PROCEEDING OF THE

International Conference On Emerging Trends In Biological Science

(ICETBS-2025)

On

27th & 28th February 2025

Organized by

PG DEPARTMENT OF ZOOLOGY

Sri Vidya Mandir Arts & Science College (Autonomous)

Katteri – 636 902, Uthangarai (Tk), Krishnagiri (Dt),

Tamil Nadu, India

In association with

PG & RESEARCH DEPARTMENT OF ZOOLOGY

A.V.V.M Sri Pushpam College (Autonomous)

Poondi - 613 503, Thanjavur (Dt),

Tamil Nadu, India

Editors

Dr. M. Murali & Dr. S.Ganesh

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MESSAGES

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Thiru. V. CHANDRASEKARAN
Founder & Secretary

Date: 27-02-2025

Foreword

It gives me immense pleasure to extend my warm greetings to the esteemed delegates, distinguished Speakers, Researchers and participants of the "**International Conference On Emerging Trends In Biological Science (ICETBS-2025)".** Sri Vidya Mandir Arts & Science College (Autonomous) always stands as a beacon of excellence in academics and Research, fostering innovation and nurturing intellectual growth. Hosting this international conference reflects our unwavering commitment to advancing knowledge and addressing our time's most critical global challenges. Biological sciences dynamic and interdisciplinary nature holds transformative potential in tackling pressing issues such as global health, climate changes and environmental sustainability.

This Conference serves as a confluence of great minds, igniting discussions, collaborations and ground breaking innovations that will illuminate pathways for a better future. I deeply appreciate the relentless efforts of the organizing committee, the invaluable contributions of the participants and the distinguished presence of our guests and speakers. Together, Let us chart a course toward a future where science, innovation and humanity unite to overcome challenges and achieve sustainability and progress. **Wishing the ICETBS-2025 resounding success and a lasting impact on the scientific community and society.**

Sincerely

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Tamil Nadu, India

Dr, N. GUNASEKARAN, MA M.Phil., Ph.D

Principal

Date: 27-02-2025

Foreword

I am delighted to extend my warmest greetings to ll the esteemed speakers, Researchers and participants of the "**International Conference On Emerging Trends In Biological Science (ICETBS-2025)".** It is a moment of immense pride for our institution, Sri Vidya Mandir Arts & Science College (Autonomous), to host this prestigious event that brings together the brightest minds to address global challenges through the lens of Biological sciences. In a world confronted by critical issues such as climate changes , environmental degradation, and global health crises, the role of life science has never been more crucial.

This conference provides a platform to foster interdisciplinary collaboration and share innovative ideas that will undoubtedly contribute to creating a sustainable and equitable future. I commended the organizing team for their tireless efforts in making this event a reality and express my heartfelt gratitude to all participants for their contributions. May the discussions and deliberations during this conference inspire new avenues of Research practical solutions to the challenges that humanity faces. **Wishing the ICETBS-2025 a grand success and a meaningful impact on the global scientific community.**

Sincerely

A. Veeriya Vandayar Memorial
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Dr. T.S.BASKARAN
Principal

Date: 27-02-2025

MESSAGE

On behalf of A.V.V.M Sri Pushpam College (Autonomous), I am delighted to welcome you all to the **International Conference on Emerging Trends in Biological Science (ICETBS-2025).** This prestigious event, organized by the PG Department of Zoology at Sri Vidya Mandir Arts & Science College (Autonomous) in collaboration with PG & Research Department of Zoology brings together leading scholars, practitioners and policymakers from across the globe.

This conference aims to recognize excellence in the field and builds awareness among the scholars and researchers to develop their knowledge in basic Life Sciences, healthcare and its applications. Significantly, the conference aims to provide a forum for reporting and discussion of ideas and strategies and issues concerning the need to protect the tradition based medicines.

India has a very rich cultural heritage and endowed abundantly with its knowledge of biological research as drugs and bio medical techniques. I am proud that the Department is taking a international awareness theme to protect the Zoological resources of our great nation.

I deem it a proud privilege that Professors, scientists and the Resource persons working in the fields of Life science would disseminate authoritative, insightful and arresting interpretation of the need to create awareness among the scholars.

I heartily congratulate the Organizing Secretary, Dr. M.Murali and Dr. S. Ganesan and the active faculty members of the Departments for their vision of future by providing a scholarly and academic exposure to the younger minds.

Sincerely

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Dr. D. Kavitha, M.Sc., M.Phil., Ph.D., SET
Vice – Principal

Date: 27-02-2025

Message

I take immense pleasure in extending my warm greetings to all the dignitaries, Research scholars and participants of the **International Conference On Emerging Trends In Biological Science (ICETBS-2025).** Our institutions, Sri Vidya Mandir Arts & Science College (Autonomous), is privileged to host this significant event, which stands as a testament to the power of collaboration and innovation in addressing the global challenges of our time, Life sciences, with its interdisciplinary approach, plays a vital role in shaping solutions for issues, such as environmental sustainability, climate changes and global health. This conference provides an invaluable platform for sharing knowledge, exploring advancements, and fostering partnerships that will pave the way for transformative research and applications. I am confident that the insights and contributions of this gathering will leave a profound impact on both the academic and global communities. I congratulate the organizing committee for their dedication and extend my heartfelt wishes for the grand success of the ICETBS-2025. Let this conference inspire new ideas, collaborations and breakthroughs for a brighter and more sustainable future.

Sincerely

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Dr. M. MURALI
Convener & Organizing Secretary (ICETBS-2025)
Assistant Professor & Head
PG Department of Zoology

Date: 27-02-2025

MESSAGE

It is with great pride and joy that I welcome all the distinguished guests, eminent speakers, researchers and participants to the **International Conference On Emerging Trends In Biological Science (ICETBS-2025).** The field of life sciences holds the key to addressing some of the most pressing challenges facing humanity today. From ensuring global food security to combating climate change and advancing healthcare solutions, life science continue to shape the future of our world.

This conference aims to provide a dynamic platform for the exchange of ideas presentation of ground breaking research and collaboration across disciplines to tackle these global issues. As the Head of the Department of Zoology, I take immense glee in being a part of this academic endeavour, which reflects our institution's commitment to fostering excellence in education, research and innovation. I extend my sincere gratitude to all the participants and organizing committee members for their dedication abd effort in making this event a success. Let this conference inspire us to explore new frontiers in life science and work collectively towards a sustainable and prosperous future.

Sincerely

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Dr. R. RAJAKUMAR
CONVENER (ICETBS-2025)
Associate Professor & Head
PG & Research Department of Zoology

Date: 27-02-2025

Message

It is my privilege to share a message for the **International Conference On Emerging Trends In Biological Science (ICETBS-2025).** The esteemed conference is organized by the PG Department of Zoology at Sri Vidya Mandir Arts & Science College (Autonomous), Tamil nadu, in collaboration with PG & Research Department of Zoology, AVVM Sri Pushpam College (Autonomous), Poondi has provided a vibrant platform for researchers and students to engage in meaningful discussions on pivotal issues and advancements in Life Sciences.

The publication of this proceeding is a testament to the organizers dedication to disseminating knowledge and ideas presented during the conference. I extend my warmest congratulations to the organizers, participants and authors for their tireless efforts.

I wish this proceeding great success in inspiring future research and collaborations, ultimately contributing to the betterment of our world.

Sincerely

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Dr. S. GANESH
Organizing Secretary (ICETBS-2025)
Assistant Professor
PG & Research Department of Zoology

Date: 27-02-2025

PREFACE

"Health is vital for total development of personality"

I am delighted to write the preface of the souvenir of the ICETBS-2025 conference as its Organizing Secretary. This Conference is poised to provide a platform for sharing scientific information on the latest research in the field of Life science. The availability of the state-of –art facilities in science and technology demands a fresh outlook at the existing scientific phenomenon's to molecular level. The interdisciplinary areas viz. Biotechnology, Genomics, Toxicology, Immunology, Stem cell Biology etc., possess extraordinary potential for improving our standard of life especially in health.

I am sure that the International Conference will bring a lot of new ideas, innovation and inoculate research ideas in the students and will update the students in newer fields of life sciences. The Conference also brings our creative talents and provides a new platform to their career opportunities.

As an Organizing Secretary I thank the scientific committee and other committee members for bringing out the souvenir successfully.

I take this opportunity to extend my warm welcome you all for ICETBS-2025 and make it a grand success and memorable event.

Sincerely

INVITED LECTURES

ABSTRACTS

Invited Lectures

BASIC GENOMIC MEDICINE

DR. R.SAMPATH KUMAR

Research Associate Professor, The Translational Genomics Research, Institute (TGEN) Phoenix USA

ABSTRACT

Basic genomic medicine focuses on understanding the role of genetics in health and disease, utilizing advancements in genomic technologies to diagnose, treat, and prevent a range of medical conditions. It integrates genomics into clinical practice by examining how genetic variations influence individual responses to diseases, medications, and treatments. Genomic medicine involves techniques such as genome sequencing, gene editing, and genetic testing, enabling personalized healthcare approaches. As the field continues to evolve, it holds promise for early disease detection, improved therapeutic strategies, and the development of precision medicine, aiming to tailor interventions based on a person's genetic makeup. This approach enhances both preventive and therapeutic strategies, promoting a deeper understanding of complex diseases like cancer, cardiovascular conditions, and rare genetic disorders.

Keywords: Cancer; Gene variations; Genomics

PLACENTA THE ROADMAP FOR NEXT GENERATION: THERAPEUTIC EFFICACY OF PALMITOLEATE AGAINST PLACENTAL DAMAGE DURING MATERNAL OBESITY AND ZIKA VIRUS INFECTION

Dr. SATHISH KUMAR NATARAJAN

Associate Professor, Department of Nutrition & Health Sciences, University of Nebraska-Lincoln

ABSTRACT

My lab is interested in studying the important role of placenta during development of a fetus. Specifically, we study the protective role of omega-7 fatty acids against placental infection- or maternal obesity-associated inflammation, lipotoxicity and endoplasmic reticulum stress response.

1) Palmitoleate protects Zika virus (ZIKV) Infection to the Placenta and fetal brain: Recent advances in monitoring Zika virus (ZIKV) infection suggest that the virus can be vertically transmitted to the fetal organs including brain via the placenta. My lab data show that Asian and African strains of ZIKV induces apoptosis to neurons and trophoblasts. Mechanistically, ZIKV-induced apoptosis is via the activation of endoplasmic reticulum stress and mitogen activated protein kinase activation in trophoblasts and neuronal cells. Further, ZIKV-induced trophoblast or neuronal apoptosis was significantly prevented with treatment of palmitoleate, an omega-7 mono-unsaturated fatty acid. These data indicate that palmitoleate can reduce placenta and fetal brain injury and viral transmission to the fetus.

2) Placental Trophoblast Lipotoxicity during Maternal Obesity: Obesity during pregnancy increases the risk for maternal complications such as gestational diabetes, preeclampsia, and maternal inflammation. Maternal obesity also increases the risk of childhood obesity, fetal intrauterine growth restriction (IUGR) and diabetes in childhood. Our published work shows that saturated FFAs induce placental trophoblast lipoapoptosis. We also observed that saturated FFAs (palmitate) integrated stress response in trophoblasts. Co-treatment of palmitate and lipopolysaccharide to placental trophoblasts exacerbates palmitate-induced placental trophoblast lipoapoptosis suggesting that maternal inflammation aggravates FFA-induced lipoapoptosis. Interestingly, palmitoleate treatment protects against palmitate-induced placental trophoblast lipoapoptosis. The protection offered by palmitoleate support the therapeutic potential of palmitoleate against FFA-induced placental lipotoxicity in maternal obesity.

Keywords: Fetal development; Prenatal care; Healthcare

NEVER DIAGNOSTICS EPIGENETICS BIOMARKERS

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ABSTRACT

Epigenetic biomarkers are molecular signatures that reflect changes in gene expression regulation without altering the underlying DNA sequence. These biomarkers include DNA methylation, histone modifications, and non-coding RNA profiles, which play a crucial role in understanding the mechanisms of various diseases. Epigenetic biomarkers offer promising applications in early disease detection, prognosis, and the development of personalized medicine. Their dynamic nature makes them valuable indicators of environmental influences and disease progression. Advances in high-throughput technologies, such as next-generation sequencing and microarray analysis, have enabled the precise identification and quantification of these biomarkers. Epigenetic biomarkers particularly hold potential in diagnosing neurodegenerative diseases, cardiovascular conditions, and other complex disorders. The non-invasive nature of detecting some epigenetic markers from bodily fluids enhances their clinical utility and patient compliance. Ongoing research and collaboration are essential to translate epigenetic discoveries into routine clinical practice. As the field progresses, epigenetic biomarkers are expected to play a pivotal role in advancing precision medicine and improving patient outcomes.

Keywords: DNA sequence; Methylation; Diagnostics

CURRENT STATUS OF STEM CELL RESEARCH IN INDIA

Dr. GANESAN SIVAMANI

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ABSTRACT

Stem cells are specialized and have the potential to maintain their numbers, and upon need proliferate and differentiate into multiple types of mature cells. The physiological roles of stem cells include homeostasis, wound healing and tissue rejuvenation. Stem cells have been isolated from all parts the human body. The specific need for stem cell research arises from the fact that multiple diseases involve aberrant cell function at its core. This calls for research involving these cells and to study the various mechanisms of their aberrance in the human body.

One of the well-researched sources of stem cells is the human bone marrow and extensive work has been done in the isolation and characterization of these cells. Mesenchymal stem cells (MSC) are one type wherein their stemness property has been well documented. MSC have also been isolated from dental pulp, adipose tissue and cord blood apart from other sources.

One fascinating development in regenerative medicine, apart from embryonic stem cells (ESC), is the development of the methodology for induction of pluripotency using fibroblasts – induced pluripotent stem cells (iPSC). This technology paves way for better opportunities to model and mimic diseases in vitro. This can also be used to develop patient and disease specific models for research and therapy.

All these offer huge opportunities in research and development. With the advent of newer technologies in cell visualization, tracking and modulation there is a greater potential of stem cells in the future.

Keywords: Stem cells; iPSC; Pluripotency

ABSTRACTS

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

(ICETBS-2025) on 27th & 28th February 2025

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PHARMACOLOGICAL ACTIVITIES OF ABUTILON GRANDIFOLIUM

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Abstract:-

Abutilon grandifolium is a common Indian shrub that belongs to the Malvaceae family. It is also known as hairy Indian mallow in English. It has been widely used in traditional medicine as an analgesic, anti-diabetic, jaundice, piles, and anti-inflammatory, as well as in the treatment of urinary disease, thirst relief, wound and ulcer cleaning, vaginal infections, allergies, and some ear and neurological issues. This plant is commonly used as a medicinal plant, although it is considered invasive on several tropical islands. The flowers *of A. grandifolium* are used in the treatment of sexual disorders in men. Bronchitis, diarrhoea, gonorrhoea, and bladder inflammation are all treated with a plant extract. The herb is extremely often utilized in siddha remedies. The root, petals, and seeds are all utilized medicinally in Tamils. An overview of the numerous studies on the abutilon genus has been offered with the goal of better understanding its therapeutic characteristics. A review of the available literature on the genus Abutilon revealed the presence of a diversity of secondary metabolites such as flavonoids, phenolic acids, sterols, triterpenes, quinones, coumarins, alkaloids, and others, which are responsible for its pharmacological activities such as anti-malarial, antipyretic, CNS activity, etc.

Key words: Malvaceae, Abutilon grandifolium, Secondary metabolites, Jaundice.

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NEW PERSPECTIVES ON DYSREGULATED KYNURENINE PATHWAY METABOLITES ASSOCIATED WITH GUT DYSBIOSIS IN SCHIZOPHRENIA

Nikhil PJ, Thirumoorthy C, Shivarama V, Priyamvada S and Gokulakrishnan K

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Abstract:-

Schizophrenia (SCZ) is a neuropsychiatric disorder linked to intricate interactions between gut microbiota and host metabolism, though the exact mechanisms remain unclear. Exploring abnormalities in KP metabolites and their connection to gut-related markers is crucial for understanding the pathogenesis of SCZ. We recruited 230 individuals, patients with SCZ (n=155) and healthy controls (n=75), from a large tertiary neuropsychiatry centre. Serum levels of Tryptophan (TRY), kynurenine (KYN), Kynurenic acid (KYNA) and 3-Hydroxy kynurenine (3-HK) were measured by LC-MS-MS. Additionally, zonulin, LBP, and IAP were measured by ELISA and 16s rRNA sequencing was performed in a subset. We found lower systemic levels of TRY, IAP ($p<0.05$), and higher KYN, KYNA, 3-HK, zonulin and LBP ($p<0.05$) in patients with SCZ compared to healthy controls. KP metabolites were significantly correlated with gut metabolites, systemic inflammation and Ruminococcus, UCG005, Clostridium_sensu_stricto_1 and Bifidobacterium ($p<0.05$). Individuals with SCZ had higher independent odds of TRY (odds ratio (OR): 0.37, 95% CI: 0.25 – 0.55), KYN (OR: 1.97, 95% CI: 1.39 – 2.78) and KYNA (OR: 3.43, 95% CI: 2.32 – 5.08), KYN – TRP Ratio (OR: 6.27, 95% CI: 3.35 – 11.72) even after adjusting for potential confounders. Our study highlights a link between KP metabolites and schizophrenia in Asian Indian patients, revealing correlations with systemic inflammation and gut dysbiosis.

Key words: Schizophrenia, Ruminococcus, metabolism

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(ICETBS-2025) on 27th & 28th February 2025

DNA METHYLATION SIGNATURES IN PERINATAL DEPRESSION: AN EPIGENOME-WIDE ASSOCIATION STUDY

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Abstract:-

Perinatal depression (PND), a prevalent mental health condition affecting mothers during pregnancy and the postpartum period, poses significant risks to both maternal and child well-being. Therefore, we investigated whether DNA methylation signatures are associated with perinatal depression and whether early alterations in methylation patterns could be used to predict postpartum depression (PPD). We randomly recruited 201 pregnant women in the second-trimester pregnancy (24-28 weeks), without prior history of anxiety and/or depression disorders, from the ST ratification of Risk of Diabetes in Early pregnancy study and grouped them as PND (n = 92), and non-PND (n=109) groups based on PHQ-9 depression score. We found 591 CpGs were significantly associated with PND (fold change >0.4 & p< <0.01). We identified a panel of 7 CpGs to discriminate PND from non-PND with the best sensitivity and specificity in training (AUC of 1), test (AUC of 0.85) and validation data sets (AUC of 0.73) by Support Vector Machine (SVM) ML algorithms, utilizing a 25-fold k-fold cross-validation. Our study unravelled a specific panel of altered DNA methylation pattern that distinguishes PND and non-PND in pregnant women. Furthermore, the genes annotated to the differentially methylated CpGs are implicated in the development of depression as well as alterations in related metabolic variables.

Keywords: Perinatal depression, DNA, Pregnancy

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MICROBIAL AND INFECTIOUS DISEASE

S. Elango, S. Sakthivel and G. Gomadhavalli

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Abstract:-

The discipline of infectious diseases will assume added prominence in the 21st century in both developed and developing nations. To an unprecedented extent, issues related to infectious diseases. In the 21st century where science and its technology have revolutionized the world, there has also been a remarkable increase in the infectious diseases which have disastrously affected mankind. From the past when millions of people died due to chickenpox and measles in America till currently a virus like the SARS, Coronavirus (COVID 19) has challenged the world, which is a highly infectious disease. Infectious disease reports the main cause of death in this global world. Despite high equipment facilities and technology, this type of disease has regularly challenged the global scenario. Infectious diseases are particularly important causes of death among the people who are elderly, immune compromised, already having a chronic disease and also to those who are suffering from malnutrition. The article focuses on the mechanisms by which the infectious agents cause pathology, various routes of infection and also throws light on the different microbial agents which are causing various infectious diseases. This attention has focused both on scientific challenges such as vaccine development and on the deleterious effects of infectious diseases on economic development and political stability. Advances in functional genomics will underpin significant progress in many areas, including understanding human predisposition and susceptibility to disease, microbial pathogenesis, and the development of new diagnostics, vaccines and therapy.

Keywords: Infectious Disease, Microbiology, Microbial Agents

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PHARMACOLOGICAL ACTIVITIES OF *ANDROGRAPHIS PANICULATA* AND *ADHATODA ZEYLANICA*

Monisha, S and Saravanan, K

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Abstract:-

Andrographis paniculata is commonly known as "green chiretta" is an annual herbaceous plant in the family Acanthaceae, native to India and Sri Lanka and *Adhatoda zeylanica* is a shrub commonly known as adhatoda in the family Acanthaceae, are the medicinal plants used for anti-inflammatory, antibacterial, and antimalarial properties. They have a broad medicinal application. Historically, many diseases have been successfully treated. The plants' success can be attributed to the presence of a few bioactive chemicals such as andrographolide and Vasicine. The highly bitter taste of these plants is caused by chemicals known as andrographolide. This combination of two bitter plants, however, offers a sweet future for people who value the plants' virtues. According to the review, a wide spectrum of phytochemical compounds has been extracted from the plant, and they have important properties such as antitussive, antibacterial, abortifacient, anti-inflammatory, and antiulcer. Other activities mentioned include radio modulation, hypoglycaemia, cardiovascular protection, antitubercular, antiviral, hepatoprotective, antimutagenic, and antioxidant. These studies are highly encouraging and show that herb should be explored more extensively for its therapeutic advantages.

Key words: Medicinal plants, *Andrographis paniculata*, Vasicine, anti-malarial

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GREEN SYNTHESIS OF SrO2 NANOPARTICLES USING *PLECTRANTHUS AMBOINICUS* LEAF EXTRACT AND ITS BIOLOGICAL APPLICATIONS

Dhamodharan S, Sakthivel M, Thaila S, Ganesan S and Kumar K*

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Abstract:-

Nanoparticles are increasingly gaining attention in various domains of their applications in materials science, energy science, medicine, and biotechnology. Nanoworld is an attractive sphere with the potential to explore novel nanomaterials with valuable applications in medicinal science. Herein, we report an efficient and ecofriendly approach for the synthesis of SrO2 nanoparticles by using *Plectranthus amboinicus* leaf extract. The prepared nanoparticles are characterized by XRD, UV–Vis-NIR, FTIR, SEM, HRTEM, and Green synthesized SrO2 nanoparticles were carried out against the antibacterial and antidiabetics activity, a-glucosidase enzyme model, indicating an enhanced biocatalytic potential compared to their respective leaf extract and the control. Furthermore, the emerging rate of infections in diabetic patients validates the need for the discovery of dual diabetes therapies. As a result, the bioderived SrO2 displayed antibacterial activity against bacterial species *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Bacillus subtilis*, and *Salmonella species*.

Keywords: Green synthesis; MgO NPs; Antibacterial activity; Antidiabetics activity

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

(ICETBS-2025) on 27th & 28th February 2025

GREEN SYNTHESIS AND CHARACTERIZATION OF SELENIUM NANOPARTICLES (SENPS) USING *WITHANIA SOMNIFERA* AND ITS BIOLOGICAL APPLICATIONS

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Abstract:-

The green synthesis of SeNPs (selenium nanoparticles) are formed by simple mixing of *Withania somnifera* (*W. somnifera*) leaves extract and selenious acid (H_2SeO_4) solution. The work was focused to determine the phytochemical analysis of leaves extract, green synthesis, its characterization and its Biological applications. The biological applications of SeNPs of antioxidant, antidiabetic, anti-inflammatory, antifungal, anticancer, and antibacterial. The present study aims to design an eco-friendly mode to rapidly synthesis SeNPs through *Gymnema sylvestre*. The synthesized nanoparticles were characterized by UV-visible spectroscopy, FT-IR, SEM, TEM, DLS, EDX, FCM, XRD, SAXS, and SMPS. Modern information and approaches to the possible biomedical use of selenium nanoparticles are presented: antimicrobial, anticancer, antioxidant, anti-inflammatory, and other properties, as well as the mechanisms of these processes that have important potential therapeutic value.

Keywords: Selenium nanoparticles, Antidiabetic activity, Drug delivery

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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INFLUENCE OF BIOLOGICAL MACROMOLECULES ON THE ANTIDIABETIC AND ANTIBACTERIAL PROPERTIES OF NiO NANOPARTICLES

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Abstract:-

Nanomedicine and Nanobiotechnology are the emerging field of nanoscience that utilize therapeutic nanoparticles for the various biomedical applications. Biological macromolecules play a pivotal role in enhancing the therapeutic efficacy, safety, and targeting capabilities of NiO nanoparticles in the context of antidiabetic treatments. Their integration into nanoparticle formulations represents a promising approach to overcome challenges associated with current diabetes management strategies. Bio synthesis method adopted here has several advantages like low cost, simplicity, fine and uniform particle size with weakly agglomerated particles and low processing temperature. NiO NPs will be synthesized using a chemical precipitation method, ensuring uniform particle size and optimal surface area for biological interactions Parameters like precursor concentration, pH, temperature, and reaction time will be optimized to achieve NPs of the desired size and morphology (confirmed by TEM, SEM, and XRD analysis). The main advantage of this process is the possibility of creating pure and homogenous nanoparticles. Biological macromolecules can mitigate the potential cytotoxicity of NiO nanoparticles by forming a protective layer around them or by facilitating their controlled release. This aspect is crucial for ensuring the safety of nanomedicine-based antidiabetic therapies. This multidisciplinary approach will provide valuable insights into the enhanced bioactivity of NiO NPs when functionalized with biological macromolecules, advancing their potential applications in diabetes and bacterial infections.

Keywords: NiO NPs; Antidiabetic; Antibacterial; Drug delivery

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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GREEN SYNTHESIS OF STRONTIUM NANOPARTICLES USING *ANDROGRAPHIS PANICULATA* LEAF EXTRACT TO IMPROVE THE DIABETIC COMPLICATION

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Abstract:-

Plant-based nanoformulation is one of the novel approaches for therapeutic benefits. This research synthesized a magnesium oxide nanoparticle from the Andrographis paniculata leaf extract and investigated its antidiabetic effects in clinically collected samples. Nanotechnology is a rapidly advancing field that focuses on the processing and modification of materials at the nanoscale, leading to the development of nanomaterials with unique physiochemical properties. Among these, strontium nanoparticles (SrNPs) have gained significant attention due to their biocompatibility, low toxicity, and diverse applications in optical, electrical, biomedical, and food packaging industries. This review highlights the green synthesis of SrNPs using plant-derived sources, including leaves, stems, bark, roots, rhizomes, fruits, flowers, and seeds. The biosynthesized SrNPs exhibit remarkable biological activities, such as antimicrobial, antioxidant, antidiabetic, anticancer, anti-inflammatory, photocatalytic, wound healing, and drug delivery applications. The structural and morphological characterization of SrNPs is performed using advanced analytical techniques, including Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), Atomic Force Microscopy (AFM), X-Ray Diffraction (XRD), Energy Dispersive X-Ray Spectroscopy (EDX), and Fourier Transform Infrared (FTIR) Spectroscopy. This study emphasizes the eco-friendly approach to SrNPs synthesis and explores their mechanisms of action, making them a promising candidate for various biomedical and industrial applications.

Keywords: Antimicrobial, Antioxidant, Antidiabetic, Anti-inflammatory, Photocatalytic,

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

(ICETBS-2025) on 27th & 28th February 2025

BIOREMEDIATION OF MONOAROMATIC HYDROCARBONS USING BIOSURFACTANT

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Abstract:-

Mono-aromatic hydrocarbons, such as benzene, toluene, ethylbenzene and xylene (BTEX), are the major components of gasoline and petroleum, and of the most prevalent contaminants in groundwater, sediments and soils. One of the major environmental problems today is hydrocarbon contamination resulting from the activities related to the petrochemical industry. Accidental releases of petroleum products are of particular concern in the environment. Hydrocarbon components have been known to belong to the family of carcinogens and neurotoxic organic pollutants. Bioremediation of soils is currently a relevant issue, because it implies a process in which organic contaminants in the subsoil are biodegraded and can become mineralized so that eventually they become non-toxic compounds. The contaminant does not enter another physical state because it is degraded. The present study focused on degradation of mono aromatic petroleum hydrocarbons using bacteria. The soil samples were collected from automobile workshops and petrol pumps at different places. To isolate and identify the BTEX degrading bacteria and the biodegradation potential of the isolated bacteria was assessed with the redox indicator 2, 6-dichlorophenol indophenols test. The selected strains used for the biosurfactants production. This biosufactants used for biodegradation process and different pH, temperature and carbon sources will be used to enhance the degradation capacity of the strains. The presented laboratory study can be applied also in case of on-field conditions.

Keyword: Bioremediation, Monoaromatic hydrocarbons, biosurfactant, BTEX.

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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DEVELOPMENT OF PROBIOTIC BEVERAGE FROM PINEAPPLE AND ROSE APPLE JUICE

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Abstract:-

Probiotics are microorganisms that, when taken, provide positive health effects. Nowadays, ingested microorganisms linked to positive effects on people and animals are referred to as probiotics. The lactic acid bacteria *Lactobacillus plantarum* fermented apple juice for 72 hours, and the physico-chemical properties of the fermented apple juices were noted at intervals of 0.24, 48, and 72 hours. The best treatments, *L. plantarum* 107 cfu/ml for apple fermented apple juice, were chosen for storage study based on the highest lactic acid bacterial counts, rate of fermentation (°B/24hr), acidity, sugar utilization percentage, retention of ascorbic acid and total phenols, antioxidant activity, and antimicrobial activity against pathogenic bacteria such as *E. coli* and *S. aureus*, while the lowest pH, coliform, yeast, and mold counts were found. During fermentation vitamin C and total phenols declined, while, the antioxidant activity, antimicrobial activity, viable cell counts and lactic acid bacteria counts were increased. So the probiotic juices were acceptable. Identification of lactic acid bacteria by biochemical test concluded that the bacteria were *L. plantarum* in apple juices which were inoculated in juices for fermentation, after storage apple juice were suitable for lactic acid fermentation to produce a probiotic beverage. So, this juice can serve as healthy beverage for vegetarians and lactose allergic consumers. This study revealed that probiotic drink is a good approach for non-dairy products, with high nutritional and health promoting components.

Keywords: Wood Apple juice, Probiotic, *Lactobacillus plantarum*

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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SUBLETHAL TOXICITY OF Al_2O_3 NANOPARTICLE IN THE OVARY OF FRESHWATER FISH *OREOCHROMIS MOSSAMBICUS*

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Abstract:-

The impact of aluminium oxide nanoparticles (Al_2O_3 NPs) was assessed in the ovary of adult female freshwater fish *Oreochromis mossambicus* by studying the bioaccumulation pattern, biochemical profile and histological changes. Sub lethal concentrations of Al_2O_3NPs such as 120, 150 and 180 ppm were used for the 96 h toxicity studies. A dose dependent toxicity with significant alterations in the biochemical parameters and transaminase enzyme activities (GOT and GPT) was observed in the target organ in response to the nanoparticles. The major histological alteration such as the abnormal vacuolization of ova, severe abnormalities and degeneration were observed in the ovary on exposure to the highest concentration of Al_2O_3 NPs.

Keywords: Nanoparticles, Enzyme activities, Aluminium oxide

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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A STUDY ON THE ACTIVITY CONCENTRATION OF POLONIUM-210 IN WATER AND SOIL SAMPLES OF VYTHIRY TALUK, WAYANAD DISTRICT, KERALA

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Abstract:-

The study was conducted to evaluate polonium 210 in the groundwater and soil along the Vythiry Taluk Wayanad District, Kerala. Ten ground water and soil samples were collected from tea crop plantation area. The descriptive statistical analysis was carried out besides SPSS version 16, such as Skewness, kurtosis and also frequency distribution. Where highly distribution is observed between water and soil (1.761mBq/L and 2.785Bq/Kg). The quantity and the suitability of groundwater for living things consumption and soil cultivated in tea crop plantation.

Keywords: Soil, Quantity, Frequency distribution

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

(ICETBS-2025) on 27th & 28th February 2025

EMERGING TRENDS OF BIOLOGICAL SCIENCES

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Abstract:-

The field of biological science is rapidly changing, and genomics will be crucial in determining the direction of future studies and applications. Genomic research has been transformed by the development of next-generation sequencing (NGS) and CRISPR-Cas9 gene-editing technologies, which allow for precise DNA alterations for crop enhancement and disease treatment. By customizing therapies according to each patient's unique genetic profile, personalized medicine powered by genomic data is greatly enhancing healthcare results. Genomic research is expanding the study of microbiomes and human health by revealing the function of microbial communities in digestion, immunity, and disease resistance. Through genetic adaptation research, environmental genomics is being used to track disease outbreaks, monitor biodiversity, and lessen the effects of climate change. Furthermore, synthetic genomics is enabling bioengineering to produce novel organisms for sustainable materials, biofuels, and medication manufacture. Machine learning and artificial intelligence (AI) are speeding up the analysis of genomic data, improving our capacity to forecast evolutionary tendencies, medication responses, and disease susceptibility. But these developments also bring up ethical issues, such as data security, genetic privacy, and fair access to genomic treatments. As the subject develops, interdisciplinary cooperation and regulatory frameworks will be essential to guaranteeing responsible genomic uses. This article examines the most recent developments in genomics, their uses in diverse domains, and the moral dilemmas that need to be resolved in order to realize their full potential.

Keywords: Genomics, CRISPR-CAS9, Microbiomes, Susceptibility

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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PREPARATION AND ANTIMICROBIAL APPLICATION OF HYDROXYAPATITE DOPED COPPER NANOPARTICLES DERIVED FROM *PILA GLOBOSA* SHELLS

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Abstract:-

Hydroxyapatite (HAp) and copper-doped hydroxyapatite nanoparticles (HAp-CuONPs) were synthesized using *Pila globosa* shells through chemical reduction and calcination methods. The transformation of white HAp powder to light blue or bluish-white confirmed the formation of HAp-CuONPs, as evidenced by surface plasmon resonance (SPR). UV-vis spectroscopy further validated the biosynthesis of HAp-CuONPs, showing distinct peaks, with one at 260 nm corresponding to Cu2O. FTIR analysis revealed characteristic adsorption bands for hydroxyl, phosphate, and carbonate groups, indicating the formation of carbonated HAp, while XRD patterns confirmed the crystalline structure of hydroxyapatite and the incorporation of copper nanoparticles without compromising HAp stability. SEM images showed irregular, grain-like structures with spherical CuONPs embedded on the HAp surface. Antimicrobial activity was evaluated against *Bacillus cereus*, *Proteus mirabilis*, *Salmonella typhi*, *Klebsiella pneumoniae*, and *Aspergillus niger* at concentrations ranging from 125 to 500 µg/mL. HAp-CuONPs exhibited enhanced antimicrobial efficacy compared to HAp, with significant inhibition of *A. niger* when compared to the control drug, Amphotericin-B. These findings highlight the potential of HAp-CuONPs derived from *P. globosa* shells as effective antimicrobial agents.

Keywords: Hydroxyapatite (HAp); Copper Nanoparticles (CuONPs); *Pila globosa* Shells

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

(ICETBS-2025) on 27th & 28th February 2025

HEMATOLOGICAL EFFECTS OF INSECTICIDE IMIDACLOPRID ON FRESHWATER FISH *OREOCHROMIS MOSSAMBICUS*

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Abstract:-

Imidacloprid, a widely used neonicotinoid insecticide, has raised concerns about its potential toxic effects on non-target aquatic organisms, particularly fish. This study evaluates the hematological alterations in *Oreochromis mossambicus* following exposure to sub-lethal concentrations of imidacloprid over a 30-day period. Blood samples were analyzed for key hematological parameters, including red blood cell (RBC) count, white blood cell (WBC) count, hemoglobin (Hb) concentration. The results indicated a significant decrease in RBC count, hemoglobin levels, and WBC count showed a marked increase, indicating an immune response to pesticide-induced stress. The observed hematological changes highlight oxidative stress, immune modulation, and physiological disturbances caused by imidacloprid exposure. These findings emphasize the ecological risks posed by imidacloprid contamination in aquatic environments and the need for stricter regulatory measures to prevent its impact on freshwater fish populations.

Keywords: oxidative stress, pesticide toxicity, freshwater fish, immune response.

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE
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HISTOPATHOLOGICAL EFFECT OF INSECTICIDE DELTAMETHRIN ON FRESHWATER FISH *OREOCHROMIS MOSSAMBICUS*

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Abstract:-

This study examines the histopathological effects of the insecticide deltamethrin on *Oreochromis mossambicus* (Mozambique tilapia), a commonly found freshwater fish species. Fish were exposed to sub-lethal concentrations of deltamethrin for a period of 14 days, and tissue samples from the gills, liver, kidney, muscles, and brain were analyzed for histopathological alterations. The results revealed significant damage to multiple organs. The gills showed epithelial hyperplasia, lamellar fusion, and mucous secretion, indicating impaired respiratory function. The liver exhibited hepatocyte vacuolization, necrosis, and congestion, reflecting liver stress and dysfunction. Renal tissues showed signs of tubular degeneration and glomerular shrinkage, suggesting renal impairment. Muscle fibers exhibited degeneration, and the brain exhibited neuronal degeneration, glial cell proliferation, and edema, signaling neurotoxic effects. These histopathological changes reflect the disruption of cellular processes, oxidative stress, and toxicity induced by deltamethrin. The findings highlight the potential ecological risks posed by deltamethrin contamination in aquatic ecosystems and emphasize the need for more stringent regulations to mitigate its impact on freshwater species.

Keywords: Deltamethrin, *Oreochromis mossambicus*, histopathology, freshwater fish

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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IMPACT OF COW URINE EXTRACT OF *AZADIRACHTA INDICA* ON THE CHITINASE ACTIVITY OF *TRIBOLIUM CASTANEUM* LARVAE

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Abstract:-

The post harvest losses and quality deterioration of food grains caused by insect pests during storage is the major problem in assuring food security in developing countries. The present study was initiated to determine the effect of different formulations of cow's urine fermented with plant leaves and were investigated against stored product pests. This study is important to discover an alternative way to eliminate or decrease the infestation of stored product pests and consequently helping consumers to prolong the shelf life of storage of food products. Studies indicated that Insect enzymes could be used as indicator for determining the antifeedant activity of herbivorous insects. The present study suggests that the enzymes can also be used to determine the adaptability of the insects to the toxic stress.

Keywords: Antifeedant activity, Food grains, Deterioration

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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HARNESSING ARTIFICIAL INTELLIGENCE TO ACCELERATE INNOVATIONS IN BIOLOGICAL SCIENCES AND HEALTHCARE

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Abstract:-

Emerging trends in biological sciences are increasingly driven by the integration of artificial intelligence (AI), creating new frontiers in research and healthcare. AI technologies, such as machine learning and deep learning, are being harnessed to analyze large-scale biological data, such as genomic sequences, protein structures, and clinical health records, in ways previously unimaginable. AI-driven models are enhancing our ability to predict disease outcomes, design personalized treatments, and identify novel drug candidates, accelerating the pace of drug discovery. Furthermore, AI is playing a significant role in genomics, where it assists in deciphering complex genetic information, identifying genetic mutations, and uncovering the genetic basis of various diseases. AI-powered imaging techniques are revolutionizing diagnostic tools in medical imaging, allowing for more precise detection of diseases such as cancer. In addition, the use of AI in synthetic biology is driving innovation in the design of biological systems and organisms, offering the potential for breakthroughs in sustainable biotechnology, bio-manufacturing, and environmental solutions. These advancements demonstrate the powerful synergy between biological sciences and AI, promising transformative impacts on healthcare, environmental sustainability, and biotechnology.

Keywords: Genomics, Drug Discovery, Bioinformatics, Medical Imaging

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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IMPACTS OF DRUGS ON OUR ADVANCED SOCIETY

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Abstract:-

All the humans are use any substance (other than food materials) that is used to prevent, diagnose, treat, or relieve symptoms of a disease or abnormal conditions. Drugs can also affect how the brain, control of the body's functions, changes in mind, thoughts, feelings, or behaviour and etc., Drugs can affect depressants, hallucinogens, and stimulants. Smoking has a smarter taste and unpleasant odour a cool lip tobacco filter is a type of smoking accessory designed to reduce the harshness of smoking tobacco. The filter may contain materials like activated carbon, cellulose acetate, or other absorbents that help remove some of the toxic chemicals and tar from the smoke. It's crucial to remember that the best way to avoid the health risks associated with tobacco use is to quit smoking altogether. If you're struggling with nicotine addiction, consider consulting a healthcare professional for guidance. Drug use negatively impacts a user's health, often leading to sickness and disease. Use of drug by common people leads to many social consequences such as – Instability in family relationships, Domestic Violence, Crime prone life, Reduction of sense of belonging to the family and the society.

Keywords: Drugs, Hallucinogens, Reducing harshness, Smoking

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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DIVERSITY AND DISTRIBUTION OF TREE HOLE MOSQUITOES IN DHARMAPURI DISTRICT , TAMILNADU , INDIA

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Abstract:-

Tree holes are produced due to environmental factors as well as biotic pressure. It is unique habitat for insects breeding and survival. The study of tree hole mosquitoes was carried out in Dharmapuri district between December 2024 – February 2025. Random collections were carried out in tree holes by using suction tube, nets. Insect vector especially mosquitoes are responsible for spreading serious human disease like Malaria, Yellow fever, Dengue. Mosquitoes are Identified by using standard entomological procedures. A total of 198 mosquitoes were collected from tree holes, comprising 3 genera. They are *Aedes, Anophele, Culex*. Tree hole mosquitoes are studied by Simpson's index, Shannon Wiener index . Aedes species is the Pre-dominant species in tree holes. This study provides information regarding tree hole mosquitoes, future vector control programmes.

Keywords : Mosquitoes, Tree holes, *Aedes,* Shannon Wiener, Simpson's index

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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PHYSIOCHEMICAL AND ECOLOGICAL CHARACTERISTICS OF TREE HOLE AS MOSQUITO BREEDING HABITATS

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Abstract:-

Mosquitoes are a significant group of vectors that transmit fatal human diseases. In India, the most common mosquito species are *Culex quinquefasciatus*, *Aedes aegypti*, *Anopheles stephensi* and *Aedes albopictus*. *Aedes aegypti* use both natural and human made artificial breeding habitats. Tree holes are one of the most neglected natural habitats, but they play a significant role in harbouring mosquito larvae, bacteria and fungi. The interactions between physiochemical variables of the breeding water and organisms may cause larval mortality, a natural decline in larval abundance, or alterations in their growth. Parasitism, pathogenism, predation, and competition has a major role in the overall development of mosquito species. In an effective mosquito control programme, information on tree hole habitats and prevalent physicochemical, biotic, and abiotic factors must be investigated. This review focuses on the various species of mosquitoes that breed in tree holes, with an emphasis on understanding how ecological factors and physiochemical variables affect the abundance of mosquito larval populations in tree hole breeding habitats observed in India with special attention to Tamil Nadu for the possible development of strategies to control of vector populations and to prevent the transmission of infectious diseases.

Keywords: Mosquitoes, tree hole, parasitism, infectious diseases

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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BIODIVERSITY AND DISTRIBUTION OF TREE HOLE MOSQUITOES IN KRISHNAGIRI DISTRICT, TAMIL NADU, INDIA

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Abstract:-

This research analyses the prevalence of tree hole mosquitoes in Krishnagiri district, Tamil Nadu, India, highlighting their breeding grounds and Arbovirus-transmitting capabilities for Chikungunya and Dengue Virus. Tree hole mosquitoes were collected at three locations: Onnakarai Forest, Sri Vidya Mandir Arts and Science College, and surrounding the Spinning Mill. Tree holes, temporary water-filled cavities in trees, are important breeding sites for mosquitoes such as *Aedes triseriatus* and *Aedes albopictus* (Asian tiger mosquito).These mosquitoes breed in small, isolated water bodies with organic debris, thus being ecologically important but also a public health concern as disease vectors. The paper emphasizes the life cycle of tree holes mosquitoes such as their fast development, capability of diapause, and specificity of breeding places. Environmental determinants such as climate change, urbanization, and patterns of rainfall affect mosquito populations as well as disease transmission. The research emphasizes the importance of knowing the biology and ecology of mosquitoes to counter public health threats due to mosquito-borne diseases**.**

Keywords: Breeding sites, Arboviruses, Public health, Climate changes

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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ANTIBACTERIAL ACTIVITY AND PHYTOCHEMICAL STUDIES ON THE PLANT LEAF EXTRACT (*CRYPTOSTEGIA MADAGASCARIENSIS*) ON THE DIFFERENT SOLVENT OF AQUEOUS AND ETHANOL

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Abstract:-

Phytochemical investigation was carried out on the leaves of *Cryptostegia Madagascariensis* (Apophyceae). They are presence of Tropical and Sub-tropical Regions in South India. This plant highly Distributed and Identified on Tamil Nadu, Dharmapuri District, Harur Talk, Keezhsengapadi village. The diameter of the zones of inhibition of the 90% ethanol and aqueous extracts of the leaves were compared in order to determine the relative activity of the extracts against the tested microorganisms and also to verify its claimed ethnomedicinal use in the treatment of microbial infections. Phytochemical tests were carried out employing standard procedures. The antimicrobial activity of the extract was tested against standard strains and clinical isolates of some aerobic bacteria using the agar well diffusion method. Commercial antibiotics were used as positive reference standards to determine the sensitivity of the strains. The minimum inhibitory concentration (MIC) values were also determined using the agar well diffusion method. Preliminary phytochemical studies revealed the presence of flavonoids, tannins, saponins and cardiac glycosides as the chemical classes of compounds present in the crude extract. The ethanol extract was more active than the aqueous extract against all the microorganisms tested, except against the clinical isolates of *Staphylococcus aureus*. The MIC values ranged from 2.5 to 6.25 mg/mL for all the organisms tested. The results showed that the ethanol extract was more potent than the aqueous extract. The broad spectrum of activity displayed by the extracts would appear to provide the scientific basis for the use of the leaves of *Lecaniodicus cupanoides* for dressing of boils, burns and cuts in ethno medicine.

Keywords: *Cryptostegia Madagascariensis*, Flavonoids, MIC, Tannins, Saponins

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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POPULATION STATUS AND BEHAVIOUR OF INDIAN PEAFOWL (*PAVO CRISTATUS*) IN RURAL AREAS OF KUMARAMPATTI VILLAGE, KRISHNAGIRI DISTRICT, SOUTH INDIA

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Abstract:-

The Indian Peafowl (*Pavo cristatus*) is national bird of India and currently facing various threats in its entire distribution range. Different behavioral activities of Indian peafowl were recorded. They were (male as well as female) devoted maximum proportion of the day in feeding followed by standing, walking, running, roosting and calling. This study investigates the population dynamics, behavioral patterns, and agricultural impact of the Indian Peafowl (*Pavo cristatus*) in the rural agricultural landscapes of Kumarampatti Village, Uthangarai Talk, Krishnagiri District, Tamil Nadu. Although peafowls have a vital role in pest control, seed dispersal, and ecological balance, their rising population has caused alarming concerns among farmers because of crop loss, soil disturbance, and financial losses. Six-month field studies were direct observation, farmer questionnaires and ecological surveys to examine peafowl behavior, their effect on agriculture and their possible benefits. The results show that peafowls inflict serious damage to groundnut and cereal crops but also play a positive role in biodiversity by lowering pest numbers and enhancing soil fertility. It extremely affects the agricultural crops due to the needs of additional resources for the entire population. The finally we are concluded identifies the need for an equal balance of management strategies to counterbalance peafowl's negative impacts on crops while embracing their ecological benefits, leading towards sustainable co-existence between wildlife and agriculture.

Keywords: Agriculture, Peacock, Population dynamics, Pest control

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CORONARY HEART DISEASE RISK FACTOR AND THERAPEUTICS: A REVIEW

Usha, K[1]., Priyadharshini, V[1]., Sasipriya, R[1]., Nandhitha, M[1]., Premalatha, P[2]., Saravanan, K[3]., Vasanthakumar, D[1]., Satheeshkumar, G[1] and Karuppannan, P[1*]

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Abstract:-

Coronary heart disease (CHD) is the leading cause of death globally. Coronary artery disease means narrowing of the coronary arteries (arteries that supply blood to the heart). This narrowing is due to a buildup in the walls of the arteries of plaque (deposits made up of cholesterol, other fats, and calcium) – a process called atherosclerosis (hardening of the arteries). If a plaque becomes delicate and breaks, a blood clot will quickly form that can block blood flow in the artery and may lead to a myocardial infarction (death of the heart muscle area supplied by the blocked artery). In 2015, CHD accounted for 111 million (27%) of the 400 million cases of cardiovascular (CVD) worldwide. CHD deaths are not uniform; rates of CHD have declined in affluent countries such as the U.S and England, while they continue to increase in industrializing countries, such as China and India. The World Health Organization projects that CHD will remain one of the top three causes of death globally, with nearly 9.3 million deaths annually in 2030. Coronary artery disease can develop slowly without any symptoms. Angina – chest pain that can radiate to (or sometimes is limited to) the shoulders, arms, or jaw. Angina usually lasts several minutes and may be related to activity, exercise, large meals, cold, or stress. If angina lasts more than 15 minutes, there is a risk that a heart attack may be occurring. Symptoms can be different in men and women, with women more likely to experience unusual fatigue after activity rather than chest pain. Blood tests can detect certain substances in the blood that are released during a heart attack. An

electrocardiogram (ECG, EKG) can reveal heart attacks and heart rhythm problems. Treatment, Nitrate medication (such as nitroglycerin) can be taken to help stop angina attacks. Blood – thinning drugs, such as aspirin, can help reduce the risk of blood clots. Statins (a kind of cholesterol-lowering drug) and beta-blockers (a kind of blood pressure – lowering drug) can prevent heart attacks and premature deaths. Coronary heart disease is largely preventable. Studies show that heart-healthy living — quitting smoking or never starting, eating healthy foods, and being physically active – throughout life can prevent or delay coronary heart disease and its complications in most people. A heart-healthy lifestyle is important for people of all ages, but it is especially important for anyone who has other risk factors for coronary heart disease.

Keywords: Cardiovascular diseases, Coronary Heart disease, Blood vessels, Plaque and Cholesterol.

CONSERVATION NEED OF TRADITIONAL HERBS USED FOR TREATMENT OF DIABETES MELLITUS IN KOLLI HILLS, NAMAKKAL DISTRICT, TAMIL NADU, INDIA: A REVIEW

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Abstract:-

In India, as in many developing countries, most diabetic patients use medicinal plants as folk medicine to treat diabetes. In the indigenous Indian system of medicine good numbers of plants were mentioned for the cure of diabetes and some of them have been experimentally evaluated and active principle were isolated. Their therapeutic significance

is well studied and discussed. However, their significance as an integral element of the biodiversity is being realized in the forestry sector lately, as it is brought to light that about 85% of known and recorded medicinal plant diversity of the country is captured in forests and wild habitats. Further, demand for herbal medicines has led to significant changes in traditional patterns of medicinal plant harvesting has placed some species under threat. These plant species are regarded as precious and highly valued. Considering the rate at which the vegetation is getting depleted in this part of the world, there is the need to document the precious knowledge of these plants as well as the experience of the traditional healers and herbalists. Thus the present review was carried to list out diabetic plants, their active compounds, status and conservation in the Kolli Hills a part of Eastern Ghats of southern India. Conservation status of all other diabetic plants was not reported. However, several species are feared to be threatened, while the population size of some species is severely reduced and in certain cases the availability of the produce has become scarce. A number of papers reported that herbalists having to walk increasingly greater distances for herbs that once grew almost outside their door. As habitats for plants disappear and over harvesting for commercial uses reduces stocks of wild medicinal plant material, there is a corresponding drop in the availability of the plants used as the first and last resort for health care by many rural populations. Therefore, appropriate conservation strategies have to be implemented immediately to protect the fragile habitats of many such medicinal plants. From this review, we recommend that the in situ conservation may initiative to protect the medicinal plants, in which the populations are allowed to flourish, while the conventional forestry management operations are kept to minimum and regulate the harvesting process.

Keywords: Diabetes mellitus, natural medicine, herbal medicine and conservation

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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MACRO AND MICROVASCULAR COMPLICATIONS RELATED TO THE DIABETES MELLITUS: A REVIEW

Sujitha, S[1]., Assala, A[1]., Saravanan, K[2]., Premalatha, P[3]., Usha, K[1]., Viji., J[4].,and Karuppannan, P[1,2*]

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Abstract:-

Diabetes is a disease that is strongly associated with both microvascular and macrovascular complications. Diabetes-associated with vascular alterations include anatomic, structural, and functional changes leading to multiorganal dysfunction. Diabetic microvascular (involving small vessels, such as capillaries) and macrovascular (involving large vessels, such as arteries and veins) complications have similar etiologic characteristics. Microvascular complications of diabetes are those long-term complications that affect small blood vessels. These typically include retinopathy, nephropathy, and neuropathy. Diabetic Retinopathy (DR) can affect the peripheral retina, the macula, or both and is a leading cause of visual disability and blindness in people with diabetes. Diabetic nephropathy is the leading cause of renal failure. It is defined by proteinuria > 500 mg in 24 hours in the setting of diabetes, but this is preceded by lower degrees of proteinuria, or “microalbuminuria” Microalbuminuria is defined as albumin excretion of 30-299 mg/24 hours. Neuropathy is a heterogeneous condition associated with nerve pathology. The condition is classified according to the nerves affected and includes focal, diffuse, sensory, motor, and autonomic neuropathy. Macrovascular complications of diabetes are primarily diseases of the coronary arteries, peripheral

arteries, and cerebrovasculature. Early macrovascular disease is associated with atherosclerotic plaque in the vasculature supplying blood to the heart, brain, limbs, and other organs. Late stages of macrovascular disease involve complete obstruction of these vessels, which can increase the risks of myocardial infarction (MI), stroke, claudication, and gangrene. Cardiovascular disease (CVD) is the major cause of morbidity and mortality in patients with diabetes. This review might be established the conditions and complications of micro and macro vascular diseases due to the long term diabetes mellitus.

Keyword: Diabetes mellitus, micro vascular diseases, macro vascular diseases

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SYNTHESIS, OPTICAL AND MORPHOLOGICAL CHARACTERIZATION OF SILVER NANOPARTICLES SYNTHESIZED USING LEAVES ETHANOL EXTRACT OF VENTILAGO MADERASPATANA (GAERTN)

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Abstract:-

In the present study, we made an attempt to synthesis silver nanoparticles using leaves ethanol extract of *V. maderaspatana*. Then the optical and morphological characterization of AgNPs was analyzed. In our study, UV-Visible spectra given absorption peak at 431nm confirmed that the synthesis of silver particles at nano scale range. FT-IR spectra revealed that the bioactive compounds present in the plant extract act as a reducing and capping agent for the synthesis of AgNPs. SEM study showed that AgNPs were spherical in shaped with equal distribution. TEM analysis clearly indicated that the AgNPs were within the size of 20 to 50 nm range and EDAX study disclosed the presence of elements like C, Cu and Ag. In this result presence of carbon and copper was due to coating of sample for the preparation of TEM study. From the result it is concluded that that *V. madearaspatana* leaf extract might be used for ecofriendly synthesis of silver nanoparticles within the nanoscale range.

Keywords: Ag NPs, Nanoparticles, *Ventilago maderaspatana*.

TWO DAY INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN BIOLOGICAL SCIENCE

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IN VITRO ANTICANCER ACTIVITY OF BARK ETHANOL EXTRACT OF VENTILAGO MADERASPATANA ON HUMAN BREAST CANCER CELL LINE (MCF-7)

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Abstract:-

In the present study we investigated to find a naturally existed novel compounds from the medicinal plant *Ventilago maderaspatana* and their anti-breast cancer activity. Preliminary phytochemical screening of ethanol bark extract of *V. maderaspatana* done by standard procedure. *In vitro* anticancer activity of ethanol bark extract of *V. maderaspatana* against breast cancer cell line (MCF -7) by MTT assay. The preliminary phytochemical assays supported the presence of alkaloids, carbohydrates, cardiac glycosides, flavonoids, phenols, proteins, saponins, sterols, tannins and terpenoids in the bark ethanol extract of *V. maderaspatana.* The anti-breast cancer activity of bark ethanol extract of *V. maderaspatana* against human breast cancer cell line (MCF-7) by MTT assay. The cytotoxic activity of *V. maderaspatana* bark extract was showed dose dependent activity i.e., maximum percentage of growth inhibition value obtained for bark ethanol extract of *V. maderaspatana* was 73.3 ± 2.02 % at higher concentration (250µg/ml). The minimum percentage (19.4 ± 1.31%) of cell inhibition was recorded at 50µg/ml concentration. From this study it is concluded that the bark ethanol extract of *V. maderaspatana* showed good cytotoxic activity against human breast cancer cell line (MCF-7).

Keyword: Cancer, Breast cancer, Natural Medicine

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DIVERSITY OF INSECTS IN POONAIYANUR DHARMAPURI DISTRICT, TAMIL NADU, INDIA

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Abstract:-

A preliminary study was conducted on the abundance and diversity of insects species in agriculture fields of Poonaiyanur village, Dharmapuri, Tamil Nadu. The present study was aimed to determine the species richness, dominance and evenness of insect fauna from agriculture fields. A total of 9,763insects from 4orders, 18families and 45 species were recorded. This study shows that Hymenoptera (20.35%) was the most dominant order according to total number of individuals, followed by Coleoptera (9..28%), Lepidoptera (2.15%), Hemiptera (1.15%), Orthoptera (0.59%) and Diptera (0.08%). The Simpson's Reciprocal Index diversity is highest in order Coleoptera (8.048) and lowest in order Diptera (1.000). The species richness, evenness and diversity of insects were calculated by Margalef's Index, Pielou's Index and Shannon-Wiener Index respectively.

Keywords: Insects, Abundance, Richness, Evenness, Diversity

HUMAN GENETICS AND RARE DISEASES: A COMPREHENSIVE REVIEW

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Abstract:-

Rare diseases affects millions worldwide, with genetic factors contributing most of them. Despite their individual rarity, rare diseases collectively impose a significant burden on public health. The complexity and heterogeneity of rare diseases pose significant challenges for diagnosis, treatment, and research.

Recent advancements in human genetics have improved our understanding of rare etiology, facilitating the development of novel diagnostic and therapeutic approaches. Next-generation sequencing, genome editing, and epigenetics have revolutionized the field, enabling researchers to identify genetic variants, modify genes, and understand gene regulation.

This review article provides an overview of current state of knowledge in human genetics and rare diseases. We discuss recent breakthroughs, their applications in rare diagnosis and treatment, and future directions for research. By highlighting the latest advances and challenges, this review aims to promote a better understanding of rare diseases and inspire further research into these devastating conditions.

Keywords: Heterogeneity, Etiology, Next-generation sequencing, Human genetics

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ANIMAL TISSUE CULTURE FOR BIOLOGICAL AND ADVANCED MEDICAL RESEARCH

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Abstract:-

Tissue culture is a technique of biological research that involves the growth and maintenance of plant or animal cells, tissues, or organs under sterile conditions on a nutrient culture medium. Tissue culture allows for the propagation of plants or animal from a small tissue sample for enabling the production, which can be free of diseases. It facilitates genetic modification, regeneration studies, and the conservation of endangered species. In medicine, tissue culture plays a crucial role in vaccine development, cancer research, and regenerative medicine by providing a controlled environment to study cell behavior, drug responses, and tissue engineering. The tissue culture has providing a powerful tool for advancing biological and medical research. Animal tissue culture allows scientists to study cancer cells in a controlled environment, helping them understand tumor growth, metastasis, and the effects of potential treatments. Cultured animal cells are used to produce vaccines, including those for viruses like polio and influenza. This method ensures a consistent and safe supply of vaccines. Researchers use animal tissue culture to develop and test gene therapy techniques, which involve inserting genes into cells to treat genetic disorders. Animal cells cultured in vitro provide a platform for testing new drugs, assessing their efficacy, and identifying potential side effects before clinical trials in humans. Tissue culture techniques are used to grow tissues and organs for transplantation, offering potential treatments for conditions like heart disease and liver failure. Cultured animal cells, including stem cells, are studied to understand cell differentiation and development, which can lead to new treatments for various diseases.

Keywords: Tissue culture, Vaccines, Gene therapy, Grow tissues

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ANTIOXIDANT EFFECT OF TERMINALIA ARJUNA BARK EXTRACT ON ISONIAZID (INH), RIFAMPICIN (RIF) TREATED RAT LIVER HISTOLOGY

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Abstract:-

Tuberculosis continues to be a worldwide and is believed to be present in about one third of the world population. It remains a major public health problem and is the single most deadly infectious disease. The three main drugs used to treat TB are Isoniazid (INH), Rifampicin (RIF) and Pyrazinamide (PZA), used in combination for six or more months. The objective of the study is to investigate the protective effect of *Terminalia arjuna* bark extracts in Isoniazid and Rifampicin drug induced rats on liver histological changes in the treated rats for 21 days. The following experimental groups have been formed for the present study Group I Control group, Group II Isoniazid and Rifampicin, Group III *Terminalia arjuna* bark extract alone, Group IV Isoniazid and Rifampicin with Silymarin and Group V Isoniazid and Rifampicin with *Terminalia arjuna* bark extract respectively. Liver histological changes are observed control rat shows radially arranged hepatic cells arranged in cords. There are no noticeable changes in the liver of *Terminalia arjuna* bark extract treated rats. Isoniazid and Rifampicin treated rats show a heavy destruction of overall arrangements of hepatocytes, appearance of vacuolization, damaged central vein degenerated nuclei and loss of cell boundries. Oral administration of *Terminalia arjuna* bark extract and also silymarin to Isoniazid and Rifampicin treated rats bring back all the above metioned histopathological changes to near normalcy, *Terminalia arjuna* bark extract alone trated rat shows normal architecture in liver.

Keywords: Tuberculosis, Isoniazid, Rifampicin, Liver, Silymarin, Histology

ECO-FRIENDLY SYNTHESIS, CHARACTERIZATION, AND MULTIFUNCTIONAL APPLICATIONS OF SILVER NANOPARTICLES DERIVED FROM *CALOTROPIS GIGANTEA*

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Abstract:-

The emergence of antibiotic-resistant Helicobacter pylori strains has necessitated alternative therapeutic approaches. This study explores the eco-friendly synthesis, characterization, and multifunctional applications of silver nanoparticles (AgNPs) using aqueous leaf extracts of *Calotropis gigantea* (Cg). The green synthesis method involved reacting 5 mM silver nitrate with 10% plant extract, leveraging the phytochemical richness of Calotropis species. The biosynthesized AgNPs (Cg-AgNPs) were characterized through UV, XRD, FTIR, SEM, TEM dynamic light scattering (DLS), and zeta potential analysis, confirming their uniform spherical morphology, stability, and functional groups contributing to stabilization. Antibacterial assays demonstrated potent bactericidal efficacy against H. pylori, with zones of inhibition measuring 11.66 ± 0.15, 16.00 ± 0.17, and 14.66 ± 0.52 mm for 25, 50, and 75 µg/ml concentrations, respectively. Furthermore, the potocatalytic activity of Cg-AgNPs was evaluated for the degradation of various organic dyes, including Rhodamine blue, Methyl orange, Methyl red, Methylene blue, and Congo red, highlighting their potential for wastewater treatment. Additionally, the larvicidal activity of Cg-AgNPs was examined against *Anopheles stephensi* and *Culex quinquefasciatus*, vectors of malaria and filariasis, respectively. The histopathological effects on mosquito larvae were analyzed to elucidate their mechanism of action. The findings indicate that Cg-AgNPs possess significant antibacterial, photocatalytic, and larvicidal properties, making them promising candidates for biomedical and environmental applications. This eco-friendly nanotechnological approach paves the way for sustainable antimicrobial therapies and environmental remediation strategies.

Keywords: Cg-AgNPs, Mosquitoes, Antibiotic-resistant