present order Salticidae>Araneidae>Oxyopidae>Lycosidae = Thomisidae.

Keywords: Diversity, Spiders, KVM college campus.

PP-22

HPLC METHOD DEVELOPMENT FOR ESTIMATION OF 5-FLUOROURACIL FOR BULK AND FORMULATION

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Abstract:

HPLC is a technique in pharmaceutical analytical chemistry used to separate, identify quantify each component in a mixture. 5-Flurouracil is an Antimetabolite used in the treatment of many malignancies especially of colon, rectum, stomach, pancreas, liver, urinary bladder, head and neck. 5-Flurouracil is pyrimidine antagonists which forms a complex with TS and thus inhibits deoxythyimidine monophosphate production. dTMP is essential for DNA replication and repair and its depletion which causes cytotoxicity. A rapid, sensitive, reversed phase stability indicating High performance liquid chromatographic assay method has been developed and modified for quantitative determination of 5-Flurouracil in bulk drugs and formulation.

Keywords: RP-HPLC, 5-FU, dTMP, PDA

PP-23

SYNTHESIS AND ANTIBACTERIAL EVALUATION OF CHALCONES

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Abstract:

A series of chalcones were prepared by Claisen-Schmidt condensation of acetophenone with variously substituted aromatic aldehydes. The progress of the reaction was monitored by thin layer chromatography. The structures of the synthesized compounds were characterized by IR, NMR and mass spectral analysis. The synthesized compounds were screened for their antibacterial activity and displayed moderate to good antibacterial activity against gram positive *(Staphylococcus)* and gram negative *(E.coli)* bacteria.

Keywords: Chalcone, aldehydes, ketones

PP-24

EFFICIENT AND FACILE SYNTHESIS OF PYRAZOLES USING DIETHYLAMINE AS AN ORGANOCATALYST UNDER AMBIENT CONDITION

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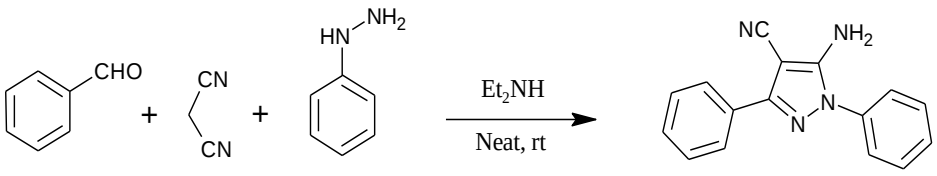
Abstract:

Pyrazole is a privileged heterocyclic skeleton due to its incorporation into pharmaceuticals, agrochemicals and materials as well as its natural occurrence. Pyrazoles have been reported to exhibit a wide range of biological properties and immense significance in the pharmacological agents of diverse therapeutic categories. Accordingly, they have been extensively studied in the last few decades as a prominent class with great attention for both pharmaceutical and agricultural benefits. Organocatalysts are the promising alternative for transition metal catalysts and hence become one of the hot research topics in advanced organic chemistry. Achievements by using piperidine, imidazole, DMAP, L-proline, Brucine, Strychnine, McMillan's catalyst etc. have been mentioned in number of reports. However the utility of diethylamine as a catalyst has been rarely investigated. Our research group has disclosed the significant utility of diethylamine for variety of synthetic conversions. Herein a green efficient and facile synthesis of pyrazoles is reported via condensation reaction between substituted aldehydes, malononitrile and 2,4-dinitrophenyl hydrazine / phenylhydrazine in presence of diethylamine as organocatalyst under solvent-free conditions. Ambient reaction conditions, avoidance of conventional workups, ease of availability, ease of handling and cost effectiveness are the major traits of the present protocol.



PP-25

LIBRARY RFID SECURITY SYSTEM

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Abstract:

This paper deals with Library Security, how to secure the knowledge hub on which the entire generation is dependent. There are many ways to secure the library resources from theft. Radio Frequency Identification (RFID) systems is one of the upcoming technology through which we can secure the knowledge resources. It is the latest technology to be used in libraries for book identification, for self-checkout, and for sorting and conveying of library books and also for theft detection. It increases efficiency and reduces labor cost. The paper tries to explain the RFID system for the academic library and discusses the advantages and disadvantages of RFID system in libraries.

Keywords: RFID, radio frequency identification, RFID system, reader, users.

PP-26

ZrO_2 AS AN EFFICIENT AND REUSABLE HETEROGENOUS CATALYST FOR SYNTHESIS OF POLYHYDROQUINOLINE DERIVATIVES

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Abstract:

A variety of polyhydroquinoline derivatives synthesized quickly, cheaply and with a high yield. These are made by condensing dimedone, ethyl acetoacetate, ammonium acetate and aromatic aldehydes in ethanol at 80°C with a catalytic amount of ZrO_2. Five cycles of recovery and reuse of the catalyst have been completed with minimal catalytic activity loss. The developed methodology is a great alternative for present methods due to its simple and moderate experimental procedure, ability to provide high yields for a variety of aromatic aldehydes and increased regard for the environment. Using spectroscopic methods such as FTIR and GC-MS the synthesized derivatives were characterized.

Key words: Polyhydroquinoline, ZrO_2, Ethanol.

PP-27

AN EFFICIENT APPROACH TOWARDS SYNTHESIS OF DIHYDROPYRANO (3,2-*C*)CHROMENE DERIVATIVES

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Abstract:

Multicomponent assembling reactions are very important inorganic synthesis due to the formation of carbon-carbonand carbon-hetero atom bonds in one pot. Simpleprocedures, high bond forming efficiency, time and energy saving, and low expenditures are among the advantages of these reactions. Pyrano[3,2-*c*]chromenes are a class of important heterocycles with a wide range of biological properties such as spasmolytic, diuretic, anticoagulant, anticancer, and antianaphylactic activity. Moreover, they have been used as cognitive enhancers, for the treatment of neurodegenerative diseases, including Alzheimer's disease,Parkinson's disease, Huntington's disease, amyotrophic lateralsclerosis, and Down's syndrome. Many methods with different conditions have been reported. Some of these compounds have been already prepared in the presence of piperidine, diammonium hydrogen phosphate (DAHP), K_2CO_3 under microwave irradiation, MgO, tetra-butylammonium bromide, DBU, and 3- hydroxypropanaminium acetate (HPAA).Herein, we have reported the successful synthesis of pyrano [3,2- c]chromene derivatives with multicomponent addition of various aromatic aldehydes, malononitrile and α-naphthol or 4-hydroxycoumarin with Na_2CO_3 as catalyst, in water-ethanol media at 100^0C.

Keywords: neurodegenerative, aromatic aldehydes

PP-28

SYNTHESIS AND CHARACTERISATION OF $NiFe_2O_4$ NANOPARTCALS BY COPRECIPITATION METHOD

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Abstract:

This work focuses on the synthesis and characterization of nickel ferrite ($NiFe_2O_4$) nanoparticles, exploring their potential applications in various fields such as catalysis, biomedical imaging, and magnetic devices. The nanoparticles were synthesized using a cost-effective and environmentally friendly co-precipitation method. The synthesis process involved the controlled precipitation of nickel and iron salts in a suitable medium, followed by annealing to obtain crystalline nickel ferrite nanoparticles. Various characterization techniques were employed to investigate the structural aspects, including X-ray diffraction (XRD) for phase identification, FTIR for functional determination**.** The results of these characterizations contribute to a comprehensive understan.ding of the fundamental properties of nickel ferrite nanoparticles, crucial for tailoring their applications in different technological domains.

Keywords: $NiFe_2O_4$, Co-precipitation method, XRD , FTIR.

PP-29

A GREEN SYNTHESIS OF 1, 8-DIOXOOCTAHYDROXANTHENES USING COBALT FERRITE OXIDE AS A RECYCLABLE CATALYST

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Abstract:

Cobalt ferrite oxide nanoparticles were successfully synthesized through the Co-precipitation technique. Subsequent analyses of the catalyst included X-ray diffraction and Fourier Transform Infrared Spectroscopy. Its performance was assessed for the synthesis of 1,8-Dioxooctahydroxanthene derivatives, demonstrating an eco-friendly and highly effective approach, largely due to the catalyst ability to be reused. The affordability and ease of separating the catalyst from the reaction mixture further improve the sustainability of the synthesis method.

Keywords: 1,8-Dioxooctahydroxanthene, XRD

PP-30

ANTIMICROBIAL ACTIVITY OF ZnO NANOPARTICLES PREPARED VIA GREEN SYNTHESIS ROUTE

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Abstract:

Herein, an eco-friendly and cost-effective approach was established via the biosynthesis of zinc nanoparticles (ZnO NPs). Physicochemical characterization of as-prepared ZnONPs confirms the successful fabrication of NPs by using *Euphorbia tithymaloides* leaves extract. Interestingly, the biosynthesized ZnO NPs exhibit antimicrobial activity against pathogenic microbe *E. Coli* and their activities were dose-dependent. Thus, the use of leaves extract as capping agent would improve the antibacterial property of ZnO nanoparticle.

Keywords: *Euphorbiatithymaloides*, Nanoparticles, ZnO, antimicrobial activity

PP-31

SYNTHESIS OF POLYHYDROQUINOLINES BY USING ANDERSON TYPE NI (II) POLYOXOMETALATE AS HETEROGENEOUS CATALYST

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Abstract:

Molecules with polyhydroquinoline structural scaffolds possess a broad spectrum of biological and pharmacological activities such as antidiabetic, hepatoprotective, vasodilator, geroprotective, antiatherosclerotic, bronchodilator, anticancer, and antitumor activities. Herein, we report Synthesis of one-pot four-component polyhydroquinolines through Hantzsch condensation reaction by using heterogeneous Anderson type Ni (II) polyoxometalate catalyst. The use of Ni (II)polyoxometalateas a catalyst is very advantageous as it is heterogeneous, reusable, non-corrosive, non-toxic. We have carried out the synthesis of polyhydroquinoline derivatives by condensation of various aldehydes (1mmol), dimedone (1mmol), ethyl acetoacetate (1mmol) and ammonium acetate (1mmol) using Ni (II) polyoxometalate as catalyst. Formation of the product was confirmed by TLC, physical constant and FTIR.

Keywords: Anderson type polyoxometalates, Hantzsch condensation, polyhydroquinoline, biological and pharmacological activities

PP-32

SYNTHESIS OF 1,4- DIHYDROPYRIDINES BY USING ANDERSON TYPE $Na_3[AlMo_6O_{24}H_6]$. $8H_2O$ POLYOXOMETALATE AS CATALYST

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Abstract:

1,4-Dihydropyridine (1,4-DHP) and its derivatives belong to a promising family of nitrogen heterocycles and have been recognized as one of the most valuable and privileged molecular frameworks in synthetic organic and medicinal chemistry.1,4-dihydropyridine core have been found to exhibit antimicrobial, anticoagulant, anticonvulsant, antitubercular, anticancer, antioxidant, antimalarial, HIV-1 protease inhibitors, and many more properties. Herein we report synthesis of 1,4-DHPs using Anderson type Al(III) POM as a catalyst. Formation of the product was confirmed by TLC, physical constant and FTIR. The catalyst is Heterogeneous,inexpensive and recyclable which offered product in shorter reaction time.

Keywords: Polyoxometalates, Anderson type POMs, 1,4-Dihydropyridine

PP-33

SEA BUCKTHORN: A GREENER AND ECOFRIENDLY MEDIUM FOR THE SYNTHESIS OF PYRAZOLOPYRANOPYRIMIDINE DERIVATIVES

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Abstract:

Sustainable development and environmental concern have becomes paramount and a fresh perspective on industrial methodologies and organic synthesis. The utilization of organic solvents and their subsequent emission has emerged as a central environmental concern in recent times. Consequently, there is a growing focus on seeking alternatives to volatile solvents and halogenated organic solvent for various synthetic processes. The present study aims to the greener and eco-friendly synthesis of pyrazolopyrimidine derivatives *via* sea buckthorn aqueous extract as a green medium. Sea buckthorn (*Hippophaërhamnoides L.*) berries have high biological value as a rich source of phenolic compounds, fatty acids and vitamins A, C, E along with high organic acid contents which favors multicomponent reactions. Pyrazolyl derivatives hold significant importance as this structural fragment serves as a crucial moiety in various biologically active compounds. Ultimately, the present methodology represents a green and environmentally sustainable alternative to existing protocols, demonstrating positive implications for both sustainability and economic considerations. Additionally, sea buckthorn berries extract proves to be a recyclable medium, with a minimal decline in product yields upon recyclability.

Keywords: Sustainable development, Pyrazolyl derivatives

PP-34

LESSER STUDIED DISTRUCTIVE LAND PLANARIANS

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Abstract :

The family Geoplanidae is commonly known as Land Planarians belongs to Phylum Platyhelminthes. Currently family Geoplanidae contains four subfamilies worldwide, three of them are found in Asian continent. India represents only one subfamily Bipaliinae (hammerhead), although there is a lot of work done only in this subfamily. They are soil predatory animals and steno hydric in nature. Extensive research on their regeneration property is currently directing to comprehend the mechanism being regeration. Tetrodotoxin (TTX) is the potent neurotoxin inducing paralysis. Also they are used as model for studying innate immunity as they are resistant to a broad spectrum of bacteria. Because of restricted distribution, nocturnal habitat and morphological similarity with earthworm, this group is poorly studied group among all taxa. There is need to study further subfamilies in India.

Keywords : Geoplanidae, Hammerhead, Tetrodotoxin, Planaria.

PP-35

SYNTHESIS AND CHARACTERIZATION OF ZnO NANOPARTICLES BY BIOGENIC METHOD

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Abstract:

In the present work, ZnO nanoparticles has been prepared by biogenic method. Is the method nanoparticles were prepared by using *Millettia Pinnata* leaf extract & Zinc Acetate [$Zn(CH_3COO).H_2O$] dihydrate at a temperature of 60^0 C. Synthesized material has been characterized by XRD. These NPs can be utilized in drug delivery environmental remediation, biomedical applications. Recently, eco-friendly routes for synthesis of NPs have become popular among researchers because of its low cost, non-toxicity environmental compability etc.

Keyword – ZnO, XRD, Biogenic method.

PP-36

SYNTHESIS AND CHARACTERIZATION OF ZnO NANOPARTICLES BY CHEMICAL REDUCTION METHOD

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Abstract:

ZnO nanoparticles have attracted interest in material science, physics, chemistry & industrial field among various nano particles. In the present work ZnO nanoparticles were prepared by using zinc nitrate hexahydrate & NH_4OH as a reducing agent. Synthesized material was characterized by XRD & FTIR. These nano particles possess unique properties due to their extremely small size.

Keywords: ZnO, chemical reduction, XRD, FTIR

PP-37

EVALUATION OF ANTIBACTERIAL AND ANTIOXIDANT POTENTIAL OF MAGNETIC NANOPARTICLE SUPPORTED XANTHINE BASED N-HETEROCYCLIC CARBENE SILVER METAL COMPLEX

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Abstract:

Xanthine based *N*-heterocyclic carbene Silver metal complex anchored on magnetic nanoparticle (MNP- caff-NHC@Ag) has been prepared by covalent grafting of caffeine on surface of chloro-functionlized Fe_3O_4 magnetic nanoparticle followed by complexion with Silver acetate. The MNP- caff-NHC@Ag complex has been characterized by Fourier transform infrared (FT-IR) spectroscopy, energy dispersive X-ray (EDX) Spectroscopy, X-ray diffraction (XRD). The MNP- caff-NHC@Ag complexes displayed significant antibacterial activity against *E coli, B.subtilis and* antioxidant activity by using DPPH and FRAP assay.

Keywords: Fe_3O_4 Magnetic Nanoparticles, Xanthine, Silver, Antibacterial, Antioxidant activity.

PP-38

DEVELOPMENT OF COBALT L-METHIONINE COMPLEX ANCHORED ON BIOFUNCTIONALIZED MAGNETIC NANOPARTICLES AND THEIR ANTIBACTERIAL POTENTIAL

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Abstract

The progress made in the functionalization of magnetic nanoparticles (MNPs) has brought a radical impact on biomedical applications. It is essential to ensure the specific and proper functionalization of MNPs for their appropriate use in nano-bio application. Considering biological importance of metal complexes in biomedical research, we have successfully prepared cobalt complex immobilized on biofunctionalized magnetic nanoparticles (MNP@starch-Met-Co). The multi-step synthesis of complex was monitored using FT-IR analysis and the XRD studies were carried out to evaluate crystalline nature exhibiting single phase invers spinel structure which remained unchanged after the metal complexation. The crystalline size was calculated using Debye Scherrer equation and found out to be 5nm. Further, MNP@starch-Met-Co was screened for its antibacterial potential against *E. coli* bacteria. The compounds displayed significant antibacterial activity with zone of inhibition of 23 mm as compared to standard drug Streptomycin. The study concludes that surface modification of the magnetic nanoparticles with bioactive ligands supported metal complexes would expand the horizon in the field of medicinal chemistry.

PP-39

PHOTOCATALYTIC EFFICIENCY OF *ACACIA CONCINNA* MEDIATED SnO_2 NANOPARTICLES FOR METHYLENE BLUE DEGRADATION UNDER SOLAR LIGHT

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Abstract:

A cost-effective and innovative approach utilizing green synthesis has been demonstrated for the efficient production of tin oxide nanoparticles (SnO_2 NPs). Comprehensive characterization, employing X-ray diffraction (XRD), UV-Vis NIR spectroscopy, Fourier transform infrared spectroscopy (FTIR) and scanning electron microscope (SEM) was conducted to analyze structural and optical properties. XRD revealed an average crystallite size of 28 nm, showing atetragonal structure. The calculated band gap stood at 2.8 eV. In catalytic studies, the synthesized NPs exhibited high efficiency in the photodegradation of methylene blue, achieving an impressive 99.88% degradation within 100 minutes under solar light. These findings underscore the SnO_2 NPs' prowess as exceptional photocatalysts for methylene blue degradation.

Keywords: Green synthesis, SnO_2NPs, *Acacia concinna*fruit extract, photodegradation

PP-40

SYNTHESIS AND CHARACTERIZATION OF COBALT OXIDE NANOPARTICLES

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Abstract:

Spherical cobalt oxide nanoparticles exhibit unique properties and have a wide range of applications. The characterization of inorganic nanoparticles is crucial for determining their size and shape, which helps in understanding the relationship between various parameters and the properties of the nanoparticles. We have successfully synthesized cobalt oxide nanoparticles using the combustion method and characterized them using X-Ray Diffraction (XRD), Fourier Transform Infrared Spectroscopy (FTIR), and Scanning Electron Microscopy (SEM). The results confirmed that the nanoparticles were pure, single-crystalline cobalt oxide with optical properties indicated by the absorption peaks of the nanoparticles.

Keywords: Nanoparticles, SEM

PP-41

FISH FOOD PREPARATION: A STUDENT ENTREPRENEURSHIP OPPORTUNITY

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Abstract:

Aquarium fish require specialized nutrition for their health and vibrancy. This study explores the potential for students and young entrepreneurs to produce affordable fish food as a business venture. By formulating food from local ingredients, leveraging existing resources, and evaluating economic viability, this research presents a promising opportunity to meet market demand sustainably while fostering entrepreneurship and innovation among students.

Keywords: Fish Food, Aquarium Fishes, Student Entrepreneurship, Local Ingredients, Economic Viability, Sustainability

PP-42

SOFTWARES: A BOON FOR MATHEMATICS IN LIFE SCIENCES RESEARCH

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Abstract:

Mathematics is required for research in Life Sciences. It was a time consuming and tedious process especially for life Science students. The current day software's come as a boon to these students. The user friendly software also enables them to use Mathematics at an increased level.

Keywords: Software, Mathematics, Life Sciences Research, Interdisciplinary Collaboration, Innovation

PP-43

STINGLESS BEES THE FUTURE OF APICULTURE

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Abstract:

The bees are facing problems of survival due to wanton use of pesticides. Loss of habitat is causing bees to move away from villages and cities. Stingless bees have adapted to modern houses and can be cultured in new styled houses and apartments. This can ensure pollination of flowers and better agriculture.

Keywords: Stingless Bees, Apiculture, Pesticides, Habitat Loss, Adaptation, Modern Housing, Pollination, Agriculture

PP-44

SCORPIONS: LEAST ATTENDED USEFUL ARACHNIDS

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Abstract :

Scorpion belongs to Order Scorpions are members of class Arachnida. All species of scorpion are poisonous though all are not fatal to human being. Studies on scorpion have received very little attention as compared to other animal groups. This may be due to poisoning sting, nocturnal secretive habits, unusual superstitions, and difficulties in collections. All scorpions are active during night and are strictly nocturnal in habit. Their habitats are known as 'microhabitats.' Microhabitats include stones, barks, thin crevices, burrows, fallen logs, soil litters and human inhabits. According to the ZSI checklist, the Indian scorpions are classified into 06 main families, namely Buthidae, Bothriuridae, Chaerilidae, Euscorpiidae (Vaejovidae), Hemiscorpiidae and Scorpionidae. These include 25 genera and more than 113 species. Out of these 34 species of scorpion were recorded in Maharashtra. Most of scorpion species have medicinal value as well as they play an important role as biocontrol agent. Mythological significant of scorpions linked with nakshatra and Raashi. The present study will emphasize the biological and medical importance of scorpion of Maharashtra.

Keyword: Scorpiones, Arachnid, Diversity, Medicinal importance.

PP-45

$Fe_3O_4@SiO_2$-Pr-THAM-$(SO_3H)_3$: A NOVEL MAGNETICALLY SEPARABLE CATALYST FOR ECO-FRIENDLY ONE-POT SYNTHESIS OF 4*H*-CHROMENES

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Abstract:

In the present study, novel $Fe_3O_4@SiO_2$-Pr-THAM-$(SO_3H)_3$ core-shell magnetically separable nanoparticles are synthesized. The structural confirmation of the catalyst is done by various tools such as FT-IR, TGA/DTA, XRD, TEM, EDX, and VSM. Catalytic efficacy of the $Fe_3O_4@SiO_2$-Pr-THAM-$(SO_3H)_3$ has been evaluated for the synthesis of the functionalized 4*H*-chromenes *via* one-pot three-component condensation of 2-hydroxybenzaldehyde, cyclic 1,3-dicarbonyl compounds, and 4-hydroxycoumarin in the presence of in H_2O at 50 ^oC with short reaction time period. The presented magnetically separable catalyst could be recycled for six consecutive runs without significant loss in catalytic efficiency and product yields. This eco-friendly approach offers several advantages such as the use of a green solvent system, ambient reaction conditions, shorter reaction times, excellent yields, and easy separation of the catalyst.

Keywords: Magnetically separable heterogeneous catalyst, One-pot multicomponent reaction, 4*H*-chromenes.

PP-46

SYNTHESIS, STRUCTURAL CHARACTERIZATION, AND PHOTOCATALYTICDYE DEGRADATION OF ALKALI TITANATE

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Abstract:

Semiconductor has been widely used for photocatalytic degradation of organic pollutants in water system due to their advantages such as high specific area, abundant reactive sites, and stability. TiO_2, SnO_2, and ZnO are UV-active photo-catalysts which show excellent photocatalytic activities under UV light. The development of visible light responsive photocatalysts is essential to utilize the sunlight for pollution abatement. In the current work, we have heterogenized TiO_2 with NiO and Na_2CO_3 to form the $Na_{0.8}Ni_{0.4}Ti_{0.6}O_2$. The as-prepared sample was characterized by XRD, Diffuse reflectance UV-Vis absorption spectroscopy. XRD pattern reveals the phase pure synthesis of $Na_{0.8}Ni_{0.4}Ti_{0.6}O_2$. It has strong absorption in visible light. The efficiency of photocatalytic reaction towards the degradation of methylene blue is high compared to individual TiO_2.

Keywords: Alkali titanate, mixed metal oxide, photocatalyst, methylene blue (MB).

PP-47

SYNTHESIS AND CHARACTERIZATION OF CHROMIUM OXIDE NANOPARTICLES

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Abstract:

Most of the compounds are metal oxide because of their small size, surface, and quantum effects which give them their special properties metal oxide nanomaterials make up the majority of the compound. Nanoparticles with a diameter of less than 100 nm are currently garnering more and more interest due to their numerous novel applications in a variety of industrial fields. Utilizing ammonia as a precipitating agent, chromium oxide nanoparticles were synthesized and characterized by X-ray diffraction (XRD), Infrared spectroscopy (IR). Chromium oxide NPs is formed as Cr_2O_3 and has a hexagonal structure, according to XRD studies. This work's chemical reduction method for creating Cr_2O_3 NPs is straightforward, cost-effective, and environmentally begins. The superior antibacterial activity of the chromium oxide nanoparticles is demonstrated.

Keyword : Nanoparticles, Chromium oxide, Antibacterial, Eco-friendly

PP-48

TINOSPORA CORDIFOLIA - AS AN ANTI-CANCER AGENT: RECENT AND ADVANCE STUDY

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Abstract:

Tinosporacordifolia, commonly known as Giloy or Guduchi, is a medicinal plant deeply rooted in traditional Indian Ayurvedic medicine. In recent years, extensive research has been conducted to explore its potential as an anticancer agent. This abstract provides an overview of recent advancements and studies concerning Tinosporacordifolia's efficacy in combating cancer. Various bioactive compounds present in Tinosporacordifolia, such as alkaloids, diterpenoids, glycosides, and polysaccharides, have demonstrated promising anticancer properties in vitro and in vivo. Mechanistic studies have revealed its ability to induce apoptosis, inhibit proliferation, and suppress angiogenesis in cancer cells. Furthermore, Tinosporacordifolia exhibits synergistic effects with conventional chemotherapy drugs, enhancing their efficacy while reducing adverse effects.

Keywords: Tinosporacordifolia, chemotherapy

PP-49

GENERATING FUNCTIONS FOR GENERALIZED LEGENDRE POLYNOMIALS

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Abstract:

Generating Functions play a key role in the characteristics of the sequences they generate. They also simplify discrete-time system analysis by transforming the difference equations of discrete-time signals and systems into algebraic equations. Furthermore, due to their extensive application in a wide range of mathematical tasks, generating functions might prove to be very helpful in advancing mathematical education. Generating functions can be studied only as instruments for addressing discrete problems. The way generating functions provide unified approaches to solve such difficulties makes the study of generating functions both potent and mystical in many ways. Only by focusing on both the discrete and continuous channels can the subject of generating functions reveal its true brilliance. The way they turn solving differential equations into simple form is then evident. In the last few decades, many well-known researchers have derived some novel results in this ever-growing field of generating functions. The methods that are widely used are the Trusdell method, the Series rearrangement technique, the Fractional derivative method, and many more. E.B. Mcbride used Weisner's method to determine generating functions for Hermite, Bessel, generalized Laguerre, and Gegenbauer polynomials. Many more researchers have used this method recently to unify the generating relation and as well to obtain new classes of generating functions. In this paper, we have used the same Weisner's Group Theoretic Method to derive generating relations involving Generalized Legendre polynomials by giving suitable interpretation to the index of the polynomials.

Keywords: Generating Functions, Generalized Legendre Polynomials, Weisner's Group Theoretic Method, Exponential Operators.

PP-50

FABRICATION OF SUPERHYDROPHOBIC SURFACES FOR OIL-WATER SEPARATION BY USING CANDLE SOOT NANOPARTICLES AND POLYURETHANE SPONGES

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Abstract:

Carbon-based materials like graphene and activated-carbon are known for their superior adsorption capabilities in waste-water treatment. Candle soot coated polyurethane sponge (CS-sponge) was fabricated and studied as an adsorbent for the adsorption of Rhodamine-B (RB) (dye), ciprofloxacin (a pharmaceutical compound) and detergent from the aqueous solution. CS-foam was hydrophobic and oleophilic in nature and can be used for oil-water separation. A rectangular piece of CS-sponge ($2\times2\times2$ cm^3) was able to adsorb 95% of RB and 80% of ciprofloxacin from its 50 ml of an aqueous solution. A significant amount of detergent was also removed efficiently. Kinetic study of adsorption of RB on CS-sponge suggests pseudo-second order is the best fit to adsorption kinetic data. Adsorption isotherm study suggests that Langmuir isotherm is a better fit to adsorption equilibrium data for RB. CS-sponge was found recyclable as it can desorb the RB in ethanol media after adsorption. It shows 88% of recycling efficiency even after 6 cycles of adsorption. CS-sponge can be an effective, low-cost, recyclable adsorbent for removal of various organic contaminants.

Keywords: Candle Soot, Superhydrophobic, Polyurethane Sponge, Dip-Coating Method, Oil-Water Separation.

PP-51

DEVELOPMENT AND CHARACTERIZATION OF PHYTOZOMES AS A NOVEL CARRIER BY QbD APPROACH

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Abstract:

This study focuses on the development and characterization of phytosomes as an innovative carrier system using Quality by Design (QbD) principles. Phytosomes, which are complex structures formed by the conjugation of plant-derived active compounds with phospholipids, offer enhanced bioavailability and therapeutic efficacy. The QbD approach ensures the systematic optimization of formulation parameters to achieve desired product quality attributes. This abstract outlines the methodology employed in the formulation of phytosomes, including the selection of critical quality attributes (CQAs), identification of critical process parameters (CPPs), and implementation of design of experiments (DoE) for optimization. Characterization techniques such as particle size analysis, surface morphology examination, encapsulation efficiency determination, and in vitro release studies are performed to evaluate the developed phytosomes. The results demonstrate the successful application of the QbD approach in enhancing the quality and performance of phytosome formulations, thereby providing a promising platform for the delivery of bioactive compounds with improved therapeutic outcomes.

Keywords: Phytosomes, Bioactive compounds

PP-52

FORMULATION AND EVALUATION OF GROUNDNUT OIL-CAKE BASED PROTEIN POWDER AS POTENTIAL ALTERNATIVE FOR DIETARY SUPPLEMENT

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Abstract:

The present research work is focuses on formulation and its evaluation of groundnut oilcake based protein food Supplements which will be better alternative to commercially available high cost protein supplements in market. Groundnut de-oiled cake is produced in a wooden churned oil extraction machine where oil is produced at 35°C without giving any chemical treatment to oilseeds. The groundnut cake contains on an average 52.5% protein, 26% carbohydrate As well as 5.65% crude fibre with 5% minerals. Milled oil cake was chemically analysed for protein analysis which Showed 49.65 % protein concentration while final formulation showed 92.81% protein concentration as fixed proportion Of synthetic protein was added during final formulation. The casein and sweetener used in it have a couple of medicinal Uses, which again enhances the nutritional properties of this powder. The prepared powder was evaluated for various Organoleptic properties as well flow properties with various parameters which showed acceptable results indicates Prepared protein powder suitable for use. The simple formulation process makes it cost-effective and also nullifies the by-Product management problems associated with oil extraction companies and its natural nature nullifies many of the side Effects of marketed of protein powder.

Keywords: Oil-Cake, Protein Powder, Dietary Supplement & Physico-Chemical Evaluation.

PP-53

PHARMACOVIGILANCE - AN OVERVIEW

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Abstract

Pharmacovigilance plays a crucial role in ensuring the safety and efficacy of pharmaceutical products throughout their lifecycle. This paper provides a comprehensive overview of pharmacovigilance, encompassing its definition, objectives, key components, and regulatory frameworks. It discusses the importance of adverse drug reaction (ADR) reporting, signal detection, risk assessment, and risk management strategies. Additionally, it explores the role of various stakeholders including healthcare professionals, regulatory agencies, pharmaceutical companies, and patients in the pharmacovigilance process. Furthermore, emerging trends such as the use of big data, artificial intelligence, and social media in pharmacovigilance are highlighted. Understanding the principles and practices of pharmacovigilance is essential for ensuring the continued safety and effectiveness of medications worldwide.

PP-54

DEVELOPMENT AND CHARACTERIZATION OF KETOROLAC TROMETHAMINE NANO SUSPENSION LOADED MUCOADHESIVE IN SITU GELLING SYSTEM FOR OPHTHALMIC APPLICATION

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Abstract:

Currently, a variety of ophthalmic products illustrate low bioavailability after topical administration because of anatomical and physiological barriers of eye. Ketorolac tromethamine (KT) is a BCS class I potent anti-inflammatory drug. The rationale of present work was to design and develop KT nanosuspension loaded in situ gel with sustained effect and greater permeability for ocular drug delivery through increased ocular residence time of drug. The present study was designed to improve the ocular availability of ketorolac tromethamine and to prolong its precorneal residence time for the treatment of postoperative ocular inflammation. Ketorolac tromethamine nanodispersions were successfully prepared by Nano precipitation method using Eudragit ((R)) RL100 and RS100. These nanodispersions were characterized in terms of particle size, zeta potential, entrapment efficiency and in vitro release. Consequently, the optimum nanodispersionswas incorporated into thermo sensitive in situ gel. Incorporation of ketorolac tromethamine loaded nanodispersions into in situ gel bases sustained the release of ketorolac tromethamine, improved its ocular availability and prolonged its residence time without causing irritation to eye.

Keywords: Nanosuspension , Ketorolac Tromethamine, Eudragit RS-100, Eudragit RL-100, Entrapment efficiency

PP-55

THALIDOMIDE INDUSED TERATOGENESES

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Abstract:

Thalidomide, once hailed as a wonder drug for its sedative and antiemetic properties, tragically emerged as a potent teratogen in the 1960s, leading to widespread birth defects. This review explores the mechanisms underlying thalidomide-induced teratogenesis, focusing on its impact on embryonic development and limb formation. Insights into its teratogenic effects shed light on its interaction with key molecular pathways, including angiogenesis and oxidative stress. Additionally, this abstract discusses the clinical implications, highlighting the importance of stringent regulatory measures and enhanced pharmacovigilance to prevent similar tragedies in the future. Understanding thalidomide's teratogenic mechanisms is crucial for developing safer alternatives and improving prenatal care strategies to mitigate the risk of birth defects associated with teratogenic exposures.

Keywords: Teratogen, Angiogenesis

PP-56

FORMULATION AND EVALUATION OF PIROXICAM NANOSUSPENSION TO IMPROVE SOLUBILITY AND IN VITRO BIOAVAILABILITY

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Abstract:

This research aimed to enhance the solubility and in vitro bioavailability of Piroxicam, a BCS Class II drug, through the development of a nanosuspension using polyvinylpyrrolidone (PVP) K30® and Poloxamer 188® as stabilizers. Nine formulations were optimized using a full-factorial design. Results showed that nanosuspension with reduced particle size (228 nm), increased solubility (87.28 µg/mL), and improved drug release (96.07% after 120 min). The findings suggest that the Piroxicam nanosuspension enhances solubility and in vitro dissolution, potentially leading to improved bioavailability.

PP-57

PHYTOCHEMICAL AND PHARMACOLOGICAL ACTIVITY OF INSULIN PLANT

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Abstract:

The insulin plant (Costusigneus) has been traditionally used in Ayurvedic medicine for its potential antidiabetic properties. This review aims to summarize the phytochemical composition and pharmacological activities associated with the insulin plant. Phytochemical analysis reveals the presence of various bioactive compounds such as alkaloids, flavonoids, phenols, terpenoids, and glycosides, which contribute to its medicinal properties. Pharmacological studies demonstrate the insulin-like effects of the plant, attributed to its ability to enhance glucose uptake, stimulate insulin secretion, and improve pancreatic β-cell function. Additionally, the plant exhibits antioxidant, anti-inflammatory, and hypolipidemic activities, which further support its potential therapeutic use in managing diabetes and associated complications. However, further research is warranted to elucidate the underlying mechanisms of action and optimize its therapeutic applications.

Keywords: Phytochemical, β-cell function

PP-58

STUDY OF *CLADOCERA* COMMUNITIES IN THE TREATED SEWAGE WATER FED PONDS OF KENGERI CAMPUS AT CHRIST (DEEMED TO BE UNIVERSITY), BANGALORE, KARNATAKA, INDIA

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Abstract:

Cladocera are a ubiquitously prominent component of zooplankton and limnological systems. In aquatic ecosystems, *Cladocera*play a significant role in the food chain and secondary production.There are currently numerous species known to exist in India, with Northeastern India having the greatest taxonomic status. A wide variety of small crustaceans known as *Cladocera* are found in a variety of aquatic settings, from shallow temporary ponds to deep lakes and wide rivers. *Cladocera*are a vital source of food for crustaceans, tiny fish, and aquatic insects. Treated sewage water fed ponds at CHRIST (Deemed to be University), Bengaluru, Karnataka's Bangalore of Kengeri Campus sewage treated water ponds have been undertaken to study the composition of and occurrence of *Cladocera* species. In the above study there were 5cladoceran species were observed.

Keywords: *Cladocera,* crustaceans

PP-59

ADSORPTIVE REMOVAL OF METHYLENE BLUE USING ACTIVATED CARBON PREPARED FROM *CAESALPINIA PULCHERRIMA* POD SHELL

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Abstract:

Getting clean and pure drinking water is one of the biggest problems now-a-days. The effective and affordable removal of both the organic and inorganic pollutants from waste water is a global issue. Industrial dyes are one of the key things that make the water dangerous to drink. Methylene blue, a cationic dye, possess greatest risk to human health and environmental safety due to its toxicity, non-biodegradability, carcinogenic and mutagenic nature. This dye, used for dying purposes in textile, leather and paper industry, is directly discharged into ground water and surface water. Therefore, it is crucial to remove methylene blue from waste water. In the present study, adsorptive removal of methylene blue by activated carbon of pod shells of plant *Caesalpinia pulcherrima* is reported. The adsorption studies were carried out by batch experiments. The various experimental conditions like contact time, adsorbent dose, initial dye concentration, speed of agitation was explored. The maximum removal of dye from aqueous solution was observed in the study. The results demonstrated that the prepared activated carbon material is very effective for dye removal and it can be used as a low-cost adsorbent.

Keywords: Adsorption, Activated carbon, Methylene blue, *Caesalpiniapulcherrima* pod shell

PP-60

DESIGN, SYNTHESIS, AND ANTICANCER EVALUATION OF QUINOLINE DERIVATIVES INCORPORATING 3-(5-THIOXO-1,2,4-TRIAZOLIDIN-3-YL)QUINOLIN-2(1H)-ONE SCAFFOLD

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Abstract:

The development of anticancer drugs is an ongoing venture, tirelessly pursued to combat premature mortality. Quinoline derivatives have emerged as promising candidates in this enterprise, showcasing potential in anticancer and antitumor therapies. In the quest for novel agents, a new series of quinoline derivatives was meticulously designed and synthesized. These compounds underwent rigorous molecular docking studies against the EGFR growth factor, a pivotal target in cancer treatment, utilizing the structure of EGFR (PDB ID: 1M17). Results revealed binding affinities ranging from -7.6 to -8.3 kcal/mol, underscoring promising interactions with the target protein. The synthesized compounds were thoroughly characterized using various spectroscopic techniques, including infrared spectroscopy (IR), proton and carbon nuclear magnetic resonance (^{1}H & ^{13}C NMR), and mass spectrometry. These methods provided invaluable insights into the structural features and purity of the synthesized molecules. Furthermore, the efficacy of the newly developed compounds was assessed through in vitro assays using the human MCF-7 cancer cell line, renowned for its heightened expression of EGFR. Encouragingly, the synthesized compounds demonstrated significant inhibition of cancer cell proliferation, highlighting their potential as potent anticancer agents. These findings underscore the promising therapeutic avenues offered by the designed quinoline derivatives in the relentless fight against cancer.

Keywords: 3-(5-thioxo-1,2,4-triazolidin-3-yl) quinolin-2(1*H*)-one, aqueous medium, *In Vitro* cytotoxicity, molecular docking study.

PP-61

GEOGRAPHIC INFORMATION SYSTEM AND SCIENCE

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Abstract:

A geographic information system (GIS) is a technology that captures, stores, analyzes, and presents geographical data. It focuses on geography and spatially references data to locations on the earth. This spatial data is often accompanied by attribute data, which provides additional information about each spatial feature. For example, the location of schools represents the spatial data, while the school name, level of education taught, and student capacity make up the attribute data. The combination of these data types enables GIS to be an effective problem-solving tool through spatial analysis. GIS involves not only software, but also the collaboration of people and methods with geospatial software and tools to enable spatial analysis, manage large datasets, and display information in a map or graphical form. GIS integrates geographic information and provides methods for spatial analysis and collaboration. It offers a science-based framework for organizing workflows and improves decision-making, saving time and resources, and enhancing communication through geospatial visualization. Today, GIS is used globally to address a wide range of challenges and has become a crucial tool for understanding how human activities are shaping the planet. Some GIS systems automate technical tasks like cartographic production and image analysis, while others manage important societal information systems such as cadastral systems, national security, facility management, resource management, and land-use planning. Additionally, GIS is used for decision support in areas like site selection, logistics, and natural resource management.

Keywords: spatial indicators, maps, data, information system, spatial analysis

PP-62

EMPOWERING MAHARASHTRA THROUGH LOCAL SELF-GOVERNMENTS: HARNESSING TECHNOLOGIES FOR EFFECTIVE GOVERNANCE

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Abstract: Local self-governments in Maharashtra have emerged as key players in the efficient administration of regions and the empowerment of citizens. These institutions, which include municipal corporations, municipal councils, and Panchayati Raj Institutions, have successfully decentralized power and decision-making, allowing Citizens to actively participate in matters affecting their localities. One of the significant benefits of local self-governments is that they provide a platform for citizens to contribute to the development of their communities, fostering a sense of ownership and participation. Through their involvement in issues related to infrastructure, healthcare, education, and other essential services, residents are empowered to shape the future of their localities. The integration of technology has further revolutionized the functioning of local self-governments in Maharashtra. Online platforms and mobile applications have been implemented to facilitate efficient service delivery mechanisms. Citizens can now access information, apply for services, and track progress through these digital portals. This has not only simplified bureaucratic procedures but also reduced corruption and expedited service delivery. Transparency and accountability are crucial elements of good governance, and technology has played a significant role in promoting these principles within local self-governments. Online platforms for tendering, procurement, and financial management have minimized irregularities and malpractices, ensuring fair utilization of public resources. Social media platforms and dedicated websites have also facilitated timely information dissemination, allowing citizens to hold local self-governments accountable.Moreover, technology-driven platforms have fostered participatory decision-making within local self-governments. Citizens can provide feedback, voice concerns, and offer suggestions through online grievance redressal systems. These inputs are taken into consideration during policy formulation and decision-making, resulting in a more inclusive and representative process. In conclusion, local self-governments in Maharashtra have significantly contributed to citizen participation and the delivery of essential services. The integration of technology has further enhanced their functioning, promoting transparency, accountability, and inclusivity. As Maharashtra continues to embrace digital transformation, it is crucial to leverage technological advancements to strengthen local self-governments and promote good governance and sustainable development.

Keywords: local self-governments, Technologies (ICTs), good governance, citizen participation, service delivery, transparency, accountability.

PP-63

ACORUS CALAMUS RHIZOME EXTRACT MEDIATED SILVER NANOPARTICLE SYNTHESIS AND ITS ANTIFUNGAL ACTIVITY

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Abstract:

In previous centuries, *Acoruscalamus* which is commonly known as Sweet flag has been used in various health related disorders like respiratory infections, digestive disfunctioning. It is also called as a Rejuvenator for brain and brain related disorders. The biomolecules present in the plants are responsible for their medicinal use. The biomolecules which are nothing but the chemicals present in t he plants called as a Phytochemicals. One of the greatest use of these phytochemicals is the reduction of metals to form its nanoparticles. Metal nanoparticles possesses numerous applications in today's era of technology. Among them Silver has been widely used nanoparticle owing to its antimicrobial, anti-cancer, anti-diabetic activity. Also it is extensively used in biotechnology and biomedical field. The present study was carried out to prepare the plant extract of sweet flag by Soxhlet Extraction method, determination of its phytochemical assay, green synthesis of silver nanoparticles and to investigate the antifungal activity of the synthesized Ag-NPs.The synthesized Ag-NPs were characterized by UV-Vis spectroscopy which shows characteristic absorbance peak at 427 nm. That confirms the formation of silver nanoparticles. The anti-fungal activity of AgNPs is also checked.

Keywords: Antifungal activity, Silver nano particles

PP-64

IMPACT OF SEAWEED EXTRACT FORTIFICATION ON PROTEIN CONTENT, ENZYME ACTIVITY, AND ECONOMIC PARAMETERS OF *BOMBYXMORI*

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Abstract: Nutrition plays a crucial role in the growth and development of the silkworm *Bombyxmori*. Prior studies have indicated that the use of synergistic supplements results in higher economic benefits and reduced mortality in silkworms. This investigation aimed to assess the influence of fortifying mulberry leaves with seaweed extract on the protein content, growth, and commercial traits of *B. mori*. Feeding silkworms with seaweed extract resulted in a significant increase in protein content by 55% and larval weight by 51%. The enzyme activity of protease and amylase also showed a notable increase, with protease activity rising from 35.84% to 51.15%. Moreover, there were substantial improvements in cocoon weight, pupal weight. The results of the present investigation clearly demonstrate the effectiveness of seaweed extract in enhancing the growth, rearing performance, and overall development of silkworm larvae. This fortification strategy positively influenced both the quality and quantity of silk produced by *Bombyxmori.*

Key words: Seaweed extract, *Bombyxmori*, Protein content, Protease, Amylase

PP-65

STUDIES ON MAGNETIC PROPERTIES OF $Sr_{1-x}Ca_xMnO_3$ (0.0<x<1.0) THICK FILM CERAMICS

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Abstract:

This paper reports the magnetic properties of strontium calcium Manganite synthesized by chemical co precipitation method. X-ray diffraction reveals the formation of monoclinic perovskite structure with dominant (020) plane. Scanning electron microscopy is used to study the surface morphology of the sample. The $Sr_{1-x}Ca_xMnO_3$ceramic shows negative magnetization below ~42 K, above this temperature it shows paramagnetic nature and below this it shows antiferromagnetic nature. Negative magnetization in this oxide is due to single-ion magneto crystalline anisotropy and antisymmetric Dzyaloshinsky-Moriya interactions.

Keywords: X-ray diffraction, Antiferromagnetic, Magnetization reversal mechanisms, Thick films

PP-66

SYNTHESIS AND CHARACTERISATION OF Zn-CuO NANOPARTCALS BY COPRECIPITATION METHOD

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Abstract:

This study focuses on the synthesis and characterization of zinc copper oxide (Zn-CuO) nanoparticles, a promising material with diverse applications in various fields, including catalysis, sensors, and energy storage. The nanoparticles were synthesized through a facile and cost-effective method, involving the co-precipitation of zinc and copper precursors followed by thermal treatment. The synthesized Zn-CuO nanoparticles were characterized using techniques which are X-ray diffraction (XRD) analysis revealed the crystalline nature of the nanoparticles, confirming the formation of the desired Zn-CuO phase. Fourier-transform infrared spectroscopy (FTIR) helped identify the surface functional groups and chemical composition of the nanoparticles. The study contributes to the understanding of the synthesis process and the fundamental properties of Zn-CuO nanoparticles, laying the groundwork for their potential applications in emerging technologies.

Keywords: ZnCuo, Coprecipitation method, XRD , FTIR.

PP-67

SYNTHESIS AND CHARACTERIZATION OF COBALT CHROMIUM OXIDE NANOPARTICLES

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Abstract:

Metal ferrites are attractive materials for solving expanding environmental issues as well as sustainable energy conversion and robust storage because of their exceptional electro-chemical properties caused by the various oxidation states of the metal ions. In order to create three nano crystallites transition metal ferrites $CoFe_2O_4$, $CuFe_2O_4$, and $Co/CuFe_2O_4$ using citrate precursor, electrode materials for supercapacitor applications were needed. Using Fourier transform infrared (FT-IR) analysis, mixed transition metal ferrite nanoparticles were described. As demonstrated by XRD, the results showed the development of a single phase Spinel Ferrite. Co-cu ferrite showed exceptional stability throughout cycling with 90% capacity retention for 3000 cycles. The aforementioned result indicates that the outstanding electrochemical performance of the nanocomposites with co-cu Ferrite may be explained by its 90% capacity cycle.

Keywords - Ferrite Magnetic properties, Dielectric properties. Supercapacitor. EIS

PP-68

ALGINIC ACID IN WATER AT ROOM TEMPERATURE: A NATURAL COMBINATION FOR THE ENVIRONMENTAL BENIGN SYNTHESIS OF 2,3-DIHYDROQUINAZOLIN-4(1*H*)-ONES

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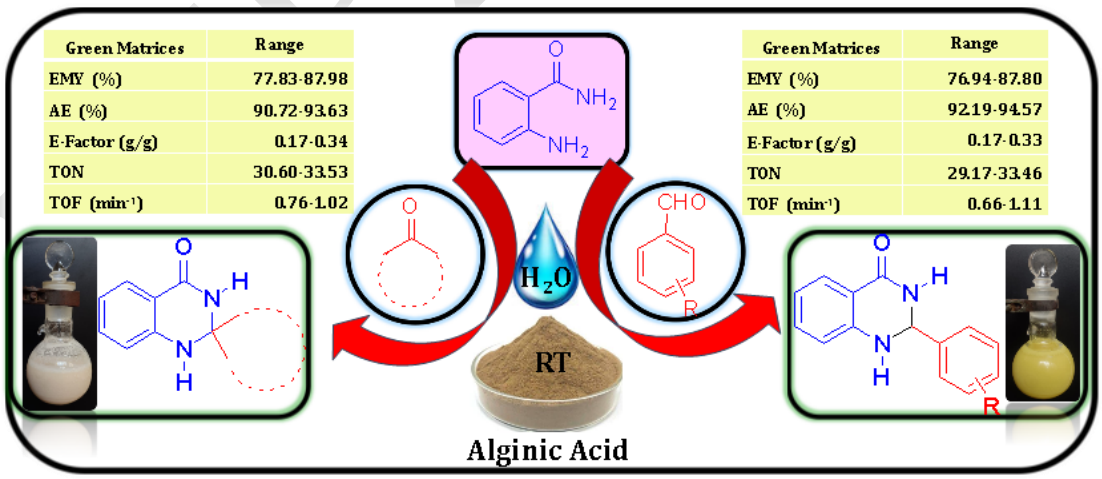
Abstract:

We have successfully synthesized 2,3-dihydroquinazolin-4(1*H*)-ones (DHQs) using naturally sourced alginic acid as a solid acid catalyst. Our synthetic method was performed in pure water at room temperature and yielded good to excellent results. We achieved this by directly cyclo-condensing anthranilamide with various aldehydes or ketones in the presence of alginic acid in water at room temperature. Furthermore, the alginic acid can be easily separated from the reaction mixture and reused up to five times with consistent yields and reaction time. This method is energy-efficientand can be applied on a large scale, with excellent green credentials. Our evaluation of green metrics highlights the sustainable features of the alginic acid-catalyzed DHQ synthesis process.



PP-69

ANALYSIS OF INORGANIC ELEMENTS IN LEAVES OF *PENTATROPIS NIVALIS* (J.F.GMEL.) D.V.FIELD & J.R.I. WOOD, WITH REFERENCE TO SALINITY CONDITION FROM BARAMATI TEHSIL

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Abstract:

This study focuses on the analysis of inorganic elements in leaves of *Pentatropis nivalis* (J.F.Gmel.) D.V.Field & J.R.I.Wood, specifically investigating their concentrations of inorganic elements in relation to salinity conditions prevalent in the Baramati Tehsil region. The in-depth analysis involves the examination of essential elements such as sodium (Na^+). chloride (Cl^-),potassium (K^I), calcium (Ca^{2+}), and iron (Fe^{2+}) among others. Atomic Absorption Spectroscopy (AAS) of the *Pentatropis nivalis* (J. F. Gmel.) D. V. Field & J. R. I. Wood leaves observed the different inorganic elements like, K^+, Ca^{2+}, Mg^{2+}, Fe^{2+}, Mn^{2+}, Zn^{2+}, Cu^{2+}, Na^+, Cl^-, The Four sites shows the variation in element content, The leaves of Songaon sites accumulate high percent of $Na^+$and Cl^- that affect accumulation of K^Idecreasing the K^I amount in the leaves of Songaonsame as the other sites show the result.The research goal to understand the impact of salinity on the mineral content of *Pentatropis nivalis* (J.F.Gmel.) D.V.Field & J.R.I.Wood, providing valuable insights into the plant's response to environmental stress. The study contribute to our knowledge of plant adaptation mechanisms in saline environments.

Keywords: Inorganic elements**,** Chloride, Salinity, Mineral content, *Pentatropis nivalis.*

PP-70

IRON DOPED CERIUM OXIDE THIN FILMS PREPARED BY ULTRA-SPRAY METHOD

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Abstract

In the present study a synthesis of pure transition metal doped ceria nanoparticles and its characterization were described. The Fe/CeO_2 nanoparticles were Fe_x Ce_X O_2 (X= 0.02 M). The prepared thin film synthesis done by well-known modern technology ultra-spray pyrolysis. An Ultra spray pyrolysis method is an attractive, versatile and practical method to prepare doped CeO_2 nanoparticles due to several advantages such as low cost, simplicity of operation and experimental setup, capacity for mass production, ease of doping, reproducibility, and rapid particle growth. synthesized nanomaterial characterized by using X-ray diffraction (XRD), Ultra Violet spectroscopy (UV-Vis), Field Emission Scanning Electron Spectroscopy (FE-SEM) and Energy Dispersive X-ray Spectroscopy (EDX). X-ray diffraction studies showed crystalline nature, while optical band gap calculated by UV-Visible Spectroscopy, FE-SEM images confirm the morphology and size of the nanoparticles, finally elemental distribution is carried out by using EDX Spectroscopy. From the outcome of these study Fe/CeO_2 nanoparticle could be used a suitable nanomaterial for the catalytic activities.

Keywords: Doped Metal Oxides, Ceria Oxide, Ultra Spray Pyrolysis.

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PP-71

PHYTOCHEMICAL AND IN VITRO PHARMACOLOGICAL EVALUATION OF FOUR HERBAL PLANTS USED IN THE TREATMENT OF *RHIZOPUS ORYZAE* CAUSING MUCORMYCOSIS

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Abstract:

Mucormycosis is a fungal disease caused by mainly mucor Rhizopus oryzae. It is also known as black fungus and it is seen mostly in covid affecting patients, due to excessive use of steroids and other medicines peoples are immunocompromised, diabetic ketoacidosis, and high iron level in blood patients. So, need for the development of the most effective and less side effects for the treatment of black fungus. In this research, the Ethanolic extract of *Curcuma longa* rhizome, *Azadirachta indica* leaves, *Tinospora cordifolia* stem, and *Terminalia Chebula* fruit parts were studied against ***Rhizopus Oryzae.*** All ethanolic extract shows significant activity against ***Rhizopus Oryzae***. The *Curcuma longa* rhizome ethanolic extract shows the highest antimycotic activity than *T. Chebula* Fruit Extract, *A. Indica,* and *T. cordifolia*. The phytochemical screening also shows the presence of bioactive constituents like curcuminoids, quercetin, and flavonoids responsible for the activity.

Key words: Black Fungus, Rhizopus oryzae, Ethanolic Extract

PP-72

ISOLATION, CHARACTERIZATION AND IDENTIFICATION OF POTENTIAL PATHOGENS FROM PUBLIC TRANSPORT VEHICLES

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Abstract:

In India, 'Maharashtra state Road Transport Corporation' (MSRTC) stood is at the first rank for transport capacity. MSRTC is operating a fleet of approximately 16,000 buses that ferry average 8.7 million passengers daily. For present study, Sangli, a city of Maharashtra, India was chosen. The city was situated on the border of Karnataka and Maharashtra. Sangli and Miraj combined has more than 900 hospitals and clinics, making it one of the India's emerging hub. The study was conducted to isolate and identify pathogens from public transport vehicles of MSRTC and private transportation buses in Sangli. Samples were collected by passive air sampling method. Sterile 'Muller Hinton Agar' and 'Sabouraud's Dextrose Agar' medium petriplates were exposed in Air conditioned and Non air conditioned buses for 10 min. Incubation time of bacterial isolation for 24 hrs at 37 °C and for fungi 4 days at room temperature. Total 5 isolates were obtained, three on 'Muller Hinton Agar' and one on 'Sabouraud's Dextrose Agar'.

The isolates were identified by using conventional identification methods and MALDI-TOF. The fungal isolates were authenticated at 'National Fungal Culture Collection of India' while bacterial isolates were authenticated at 'National Center for Microbial Resource'. Vide culture code number SD416 the isolate was *Moraxella osloensis* LMG 692 LMG. As per code KMSD the isolate was confirmed to be Bacillus*licheniformis* 992000432 LBK. *Microbacterium aurum* 55 RLT was isolated vide code SWAC. Vide fungal culture code number GN13, the isolate was confirmed as *Cladosporiumcladosporiodies*. One bacteria cannot be identified using the MALDI-TOF technique(culture code number KA-29) and it may be novel bacterium. All isolates are potential pathogens. Hence, it is recommended that regular cleaning procedures are needed in MSRTC and private buses to protect passengers from pathogens.

Keywords: Pathogens from transport vehicles, *Moraxella osloensis* LMG 692 LMG

PP-73

MUTAGENIC EFFECTIVENESS AND EFFICIENCY OF GAMMA RAYS IN MACROTYLOMA UNIFLORUM (LAM.)VERDC

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Abstract:

Mutagenic effectiveness and efficiency are the most essential elements affecting the success of mutation breeding. To study the effectiveness and efficiency, the dry seeds of the Horse gram variety- Phule Sakas were irradiated with different doses of gamma-rays i.e. 400 Gy, 500 Gy, 600 Gy, and 700 Gy at BARC, Mumbai. The biological damage was calculated in the M_1 generation based on percent reduction in height (I), lethality (L), and percent pollen sterility (S). The mutation rate was calculated in terms of the mean values of effectiveness and efficiency of each treatment. In the present investigation, various types of chlorophyll mutants i.e. Albina, Chlorina, Xantha, and Viridis were isolated in the Gamma radiation-exposed population of the M_2 generation. Among the gamma radiation-exposed population, the mutagenic effectiveness was higher at 700 Gy and lower at 400 Gy. Themutagenic efficiency was higher at 700 Gy and lower at 400 Gy based on percent reduction in height and lethality. This indicates that the lower doses of gamma radiation were more effective to induce mutation.

Key words: Horsegram, Gamma rays, effectiveness, efficiency, mutation rate.

PP-74

SYNTHESIS OF ZnO NANOPOWDERS BY A SOL-GEL AUTO COMBUSTION METHOD

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Abstract:

Zinc oxide has been used for many applications for example opto electronic devices, ceramics, catalysts, pigments, varistors and many other important applications. In this study, a sol-gel auto combustion method was used to synthesis ZnO nanopowder. Zinc nitrate hexahydrate and fuel glycine were mixed at room temperature by maintaining pH, which resulted in the production of ZnO nano powders, followed by calcination at temperature of 650 °C. The crystal structure, lattice constant and size of the synthesized powder were determined by X-ray diffractometer (XRD).

Keywords: Nanopowder, Zinc oxide, Glycine

PP-75

IMPACT OF INVASIVE ALIEN AQUATIC PLANT AND FISHES ON ECOSYSTEM, BIODIVERSITY AND HUMAN HEALTH

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Abstract:

The spread of invasive alien species is a threat to ecosystem worldwide. However, we know relatively little about how invasive species effect on ecosystem, human health and biodiversity. In present investigation 5 alien invasive aquatic plants species and 5 invasive fishes species were reported in freshwater, Western Maharashtra, and their impact on ecosystem, biodiversity and human were studied during year 2022 to 2023. This study reveals that invasion of these species in the pond, river and tank cause's serious damage of ecosystem, biodiversity and human health.

Keywords: Alien, aquatic plants biodiversity, ecosystem, freshwater fishes, human health.

PP-76

BRONSTED ACID HYDROTROPE COMBINED CATALYSTS FOR THE SYNTHESIS OF ISOINDOLO[2,1-*a*]QUINAZOLINE DERIVATIVES IN WATER

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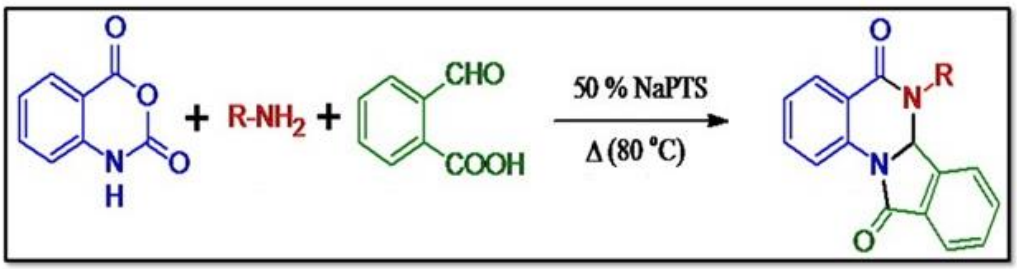
Abstract:

An efficient and versatile route for the synthesis of isoindolo[2,1-*a*]quinazoline scaffolds has been developed by the three component reaction of isatoic anhydride, amine and 2-carboxybenzaldehyde using Bronsted acid-hydrotrope combined catalysts in water. The present protocol is very efficient as it offers reaction in mild reaction condition, cleaner reaction profiles, and effortless work-up step with excellent purity, and high yield of the desired products.

Keywords: Hydrotrope, Isoindolo[2,1-*a*]quinazoline derivatives, Water



Scheme: Synthesis of isoindolo[2,1-*a*]quinazolines

PP-77

h-MoO_3 THIN FILMS SYNTHESIS BY CHEMICAL BATH DEPOSITION (CBD) METHOD FOR GAS SENSOR

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Abstract

One dimensional (1D) transition metal oxide nano-structured materials have high possibilities in the field of sensor applications. We have synthesized h-MoO_3 nano-rods by facile chemical bath deposition method (CBD). To fabricate sensors, thin films were deposited on glass substrates using Doctor Blade technique. We have optimized the best results of crystal structure by X-ray diffraction.

Keywords: *Molybdenum oxide, Gas sensors, chemical bath deposition, Doctor Blade method.*

PP-78

A REVIEW OF MEDICINAL POTENTIAL OF COASTAL SAND DUNE (CSD) VEGETATION

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Abstract :

The sand dunes vegetation in coastal regionsis important ecosystems because of their species diversity and beautiful landscapes. Coastal dune floras play a key role in dune stabilization and restoration, a part from this, their unique important medicinal values remains unexplored to most of the people. Coastal halophytes contains highly bioactive compounds with useful medicinal properties such as anticancer, antimalarial, antiviral, antimicrobial, antifungal, antiplasmodial, antioxidant, antiparasitic and anti-inflammatory properties due to presence of secondary metabolites and other phytochemical compounds like alkaloids, steroids, polyphenols, glycosides, saponins, tannin, quinones, terpenoids and polysaccharides. Fabaceae was found to be the most dominant family and majority of the member are medicinal plants. These CSD floras were under constant anthropogenic pressure due to rapid elimination of sand dunes and its associated vegetation; as a result, its associated indigenous knowledge with them is also gradually disappearing. Such biodiversity rich and useful ecosystems need immediate restoration and conservation actions.

Keywords: Coastal sand dunes, Medicinal properties, Secondary metabolites.

PP-79

PROTECTIVE EFFECTS OF VANILLIC ACID ON LETROZOLE-INDUCED POLYCYSTIC OVARIAN SYNDROME: A COMPREHENSIVE STUDY IN FEMALE WISTAR RATS

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Abstract:

Polycystic Ovarian syndrome (PCOS) is one of the known causes of anovylatory fertility in the world. Previous research has linked oxidative stress could contribute to PCOS, and vanillic acid has shown antioxidant potential. Hence, the present study evaluated the effect of vanillic acid on letrozole-induced polycystic ovarian syndrome in female rats.

PP-80

PREVALENCE OF ENDOPARACITES IN DOMESTIC CHICKEN

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Abstract:

The present study experimentally investigated the endoparasites found in Domestic chicken (Gallus Domestics) at sangli, District- Sangli, Maharashtra. The dissection was carried out in study area within span of 4 months from month of October to January. The intestine, Gizzard, Rectum were the organs dissected to find the infection to the individual. Total 50 chickens were dissected out of which 46 were found to be infected while 4 were uninfected.

Keywords: Domestic chicken, Sangli, necroscopy, prevalence.

PP-81

SYNTHESISAND CHARACTERIZATION OF h-MoO_3 FILMS BY CHEMICAL METHOD FOR GAS SENSING APPLICATION

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Abstract:

In this study, we present the synthesis and characterization of h-MoO_3 films fabricated via a chemical method, aimed at enhancing gas sensing capabilities. The fabrication process involved a facile chemical route, allowing for precise control over the film thickness and morphology. The synthesized films were systematically characterized using various analytical techniques, including X-ray diffraction (XRD), scanning electron microscopy (SEM), and Fourier-transform infrared spectroscopy (FTIR). XRD analysis confirmed the formation of highly crystalline h-MoO_3 films with preferred orientation along the (001) plane. Additionally, the gas sensing performance of the h-MoO_3 films was evaluated towards various target gases, demonstrating promising sensitivity and selectivity. Overall, the synthesized h-MoO_3 films exhibit great potential for gas sensing applications, offering a cost-effective and scalable approach for the development of sensitive gas sensors.

Keywords: Molybdenum oxide, Gas sensors, chemical bath deposition.

PP-82

THE MILLIPEDE APPENDAGES

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Abstract:

In Present Study, two species of Millipedes were collected from sangli city, and were studied for their appendages. These are Rusty Millipede Trigonullus corallines - It has cylindrical. body with two pairs of legs on body segments except first segment.collum is legless. Legs are composed of 7 segments. They have two pairs of antennas, on mouth. Antennas composed of 6 segments. Head contain only a single Maxilla. Head bears a pair of mandibles. A pair of mandibles and a pair of fused first maxilla. There is no second maxilla (=labium) and it's segment is absent. While Harpaphe hydeniana : Mouthparts of yellow-spotted millipede adapted for chewing and grinding. It consists of I5-20 segments of body, It can have upto 400 legs. They have a single pair of antennas & have simple eyes. Mouthparts lie on underside of the head with ‘epistome’ and labrum forming the upper lip.A pair of maxilla forming the lower lip. A pair of mandibles lies inside the mouth. Labrum is present but sometimes is not obvious.

PP-83

STUDY OF CATALYTIC AND PHOTOCHEMICAL ACTIVITY OF SOL-GEL SYNTHESIZED Zn/Mo DOPED ON CERIA OXIDE

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Abstract:

Metal oxides are the most important and widely employed categories of solid catalysts, either as active phases or as supports. Application of these mixed metal oxides has important role inorganic transformations, due to their simplicity in handling, decreased reactor and plant corrosion problems, cost effectiveness and because most of the mixed metal oxides are reusable and recyclable.

In view of this, series of Zinc doped molybdenum supported on ceria oxide synthesized by using sol-gel method with precursors of zinc nitrate and ammonium heptamolybdate respectively. These synthesized mixed oxides were calcined and characterized by using FT-IR, XRD and TGA techniques. XRD showed highly crystalline material with nano size and confirmed the presence of phases of ZnO, MoO_3 and CeO_2.

Photochemical activities were also studied using Methyl orange and bromothymol blue dye. These series of catalysts study revealed the importance of doped material in catalysis and photocatalytic activity.

Keywords: Metal oxides, molybdenum oxide, photochemical degradation, catalysis

PP-84

STUDIES ON METAL IODIDE THIN FILMS PHYSICO CHEMICAL PROPERTIES AND THEIR APPLICATION

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Abstract:

Metal iodide thin films have garnered significant attention in recent years due to their diverse applications in optoelectronic devices, photovoltaics, and materials science. This research article presents a comprehensive investigation into the physicochemical properties of metal iodide thin films, with a focus on their structural, optical, and electrical characteristics. The thin films of various metal iodides like copper iodide, lead iodide etc. The characterization of copper iodide thin films for their structural morphological and wettability studies by means of XRD, FT-Raman Spectroscopy, Scanning electron microscopy (SEM), optical absorption and contact angle measurement.

Depending upon the method of synthesis and the nature of substrate surface, there is variation in the physico-chemical properties of the material. Cuprous iodide films are deposited at room temperature on the glass and copper substrates by a simple SILAR method and the obtained results are compared.

In summary, this research article provides a comprehensive overview of the physicochemical properties of metal iodide thin films, offering valuable insights into their structure and behavior. The findings contribute to the fundamental understanding of these materials and can guide future research efforts aimed at optimizing their performance in various technological applications.

Keywords: Thin films, Metal Iodide, XRD, SEM

PP-85

ALCOHOL PRODUCTION BY VARIOUS SOURCES

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Abstract:

Food processing operations produce large amounts of waste that are rich in nutrients, and although these wastes are utilized to produce value added products to some extent, the majority of the waste is discarded. This paper provides a comprehensive review of the characteristics of food processing waste for micro- and macro-nutrient composition, and utilization of these materials in alcohol production. The feasibility of producing alcohols, mainly ethanol and butanol, was investigated while identifying the research gaps and suggesting future directions for food processing waste utilization. Ethanol and 1-butanol are the most studied alcohols produced by fermentation of food processing wastes. Methanol is used to a much lesser extent as fuel and produced using chemical conversion methods. Propanol and isobutanol from fermentation of food processing waste are gaining interest more recently, and there are fewer published articles on these products. Alcohols have high market demand as fuels and industrial solvents. Effective utilization of food processing wastes in alcohol production can significantly affect the production economics by not having a need to grow crops for raw materials or acquiring biomass at a high cost. Although theoretically alcohol production from food processing waste appears to be feasible, the technology still has to overcome several constraints.

Keywords: Methanol, Fermentation

PP 86

STUDY OF REARING PERFORMANCE OF ERI SILKWORM, SAMIA CYNTHIA RICINIBOISD UNDER LABORATORY CONDITIONS

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Abstract:

Domestication of Vanya Silkworms is largely followed practice in our country to fullfill the increasing demand of silk. In the present study, the efforts were made to study the rearing performance of eri silkworm under laboratory conditions. The rearing was carried in the month of October 2023. The total egg period was ranged from 6 to 7 days. The larvae pass through four moults and required 22 to 25 days to complete larval development. The pupal duration range from 15 to 17 days. The total life span from egg to an adult was 43 to 49 days. The adult longevity was 3 to 4 days. The fecundity was ranged from 300 to 305 eggs.

Key words: Life cycle, Vanya Silk, Castor, Eri Silkworm, Domestication, Tropical region

PP 87

GREEN SYNTHESIS OF SILVER NANOPARTICLES USING AQUEOUS LEAVES EXTRACT OF *CITRUS MEDICA* L. AND ITS ANTIBACTERIAL ACTIVITY AGAINST TWO HUMAN PATHOGENIC BACTERIA

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Abstract:

Silver nanoparticles (AgNPs) are highly valued for their distinctive physicochemical properties and versatile applications across various industries, including environmental science, biotechnology, and medicine. In this study, we present a sustainable and eco-friendly method for synthesizing AgNPs using the aqueous extract of *Citrus medica* L. leaves and investigate their antibacterial efficacy. The aqueous leaf extract of *Citrus medica* L. serves as a dual-functional agent, acting both as a reducing and stabilizing agent during the synthesis process. Confirmation of AgNPs formation was achieved through UV-Visiblespectroscopy, which exhibited a characteristic absorption peak at 420 nm, indicative of the surface plasmon resonance of silver nanoparticles. Morphological analysis using scanning electron microscopy (SEM) revealed the presence of spherical nanoparticles with an average size of 82 nm.

The synthesized AgNPs were then evaluated for their antibacterial activity against pathogenic bacteria, including *Escherichia coli* and *Staphylococcus aureus* using standard agar disc diffusion assays. Remarkably, significant inhibition zones were observed around the AgNPs-containing discs, indicating potent antimicrobial effects. The mechanism underlying this antibacterial activity is presumed to involve the generation of reactive oxygen species and disruption of bacterial cell membranes. Overall, our green synthesis approach offers a sustainable and environmentally friendly strategy for producing AgNPs with robust antibacterial properties, holding promise for various biomedical and environmental applications, though further research is needed to explore their full potential.

Key words: Silver Nanoparticles, *Citrus medica* L., UV-Visible spectroscopy, *Escherichia coli, Staphylococcus aureus.*

PP 88

ANTIMICROBIAL ACTIVITY AND PHYTOCHEMICAL SCREENING OF PLANT EXTRACT *JUSTICIA ADHATODA*

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Abstract:

The current study was focused on Antimicrobial activity of ***JUSTICIA ADHATODA*** plant and its phytochemical screening by test. The ethanolic crude extract showed largest zone of inhibition 100µg/ml of *P.auruginosa*, 50µg/ml of *S.aureus* bacteria and 1000 µg/ml with *A.nifer fungi*. The data was compaired with antibiotics having 50µg/ml chloramphenicol, 100µg/ml Amphicillin and 100µg/ml Nystatin.

Keywords: *JUSTICIA ADHATODA,* Amphicillin

PP 89

SULPHATED TIN OXIDE: AN IMMENSELY EFFICIENT AND REUSABLE CATALYST FOR THE SYNTHESIS OF BENZIMIDAZOLE DERIVATIVES

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Abstract:

In this research, a new strategy for synthesis benzimidazoles *via* condensing o-phenylenediamine and substituted aldehydes by adopting prepared sulphated tin oxide as solid heterogenous catalyst in water ethanol system (1:1-v/v) at reflux condition has been developed. The solid sulphated tin oxide was synthesized and confirmed by XRD, EDS map, SEM images and FTIR. The reaction wasoptimized for different solvents and loading of catalyst. The yields of all benzimidazole derivatives were observed in the range of 80-94%. All the synthesized benzimidazoles were analyzed by spectral data. The use of ecologically benign catalyst sulphated tin oxide, solvent system, ample substrate scope with good atom economy, environmental affordability and easy work up makes this protocol green.

PP 90

STUDY OF POTENTIAL ANTIBACTERIAL ACTIVITIES OF TAGETES ERECTA AND FDA APPROVED AYURVEDIC MEDICINES, 'SUKSHMA TRIPHALA' AND 'GANDHAK RASAYAN'

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Abstract:

'Acne vulgaris' is a chronic skin disease involving blockage or inflammation of pilosebaceous units.Acne can present as non-inflammatory lesions, inflammatory lesions, or a mixture of both, affecting mostly the face but also the trunk and back. In Asia including India more than half ofb the adolescent population develops the complications. 'Acne vulgaris' is the prevalent chronic skin disease in the United States, affecting nearly 50 million people per year, mostly adolescents and young adults.

This study was conducted to isolate and identify bacteria causing 'Acne vulgaris' and to determine their responsiveness towards *Tageteserecta* along with FDA approved ayurvedic medicines 'Sukshmatriphala' and 'Gandhakrasayan'. Samples were aseptically collected from humans suffering from the skin disorders. The samples were transferred on sterile 'Nutrient Agar' plates and incubated for 24 hrs at 37°c to get isolates. The isolates as obtained were identified using conventional identification methods and MALDI-TOF technique. Vide culture code number AS4344 the isolate was *Staphylococcus epidermidis*. *Staphylococcus aureus* was also obtained as a lab isolate.

Bacterial isolates were subjected to sensitivity testing using *Tageteserecta* and FDA approved ayurvedic medicine 'Sukshmatriphala' and 'Gandhakrasayan'. The ayurvedic preparations were chosen on the background of their native origin and comparatively chipper price. Studies of antibacterial activities were done using "Agar Diffusion Method". *Staphylococcus aureus* and *Staphylococcus epidermidis*were not sensitive to *Tageteserecta*. *Staphylococcus aureus* and *Staphylococcus epidermidis*were sensitive to 'Sukshmatriphala' and 'Gandhak rasayan'.

Keywords: Acne Vulgaris, *Tegeteserecta*, Sukshmatriphala, Gandhakrasayan, *Staphylococcus aureus, Staphylococcus epidermidis.*

PP 91

KINETICS AND MECHANISM OF OXIDATION OF BENZOIC AND 4-HYDROXY BENZOIC ACID HYDRAZIDES BY BROMATE IN AQUEOUS HYDROCHLORIC ACID MEDIUM: A KINETIC STUDY

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Abstract:

Selenium dioxide catalyzed benzoic and 4-hydroxy benzoic acid hydrazide oxidation by bromate was studiedinhydrochloric acid medium. The order in oxidant, substrate and catalyst were found to be unit each. Increasing hydrogen ion concentration increases the rate of the reaction due to the formation of an active protonated hydrazide. The mechanism of the reaction involves oxidation of selenium dioxide, Se(IV), to its higher oxidation state Se(VI) by the oxidant which then oxidizes the hydrazide in a rate determining step. Benzoic and 4- hydroxy benzoic acids were found to be the oxidation products. Other kinetic data like activation parameters, effect of solvent polarity and ionic strength on the reaction support the proposed mechanism.

Keywords: Selenium dioxide, catalysis, hydrazides, oxidation, Bromate

PP 92

STUDY OF SPOILAGE CAUSING FUNGI AS ISOLATED FROM TURMERIC POWDER AND EVALUATION OF AANTIFUNGAL COMPOUND AS A PRESERVATIVE

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Abstract:

Turmeric is prime ingredient of Asian recepies. Scientific name of the turmeric is *Curcuma longa* L. and it is belongs to ginger Family *Zingiberaceae*. Annual production of the turmeric in India is 1.23 million metric tons and alone Sangli city from Maharashtra contributes for 1,40,000 metric tons/total yield.

About 20-30 % of stored turrmeric powder and rhizomes get spoiled by fungi and it is a great economic loss for farmers. For avoiding or minimizing the losses, present study highlights isolation and identification of spoilage causing fungi from turmeric four samples of spoiled turmeric powder were collected from mill and vendors.

'Sabouraud's Dextrose Agar' and lab made 'Coriander Dextrose Agar' were used for isolation of fungi. The plates were incubated at room temperature for 5 days. The isolates were identified by using conventional identification methods. ‘Sabouraud’s Dextrose Agar’ and ‘Coriander’s Dextrose Agar’ media both showed the presence of *Aspergillus niger*. The isolates were authenticated at ‘National Fungal Culture Collection of India’. Vide culture code number SK27 and SCDA the isolates were confirmed as *Aspergillus niger*. As per code SS1012 the isolate was confirmed as *Aspergillus flavus. Penicillium spp*. was isolated vide code number SH0054. Fungal isolates were subjected to antifungal activity using fluconazole as FDA approved chemotherapeutic agent. Two isolates of *Aspergillus* spp. were sensitive to Fluconazole.*Penicillium*spp showed considerable resistance to Fluconazole. Study concluded with the isolation of *Aspergillusniger, Aspergillus flavus and Penicillium*as spoilage causing fungi for turmeric Fluconazole can be used as a potential preservative for end products of turmeric.

Keywords: Turmeric, *Aspergillus*, *Penicillium*, Fluconazole, Antifungal agent as preservative

PP 93

BIOLOGY OF *MARUCA VITRATA* (LEPIDOPTERA: CRAMBIDAE) ON COWPEA UNDER LABORATORY CONDITIONS

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Abstract

Legume pod borer, *Maruca vitrata* (F) is key pest of cow pea and other legume crops, causing up to 80 % loss. Insect most found in tropical and subtropical areas with wide host range. *Maruca vitrata* passed through five different larval instars. There were five larval instars which took 13 days to enter pupal stage. Pupation took place inside the webbed pods and the pupal period was lasts for 8 days. Mean adult longevity was 7 days. Total life cycle of *M. vitrata* was completed in 33 days.Pupal mean length was about 11- 12 mm, breadth was about 2.50 mm. Mean length and breadth of moth was about 12.50 mm and 2.60 mm, respectively.

Keywords: Biology, cowpea, instar, caterpillar, *M. vitrata* (F).

PP 94

PLANTS AS BIOLOGICAL INDICATOR OF AIR POLLUTION IN CORPORATION AREAS OF SANGLI, MIRAJ AND KUPWAD (MAHARASHTRA)

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Abstract:

Increasing industrialization and anthropogenic activities is the main agent of pollutant discharge into the environment and introduce various harmful substances into the atmosphere. These pollution effects adversely on plants directly and/or indirectly. Leaf surface in plants undergoes several structural and functional changes when particulate laden air strikes it. An attempt was made to evaluate the quality of air in terms of respirable suspended particulate matter (RSPM), suspended particulate matter (SPM), sulphur dioxide (SO_2) and Nitrogen dioxide (NO_2) along with biochemical parameters of ten selected road side plant species at industrial traffic, residential and surrounding areas of SMK Corporation. Increased concentration of heavy metals (Fe, Cu, and Zn) was recorded at site A (industrial area). Considerable reduction in chlorophyll, sugar and protein contents were observed at sites receiving higher pollution load. The variation in heavy metal concentration and enzyme activity (e.g. Catalase, Peroxidase) were found to be pollution load dependent sites. Suggestion of activation of protection mechanism in studied plants under air pollution stress.

Keywords: Air quality, heavy metals, Pollution, bio-indicators.

PP 95

ISOLATION AND CHARACTERIZATION OF PHOSPHATE SOLUBILIZING BACTERIA AND SILICON SOLUBILIZING BACTERIA TOLERATING HIGH SALT AND ALKALI STRESS

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Abstract:

Low soil microbial activity and poor plant growth is observed in saline soils due to osmotic stress and toxic ions.Use of phosphate solubilizing bacteria (PSB) and as seed or soil inoculantsis known to improve solubilisation of fixed soil phosphorus and applied phosphates resulting in higher crop yields.Silicon uptake by plants can alleviate both biotic and abiotic stresses. The beneficial effects of silicon include accelerating growth, conferring rigidity to leaves, thus maximizing leaf surface area for photosynthesis and mitigating the effects abiotic stresses like drought, salt and metal toxicity in several plants. Silicon solubilizing bacteria (SSB)can solubilize insoluble silicon in soil resulting in increased yield. However, the establishment and performance of PSB and SSB is severely affected by environmental factors, especially under stress conditions. Bacteria growing in alkaline soil in India during the summer season are subjected to high salt, high pH and high temperature stress. In the alkaline soils of tropics, salt concentrations and pH may be as high as 2% and 10.5 respectively and temperature may range between 35 ^{o}C to 45 ^{o}C, these conditions may result in poor growth and survival of PSB and SSB.An understanding of the Phosphate solubilisation and Silicon solubilization by bacteria under stress conditions requires intensive screening of PSB/SSB with genetic potential for increased tolerance to high salt, high pH and high temperature which could enhance production of food and forage in semiarid and arid regions of the world. Therefore, the objective of this study was to isolate and characterize PSB/SSB strains tolerating high salt and alkali stress.

We isolated various bacteria from 9 different soil samples collected from semiarid regions of Sangli district in Maharashtra. Out of 92 isolates, 4 isolates can solubilize silicates in 7 days when incubated at room temperature (average 27^{o}C) in dark, tolerate 9% Nacl (salt) concentration and grow at pH 8.4, 8.5, 8.7 and 8.9 respectively. 14 isolates solubilize phosphate at 9-11% Nacl and grow at pH above 8.5.These isolates also show promising results of silicate solubilisation, phosphate solubilisation, IAA production, starch hydrolysis and Ammonia production. These isolates can be further studied for their role as salt and alkali tolerant bioinoculants to increase the crop yield in saline soils and semiarid regions.

Key words: Silicate solubilizing bacteria, Phosphate solubilizing bacteria, salt stress, alkali tolerance, environmental factors.

PP 96

BIODIVERSITY AND BIOPROSPECTING OF SCORPIONS EMERSING FIELDS

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Abstract:

Scorpion considered to be venomous animals is killed by human out of fear. In the recent times especially in foreign countries lot of research is being carried out for scorpion venom and molecules present in the venom. The findings to great prospect even in Indian scorpion where very few studies have been carried out in this subject.

PP 97

STUDY OF DANDRUFF CAUSING MICROORGANISMS IN THE CONTEXT OF NOVEL SYMBIOTIC INTERACTION OF *PANTOEA CALIDA* AND *ASPERGILLUS*

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Abstract:

Dandruff is a common scalp disorder affecting the post pubertal population. Medical term describing the complication is dandruff. More than half the population of the world has been documented for dandruff and thus it involves a variety of economical and social aspects. Majority of the population prefers Anti-dandruff preparations including shampoos. The present study also highlighted the efficacy of most commonly used Anti-dandruff shampoos. Novelty of the research lies in the claims of symbiotic relationship of bacteria and fungi for the development of dandruff.

Total 3 samples were aseptically collected from scalp of the individuals having dandruff. The samples were transferred on sterile 'Sabouraud Dextrose Agar' and 'Modified Dixon's Agar' plates and incubated for 4 days at room temperature. Total 4 isolates were obtained, one on 'Modified Dixon's Agar' and three on 'Sabouraud Dextrose Agar' media. The isolates were identified by using conventional identification methods and MALDI-TOF. The isolates were authenticated by 'National Fungal Culture Collection of India'. Vide culture code number RK8600 and RR1329 the isolates were *Aspergillus niger.* The fungus isolated vide culture code number BR2000 was *Aspergillus awamori.* The selective medium interestingly showed the growth of bacterial isolates. The isolate was processed with MALDI-TOF and found as *Pantoea calida.* One bacteria cannot be identified using the MALDI-TOF technique (culture code number RDMF) and it may be a novel bacterium.The bacteria is well known for producing various enzymes including proteases. It is our primary observation that the bacterium creates a suitable environment for secondary growth of *Aspergillus* spp. and plays a significant role in the development of dandruff. Fungal isolates were subjected to sensitivity testing using *Sesamum indicum* oil and two well known market brands of anti-dandruff shampoos. Two isolates of *Aspergillus* spp. were not sensitive to the *Sesamum indicum* oil. Both the brands showed differential activities against the fungal isolates.

Keywords: *Pantoea calida*, *Aspergillus*, Symbiotic association, Dandruff, Anti-dandruff shampoos

PP 98

CATALYTIC PROPERTIES OF MIXED TRANSITION METAL OXIDE IN ORGANIC TRANSFORMATION

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Abstract:

A number of transition metal mixed oxides with spinel-type, corundum-type and perovskite-type structures have been Prepared and characterized. Attempts have been made to improve their morphological properties and their stability. Some of them have been tested in the catalytic combustion of methane, CO and H_2 (perovskites), of propane and of phenantrene. FT-IR experiments allowed to obtain a quite complete picture of the mechanism of catalytic combustion of C3 organic compounds on spinel-type oxides $MgCr_2O_4$ and Co_3O_4. Nucleophilic oxygen species (lattice oxygen) is thought to be involved in both partial and total oxidation.

PP 99

FACILE FABRICATION OF g-C_3N_4-Fe_2O_3 HETEROJUNCTION FOR NOVEL PHOTOCATALYTIC DEGRADATION OF METHYL ORANGE DYE

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Abstract:

A new strategy was developed for graphitic carbon nitride-iron oxide (g-C_3N_4−Fe_2O_3) heterojunction composite formed by the one step calcination method from the Fe_2O_3 nanoparticles (NPs) and thiourea as a carbon and nitrogen precursor. It is a simple and cost-effective strategy to exploit iron in biological waste as a Fe precursor for the synthesis of Fe_2O_3 NPs. The synthesized composite material was characterized by XRD, SEM, TEM, FTIR, UV-Visible diffuse reflectance spectra and BET for surface size and pore diameter. The photocatalytic activity of the synthesized mpg-C_3N_4−Fe_2O_3 heterojunction composite was evaluated against methylene orange (MO) dye. It is interesting to find that the g-C_3N_4−Fe_2O_3 heterojunction composite exhibited superior photocatalytic activity than that of individual g-C_3N_4 and Fe_2O_3 under UV-Visible light against MO dye. Moreover, the g-C_3N_4-Fe_2O_3 heterojunction composite exhibited excellent reusability without the loss of photocatalytic activity after five successive runs.

Keywords: Heterojunction, Graphitic-carbon nitride, Photocatalyst, UV-Visible Light

PP 100

ASSESMENT OF INVITRO CYTOTOXICITY STUDY OF *HELICTERES ISORA* DRIED FRUIT EXTRACT USING BRINE SHRIMP LETHALITY (BSL) ASSAY METHOD

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Abstract:

Plant-derived cytotoxic constituents and polyphenolic compounds have played an important role in the development of clinically useful anticancer agents. In this context, we have selected Indian medicinal plant based on the literature claims and an attempt was made to evaluate the cytotoxic potential and total phenolic content (TPC) of their methanol extracts and fractions. Plant has been selected for the study, namely, Helicteres isora Linn (Malvaceae). The fruit of Helicteres isora L. contains alkaloids, glycosides, anthraquinones, tannins, saponins, flavonoids, and cardiac glycosides, according to the current study. Authenticated plant materials were subjected to extraction with ethanol by cold maceration and hot percolation methods. The extracts were fractionated into four fractions (F1, F2, F3, and F4). Preliminary phytochemical investigation was carried out for all extracts and fractions. All extracts and their fractions were subjected to cytotoxicity screening by brine shrimp lethality (BSL) bioassay. The plants with significant cytotoxicity were evaluated for TPC. F3 fractions of Helicteres isora L. has shown significant cytotoxicity (lethal concentration (LC50) < 100 ppm). F3 fractions of ethanolic, aqueous and hydroalcoholic extract of Helicteres isora L. show the LC50 values 19.23, 34.05, 32.50 respectively. The cytotoxicity screening system confirmed the proposed anticancer plants used by traditional healers and literature claims.

PP 101

STUDY ON USE OF HALOTOLERANT RHIZOBACTERIA AND IT'S APPLICATION IN AGRICULTURE

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Abstract:

Soil salinity is the abiotic stress which affects physiological, morphological & biochemical process of plant ultimately decreases the crop biomass & productivities. The excess Na & Cl can cause ion toxicity & interferes with many physiological processes which lead to the Chlorosis & necrosis in plant. To overcome this problem various biopesticides & plant growth promoters are used. The halotolerant PGPR increase the productivity of crop in salted soil by various mechanisms. That includes nitrogen fixation, phosphate solubilization, potassium solubilization, siderophore production, & plant growth hormones production (Indole, Gibberellins, Cytokinin, Amino cyclopropane-1- Carboxylate Deaminase). It is important to explore & identify region specific microbial strains which can be used as potential plant growth promoters to achieve higher yield under specific environmental conditions. Therefore isolate & identify the plant halotolerant PGPR from saline agricultural field soil & study their beneficial impact on saline agricultural field crops productivity.