University of Lucknow | Centennial Celebrations
लखनऊ विश्वविद्यालय | शताब्दी उत्सव

लखनऊ विश्वविद्यालय
University of Lucknow
(Accredited A^{++} by NAAC)

IQAC RESEARCH HIGHLIGHTS

Vol 1,Issue1, July 2023 A Quarterly Newsletter

Our Accreditations:

The University of Lucknow has secured a prestigious position in virious university ranking systems:

- Edu Rank : 29th in India and 463th in Asian University Rankings.
- Quacquarelli Symonds (QS) : 651-700th in Asian University Rankings.
- Times Higher Education (THE) : 401-500th in Asian University Rankings.

Message from the Vice Chancellor

It is a great pleasure that IQAC brings out a quarterly research highlights. Academic research is the foundation of our pursuit of knowledge and the driving force behind our mission to positively impact society. Through rigorous research, exploration, and discovery, we contribute to the global body of knowledge, address societal challenges, and prepare our students to become critical thinkers and leaders. The University of Lucknow has a rich tradition of pioneering research and it is our collective responsibility to build on this legacy and propel our institution to new heights of excellence. It is my wish that this research bulletin will help foster the creativity and scientific endeavour that leads to development and innovation.

Prof. Alok Kumar Rai

Message from Director, IQAC

To support and promote academic research IQAC is coming with its first research highlights. IQAC continues to invest in state-of-the-art research infrastructure, provide competitive funding opportunities, and foster interdisciplinary collaboration. In addition, we are exploring partnerships with industry leaders, government agencies, and international institutions to create a dynamic ecosystem that amplifies the impact of our research efforts. IQAC would also like to emphasize the importance of mentorship and collaboration in nurturing the next generation of researchers. By fostering a culture of mentorship, we ensure that our students and early career researchers receive the guidance and support they need to succeed in their research.

Prof. Sangeeta Sahu

E-mail: iqac@lkouniv.ac.in https://www.lkouniv.ac.in

Quarterly Research Publications Updates (April-June 2023) University of Lucknow, Lucknow Uttar Pradesh, India

Our university's, academic and administrative functioning is geared towards enabling, supporting and encouraging our faculty members to undertake rigorous, transdisciplinary, and collaborative research. Our faculty members published more than fifty research articles, reviews, chapters, and books between April and June of 2023. During last three months (April- June 2023) our faculty members published over 50 plus research, reviews, chapters & books. These include research papers and articles published in national and international journals, edited and authored books, book chapters and several research reports, many of which have been in some of the world's most prestigious journals and publishing houses.

Improving the National and International Ranking

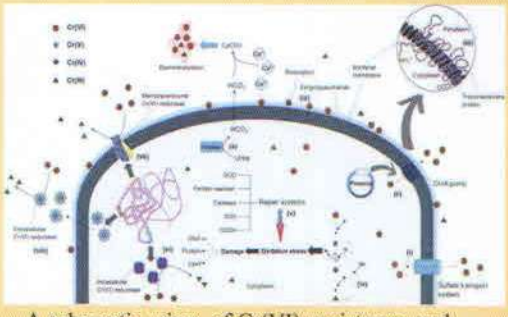
University of Lucknow established in Year 1920 and having more than 10 faculties, 47 departments, 15 UG & 67 PG programs, with more than 16000 students, 478 Professors and more than 550 affiliated colleges.

University of Lucknow became the first institution in India to have implemented National Education Policy 2020. The University of Lucknow has secured an important place in many prestigious rankings of the country and abroad including QS, Nature Index, TIMES Higher Education, EduRank, UniRank, SCImago, UniRank, and NIRF Ranking since January 2020.

A comprehensive review on chromium (Cr) contamination and Cr (Vi) -resistant extremophiles in diverse extreme environments

Dr. Vikash Kumar, Department of Botany, University of Lucknow, Lucknow

[Environmental Science and Pollution Research IF: 5.8]



A schematic view of Cr(VI) resistance and detoxification mechanisms in bacteria

The study gives a detailed account on the ecology and biogeography of Cr(VI) - resistant microorganisms in inhospitable environments, and their use for detoxifying Cr(VI) and other applications. The study also focuses on physiological, multi-omics, and genetic engineering approaches of Cr(VI)- resistant extremophiles.

Integrated ated application of Trichoderma and Carbendazim affects the carbedazim extractability and microbial functions in the maize rhizosphere

Dr. Om Prakash, Department of Chemistry University of Lucknow, Lucknow, India

[Journal of Soil Science and Plant Nutrition- IF: 3.9]

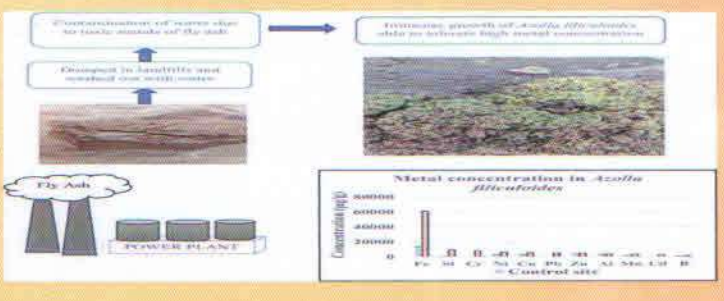
The HPLC analysis of soil and maize tissue reveals increased persistence of carbendazim and its degraded products in fallow treatment compared to maize with or without Trichoderma. The application of Trichoderma enhanced the carbendazim removal and alleviated its effect on the microbial populations. The present study concludes that fallow conditions prolong the presence of residual pesticides in soil and affect the soil microbial community, whereas bio fungicides such as Trichoderma facilitate its degradation.

Phytoremediati of Heavy Metals by Azolla filiculoides Lam. From Fly Ash Polluted Water Bodies

Prof. Alka Kumari, Department of Botany, University of Lucknow, Lucknow

[Water, Air, & Soil Pollution- IF: 2.9]

Results indicates that the Azolla filiculoides has the capability to withstand FA- induced metal toxicity and it may prove an ideal candidate to detoxify FA-contaminated water bodies.

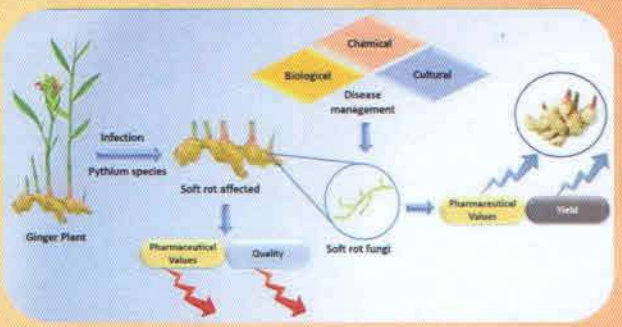


A comprehensive review on soft rot disease management in ginger (Zingiber officinale) for enhancing its pharmaceutical and industrial values

Prof. Amritesh C. Shukla, Department of Botany, University of Lucknow, Lucknow

[Heliyon - IF: 4]

The present review is aimed to discuss various means of controlling soft rot disease by physical, chemical, biological, and nanotechnology - based methods. Moreover, various bioactive constituents of ginger and their pharmaceutical importance have been also discussed.

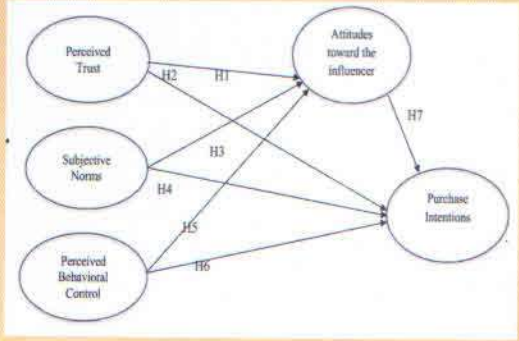


Impact of fashion influencers on consumer's purchase intentions: theory of planned behavior and mediation of attitude

Prof. Audhesh kumar & Dr. Rishi Kant, Department of Commerce, University of Lucknow, Lucknow, India

[Journal of Fashion Marketing and Management- IF: 4.18]

The study found that attitudes toward fashion influencers are positively influenced by perveived trust, subjective norms and perveived behavioural control. However, perceived behavioural control is not directly related to purchasing intents in the research model. The result confirmed that attitudes have a positive association with purchase intentions both directly and indirectly (partially mediation)



Naringenin ameliorates aluminum toxicity - induced testicular dysfunction in mice by suppressing oxidative stress and histopathological alterations

Prof. Siddhartha Kumar Mishra, Department of Biochemistry, University of Lucknow, Lucknow, India

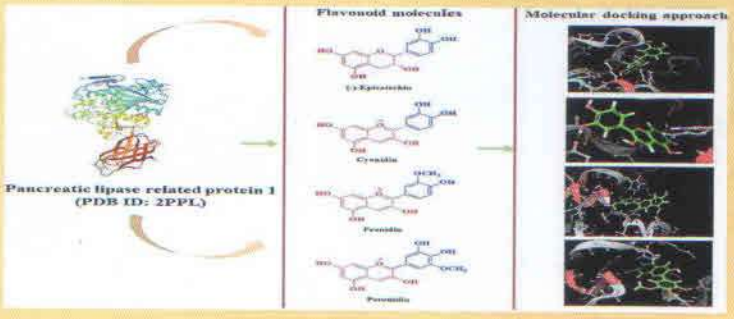
[Systems Biology in Reproductive Medicine - IF: 2.95]

Oral administration of NAR was found to restore body weight and testes weight and ameliorated reproductive dysfunctions. NAR decreased oxidative stress, replenished the antioxidant defense system, and improved his topathological alterations in the AlCl3 treated testes. Therefore, the present study suggests that the supplementation of NAR maybea beneficial strategy to mitigate A1C13-inducedreproductivetoxicityand testicular dysfunction.

Pancreatic lipase related protein 1 as a potential target in triglyceride breakdown: A molecular docking studies within vitro appraisal

Prof. Siddhartha Kumar Mishra, Department of Biochemistry, University of Lucknow, Lucknow, India

[Results in Chemistry - IF: 2.37]



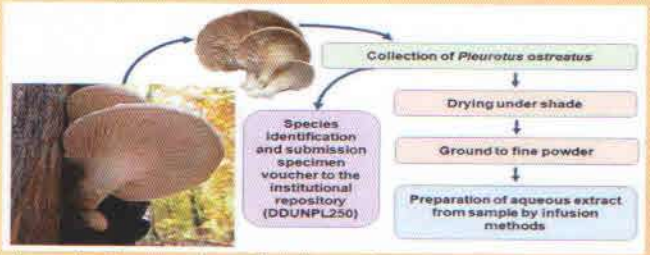
The findings of this study will be able to deliver useful insights to researchers in designing interesting weight- - control drugs. Also, PLRP1 protein could open us a new insight and as an interesting target approach in the triglyceride eakdown for the management of obesity.

Orally Administered Aqueous Extract of Pleurotus ostreatus Ameliorates Hyperglycemia in Streptozotocin- Induced Diabetic Rate

Prof. Siddhartha Kumar Mishra, Department of Biochemistry, University of Lucknow, Lucknow, India

[INNOSC Theranostics and Pharmacological Sciences - IF: 11.556]

Observations from the current experiments indicate that P. ostreatus help in reduction of bl ood glu cose level, thus confirming its antidiabetic activity in STZ- induced diabetes in rats. Th is study further advocates that supplementation of edible mushroom P. ostreatus could be a preventive approach in diabetes as well as in obesity management.



Schematicdiagram for collection and preparation of the a queousex tract of Pleurotus ostreat

Anchor- based void detouring routing protocol in three dimensional IOT networks

Deepak Gupta, Faculty of Engineering and Technology, University of Lucknow, Lucknow, India

[Computer Networks - IF: 5.6]

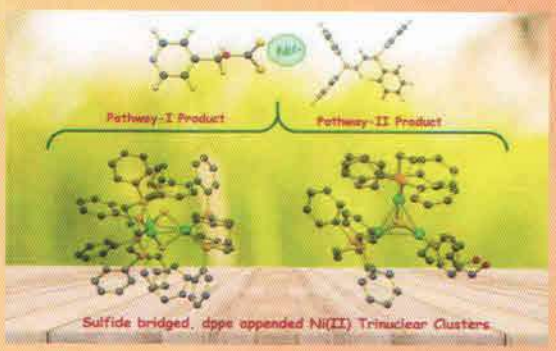
This paper presents a novel anchor -based void detouring routing (AVDR) protocol where anchor node is treated as a sub- destination which provides the direct smaller path between source and gateway nodes.

Sulfidobridged- 1,2-bis (diphenylphosphino) ethane (dppe) appended trinuclear nickel (II) clusters: Crystallographc and computational analyses

Dr. Om Prakash, Department of Chemistry, University of Lucknow, Lucknow, India

[Inorganica Chimica Acta- IF:2.8]

In the presented investigation, two sulfido-bridged 1,2-bis(diphenylphosphino)ethane (dppe) appended trinuclear Ni(II) clusters were synthesized using the same starting reactants but adopting two different reaction pathways. Both compounds possessed three Ni(II) centers held by two sulfido-ligands and appended with dppe, but with different compositions and exhibited different non-covalent interactions alongwith the Ni Ni interactions. Attempts were made to address the nature of weak interaction.



An Expedient Three- component Synthesis of Novel Pyrido - pyrimidine Derivatives: Antimicrobial Activity, Molecular Docking, and ADME Studies

Dr. Abha Bishnoi - Department of Chemistry, University of Lucknow, Lucknow, India

[Polycyclic Aromatic Compounds- IF: 2.4]

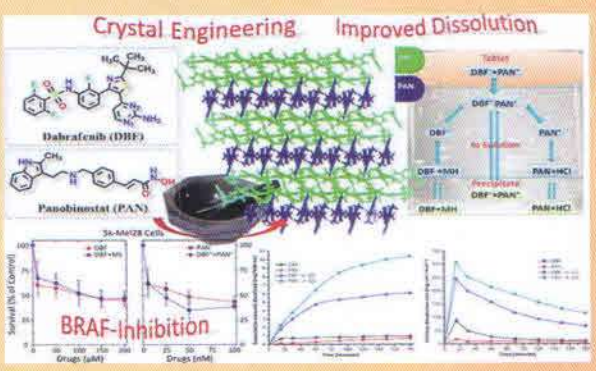
The present study thus paved the way for developing lead compounds which could be potentially used as an efficient antibacterial drug in humans after appropriate animal, and clinical trials.

Dabrafenib- Panobinostat Salt: Improving the Dissolution Rate and Inhibition of BRAF Melanoma Cells

Dr. Sunil Kumar Rai, Department of Cheistry, University of Lucknow, Lucknow, India

[ACS Omega- IF: 4.1]

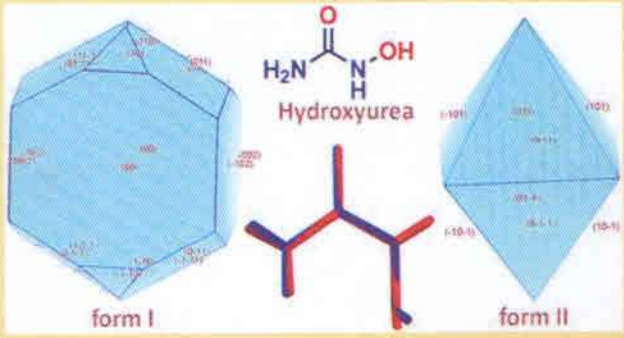
We report herein the crystalline salt of the BRAF inhibitor dabrafenib (DBF) and HDAC inhibitor panobinostat (PAN) and the role of the novel DBF-PAN^{+} salt to induce cell death in BRAF^{V600E} melanoma as well as in other cancer cells. Another objective of the salt formulation is to improve the dissolution rate and solid form stability in a single.



Polymorph II of hydroxyurea 150 years after its first synthesis

Dr. Sunil Kumar Rai, Department of Chemistry, University of Lucknow, Lucknow, India

[ACS Omega- IF: 4.1]



A new polymorph of hydroxyurea (HU) was crystallized 150 years after its first synthesis. Due to its medicinal use in neoplastic diseases and sickle cell anemia, a high throughput screen of HU binary cocrystals was attempted. Instead of a cocrystal, an isoenergetic form II crystallized concomitantly with urea in methanol.

Beyond membrane components: uncovering the intriguing world of fungal sphingolipid synthesis and regulation

Dr. Ashutosh Singh, Department of Biochemistry, University of Lucknow, Lucknow, India

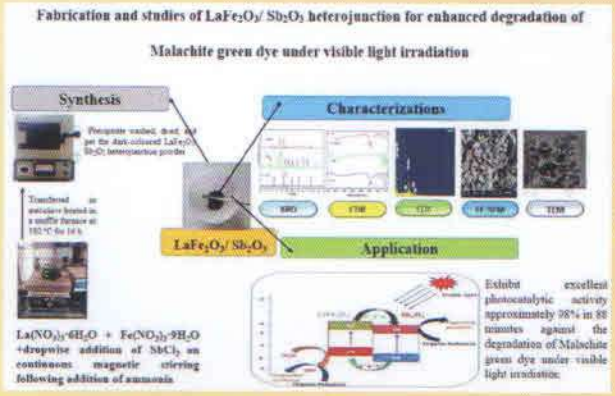
[Research in Microbiology - IF: 3.94]

These studies have provided a better understanding of SL biosynthesis, degradation and regulation networks in filamentous fungi, which are discussed and elaborated here

Fabrication and studies of $LaFe_2O_3/Sb_2O_3$ heterojunction for enhanced degradation of Malachite green dye under visible light irradiation

Dr. Shashi Bala, Department of Chemistry, University of Lucknow, Lucknow, India

[Inorganic Chemistry Communications - IF:3.8]



Impedance studies demonstrated lower charge transfer resistance for the heterojunction as compared to lanthanum ferrite and antimony oxide. The photocatalytic activity of the samples was checked for the decolorization of malachite green. It was observed that the nanocomposite showed maximum response with 98% degradation of MG in 88 minutes. Scavenging experiments established the involvement of hydroxyl radicals (OH) in the photodegradation mechanism of malachite green, while recycling experiments demonstrated its reliability and long-term use as a photocatalyst.

Synthesis of Novel Ciprofloxacin- Avibactam Conjugates For the Development of Second Generation Non - β - Lactam - β - Lactamase Inhibitors

Dr. Sushil Kumar Maurya, Department of Chemistry Unviersity of Lucknow, Lucknow, India

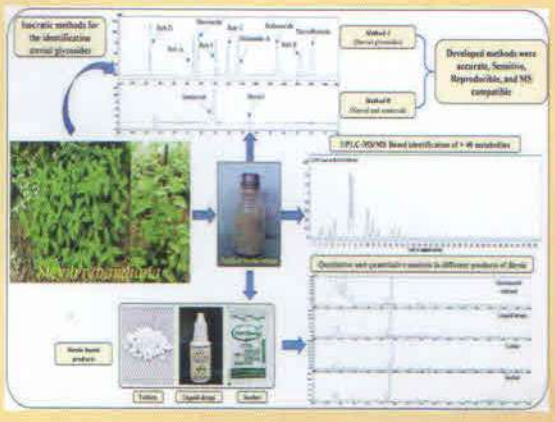
[Bioorganic & Medicinal Chemistry Letters- IF: 2.8]

These outcomes allude to avibactam integration with ciprofloxacin is a novel and fruitful approach to discovering clinically valuable next-generation non-ß-lactam-B-lactamase inhibitors.

Simple isocratic RP - UHPLC - MS methods for the determination of steviols and its glycosides: Quality control perspectives

Dr. Sushil Maurya, Department of Chemistry University of Lucknow, Lucknow, India

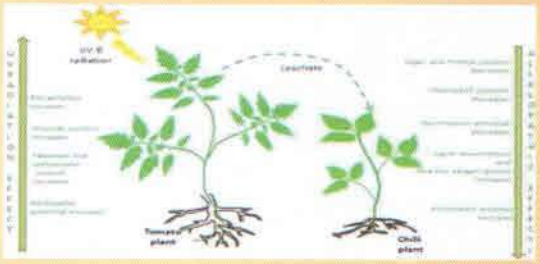
[Food Biosciences- IF: 5.2]



The current investigations were aimed to develop and validate new reversed phase MS compatible isocratic methods for qualitative and quantitative determination of steviol glycosides (Method A) and isomeric aglycon (steviol and isosteviol: Method B). These methods were used for the determination of steviol glycosides, steviol, and isosteviol in *Stevia rebaudina* leaves and its derived products viz. Stevia tablets, Stevia sachet, Stevia liquid drops, and purified Stevia extract. Furthermore, Stevia leaves purified extract was also profiled for its comprehensive chemical profiling through UHPLC-MS/MS based strategies.

Secondary metabolites interference on potential of solanum lycopersicum grown under UV - B stress and its impact on developmental attributes of capsicum annuum

Dr. Ajey Singh & Dr. Niharika Department of Botany, University of Lucknow, Lucknow



[Plant Stress - IF: 5:0]

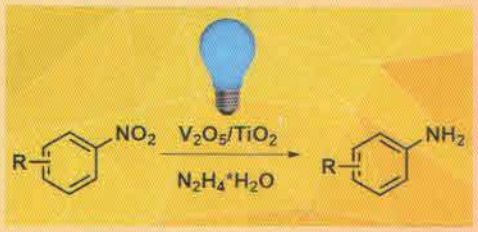
In conclusion our results highlight the presence of miscellaneous secondary metabolites which increased under UV-B stress and improved its herbicidal potency against chilli plants.

Heterogeneous V205/Ti02 Meiated Mild Photocatalytic Reduction of Nitro compounds to corresponding Amines under Visible Light

Dr. Sushil Kumar Maurya, Department of Chemistry University of Lucknow, Lucknow, India

[Journal of Organic Chemistry - IF:3.6]

The developed protocol enabled wide functional group tolerance, chemo-selectivity, high yield, and low-cost, sustainable, and environmentally benign synthesis.



Photocatalytic Reduction of Nitroarenes to Aromatic Amines

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