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BOOK OF ABSTRACTS

INTERNATIONAL CONFERENCE ON

Recent Innovations in Health & Biological Sciences

ICRIHBS 2023

14th & 15th JULY, 2023

Organized by

PSG College of Arts & Science, Coimbatore - 641 014

in association with

PSG CARE **PSG Center for Academic Research & Excellence**

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Editor-in-Chief

Dr. D. Brindha

Principal, PSG College of Arts & Science

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INTERNATIONAL CONFERENCE ON

RECENT INNOVATIONS IN HEALTH & BIOLOGICAL SCIENCES

14th &15th July, 2023

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Messages

MESSAGE

Thiru. L. Gopalakrishnan
Managing Trustee
PSG & SONS' CHARITIES

It is quite gratifying to note that the Life Science Departments of PSG College of Arts & Science is hosting an "International Conference on Recent Innovations in Health and Biological Sciences (ICRIHBS-2023)", in association with PSG CARE on 14th and 15th July, 2023.

From new treatments for diseases to advanced medical technologies, life science innovation has a huge potential to improve the quality of life. I hope that the conference will have the opportunity to discuss the recent advances in life sciences that are revolutionizing the way we understand and interact with the world around us, notably in the areas of Science and Technology, specifically Biochemistry, Biotechnology, Microbiology, Nutrition and Environmental Sciences.

I am confident that this event will offer academics and researchers a good atmosphere which will enable them to discuss their opinions and thoughts. My best wishes for the success of the Conference with heartfelt greetings and congratulations to the organizing committee and attendees.

MESSAGE

Dr. R. Rudramoorthy
Director
PSGCARE

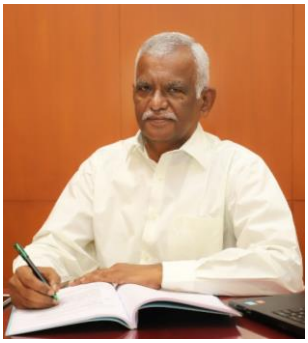
It is a matter of contentment and pride for all of us to organize an International Conference on Recent Innovations in Health and Biological Sciences (ICRIHBS-2023), in association with PSG CARE on 14th and 15th July, 2023. This two-day International Conference will offer insights into novel and recent developments in the field of Biosciences as leading experts in advanced sciences are invited to give informative talks to young minds. It will involve productive discussions to translate new creative ideas in biosciences to clinical practices.

I believe ICRIHBS-2023 is a strong platform for discussions on the recent advancements in this field, and it plays a crucial role to provide sophisticated analytical instrument support to the researchers from Universities, National laboratories and also industries all over India and abroad.

I am sure the technical and scientific program of the conference would certainly give the delegates an opportunity for fruitful discussions and stimulating interactions. I would like to extend my best wishes for the success of the Conference in achieving its objectives.

MESSAGE

Dr. T Kannaian
Secretary
PSG College of Arts & Science



The announcement that the "International Conference on Recent Innovations in Health and Biological Sciences (ICRIHBS-2023)" will be held on July 14th and 15th, 2023, makes me immensely delighted. With the imminent need of using scientific knowledge and technological advancements to create new products, services, and processes that help promote human health and well-being, the ICRIHBS-2023 will offer a productive platform to the International researchers, scientists, and experts in technology, research and development fields to indulge in in-depth discussion on topics leveraging the latest breakthroughs for the benefit of humanity.

I expect that eminent speakers will cover new avenues in the fields of medical robotics, genomics, virtual reality and artificial intelligence, from a range of perspectives. The gathering will surely develop solutions to help people live longer and healthier lives.

I congratulate the team members and participants for their efforts in organizing and participating in this Conference and wish the Conference all the success.

MESSAGE

Dr. D. Brindha
Principal
PSG College of Arts & Science

It gives me immense pleasure to be a part of this hosting team of "International Conference on Recent Innovations in Health and Biological Sciences (ICRIHBS-2023). Recent Innovations like synthetic biology, lab grown organs, 3D printing etc., has the power to revolutionize the way we live. From new treatments for diseases to advanced medical technologies, life science innovations coupled with artificial intelligence has a huge potential to improve the quality of life for people around the world.

With potential and bright scope for advanced research in this field of life science innovations, this Conference organized by PSG College of Arts & Science aims to disseminate knowledge on the various cutting-edge technological advancements with the motive of importing scientific knowledge and technological advancements to create new products which will promote human health and well-being. I am confident that this Conference will open up new avenues and opportunities to the participants to exchange latest research results, ideas and applications in the emerging areas of science and technology. With eminent speakers sharing their experience and perspectives in ICRIHBS-2023 will foster the research culture among the academia and industry.

With research being imperative in the progress of our society it has become an integral part of our life. My message to all participants is to carry out and participate more on research, and development in the area of Science and Technology.

I would like to use this opportunity to extend a warm welcome to all the Conference attendees and keynote speakers for their support and cooperation on behalf of the entire ICRIHBS-2023 team.

I welcome you all to PSG College of Arts & Science and hope that this Conference will act as a great source of knowledge creation and dissemination for all of us.

Thank you

MESSAGE

Dr. A. Anguraj
Vice Principal
(Academic Affairs – Self Financed)

PSG College of Arts & Science is really privileged to organize the two day International Conference on Recent Innovations in Health and Biological Sciences (ICRIHBS- 2023), which will take place on July 14th & 15th, 2023. The Conference's clearly stated objective is to effectively build a noteworthy landmark by utilizing activities that include professional talks from exceptional achievers and presentations by researchers in relevant subjects in an atmosphere of positive contact and sharing.

The topics specified will serve as a platform for showcasing cutting-edge technology and enable us to advance by accessing knowledge and learning from a pool of knowledgeable academics.

I would like to express my sincere gratitude to the distinguished invited speakers and participants for their presence and contributions to the conference. I also thank all the review committee members for their efforts in ensuring a rigorous review process to select high quality papers.

I hope all the participants will benefit from the technical contents of this Conference and wish you a very successful Conference. I owe a great deal of gratitude to the team members who worked so diligently to materialize the Conference.

The success of this Conference will encourage us in introducing many more initiatives for innovative trends in the coming years. I wish the ICRIHBS- 2023 a great success.

MESSAGE

Dr. M. Jayanthi
Vice Principal
(Academic Affairs – Aided)

With great pleasure, I am contented to invite all the participants to the International Conference on Recent Innovations in Health and Biological Sciences (ICRIHBS- 2023), organized by PSG CAS on July 14th and 15th, 2023.

As a premier higher education institution, PSG College of Arts & Science offers an ideal platform for learning and discovery coupled with creativity. With innovation being vital for scientific breakthroughs, this conference on the recent innovations in life sciences will serve as an academic platform for scholars, researchers, practitioners, and professionals to share their knowledge, aspirations and perspectives on contemporary trends and future directions in the constantly evolving field of life sciences.

I am sure that the exchange of ideas by the erudite resource persons will enlighten the participants of this conference to have a better understanding of how best we can contribute our might to exploring, enhancing and elevating the scientific advancements towards excellence.

The success of this Conference is solely due to the dedicated efforts of innumerable people who worked in many ways to make this Conference become a reality. I express my special thanks and appreciation to all. I express my earnest gratitude to all contributors and participants of this event for making it an informative and successful event.

MESSAGE

Dr. M. Uma Rani
Faculty-in-charge
(Student Affairs – Self Financed)

It is quite gratifying to note that the Department of Life sciences of our college is hosting an International Conference on Recent Innovations in Health and Biological Sciences (ICRIHBS-2023), in association with PSG CARE.

Putting on such an event strengthens our goal creating a space where thoughts about technology breakthroughs can be exchanged. I wish the conference would be able to deliberate on current issues of National and International relevance, particularly in the field of Life Sciences.

I congratulate the entire team for the meticulous work they've done to bring the much-needed brightness and vibrancy to this International meeting. I hope that they will continue to carry out this purpose with even more vigor in the years to come and send them my best wishes for the smooth running of the entire event.

My best wishes for the success of this splendid event both in terms of intellectual quality and social gratification.

PSG COLLEGE OF ARTS & SCIENCE

COIMBATORE – 641 014

Dr. D. Brindha
Principal
PSG College of Arts & Science

PREFACE

PSG College of Arts & Science established in 1947**,** is a premier ranking educational institution that provides quality higher education on par with International standards in the state of Tamil Nadu, India. Being the largest Higher Education Institutions of South India, PSG College of Arts & Science offers 43 Undergraduate Programmes, 4 B.Voc Programmes, 30 Postgraduate Programmes, 1 Five year Integrated Postgraduate Programme, 3 PG Diploma Programmes, M.Phil and Ph.D Programmes 24 disciplines. In addition to this, 12 Career Oriented Add-On courses are offered for enhancing the life skills of students. Excellence in research and teaching has been the hallmark of PSG College of Arts & Science ever since its inception.

It's our great pleasure to inform you that the college is organizing "International Conference on Recent Innovations in Health and Biological Sciences (ICRIHBS-2023)" on 14th & 15th July 2023. The Conference will provide an opportunity for the young researchers to have interactions with eminent scientists from all over India who will focus on related state-of-the-art technologies in the areas of the Conference. I am very glad to convey that several invited talks and around 200 research papers will be presented for discussions in this Conference.

I take this opportunity to express my heartfelt thanks and gratitude to our Honourable Managing Trustee, PSG & Sons' Charities for his whole hearted support for the successful conduct of this event. I sincerely thank our Secretary, Director (PSG CARE), and Vice-Principals (Academic and Student affairs) for providing valuable guidance to lead this conference to a grand success. We have also taken initiative work to publish the presented papers in Scopus indexed International journals.

I am greatly obliged to the plenary speakers, invited speakers, delegates and participants from various Research Centers, Universities and Institutions for their interest to present their research work in our Conference. I express my heartfelt content to all the members of the Advisory Committee and Reviewers for their kind and valuable help. I would like to extend my appreciation to the members of Organizing committee, Colleagues, Technical Staff members and to our students for their priceless contributions and hard work in all the phases of Conference work.

Dr. D. Brindha
Convenor – ICRIHBS-2023

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Programme Schedule

International Conference
on
RECENT INNOVATIONS IN HEALTH & BIOLOGICAL SCIENCES (ICRIHBS 2023)

14th& 15th July, 2023

SCHEDULE & TOPICS

Date: 14/07/023 **DAY - 1**

Registration: 08:30 a.m. to 09:30 a.m.

Session	Title	Keynote Speaker	Session Chair/ Co-chair
09:30 a.m. to 10:45 a.m. **Venue:** GRD Auditorium	Inauguration & Key note address	**Dr. W. Selvamurthy** President, ASTIF, Director General, Amity Directorate of Science & Innovation, Chancellor, Amity University Chhattisgarh and Chair Professor for Life Sciences (Former Distinguished Scientist & Chief Controller R& D (LS), DRDO) & **Prof. Sultan Ahmed Ismail** Member, State Planning Commission Government of Tamil Nadu	
Tea Break 10:45 a.m. to 11:00 a.m.			
Session I 11:00 a.m. to 11:45 a.m. **Venue:** GRD Auditorium	Sustainable living the way forward	**Prof. Sultan Ahmed Ismail** Member, State Planning Commission Government of Tamil Nadu	**Dr. Ponmariappan Swamy** Scientist, Defence Research and Development Establishment (DRDE-DRDO), Gwalior, Madhya Pradesh
Session II 11:45 a.m. to 12:30 p.m. **Venue:** GRD Auditorium	Analysis zooplankton community diversity in reservoir water through eDNA metabarcoding and microscopy	**Dr. Chang Woo Ji** Research Professor Fisheries Science Institute, Chonnam National University, Yeosu, South Korea	**Dr. Pariyaporn Itsaranuwat** Asst. Prof.& Head Dept. of Biotechnology, Mahasarakham University, Thailand
Lunch Break 12:30 p.m. to 01:15 p.m.			
Session III 01:15 p.m. to 02:00 p.m. **Venue:** GRD Auditorium	Reactive astrocytes in neuronal injury, aging and neurodegenerative diseases	**Dr. Naren Ramanan** Associate Professor Centre for Neuro Science Indian Institute of Science (IISc), Bangalore.	**Dr. Kalpani Ratnayake** Deputy HOD Faculty of Health Sciences, Colombo International Eng. College Colombo, Sri Lanka
Session IV 02:00 p.m. to 02:45 p.m. **Venue:** GRD Auditorium	Identification of anti-inflammatory activity of natural products adhering to the 3Rs in laboratory animal science	**Dr. Kalpani Ratnayake** Deputy HOD Faculty of Health Sciences, Colombo International Eng. College Colombo, Sri Lanka	**Dr. Chang Woo Ji** Research Professor Fisheries Science Institute, Chonnam National University, Yeosu, South Korea
Session V 02:45 p.m. to 03:30 p.m. **Venue:** GRD Auditorium	Recent advances in biological detection technologies	**Dr. Ponmariappan Swamy** Scientist, Defence Research and Development Establishment (DRDE-DRDO), Gwalior Madhya Pradesh	**Dr. Naren Ramanan** Associate Professor Centre for Neuro Science Indian Institute of Science (IISc) Bangalore
Tea Break 03:30 p.m. to 03:45 p.m.			
Session VI 03:45 p.m. to 05:15 p.m. **Venue:** GRD Auditorium	ORAL/POSTER Presentation		

International Conference
on
RECENT INNOVATIONS IN HEALTH & BIOLOGICAL SCIENCES (ICRIHBS 2023)

14th& 15th July, 2023

SCHEDULE & TOPICS

Date: **15/07/2023** **DAY- 2**

Session	Title	Keynote Speaker	Session Chair/ Co-chair
Session I 09:15 a.m. to 10:00 a.m. **Venue:** GRD Auditorium	Lactic acid bacteria, the promising cultures for bio-business and better quality of life: research to market	**Dr. Pariyaporn Itsaranuwat** Asst. Prof.& Head Dept. of Biotechnology Mahasarakham University, Thailand	**Dr. Chang Woo Ji** Research Professor Fisheries Science Institute, Chonnam National University, Yeosu, South Korea
Session II 10:00 a.m. to 10:45 a.m. **Venue:** GRD Auditorium	Bio-electro degradation – a hybrid technique for rapid degradation of xenobiotics	**Dr. Seralathan Kamala Kannan,** Professor Dept. of Biotechnology Chonbuk National University, South Korea	**Dr. Pariyaporn Itsaranuwat** Asst. Prof.& Head Dept. of Biotechnology Mahasarakham University Thailand
Tea Break 10:45 a.m. to 11:00 a.m.			
Session III 11:00 a.m. to 11:45 a.m. **Venue:** GRD Auditorium	Ammoniacal nitrogen removal from closed landfill leachate: Validation by toxicological risk assessment and metagenomic analysis	**Prof. P. Sankar Ganesh** Associate Professor Dept. of Biological Sciences, BITS Pilani Hyderabad	**Dr. Seralathan Kamala Kannan,** Professor, Dept. of Biotechnology Chonbuk National University South Korea
Session IV 11:45 a.m. to 12:30 p.m. **Venue:** GRD Auditorium	Production of designer foods and its health benefits	**Dr. C. Kathirvelan** Associate Professor, Tamil Nadu Veterinary and Animal Sciences University Namakkal	**Dr. K. Ramesh** General Manager, R&D,Grasim Industries Aditya Birla Group Mumbai, India
Lunch Break 12:30 p.m. to 01:15 p.m.			
Session V 01:15 p.m. to 02:00 p.m. **Venue:** GRD Auditorium	Waste water treatment technologies, application and water reuse	**Dr. K. Ramesh** General Manager, R&D Grasim Industries Aditya Birla Group Mumbai, India	**Prof. P. Sankar Ganesh** Associate Professor Dept. of Biological Sciences BITS Pilani Hyderabad
Session VI 02:00 p.m. to 02:45 p.m. **Venue:** GRD Auditorium	Recent Trends and Opportunities in Alternatives to Animal Testing	**Dr. S.P Muthukumar** Senior Scientist, Dept. of Biochemistry, Central Food Technological Research Institute (CSIR-CFTRI), Mysore	**Dr. C. Kathirvelan** Associate Professor, Tamil Nadu Veterinary and Animal Sciences University Namakkal
Tea Break 02:45 p.m. to 03:00 p.m.			
Session VII 03:00 p.m. to 05.00 p.m.	ORAL/POSTER Presentation **Venue:** GRD Auditorium		
05:00p.m. to 06:00 p.m.	**Valedictory Function** **Venue:** GRD Auditorium **Chief Guest** **Dr. R. Kumar,** Scientist 'G' Associate Director, Head Food Eng.& Packaging Technology Division DFRL-DRDO, Mysuru		**Dr. K. Kadirvelu** Scientist 'F', Interim Director, DRDO, Industry - Academia, Centre of Excellence (DIA-COE) Bharathiar University, Coimbatore

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Content

Lead Presentations

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Lead Presentations

LP -001

Analysis of zooplankton community diversity in reservoir water through eDNA metabarcoding and microscopy

Chang Woo Ji[1], Boobal Rangaswamy[1], Cheol Hong[2], Ihn-Sil Kwak[1,2]

[1]Fisheries Science Institute, Chonnam National University, Yeosu 59626, Republic of Korea

[2]Department of Ocean Integrated Science, Chonnam National University, Yeosu 59626, Republic of Korea

Recently, the NGS-based eDNA (environmental DNA) technique has been utilized in ecosystem studies for biodiversity, etc. For comparison with the traditional sampling method, we analyzed the zooplankton diversity in reservoirs with its inflow and outflow streams by using eDNA metabarcoding. The dynamic patterns of Copepoda at different times were slightly different between the two sampling methods, but there was a similarity in the Cladocera and Rotifera. Specifically, the sub-members of the Copepoda could not be easily classified using the traditional sampling method, whereas eDNA metabarcoding could detect minor taxa of Cladocera and Rotifera. The zooplankton diversity decreased according to the traditional sampling method but increased according to the eDNA metabarcoding method as water temperature increased after May. In addition, to identify some inconsistencies between the two survey methods, we investigated the registration rate of the NCBI sequencing database for the genes (12S rRNA, 16S rRNA, 18S rRNA, COI, and CYTB), which are mainly used in eDNA studies, of the genus of aquatic organisms (phytoplankton, zooplankton, macroinvertebrates, and fish) registered in Korea. Phytoplankton and zooplankton showed the highest taxa proportion in 18S rRNA, and macroinvertebrates observed the highest ratio in the nucleotide sequence database in COI. In fish, all genes except 18S rRNA showed a high taxon ratio. These results provided comprehensive information on the genes suitable for eDNA research for each taxon group and can be used for rational method design for aquatic biology research using eDNA metabarcoding.

Keywords: eDNA, Zooplankton, Microscope identification, Diversity, 18S rRNA

LP -002

Identification of anti-inflammatory activity of natural products adhering to the 3Rs in laboratory animal science

Kalpani Ratnayake

Department of Cosmetic Science, Faculty of Health Sciences, CINEC Campus, Millennium Drive, IT Park, Malabe, Sri Lanka

Inflammation is a complex biological response of the body to physical, chemical and biological harmful stimuli. It not only plays a vital role in eliminating the initial cause of cell injury but also important in clearing necrotic cells and repairing damaged tissues. As a cascade of biochemical pathways by activated enzymes and chemical mediators, fluid extravasation and cell migration occur in the inflammation, characterized by redness, oedema, heat, pain and loss of function. Although inflammation is a body's defence process to eliminate or limit the spread of harmful stimuli, inappropriate or inadequate control is linked to various diseases.

As most commonly used allopathic drugs show various side effects, there is considerable attention for continuous research focusing on new therapeutic strategies of novel anti-inflammatory compounds with lesser or no adverse effects. As natural products lack more side effects, the current trend is to conduct investigation on plant-based drugs. There are a number of *in vitro* (i.e. Human red blood cell membrane stability test, Inhibition of protein denaturation, Cyclooxygenase inhibitory assay, 5-Lipoxygenase inhibitory assay) and *in vivo* studies for screening anti-inflammatory activity of natural products.

Animals are used in research when it is necessary to study the whole, living body, which is more complex than individual parts. However, as scientists, it is very important to follow the 3Rs when implementing *in-vivo* animal studies. The goal of the 3Rs is to find alternatives to animal testing (replacement), to optimize the amount of information obtained from fewer animals (reduction), and to adopt methods that alleviate distress (refinement). Hence, we must apply the 3Rs' concept when we follow animal testing.

Acronychia pedunculata (Family- Rutaceae) is one of the commonly used medicinal plants in Sri Lankan traditional systems of medicine). Leaves, roots, barks and fruits of this plant have been used in the folk medicine of different regions in the world for treating diarrhoea, cough, asthma, ulcers, itchy skin, scales, pain, swellings, rheumatism and disorders with involvement of the inflammatory processes. Although there is much importance there are only a few scientific investigations based on this plant. Hence, our research studies have aimed to evaluate the anti-inflammatory activity of *A. pedunculata through in vitro and in vivo* studies and the active compound was isolated from it. Carrageenan-induced paw oedema method was used as the primary *in-vivo* method to screen anti-inflammatory activity. Further, anti-inflammatory marker levels i.e, Cycloxygenase-2 (COX-2) and Prostaglandin E2, were assessed. The studies on an ethanol extract of *A. pedunculata* leaves (EAPL) showed significant ($p<0.05$) *in vitro* and

in vivo anti-inflammatory activity. Acute anti-inflammatory activity of EAPL was dose-dependent and the 200 mg/kg body weight (b. w.) dose was found as the minimum effective dose with maximum inhibition (78 %) of oedema at the 5th hour compared to the negative control ($p < 0.05$). Also, there was a significant ($p<0.05$) reduction in inflammatory markers compared to the negative control. Finally, evolitrine was isolated and the structure was identified by 1H NMR and 13C NMR analysis. The dose of 50 mg/kg b. w. of evolitrine was found as the minimum effective dose with a maximum inhibition of paw oedema. Hence, Evolitrine was identified as the main active anti-inflammatory compound in *A. pedunculata* leaves.

Keywords: *Acronychia pedunculata*, anti-inflammatory, Carrageenan-induced paw oedema

LP -003

Lactic acid bacteria, the promising cultures for biobusiness and better quality of life: Research to market

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Lactic acid bacteria (LAB) have long been used in many industrial applications mainly as starters for food fermentation or as probiotics in food and feed supplements. LAB genera isolated from various fermented foods include *Lactobacillus, Lactococcus, Pediococcus, Enterococcus,* and *Leuconostoc*. They are generally recognized as safe (GRAS). Many species of LAB are probiotic strains and provide functional properties to hosts. Some LAB strains can produce antimicrobial substances or bacteriocins which can be used as biopreservatives for food and cosmetic industries. *Lactococcus lactis* sp. *lactis* A7 was a bacteriocin-producing strain isolated from traditional Thai fermented sausage and well studied for its probiotic and technological properties. The strain is used as a starter culture for "Lactis Milk" production for commercialization supported by National Innovation Agency, Thailand. To conclude, LAB plays an important role not only in food production but also in healthcare products and pharmaceutical sections.

Keywords: Lactic acid bacteria, Probiotics, Starter culture, *Lactococcus lactis*

LP-004

Bio-electro degradation – A hybrid technique for rapid degradation of xenobiotics

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Environmental contamination with xenobiotics such as benzene (B), toluene (T), ethylbenzene (E), xylene (X) and bisphenol-A (BpA), has become a major concern because of their high toxicity to mankind and all other forms of life. Coagulation, filtration, photocatalysis, sonolysis, electrocatalysis, adsorption and biodegradation are widely used for the removal of xenobiotics from contaminated wastewater. Biodegradation has been considered an eco-friendly, inexpensive, simple and one of the widely accepted methods for the treatment of xenobiotics-contaminated industrial wastewater. However, the core limitations of biodegradation processes are inadequate time for adaptation to the xenobiotics, initial xenobiotics concentration in the influent, abiotic variables during treatment, and bioavailability of the xenobiotics to microorganisms. Relying purely on microorganisms to degrade the xenobiotics might not aid in achieving the desired results. Hence, a bio-electro degradation system was developed. It is a process in which electro-degradation was integrated with the conventional microbial biodegradation process. The process surpasses other remedial techniques with its relatively greater affordability, durability, energy efficiency and enhanced mineralization of xenobiotics. Bio-electro degradation was used for the remediation of xenobiotics-contaminated soils. *Pseudomonas putida* YNS1 was used for BTEX bio-electro degradation and *Bacillus subtilis* HV-3 was used BpA bio-electro degradation. Experimental variables such as initial concentration of the pollutants, pH, applied potential, and inoculum dose were optimized to enhance the degradation rate. Under optimized conditions, more than 92% of BTEX compounds and 98% of BpA were rapidly and completely degraded in the bio-electro degradation system when compared with the conventional biodegradation process. The intermediates produced during biodegradation and bio-electro degradation were analyzed through GC-FID and HPLC-MS/MS, and the possible degradation pathways were elucidated. RT-qPCR results show the variations in the gene expression rate under applied potential. These confirmed that the bio-electro degradation system is more effective when compared with the conventional biological treatment method.

Keywords: Xenobiotics, *Bacillus subtilis*, *Pseudomonas putida*, RT-qPCR

LP -005

Reactive astrocytes in neuronal injury, aging and neurodegenerative diseases

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Astrocytes, the major cell type in the central nervous system (CNS), play several critical functions including ion homeostasis, synapse formation and synaptic plasticity. In addition, astrocytic dysfunction is central in several CNS disorders including epilepsy, amyotrophic lateral sclerosis, Parkinson's, and Alzheimer's disease. In response to CNS injuries and pathologies, astrocytes undergo a spectrum of gene expression as well as physiological and structural changes, a process known as reactive astrogliosis. Reactive astrogliosis is largely considered beneficial to the CNS, where reactive astrocytes protect by several mechanisms, ranging from efficient uptake of excitotoxic glutamate, preventing oxidative stress and reducing edema, to restricting inflammation, facilitating blood-brain barrier repair, and restricting the spread of infection. However, astrogliosis can also cause detrimental effects wherein reactive astrocytes inhibit CNS regenerative responses, contribute to neuroinflammation, generate reactive oxygen species and cause cell death. There is increasing interest in unravelling the molecular mechanisms that regulate astrogliosis as these might provide valuable therapeutic targets to improve neuronal survival and promote CNS repair and recovery following injury and in neurodegenerative diseases. This raises the interesting question of whether astrocytes can be converted to the neuroprotective phenotype and whether they can provide neuroprotection.

In this context, we have recently identified the transcription factor, serum response factor (SRF) as important for the maintenance of astrocytes in a non-reactive state. In this talk, I will present data that shows that deletion of SRF in astrocytes alone in the mouse brain results in widespread and persistent reactive-like astrocytes in all brain regions. These reactive astrocytes do not affect neuron survival, synapse numbers, synaptic plasticity or learning and memory. However, the brains of *Srf* knockout mice exhibited neuroprotection against kainic-acid-induced excitotoxic cell death. Relevant to human neurodegenerative diseases, SRF-deficient reactive astrocytes abrogate nigral dopaminergic neuron death and reduce β-amyloid plaques in mouse models of Parkinson's and Alzheimer's disease, respectively. Interestingly, the brains of aged SRF knockout mice showed attenuated cell loss and myelination in several brain regions. Notably, the age-associated loss of cerebellar Purkinje neurons was reduced in the mutant mice and these mice showed better motor coordination compared to the age-matched control mice. Collectively, these findings establish that SRF regulates the conversion of astrocytes from a non-reactive to a neuroprotective state and suggest that activation of neuroprotective astrocytes is a potential therapeutic approach to aid in neuroprotection following injury, in ageing and neurodegenerative diseases.

LP -006

Recent advances in biological detection technologies for onsite detection and identification of pathogens (Aerosol form)

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Onsite detection and identification of pathogens are always a great challenge to biologists and technologists. Bioaerosols detection is limited to defence sectors only. After the COVID pandemic, Bioaerosol detection technologies gained importance in the public sector. Pathogenic microorganisms have posed a great threat to human and animal health which was evidenced by the COVID-19 pandemic. Effective monitoring of bioaerosols containing pathogenic microorganisms (bacteria /fungi/viruses and toxins of great significance to prevent and control infectious diseases. The detection of biological agents is extremely complex due to the involvement of an infinite number of possible agents that a perpetrator can use. The delayed appearance of symptoms that is a hallmark of disease due to the involvement of the incubation period makes rapid detection difficult. However, early detection is the crucial link to contain the dissemination of agents in the population. DRDO is involved in various R&D to detect high-risk biothreat agents. Most of this expertise is confined to the laboratory which basically caters to off-site detection and identification. However, the on-site detection of a biological agent is a challenging area which is required to be tackled at the earliest for containment.

Keywords: Onsite detection, bioaerosols, perpetrator

LP -007

Ammoniacal nitrogen removal from closed landfill leachate: Validation by toxicological risk assessment and metagenomic analysis

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Closed landfill leachate (CLL) is generated from municipal solid waste landfills that are non-operational (closed) and capped. CLL contains high ammoniacal nitrogen (AN) concentrations, usually more than 1800 mg/L, and the humic substances (HS) are more than 190 mg/L. Currently, CLL is treated through the reverse osmosis process across the globe. Owing to the high concentrations of chemical oxygen demand (COD), AN, HS, and other contaminants, only 60 % of CLL gets treated, while the rest 40 % is pumped back to the leachate ponds as reverse osmosis reject. Simultaneous partial nitrification, anammox, and denitrification (SNAD) is a promising technology for closed landfill leachate (CLL) treatment due to the efficient removal of AN and HS. This investigation aims to assess the effect of aeration on treatment efficiency and microbial community shift. The SNAD reactors had higher AN (97.8 %) and HS (60 %) removal efficiencies. CLL's contamination and toxicological risk were lower in the SNAD-treated effluent. Metagenomic analysis of the microbial community showed that the growth of microorganisms of phyla *Proteobacteria*, *Planctomycetes*, and *Actinobacteria* got enhanced. However, to increase the HS removal, dissolved oxygen (DO) levels should be adequate to enhance the growth of HS-degrading microorganisms (*Actinobacteria*). Additionally, the genesannotated for AN and HS metabolism were enhanced during treatment. In conclusion, the SNAD process can serve for ammoniacal nitrogen removal and can be considered as a pre-treatment step. However, SNAD alone is insufficient for comprehensive CLL treatment, so it must be coupled with other methods, such as reverse osmosis or anaerobic digestion.

Keywords: Closed landfill leachate, SNAD, Ammoniacal nitrogen, Humic substances, Microbial community

LP -008

Production of designer foods and their health benefits

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Diet is one of the important factors that affect the well-being and health of human beings. There is increasing interest in natural micronutrients and non-nutrient compounds, present in foods, which may improve general health, and in particular attenuate the diseases such as cancer, atherosclerosis and other age-related degenerative processes. Milk is an ingredient that is consumed globally and today's advantages in biotechnological leads to scientist to develop 'designer milk' tailored to consumer preferences or rich in specific milk components that have implications in health. Conjugated Linoleic Acid (CLA) refers to a mixture of positional and geometric isomers of linoleic acid with two conjugated double bonds at various carbon positions in the fatty acid chain. It is formed as an intermediate during the biohydrogenation of linoleic acid by linoleic acid isomerase from the rumen. Milk fat is the richest natural dietary source of CLA. Whole milk contains an average of 4.5 mg CLA/g of fat. There is an increasing research interest towards the CLA and its potential health benefits such as anticarcinogenic, antiatherogenic, antidiabetic and antiadipogenic effects.

Keywords: Functional Foods, Health benefits, Designer foods, Fatty acids, CLA

LP -009

Wastewater treatment technologies, application and water reuse

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Water is a vital source for industrial operation and human use. Rapid industrialization, rampant water pollution, and inconsistent rainfall are the key factors which are primarily affecting the water quality and its availability. Due to industrial operations, a huge amount of toxic wastewater is discharged into the environment. To prevent wastewater discharge and water pollution, state governments have been enforcing the industries to implement Zero Liquid discharge systems. To meet the regulatory standards, industries have been installing ZLD-based wastewater treatment plants for recycling water, eliminating water pollution, and reducing the freshwater footprint within manufacturing operations. Though the ZLD concept is a climate-independent approach, the selection of an appropriate technology to treat the wastewater up to reuse level is a challenging task as "Not-One-fits-to all".

In this context, various wastewater treatment technologies often employed in the ZLD scheme are extensively covered. Since the conventional and advanced membrane technologies (UF, NF & RO) are playing a very critical role in wastewater recycling and target pollutant removal, various membranes and their configuration are covered in the presentation. Different types of biological treatment technologies for textile & tannery wastewater treatment are covered. Schematics for textile and tannery wastewater treatment and resource recovery with case studies are included in the lecture. Post-water recovery from the wastewater using a membrane process, highly concentrated RO reject needs to be evaporated using an evaporator. As thermal evaporators are a highly energy-intensive process, the selection of the right configuration is very important. Considering this task, various evaporation technologies are covered in detail.

In the ZLD process, since the wastewater is finally converted into solids, its storage and disposal are major challenges in any ZLD plant. To reduce sludge generation and disposal costs, sludge-free advanced technologies are generally preferred for ZLD systems. Fenton and Electro oxidation are very promising technologies for reducing the Chemical and biological oxygen demand with minimal sludge or Zero sludge. Organic substances from wastewater must be removed before the Reverse Osmosis process so that membrane fouling can be averted. Thus, these technologies are covered in detail to understand their importance.

In the ZLD process, around 98-99 % of pure water can be recovered, while 1 to 2 % is wasted as solids. However, high pure salts like Sodium Chloride and Sodium Sulphate salts can be recovered for reuse from the final solid waste. Therefore, the ZLD system has to be designed with resource recovery options to make the industry environmentally sustainable.

LP -010

Recent Trends and Opportunities in Alternatives to Animal Testing

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Animals are used in pharmaceutical, biomedical and scientific research for centuries and thought it is inevitable in the drug discovery and development process. A large number of studies involving animals and cell cultures are carried out to explore the beneficial properties of various plant extracts and bioactive molecules. Due to the complexity and problems involved in carrying out *in vivo* and in vitro studies, the development of an alternative, cost-effective, feasible model is desirable. The investment in drug discovery processes like target identification, lead development, preclinical (*in silico, in vitro, ex vivo*), and clinical (Phase I, II, III & IV) is huge and deters new entrants in the pharma business. The pharma companies are looking for alternate strategies to minimize the cost to accelerate the drug discovery process with cost-cutting processes. There are few alternatives in animal testing like the use of cell lines, *in vitro* constituted human tissue models, AMES, Limulum amebocyte lysate (LAL) assay *Drosophila, Caenorhabditis elegans*, imaging techniques, *in vivo*, *ex vivo*, organs on a chip, computer-based simulations, *in vitro* production of monoclonal antibodies, etc. The presentation will focus on the current drug discovery process, R&D costs, reasons for terminations, correlation between animal and human bioavailability and possible alternative approaches. We will be discussing an alternative to animal testing, methodology, validation, advantages, disadvantages and requirements of infrastructure etc.

Oral Presentations

Oral - 001

A comparison of indigenous and alginate immobilized Enterobacter cloacae for *in situ* remediation of lead polluted foundry soil

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Heavy metals are heavy and dense metallic elements, with a molecular weight greater than 5 g/cm^3. Lead is a highly toxic heavy metal that can affect all organs in the human body. Therefore, it is necessary to remediate lead contamination from soil. In this study, a soil sample from a metal casting foundry industry was collected to isolate bacteria that are resistant to metal contamination. To isolate potential metal-resistant bacteria, serial dilution and plating method was employed. The isolated bacteria that showed the highest MIC value of 1300 ppm for lead was selected for further investigation. The lead-resistant bacterial isolate was identified as Enterobacter cloacae based on morphological, cultural, biochemical and 16S rDNA sequence analysis. The impact of lead on the surface of Enterobacter cloacae was examined by using a Scanning Electron Microscope (SEM), which showed the shrinkage in the surface area of *Enterobacter cloacae*. Furthermore, Transmission Electron Microscope (TEM) analysis divulged the lead-dense area within the bacterial cell due to its intracellular sequestration of lead. To increase the lead removal efficiency, immobilized *E. cloacae* were prepared by employing the carbohydrates specifically, alginate, agarose and chitosan. *In vitro* method was conducted with both indigenous and immobilized *Enterobacter cloacae,* showing 100% lead removal under the optimum condition. *In situ* lead removal efficiency was also carried out in the metal-contaminated foundry soil for native and immobilized *Enterobacter cloacae* which showed 99.3 % lead removal for native strain when compared to immobilized strain which showed metal removal of only 97.44 %. Hence, it could be concluded that native *Enterobacter cloacae* can remove a higher amount of lead when compare with immobilized *Enterobacter cloacae* and act as a potential candidate for *in situ* bioremediation of lead.

Keywords: Lead, *Enterobacter cloacae,* alginate, Scanning Electron Microscope, Transmission Electron Microscope, *In situ* remediation.

Oral - 002

A review of advanced treatment methods for Arthritis

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Arthritis is a complex group of disorders represented by joint inflammation, which causes pain, stiffness, and decreased mobility. Arthritis involves inflammation or degeneration of our joints. The underlying biology of arthritis involves intricate molecular and cellular processes. Osteoarthritis (OA), rheumatoid arthritis (RA), gout, psoriatic arthritis, and juvenile idiopathic arthritis (JIA), Ankylosing arthritis (AA), Reactive arthritis are all kinds of arthritis. The most prevalent kind is OA, which is caused by joint wear and strain. RA is a chronic autoimmune disease that causes joint inflammation. Gout is caused by uric acid crystals accumulating in the joints. Psoriatic arthritis is an autoimmune skin disorder that affects people who have psoriasis. JIA is a kind of arthritis that occurs in youngsters. The symptoms of various forms of arthritis vary. They might range from moderate to severe in certain persons. Because some kinds of arthritis run in families, we may be more likely to get the illness if our parents or siblings do. Recent advances in biotechnology have aided researchers even though the condition is incurable. Tissue regeneration, stem cell transplantation, immunomodulation, anti-inflammatory and anti-cytokine medicines, inhibitors, and other alternatives like lifestyle changes, and dietary monitoring would aid the person in suppressing the effects and leads to a better condition. Other drugs are often administered, such as non-steroidal anti-inflammatory drugs, steroids, and some biological agents which reduce pain and inflammation but have negative effects same as positive effects. Along with these, yoga and moderate exercising keeps one from being affected by depression as it is one of the side effects of arthritis. This is the most necessary information for people to overcome arthritis and its associated diseases.

Keywords: Arthritis, Inflammation, Immunomodulation, Regeneration, Depression

Oral - 003

A study on the production of bioplastics using banana peel by chemical and natural based materials

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Plastic has become humans' vital need as it has a lot of usefulness. Efforts have been made to overcome the problems arising from plastic pollution. Bioplastics are plastics derived from renewable biomass sources, they are completely safe and do not have any harmful chemicals or toxins. Bioplastics can replace petroleum-based plastics and can be made from vegetable wastes that contain starch. This research is mainly to develop a bioplastic from food waste The study is to emphasise the synthesis of bioplastic material by using fruit waste mainly banana peel. The additives used with banana peels are natural-based materials such as corn starch and tapioca starch while the chemical-based materials used consist of Hydrochloric acid and Sodium hydroxide. The addition of glycerol is used to increase the plasticity characteristics. The bioplastics produced were flexible and durable. Certain tests were carried out to check the bioplastics. As a result, the natural-based materials were much less costly compared to the chemical-based ones. The degradation of bioplastic starts after 6 to 14 days from the date of production. Hence, this study reported that the synthesis of bioplastic using fruit waste is a more reliable method as it is economically convenient and effectively uses waste.

Keywords: Banana peel, Bioplastic, Biodegradable

Oral - 004

An assessment of groundwater quality and heavy metal load in and around brick kiln units of Thadagam Valley, Coimbatore, Tamil Nadu

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The brick sector in India, although unorganized, is tremendous in size and ranks second in brick production after China. In Coimbatore, more than 180 brick kiln units are illegally established in Thadagam Valley, and this brick kiln encroachment in the elephant corridor has changed the dynamics of the entire landscape of this valley and caused severe damage to its ecology and the migratory routes of elephants. The groundwater level and quality have drastically fallen due to the over-exploitation of natural resources by these kilns. In this regard, brick kilns were banned by our honourable high court from January 2021 onward. The objective of the present study is to assess the groundwater quality (11 parameters) and heavy metal load (4 metals) as per WHO and BIS norms during the post-ban period. The study also focused on determining the spatial interpolation of heavy metals for the whole study region using the Inverse Distance Weight Interpolation (IDW) method. Totally 11 groundwater samples were taken for analysis, and the study results revealed that pH, EC, turbidity, sodium, potassium, sulphate, nitrate, chloride, chromium, cadmium, and zinc lie within the permissible limits except for TDS, total hardness, phosphate, and lead. It also found positively high correlations between pH-K^+, EC-Cl^-, EC-TH, EC-SO_4, TH-Cl^- and Cl—SO_4 and a negatively high correlation between pH-EC, pH-Cl^-, pH-SO_4, EC-K^+, K^+-Cl and SO_4-K^+. Finally, the study concludes that the Brick kiln ban may have a positive impact on groundwater quality and is a good sign for the recovery of groundwater resources in the valley.

Keywords: brick kiln, landscape, Inverse Distance Weight Interpolation, spatial interpolation

Oral - 005

Analysing the potential of lignosulfonate as soil amendment

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Viscose manufacturing industries utilize a large number of chemicals for the processing of wood pulp. The solid wastes discharged from these industries are rich in nutrients and organic matter and could be utilized to enhance plant growth and yield. In the present study, an incubation experiment was carried out to estimate the impact of sodium lignosulfonate at different concentrations on soil physico-chemical properties. During the experimental period, soil parameters like available N, exchangeable Ca, Mg and Na concentration were estimated. The results showed that the application of lignosulfonate at 1 % (w/w) concentration increased the soil pH to 8.01, EC to 0.55 dSm^{-1} and also increased the available N and exchangeable Ca, Mg and Na significantly.

Keywords: Viscose, Sodium lignosulfonate, soil amendment.

Oral - 006

APP creation named NUTRI-TRADI

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People's knowledge on traditional foods decreases day by day. As more people changes their lifestyle towards modern medicine, the usage of traditional foods gets lowered. Instead of creating the foods on traditional basis, we have to create awareness among people. We are the one to protect our traditional foods. The people in Ancient days consumed the traditional foods and they are far away from the disease condition. But when the people started to consume junk foods they started to have disease condition like obesity and diabetes and other. Based on this motto, This app create awareness among people especially youngsters about the impact of traditional foods on our daily life. Instead of conducting the awareness programs (most of the people will not be able to attend), the app creation will be a better one to assess. They can learn about the traditional foods in their free time. It will also give some idea to the students who likesto do their project on traditional foods.

Keywords: Mobile App, traditional foods, disease condition

Oral - 007

Assessment of urinary heavy metal concentrations in residents of Industrial Area

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Industrialisation led to generating a wide variety of toxic contaminants. Maximum of the residents and density population found adjacent to the industrial areas in Urban. Urban populations are at high risk, those exposed to a wide variety of toxic pollutants, especially heavy metals. Heavy metals such as lead, copper, cadmium, and chromium can give oxidative stress and disease manifestation to the exposed population. Therefore, the present study aimed to assess metal exposure using urine samples collected among the population residing adjacent to Industrial Area. In this study, a total of 87 subjects including males and females participated in the questionnaire survey and urine sample collection. Urinary heavy metals concentrations were measured by (ICP-OES). SPSS software was used for statistics. About 87 samples, 50 male and 37 female subjects with an average age of 42.06 ± 15.08. The subjects were categorized under BMI, 36.8 % of the subjects were under the group overweight. About 64.37 % of subjects were above 10 years of residing in the same study area. Only 10% of the people used to eat fruits daily, also 85 % of subjects would consume fruits weekly once. However, in urinary heavy metals concentrations of Cobalt (0.71 µg/L), Copper (26.71 µg/L), and Lead (7.37 µg/L) exceed the Canadian Health Measures criterion values whereas a slightly lower concentration of Cd (0.69 µg/L). The higher concentration of heavy metals evaluated in biological samples of the population residing in the industrial area indicates high exposure to heavy metals. Further studies are required for the identification of different sources.

Keywords: Heavy metals, Industrial area, Questionnaire survey, Toxic Pollutants

Oral - 008

Association of stress with menopausal symptoms in rural middle age women

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Menopause is a natural aspect of a woman's life cycle, however, many women find the period leading up to menopause distressing. The purpose of this study is to assess how stress affects menopausal women's health. A cross-sectional study was conducted in selected rural areas in Coimbatore. The research participants were chosen using a purposive sampling technique. A total of 500 women samples aged 40-60 years were collected who were in pre, peri and post-menopausal stages. For the purpose of measuring stress and menopausal symptoms in menopausal women, Sheldon Cohen's Perceived Stress Scale and Menopausal Rating Scale (MRS) was used. The study's findings showed that the degree of stress has a significant impact on a woman's general health after menopause occurs. The mean level of stress was significantly higher 35.86 ± 4.65. The majority of responders (42 %) felt moderate levels of symptoms, followed by severe and mild (30 %) and (28 %), respectively. The prevalence of the total number of menopausal symptoms was substantially correlated with PSS scores. The level of Stress and women's occurrence of menopausal symptoms were found to be somewhat positively correlated. The stress (P=0.001) was significantly associated with menopausal symptoms. It was curiously observed that when the stress level increased the women's health issues also increased. It is clear that the initial onset of menopause-related stress is connected to the health status of menopausal women.

Keywords: Menopause, Stress scale, Symptoms, Health status

Oral - 009

Biochemical investigation of aqueous leaf extract of *Artemisia vulgaris*

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This study was designed to investigate the biochemical composition and evaluation of *in vitro* anticancer activity in the aqueous leaf extract of *Artemisia vulgaris.* The leaves of *Artemisia vulgaris* were selected as the sample for the study and aqueous extract was prepared from the sample and used for the studies. The qualitative phytochemical analysis was done followed by quantitative analysis of total phenols, total flavonoids and phytosterols. The aqueous extract was analysed for *in vitro* antioxidant activity through DPPH free radical scavenging assay and total antioxidant activity assay. FTIR and HPLC analysis was done to find the chemical groups present in the leaf extract. Followingly, the extract was tested for invitro anticancer activity using MTT assay. The level of cytotoxicity and cell viability at different extract concentrations was tested using an MTT assay and it showed supportive evidence that the extract has a potential in curbing the infected cancer cells. The results of the study revealed the presence of phytochemicals and their biochemical activities.

Keywords: *Artemisia Vulgaris*, aqueous extract, phytochemical, FTIR, HPLC, MTT assay.

Oral - 010

Bioconversion of Ligno cellulosic biomass in to Ethanol

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The present study is aimed with an objective to produce bioethanol from agro waste. Paddy straw biomass is collected from agricultural land and utilized as feedstock for ethanol production after subjecting them to acid, alkali and enzymatic pre-treatments for conversion of lignocelluloses rich biomass to utilizable sugars. Two bacterial strains (R2 and R3) and one yeast strain (S6) were isolated from soil samples collected from paddy fields dumped with straw and from sugarcane bagasse dumped soil. In addition to this, cellulose-degrading bacteria strain (C1) is isolated to carry out the enzymatic pre-treatment. Based on the fermentation efficiency tested, S6, R2 and R3 strains were inoculated in eight different pretreated biomass filtrate mediums for the fermentation process. Ethanol concentration and sugar levels were quantified at a period of five days intervals up to twenty days. Ethanol concentration increased from the 5^{th} day to the 20^{th} day in yeast inoculated biomass and increased from the 5^{th} day to the 15^{th} day in bacterial strain inoculated medium. After recovery through distillation, yeast strain S6 inoculated medium is reported with more concentration of ethanol in alkali pre-treated biomass filtrate medium. There is no significant difference between alkali-pre-treated biomass and combined alkali and enzyme pre-treated biomass inoculated with yeast strain at 0.001 level of significance. The overall product extracted is in the range of 5-12 %. Ethanol extracted from yeast S6 fermented alkali-treated biomass filtrate is reported to have a disinfectant effect against bacteria. FTIR spectrum analysis reported the presence of similar peaks to that of standard ethanol. Extracted bioethanol is also tested for its flaming efficiency and cosmetic effect.

Keywords: BioEthanol, Biomass, Lignocellulose, Pre-treatment, fermentation

Oral - 011

Bioethanol production from agricultural and vegetable wastes by microbial fermentation

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Rapid industrialization, population and fast-depleting fossils create an urgent worldwide demand for fuel from renewable origin. Energy from food crops is unable to meet the huge demand for fuels. Bioethanol is the best alternative for the increasing energy demand and serves as the potential source as biofuel. Lignocellulosic substances such as agricultural wastes are considered a promising source for bioethanol production. The organic constituents and the abundant nature of vegetable wastes make them suitable for bioethanol production. In this study, kitchen wastes and agricultural wastes have been utilized as substrates for the production of bioethanol. Corn cob and vegetable wastes have been taken as feedstock for the production of bioethanol. The carbohydrate content was increased by pretreatment. The fermentation was assisted by S*accharomyces cerevisiae* for 21 days and bioethanol was recovered by distillation. The final bioethanol content in the distillate was found to be 92.4 % v/v. Compared with the vegetable waste substrate, the yield of bioethanol in corn cob waste was high. The comparative analysis of mixed substrate results in the efficient production of bioethanol. The quality and quantity of bioethanol was increased while using mixed substrates. Thus, the study reveals that corn cob and vegetable wastes are better sources for bioethanol production.

Keywords: Agriculture waste, vegetable waste, fermentation, distillation, *Saccharomyces cerevisiae*

Oral - 012

Biogenic synthesis of zero valent iron nanoparticles from banana bracts

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Iron nanoparticles have drawn a lot of interest because of their distinctive characteristics and prospective uses in a variety of industries. However, traditional synthesis techniques frequently include harsh environments, dangerous chemicals, and significant energy consumption, which raises questions about the environment and human health. In this paper, we suggest a resource-efficient method for producing iron nanoparticles through the biosynthesis of banana bract, a plentiful and easily accessible agricultural waste product. By utilising the reducing and stabilising properties of phytochemicals found in banana bract, zero-valent iron nanoparticles were biosynthesised in a sustainable and environmentally friendly manner. The bract extract efficiently transformed iron ions into nanoparticles by acting as a reducing and capping agent. Several analytical methods, including UV-visible spectroscopy, Fourier-transform infrared spectroscopy (FTIR), and transmission electron microscopy (TEM), were used to characterise the synthesised zero-valent iron nanoparticles. The outcomes supported the creation of average-sized iron nanoparticles. The biomolecules that are decreasing and stabilising the nanoparticles were discovered by the FTIR analysis. The antibacterial activity the nanoparticles displayed against several harmful bacteria suggests their potential use in biomedical applications. The suggested biosynthetic technique has a number of benefits, including affordability, sustainability, and minimal environmental impact. The procedure contributes to waste valorization and advances the idea of the circular economy by using banana bract, a waste product from the agriculture sector. Additionally, the green synthesis method does away with the energy-intensive processes and harmful chemicals used in conventional approaches.

Keywords: Banana bract FTIR, TEM, Iron nanoparticles, UV-visible spectroscopy

Oral - 013

Bioinoculants seed coating - A promising 'ready to use agro input' for effective nutrient acquisition & sustainable yield enhancement for maize

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Maize (*Zea mays* L.) is the third most important cereal crop in the world economy after rice and wheat because of its versatile utility as food, feed and fuel. Though the area under maize cultivation is increased, due to the adverse climatic condition and the use of inferior seeds decrease the production. Hence, it is mandatory to improve the seed quality and thereby productivity in a sustainable way. At this juncture, biofertilizers play a vital role for effective nutrient acquisition and yield enhancement; which is normally applied through seed treatment. An alternative to that, pre-coating seeds with bioinoculants ensures precise delivery of bioinoculants in the rhizosphere region of crop plants. In the present study, bioinoculants coated maize seeds were developed with two different bioinoculants consortia namely NPK & NPKZn consortia using four biofertilizer strains *viz.*, *Azospirillum,* phosphobacteria, potash bacteria and zinc solubilizing bacteria and studied its efficacy on maize both under gnotobiotic and pot culture conditions. Bioinoculants coated maize seedlings recorded a significant increase in plant biometrics, nutrient status of soil and plants *viz.*, N, P, K and Zn and the biochemical parameters *viz.*, chlorophyll and protein. Enhanced microbial activity in the rhizosphere soil of coated maize plants was assured by the improved soil enzyme activities and soil organic carbon pool. Additionally, coated maize plants showed improved nitrate reductase activity and decreased malondialdehyde and proline content which revealed the stress mitigation potentiality of the coated bioinoculants. From the findings, seed coating with biofertilizer consortia ensures not only the precise delivery of bioinoculants for effective nutrient acquisition (N, P, K and Zn) but also help in mitigating the stress faced during the crop growth period. Hence, bioinoculant seed coating is not only an effective alternative for seed treatment but also a ready-to-use agro-input (seed) for the farmers in terms of nutrient management and yield sustainability.

Keywords: Biofertilizer consortia, seed coating, maize, nutrient acquisition

Oral - 014

Bioplastic from starch in banana pseudostem

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The increasing concern over environmental degradation and the depletion of fossil fuel resources has led to a growing interest in developing sustainable materials. Bioplastics have emerged as a promising alternative to conventional plastics due to their biodegradability and renewable nature. This study focuses on the production of bioplastics from starch derived from the pseudostem of plants, specifically exploring the potential of pseudostem starch as a viable feedstock. The research begins with the extraction of starch from the pseudostem, which serves as a readily available and underutilized agricultural waste material. Starch is obtained through a series of processing steps, including milling, washing, and drying, followed by enzymatic hydrolysis to break down the starch molecules into smaller units. The resulting starch hydrolysate is then subjected to further processing to convert it into a biodegradable and thermoplastic material. Different methods of plasticization and blending are explored to enhance the mechanical properties and processability of the obtained starch-based bioplastic. Various plasticizers and reinforcing agents are investigated to optimize the material's flexibility, tensile strength, and thermal stability. The compatibility of these additives with pseudostem starch is evaluated, taking into consideration their impact on the overall sustainability of the bioplastic. Characterization techniques, including Fourier-transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), and mechanical testing, are employed to evaluate the structural, morphological, and mechanical properties of the developed bioplastic. The degradation behaviour of the bioplastic under controlled composting conditions is also investigated to assess its environmental impact. The results demonstrate the feasibility of utilizing pseudostem starch as a valuable feedstock to produce bioplastics. The developed bioplastic exhibits promising mechanical properties and thermal stability, making it suitable for various applications. Moreover, the biodegradability of the bioplastic ensures its potential as an eco-friendly alternative to conventional plastics. This research contributes to the ongoing efforts in developing sustainable materials and highlights the potential of pseudostem starch as a valuable resource for bioplastic production. Further optimization and scale-up studies are recommended to explore its commercial viability and broader applications, paving the way towards a greener and more sustainable future.

Keywords: Bioplastics, starch, banana, pseudostem, SEM, FTIR

Oral - 015

Breakfast habits, nutritional status and academic performance in government school children (12-14 years) in Sivagangai district

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A healthy nutritional diet at a young age ensures better development and health status in the coming years of a person‘s life. Regular breakfast consumption would be an important remedy to obtain adequate calorie intake and a healthy lifestyle later at a younger age. Breakfast is a basic requirement for children and needs to be introduced in school in order to improve the nutritional security of children. The present study aims to assess the socio-economic status of selected samples of rural government school children and to study the breakfast habits of the sample population. The school children in the ages of 12-14 both boys and girls were selected for the study. The tool used for the study is an interview schedule. An interview schedule is defined as the tool through which data is collected by the researcher directly from the respondents, through face-to-face communication. Most of the respondents had their breakfast 97 % with the family members. 62 % of the respondent were non-vegetarian the rest were vegetarian. 72 % of the respondent had the habit of consuming milk. Therefore it is desirable to provide proper nutritional education to adolescent girls and boys in rural areas, particularly to government school children and empower the children with health and nutrition.

Keywords: breakfast, nutrition, health status, government school children

Oral - 016

Cardioprotective activity of *Artabotrys hexapetalus* (L.f.) Bhandari leaves in isoproterenol induced cardiac hypertrophy in male wistar rats: A histopathological analysis

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The present study was designed to assess the cardio-protective role of *Artabotrys hexapetalus* (L.f.) Bhandari leaves in the male Wistar rats. Cardiac hypertrophy was induced by intraperitoneal administration of 10mg/kg body weight of isoproterenol for 7 days. Isoproterenol induced rats were treated simultaneously with 100 mg/kg and 300 mg/kg body weight of aqueous leaves extract of *Artabotrys hexapetalus* (L.f.) Bhandari for 7 days. Histopathological analysis of rats' heart were performed using Hematoxylin and Eosin staining. The results of the study revealed that isoproterenol causes distorted muscle fiber, elongated hypertrophied nucleus and loss of cross striations. Rats treated with aqueous leaves extract of *Artabotrys hexapetalus* (L.f.) Bhandari alleviates the effect of isoproterenol induced damage in the rat heart. *Artabotrys hexapetalus* (L.f.) Bhandari leaves possess cardioprotective activity.

Keywords: *Artabotrys hexapetalus* leaves, Histopathology, Hypertrophy, Isoproterenol.

Oral - 017

Cellulose production using *Glucanacetobacter* for Non-wood cellulosic applications

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The most prevalent macromolecule in the world is cellulose, which is mostly produced by plants and is used in the medical, paper, textile, feed, cosmetics, and Pharmaceutical industries. It is challenging to acquire pure cellulose as a substrate as cellulose is mixed with lignin, pectin, hemicellulose, and other biogenic compounds in plant sources. Due to the absence of lignin, pectin, and hemicellulose, microbial cellulose produced by fermentation has a higher purity than plant cellulose and doesn't require energy-intensive processes like hydrolysis and delignification and harder purification processes. Some strains of bacteria from the genera *Acetobacter*, *Agrobacterium*, *Gluconacetobacter*, *Rhizobium*, *Sarcina*, *Achromobacer*, *Aerobacter*, *Salmonella*, and *Escherichia* have been reported to generate bacterial cellulose. In the present study *Acetobacter* sp., and *Komagateaibacter* sp., have been isolated from rotten fruits and vegetable sources and characterized for Cellulose production. Surface aeration proved successful in producing homogenous, low-syneresis gelatinous cellulose in 7-10 days in Hestrin Schramm medium. Thus, our crude method for the production of cellulose from komagateaibacter, isolated from fruit wastes, yielded 0.75 g/L of the medium. Parameters such as temperature, incubation time, pH, carbon source, nitrogen source, organic acids, and addition of metal salts need to be optimized for better yield.

Keywords: Bacterial cellulose, *Gluconacetobcter*, agitated culture, *Rhizobium*, Fermentation.

Oral - 018

Chemical compositions, phytochemical constituents and *in vitro* biological activity of various extracts of *Cymbopogon citratus*

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The medicinal plant that resides in natural areas has received increasing scientific and also commercial attention. The bioactive phytochemical constituents present in plants determine the medicinal value of plants. It is commonly known as lemongrass, is a tropical perennial herb belonging to the family *Poaceae*. It is a tropical plant widely used for its medicinal, culinary and aromatic properties. The various extracts of *Cymbopogon citratus* have demonstrated *in vitro* biological activities. These include antimicrobial activity against bacteria, fungi, and some viruses and anti-inflammatory effects by inhibiting pro-inflammatory cytokines and enzymes. Studies have shown that lemongrass extracts possess anticancer properties by inhibiting the growth and proliferation of cancer cells. Lemongrass is one of the important medicinal plants and it has various applications in traditional medicines. Also, it can be used for the treatment of HIV complications, especially secondary bacterial infections. This is results of this study showed the presence of phytochemicals namely (flavonoids, phenols, tannins, alkaloids, cardiac glycosides & coumarins. Lemon grass will be helpful to improve the body's antioxidant defence system by increasing serum antioxidant levels & reduce free radical-mediated diseases. There are no clinical trials with lemon grass on the Indian population, either on healthy or on diseased populations to support its antioxidant claims or its use in any therapeutic condition. Using the plant extract herbal soap was developed. The pH and foam height are analysed using the standard protocols.

Keywords: Poaceae, culinary, cytokines, alkaloids

Oral - 019

Comparison and optimization of quality DNA extraction procedure in *Abelmoschus esculentus*

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In the field of Molecular Biology Quality DNA extraction from plants is a very important aspect. That too crop like okra (*Abelmoschus esculentus* L.) is notoriously troublesome due to the high contents of polysaccharides, polyphenols, and different secondary metabolites present in this. We attempted a study for quality DNA extraction from dried okra leaves. A simple, quick, and modified procedure for high-quality DNA extraction from okra is attempted and proven with a good result. We have compared different methods (CTAB & SDS) to isolate the purest form of the high-quality genomic DNA from the fresh leaves of *Abelmoschus esculentus* (known as *bhendi* or *okra*). It contains high amounts of mucilaginous acidic polysaccharides and other phenolic compounds which are responsible for its stickiness. Adding 6M Guanidine Hydro Chloride after phenol-chloroform extraction will help in high binding affinity towards DNA. The isolated DNA can be used for genomic analysis such as genetic mapping genetic transformation, assisted plant breeding, etc. as it was free from contaminating agents like polysaccharides, proteins and polyphenols. The quantity and quality of DNA is satisfactory and the method can be very useful for molecular biology-related studies.

Keywords: DNA extraction, CTAB & SDS method, *Abelmoschus esculentus,* Guanidine HCl.

Oral - 020

Study on soil microbiome from few forest Soils of Western Ghats, Tamil Nadu.

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Western Ghats covers an area of about 1,80,000 km^2 and it is widely populated with over 30 % of plants. It starts from the southern tip of Gujarat and ends at Anaimudi in Kerala. Bacteria, fungi and actinomycetes are abundant soil microorganisms which perform key functions for retaining soil fertility and fostering plant health. Soil microbes have a profound impact on above-ground ecosystems by providing nutrients to plants. Since these microorganisms control the discharge of minerals and nutrients, the cycling of nutrients, and the deterioration of organic matter, it has a huge impact on the chemical-physical attributes and primary productivity of the soil. The soil microbial communities are relatively very diverse and to understand this soil samples were collected from six different forest regions of the Western Ghats *viz.*, Nilgiris (Thuneri, Thaisola, Devashola and Korakundah), Thimbam, Topslip region. The isolation of soil microorganisms was carried out by the standard plate method. The distribution of microorganisms was found to be more including bacteria, fungi and actinomycetes. Till now we have isolated and identified 25 genera of bacteria and 12 genera of fungi. Out of the 25 bacteria, *Bacillus* sps presence was dominant followed by *Azotobacter*. The presence of mycorrhizal fungi was found to be dominant in all the above-mentioned study areas. Soil microbial diversity of Western Ghats is still very much underestimated. Our aim is to get a deeper knowledge of the number and role of microorganisms within this natural ecosystem and its influence on selected plant communities. Hence, if we can access the biodiversity of the native microbial population of Western Ghats, it could open an avenue for potential application in agriculture and allied industries through the isolation of novel compounds from selected microbiomes.

Keywords: Soil microbiome, Diversity, Western Ghats.

Oral - 021

Detail study on curative role of phyto-derived compound to counter the progression of end- stage kidney disease with onset of hyperglycemia and hypertension

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Chronic kidney disease (CKD) is a heterogeneous disorder, characteristic of inflammation, nephron loss, activation of myofibroblasts etc., which decline in renal function and gradually leads to end-stage kidney disease (ESKD). The prevalence of ESKD continues to upsurge in developed and developing countries. In 2016 it ranked 13th place and is estimated to place top 5 on cause of death in 2040. The risk factors of CKD are hyperglycemia, hypertension, obesity, genetic disorders, cardiovascular diseases and a sedentary lifestyle. The pathogenesis of kidney diseases was 5 stages from mild to severe kidney dysfunction, worsen up in ESKD. Despite advanced disease management, it requires expensive treatment such as dialysis or renal transplant. Poor glycemic control stimulates the kidney cells and tissues which leads to structural and functional changes, advanced glycation end products (AGEs), distressing the cell growth and eventually progressive in declined glomerular filtration rate (GFR) and albuminuria. Prolonged hypertension possibly reduces the blood flow in peritubular capillaries thereby increasing the Angiotensin II, peripheral vasoconstriction, arterial stiffness, elevated sodium retention and alters hormonal systemic blood pressure and endothelial dysfunction. To triumph over these health issues and economic burdens, cost-effective phyto-derived compounds have an active role in lowering the most predominant ESKD clinical symptoms. Plants having anti-inflammatory properties are selected for therapeutic strategy and a combination of In-silico analysis can find the bioactive component in *Calophyllum apetalum willd*, active mechanism of beta-sitosterol and other phytosterols may have an inhibitory effect on numerous signaling pathways including TNF, Polyol and JAK-STAT, JAK is Janus consists of 4 tyrosine receptors and signal transducer of activators of transcription (STAT) it regulates roughly 50 cytokines and growth factors that arbitrates CKD by oxidative stress, inflammation and nephrotoxicity. This therapeutic approach is used in targeted drug delivery systems.

Keywords: End-stage kidney disease, JAK-STAT, inflammation

Oral - 022

Development and acceptability of germinated buckwheat flour incorporated extruded products

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Buckwheat resembles cereals in its structure and chemical composition. Buckwheat is produced in several parts of the world and is also used as a major ingredient in daily diet. It has many bioactive components and also has various health benefits. Germination will reduce the anti-nutritional components and improve the availability of nutrients. The objectives of the study were to formulate germinated buckwheat flour incorporated extruded products; to evaluate the quality parameters; to estimate the cost and to popularize the best products. In the present study, extruded products like noodles, vermicelli and pasta were prepared by incorporating germinated buckwheat flour instead of wheat flour. A trial run was done from 10 % to 60 % level of incorporation and 30 % to 60 % proportion were chosen for further study. The formulated products were standardized and sensory evaluation was done. Storage stability was assessed by means of microbial analysis and sensory analysis. Cost estimation and popularization were also done. The results showed that noodles and vermicelli with 40% incorporation and pasta with 50 % incorporation were selected as the best products. The shelf life study showed that the extruded products can be stored for a period of one month. The cost of the selected products was slightly higher than the standard products and the products were accepted by all the participants involved in the popularization study. The study concludes that buckwheat can be incorporated into food products without affecting the sensory characteristics and the incorporation can also add nutritional and health benefits.

Keywords: Germinated buckwheat flour, noodles, vermicelli, pasta, sensory analysis

Oral - 023

Development of gluten free nutrition enriched green cupcake

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Cupcakes are high in sugar and saturated fat which increases the risk of heart disease and Type 2 diabetes. The present study proved that the incorporation of Moringa leaves and pumpkin seeds for the development of cupcakes affected the overall quality *viz*, batter, physical, textural and colour parameters. The proximate composition was increased with an increase in the amounts of Moringa leaves and pumpkin seeds without carbohydrates. Cupcakes substituted with 10 % moringa and 10 % pumpkin seeds recorded the highest nutritional values. Consumption of 100 g of these cupcakes provided 1.6 g of iron, 8 g of protein along with 4.9 g of fibre. The cupcakes fortified with moringa leaves and pumpkin seeds at high concentrations showed an increased total phenolic content as well as antioxidant activity. Though the gluten-free foxtail millet adversely affected the hardness, gumminess and chewiness of cupcakes, the textural properties improved with increasing substitutions of pumpkin and moringa residues. The sensory acceptability of the foxtail millet and substituted cupcakes were in the acceptance range. The sensory acceptance scores indicate the scope for foxtail millet use in cupcakes. Foxtail millet can be considered a gluten-free product that could be used in novel foods when fortified with moringa leaves and pumpkin seeds.

Keywords: Gluten-free, Fortified, Sensory Acceptability, Cupcakes

Oral - 024

Development of herbal based gloves coated with *Valeriana officinalis* with enhanced UPF and antifungal activity

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Ozone plays a vital role in protecting life on Earth by absorbing a significant amount of the sun's ultraviolet radiation (UVR). Several pollutants which are exposed in the atmosphere lead to thinning of the ozone layer creating pavement for the UV radiation to reach the earth's surface. Increased levels of UVR reaching the earth's surface has numerous detrimental effects, including compromised immune system and lesions. *Valeriana*, a medicinal plant which is known for its promising therapeutic properties. This study aims to investigate the beneficial impacts of valerian extracts on UV protection and their functionality. The development of herbal-based gloves incorporated with valerian mainly focuses on two important aspects: Ultraviolet Protection Factor (UPF) enhancement and antifungal activity. The experimental methodology involved the extraction of valerian compounds and their subsequent incorporation into the glove material through a coating process. The coated gloves were subjected to rigorous testing to evaluate their UPF performance. Additionally, the antifungal activity of the gloves was examined by using *C. albicanns* and *C. tropicalis* through the well diffusion method. The results demonstrated that valerian-based coating significantly increased the UPF of the gloves which provides enhanced protection against harmful UVR and exhibits substantial antifungal activity by inhibiting the growth of various fungal strains. The study holds considerable significance for various industrial applications including healthcare and agriculture, where the demand for effective UV protection fabrics is paramount. This study highlights the successful development of herbal-based gloves with valerian, showcasing their improved UPF performance and notable antifungal activity.

Keywords: Detrimental, lesions, UPF, valerian.

Oral - 025

Diet Grade – a mobile application for assessing Dietary Intake

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Malnutrition manifests itself as both overnutrition and undernutrition often described as the dual burden of malnutrition. It leads to far-reaching consequences affecting a nation's, family's and individual's productivity. Despite the giant leaps in technological advancement, India continues to be a major contributing nation to the worldwide occurrence of Malnutrition. Early detection of malnutrition will aid in early intervention thereby limiting the progress of malnutrition. It is therefore imperative to identify and develop simple, effective and inexpensive tools to detect and predict malnutrition. Accurate assessment of malnutrition paves the way for early identification and intervention. However, traditional methods of nutritional assessment are cumbersome as they are heavily resource reliant. The accuracy and reliability of data become a challenge, especially in the field where large-scale assessment is required within a short span of time. Sustainable technology encompassing digital and technological tools which integrate traditional methods with technological components enables better access, care and follow-up, especially in large populations. The use of technology also provides scope for further research as they are reliable and provide longitudinal data for research. Mobile dietary applications are useful in recording dietary intake in an individual as the tedium of traditional methods involving recall of all of an individual's food intake over 24 h or maintaining a food diary by the individual is minimized. A dietary mobile application (DIETGRADE) was developed to assess dietary intake through uploading images of daily food intake and was scored on various parameters like inclusion of all food groups, food choices, portion adequacy and hydration.

Keywords: Malnutrition, nutritional status, mobile applications

Oral - 026

DST gene specific targeted editing for drought and salinity tolerance in sugarcane

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Drought, salinity and other abiotic stress conditions are the key factors that limit agriculture production and productivity. The development of plants which have genetic resistance to tolerate water deficit and salinity conditions is an alternate approach to minimise the loss in agriculture production and productivity. Genome editing is a targeted mutagenic tool for crop improvement with desired traits. CRISPR/Cas-based genome editing technology is widely used to create mutations in targeted regions of the gene. Plants' gaseous exchange is mainly controlled by stomatal conductance which in turn plays a major role in plants' resistance to abiotic stress conditions. Hydrogen peroxide plays a major role in stomata opening and closure signalling. Drought and Salinity tolerance protein (DST) negatively regulates stomatal closure by modulating genes related to hydrogen peroxide homeostasis. Loss of DST function in plants reduces stomatal density which subsequently results in enhanced drought and salinity tolerance. Hence targeting drought and salinity tolerance protein is an appropriate candidate gene conferring abiotic stress resistance in sugarcane. The DST gene is cloned from *Saccharum* hybrid cultivar Co 86032. Gene structure analysis of DST gene revealed the presence of a single exon without any introns. Knock-down of the DST gene by directing guide RNA (sgRNA) and Cas9 complex to the exonic region of the DST gene is proposed to confer drought and salinity tolerance in sugarcane.

Keywords: Sugarcane, Drought and Salinity tolerance, Plant gaseous exchange, Targeted genome editing

Oral - 027

Eco-friendly degumming treatment using Pectinase and Xylanase in textile industries

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The invention discloses degumming is the process of removing the sericin or gum from silk yarn. Removing the gum improves the sheen, colour, hand and texture of the silk. Enzymes are biocatalysts that are being used to selectively target fibre-accompanying impurities such as pectin, hemicellulose, lignin, cellulose, proteins, fats, starch, greasy substance and oil during fibre recovery. Plant-based fibres including jute, hemp, and ramie have a great market share in textile industries. Textile processing of natural fibre necessitates the removal of the hemicellulosic substance. The objective of this research is to explore the effectiveness of pectinase and xylanase enzymes in degumming textile fibres, particularly natural fibres like silk and flax. These enzymes have shown promise in various industries as effective and sustainable alternatives to conventional chemical-based processes. In this study, pectinase and xylanase enzymes were extracted from microbial sources and optimized for degumming applications. Parameters such as enzyme concentration, temperature, pH, and treatment duration were optimized to achieve maximum degumming efficiency while minimizing adverse effects on the textile fibres. The results of the study demonstrate that pectinase and xylanase enzymes effectively remove gum and non-cellulosic impurities from natural fibres without compromising fibre strength and quality. Compared to chemical degumming processes, enzymatic degumming offers several advantages, including reduced water consumption, lower energy requirements, and the absence of toxic chemicals, resulting in a significantly reduced environmental footprint. Furthermore, the enzymatic degumming process promotes the utilization of renewable resources and supports the concept of circular economy by enabling the recovery and reuse of degumming enzymes. The enzymes can be regenerated, thereby reducing waste generation and optimizing the overall process efficiency. This research highlights the potential of pectinase and xylanase enzymes as eco-friendly alternatives for degumming in the textile industry. Implementing enzymatic degumming processes can contribute to the sustainability goals of textile manufacturers by minimizing environmental impact, improving resource efficiency, and ensuring the production of high-quality textiles.

Keywords: degumming textile fibres, sericin, silk yarn, enzymatic degumming

Oral - 028

Effect of lipids and phytosterols from *Pennisetum glaucum* grains on anti-inflammation: An *in Silico*, i*n vitro* and i*n vivo* Studies

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The current research is engrossed in screening the anti-inflammatory activity of methanolic grain extract of *Pennisetum glaucum* using *in silico*, *in vitro* and *in vivo* methods. *In silico* studies were carried out using docking (CB-Dock2) and Ramachandran plot (procheck). *In vitro* studies were carried out using inhibition of protein denaturation, and membrane stabilization activity while *in vivo* studies used carrageen-induced paw oedema in rodents. Docking studies were performed for natural compounds against PDB ID: 1FT4, PDB ID: 3NS7, PDB ID: 1KQU and PDB ID: 3E7G. The docking results revealed that all of the selected proteins had the greatest vina scores with all of the phytoconstituents from the extract and the common medication indomethacin, indicating a better receptor-ligand binding affinity. In *in vitro* results MEPG showed higher inhibition at 500 µg/ml (46.4 %) compared to aspirin 100µg/ml (60.7%) for protein denaturation. The extract demonstrated 56.6 % suppression of heat-induced hemolysis at 500 g/ml, while aspirin demonstrated 73.3 % inhibition at 100 g/ml. The extract inhibited hypotonicity-induced hemolysis by 59.3 % at 500 g/ml and Diclofenac sodium 100 g/ml with 75 % inhibition at 100 g/ml. The extract at doses of 200 mg/kg, 400 mg/kg, and the common medicine indomethacin at 3 mg/kg bd. wt significantly reduced paw oedema in an animal model. It was clear from the above that *Pennisetum glaucum* methanolic grain extract had strong anti-inflammatory activity.

Keywords: *Pennisetum glaucum*, docking studies (CB-Dock2), Ramachandran plot (procheck) and anti-inflammatory activity

Oral - 029

Efficacy of nanocomposite biopolymer film incorporated with the green synthesis of silver nanoparticles (AbNPs) of *Caesalpinia bonducella* seed for diabetic wound healing

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Nanotechnology has provided new platforms for investigating the effects of natural polymer-based nanocomposite in the form of hydrogels, films, foams, and other materials on wound healing. In the current study, we propose the green synthesis of silver nanoparticles extracted from *Caesalpinia bonducella* seed and incorporated them in chitosan-PVA film. The synthesized nanoparticles film would be tested for diabetic-induced mice for wound contraction. This type of nanocomposite biopolymer film with medical properties would act as an effective wound dressing compared to traditional treatment methods.

Keywords: natural polymer-based nanocomposite, hydrogels, *Caesalpinia bonducella*

Oral - 030

Elucidation of the probiotic potential of bacteria isolated from natural honey

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Honey, one of nature's wonders, found to be inevitable in therapeutic applications. Extensive research has shown the therapeutic promise of the use of honey in enhancing health values. The quality of honey is determined by its nutraceutical, chemical, physical and microbiological characteristics. In addition to physicochemical characteristics, the present study aimed to evaluate the probiotic potential of bacteria isolated from natural honey. The probiotic nature of the isolate was elucidated by a battery of assays. A linear positive relationship was observed between the honey concentration and DPPH (2, 2 diphenyl-1-picrylhydrazyl) radical scavenging activity. Energy dispersive X-ray spectrum (EDAX) analysis of the honey revealed the presence of essential elements like K, Ca, Mn and Fe. The high R2 values obtained with dose-response plot inferred the inhibitory efficiency of honey toward different bacterial pathogens. *Bacillus cereus* isolated from honey was found to possess probiotic properties with siderophorogenic potential. The nature of the siderophore produced by the isolates was found to be trihydroxamate nature and formed hexadentate ligands with Fe^{3+}. Fourier transform infrared (FTIR) spectra revealed the trihydroxamate nature of the siderophore produced. The isolate exhibited probiotic properties such as tolerance to acid, bile salt, gastric juice, auto-aggregation potential, antibiotic resistance and the absence of haemolytic activity. This study indicated *Bacillus cereus* as a potential probiotic bacterium bearing siderophoregenic attributes that confer health benefits to the host.

Keywords: honey, nutraceuticals, probiotics, and Siderophore.

Oral - 031

Ensemble docking augmented by machine learning and molecular dynamics for drug repurposing approach for JAK2 - colon rectal cancer

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JAK2 plays an important role in JAK/STAT signalling pathway and functions as a critical regulator of cell growth, differentiation, and immune expression. The abnormality in the JAK2/STAT3 pathway is involved in the pathogenesis of colon cancer including apoptosis. The activation and role of the JAK2 protein in CRC are not completely identified. In this study, we have identified the new inhibitors for JAK2 protein by drug repurposing approach. Structure-based virtual screening approach was carried out, a total of 1641 FDA-approved compounds were screened and the top hits were selected based on their binding affinity. To validate the identified compounds, we implemented cross-docking techniques to improve the selectivity of identified JAK2 compounds. Ensemble docking was performed by taking different receptors of JAK2 using EDock- Machine Learning approach. Machine learning (ML) approaches enhance decision making which classifies the predictions of compounds to be active or inactive. k nearest neighbour, Support vector machine (SVM), Random Forest (RF) and Logistic Regression were used to find the active compounds. The compounds Entrecitinib, Ergotamine and Exatecan are predicted to have a 90 % probability to be active. Besides, molecular dynamic simulation was done for the top potent and selective compounds against JAK2. The ability of cells to proliferate after the drug treatment was checked by MTT assay for Ergotamine. Through these computational approaches, we have identified the potent lead compound when compared with the drug Fedratinib which has been approved by FDA against JAK2.

Keywords: JAK2, Colon rectal cancer, Drug Repurposing, Machine learning, Molecular Docking, Density Functional Theory, Molecular Dynamic Simulation.

Oral - 032

Environmental toxicology of microplastics: A comprehensive assessment of ecological impacts and human health risks

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Microplastics (MPs), defined as plastic particles smaller than 5 millimetres, have become a significant environmental concern in recent years. With their persistence in aquatic and terrestrial ecosystems, MPs pose many threats to the environment and potentially to human health. As MPs are tiny, they can easily enter and interact with organisms, which can harm the ecosystem and the food chain. Despite being ubiquitous in our environment, we still have limited knowledge about how MPs can affect human health. Research findings suggest that humans can come into contact with MPs through ingestion, inhalation, and direct contact due to their presence in food, water, air, and various consumer products. Exposure to MPs can lead to toxicity by causing oxidative stress, inflammation, and increased uptake or movement within the body. Some studies have indicated possible effects on metabolism, neurotoxicity, and increased cancer risk in humans. Additionally, MPs can release their components and absorb other chemicals from the microcosm. Therefore, it is crucial to investigate the release of chemicals from MPs and their potential to contribute to the overall toxicity and environmental risks. This paper aims to provide a comprehensive overview of the environmental toxicology of MPs by assessing their sources, distribution, and fate in different environmental compartments, including freshwater bodies, oceans, soil, and air. It is crucial to conduct in-depth research to learn about the effects of MPs on human health. This will help us understand the risks better and find ways to protect ourselves.

Keywords: Microplastics; Human health effects; Environmental toxicology; Ecological impacts; Ecosystems.

Oral - 033

Evaluation and development of fermented iron drink with vitamin C absorption vegetables

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Iron deficiency is a prevalent global health issue, and enhancing iron absorption is crucial for addressing this problem effectively. Vitamin C is known to enhance non-heme iron absorption, and incorporating it with fermented iron could provide a novel approach to improve iron bioavailability. Iron deficiency symptoms include poor appetite, breathlessness, irritability, tingling, burning sensations, angina etc.. This deficiency is caused by blood loss, lack of iron in the diet, inability to absorb iron and pregnancy. Iron deficiency anemia is prevented by taking sufficient amounts of iron or iron supplements. This dietary control will lead to an increase in the amount of iron. A major drawback of taking supplements is that it causes side effects when consumption goes beyond the level. TIBC test shows the level of iron. This study is focused on formulating fermented iron drinks with vitamin C absorption vegetables that help increase the bioavailability of iron contents in blood. It helps in the prevention of iron deficiency. The major ingredients included in the preparation of the drink include *Moringa oleifera*, ipomoea batatas, *Solanum nigrum* leaves, carrot, bitter guard and lactic acid-containing curd. In conclusion, Lactic fermentation of foods increases the availability of iron as shown in a number of studies throughout the years. The mechanism for the increased bioavailability of iron from lactic-fermented vegetables is likely an effect of the increase in ferric iron ($Fe3^{+}$) species caused by lactic fermentation.

Keywords: Iron deficiency, lactic fermentation, TIBC

Oral - 034

Evaluation of *in vitro* wound healing activity of Prodigiosin in mouse fibroblast cell lines

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Microbial infections are often life-threatening and observed as a major clinical health challenge which needs global attention. Microbial infections in wound remains a significant problem that results in increased morbidity and mortality. To control the proliferation of microorganisms in wounds, synthetic antibiotics have been used. However, they have disadvantages owing to their adverse reactions and thus an effective alternative is required. Hence, microbial pigments are considered a promising source for treating both acute and chronic wounds. Therefore, this work aimed to use prodigiosin as an effective wound-healing agent to treat acute and chronic wounds that are caused by microbial pathogens. Prodigiosin, a tri-pyrrole red pigmented molecule was isolated from *Serratia marcescens* SP1 and their production parameter was optimized. It was observed that yeast malt extract agar with a pH of 7, temperature of 24 ^{o}C and growth time of 72 h exhibited maximum prodigiosin production. Further, based on the Rf value of 0.89 in TLC, UV-Visible absorption spectra of 534 nm, retention time of 15.667 in HPLC, presence of alkane and nitro compounds in FTIR, molecular weight of 322 D m/z in GCMS, presence of pentyl chain methylenes, methyl, alkyl and methoxy groups in NMR spectra together with amorphous nature in XRD, the pigment was characterized as prodigiosin. In addition, the antimicrobial activity of prodigiosin was found to have a profound effect on *Staphylococcus aureus* with a MIC and MBC of 62.5 μg/mL and 250 μg/mL, respectively. Moreover, the synergistic activity of prodigiosin with streptomycin conferred the ability of prodigiosin to act as an ideal therapeutic compound rather than in combination. Furthermore, an *in vitro* wound healing assay of prodigiosin in mouse fibroblast cell lines (3T3) showed an accelerated wound healing effect within 24 hours. Thus, it could be concluded that prodigiosin could play a paramount role in the development of effective antibacterial and wound-healing agents in the near future.

Keywords: Prodigiosin, *Serratia marcescens*, Antimicrobial activity, Wound healing, Mouse fibroblast cell lines

Oral - 035

Evaluation of proximate, physical and sensory qualities of cookies

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Cookies are made in a wide variety of styles, using an array of ingredients including sugars, spices, chocolate, butter, peanut butter, nuts, or dried fruits. Recently Polyalcohol and natural sweeteners (such as steviol glycosides and tagatose) are gaining much attention as sugar replacements in developing bakery products. The present study aims to reformulate cookies by replacing sugar, flour and butter with black rice, unsalted butter, baking soda and stevia sweetener-stevioside. Based on the AOAC method, the proximate compositions of the developed cookies were evaluated and physiochemical characteristics and sensory qualities of cookies were also examined. The resultant value-added cookies would be increased in protein, ash and fibre content and decreased moisture and carbohydrate content that makes them suitable for consumption by diabetic patients. The evaluation of sucrose replacement by stevioside in cookies and their impact on the product quality, physical characteristics and were analysed. The diameter and spread ratio were reduced and the thickness and colour intensity increased in test cookies. The sensory evaluation values showed that the stevioside-substituted cookies were the most preferred cookies for diabetic patients.

Keywords: Cookies, stevia sweetener-stevioside, black rice

Oral - 036

Evaluation of serum amino acids and non-enzymatic antioxidants of *Sesbania bispinosa* extract and physical exercise treated stress induced experiment in wistar rats

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Depression is the most common mental illness and affects more than 10-15% of people. There are a lot of synthetic drugs used to treat depression but these synthetic drugs have potential side effects. Exercise has also been recommended as a complementary therapy that can help improve the symptoms of depressive symptoms and prevent recurrence. The present study aims to assess the antidepressant effect of *Sesbania bispinosa* extracts and Physical exercise in rats and *in vivo* amino acids and non-enzymatic antioxidants analysis of the rat serum. The oral administration of extracts was carried out in rats for about 30 days. After the end of the experimental treatment period (30 days), the animals were sacrificed serum was collected for the amino acids and non-enzymatic antioxidants analysis. The amino acids and non-enzymatic antioxidants parameters were carried out as follows. The amino acids and non-enzymatic antioxidants levels were found to be decreased in group II depressed rats. The case was reversed after the treatment with *S. bispinosa* extract (group IV and V) and in swimming exercise (group VI). In addition, antioxidant activity results suggested that could be due to polyphenols. *S. bispinosa* extract and swimming exercise has antidepressant activity, antioxidant activity and this supports its use in ethnomedicine for the treatment of central nervous system disorders.

Keywords: Antidepressant, *Sesbania bispinosa*, swimming exercise, amino acids and non-enzymatic antioxidants.

Oral - 037

Evaluation of the antiviral activity of the anticancer drug - Cladribine against HSV-1 and HSV-2 viral infections: A drug repurposing approach

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Viral infections cause a significant burden on the global health economy as evident through the HIV epidemic and the recent SARS-CoV-2 outbreak. Rising trends of drug resistance against currently available antiviral drugs combined with the lack of newer antivirals is a cause for concern. The drug repurposing approach offers an alternative and innovative route to combat these issues. The proposed work aimed to investigate the antiviral activity of Cladribine against HSV-1 and HSV-2 viruses through a systematic drug repurposing approach. *In silico* molecular docking and binding energy studies were performed using Schrödinger. Cytotoxicity of Cladribine against vero cells was estimated by MTT assay. The *in vitro* antiviral assays namely, Cytopathic effect inhibition (CPE) assay, Virucidal assay, Plaque reduction assay and Time of addition studies. Cladribine exhibited a strong binding interaction with HSV Thymidine kinase through a docking score of -11.364 and binding energy of - 51.35 kcal/mol. The cytotoxicity value (CC_{50}) was found to be 295.54 µM in Vero cells. It showed 75 % cell protection against HSV-1 and 25 % cell protection against HSV-2 in the CPE assay. In the virucidal assay, it had no protection against HSV-1 and 25 % cell protection against HSV-2. IC_{50} value of 2.942 µM against HSV-1 and 2.711 µM against HSV-2 in plaque reduction assay. In the time of addition studies, it exhibited 78 % cell protection against HSV-1 and 71 % cell protection against HSV-2 during the virus replication stage. The results indicate that Cladribine demonstrated significant antiviral activity against both HSV-1 and HSV-2 viruses *in vitro* and its mechanism of action was during the virus replication.

Keywords: Cladribine, HSV, Antimetabolites, Drug repurposing, Viral infection.

Oral - 038

Exploration of different soil samples for isolation of mosquitocidal bacteria to control mosquito vectors.

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Vector borne diseases (VBD), such as dengue, malaria, and yellow fever are transmitted by mosquitoes. The most effective way for controlling these mosquito vectors was to utilise chemical pesticides. The repeated use of these compounds, however, not only had negative effects on human health and non-target creatures but also created environmental hazards. Researchers increasingly recognise microbial insecticides as a superior alternative since they are less harmful to the environment and other non-target organisms. This study attempted to screen and isolate potent and environmentally friendly mosquitocidal bacteria from several soil types obtained from the Indian Union Territory of Puducherry. From a total of 140 soil samples tested, 16 isolates showed mosquitocidal activity. Out of these 16 isolates, two bacteria with the code numbers PYKAL-31A and PYKC-33C that were isolated from red soil in the villages of Kalapet and Kanagachettikulam in the Union Territory of Puducherry, India, were found to be the most potent isolates. An extensive bioassay was carried out with these two bacterial strains against larvae of *Aedes aegypti*, *Culex quinquefasciatus* and *Anopheles stephensi*. The LC_{50} and LC_{90} values of PYKAL-31A against *Aedes aegypti*, *Culex quinquefasciatus* and *Aedes stephensi* were 0.007, 0.011, 0.015 and 0.015, 0.021, 0.029, respectively and that of PYKC-33C were 0.009, 0.014, 0.013 and 0.015, 0.026, 0.023, respectively.

Keywords: Vector-borne diseases, mosquito, mosquitocidal bacteria, *Aedes aegypti*, *Culex quinquefasciatus*, *Anopheles stephensi*.

Oral - 039

Formulation of moringa based herbal toothpaste against *Streptococcus mutans*

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The *Moringa oleifera* (Drumstick) is a tree that belongs to the Moringaceae family. It is less economical to cultivate and grows well in all weather conditions with less maintenance. Parts of the tree such as leaves, stem, flower and root have nutritional and medicinal value. The plant also has a good source of iron and vitamins. Because of their medicinal value, this plant can be considered as an herbal plant. Since we have taken the plant to analyze its medicinal property against biofilm-forming *Streptococcus mutants*, a Gram-positive facultative anaerobic bacteria which can be grown on teeth and responsible for tooth decay. It was isolated from the dental cavity and inoculated in Brain Heart Infusion broth. In this study, we have taken the plant leaf extract as a sample and put effort to formulate a toothpaste. Besides, we also studied the phytochemical properties and antibacterial activity. The antibacterial activity of formulated herbal toothpaste was determined by the well diffusion method under aseptic conditions. The formulated herbal toothpaste of 2 g was taken and dissolved in 10 ml of sterile distilled water and left for 30 min at room temperature for compound diffusion. The solution of dissolved herbal toothpaste was loaded in the well along with an antibiotic as a positive control at different concentrations 20 µl, 50 µl, 75 µl, and 100 µl and the inoculated plates were incubated at 37 °C for 24 h. After the incubation, the diameter of the clear zone of inhibition (mm) was measured as 8 mm, 10 mm, 13 mm and 16 mm respectively. This study concludes that the formulated antibacterial herbal toothpaste is better at controlling the growth of *Streptococcus mutans* oral bacteria.

Keywords: Moringa leaves, Dental cavity, Herbal toothpaste, Antibacterial activity, biofilm, Oral flora

Oral - 040

Formulation of natural mouthwash from piper betel leaf extract against common dental caries bacterial pathogen

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Though a lot of antibacterial agents available in the market, still there is a need for novel antimicrobial agents, so the present study was aimed to formulate herbal mouthwash from the extract of betel leaf and evaluate the efficacy of the formulated mouthwash against dental caries-causing microbes. The piper betel leaves were collected randomly from Chinnavedampatti and extracted the phytometabolites using Soxhlet hot extraction method with the universal solvent (water). The phytoconstituents were used for the formulation of mouthwash and examined their efficacy against the dental caries-causing microbes by the Kirby-Bauer method. The aqueous betel leaf extract revealed the presence of enormous phytoconstituents like saponin, phytophenol, and essential oil, and the formulated mouthwash showed significant antibacterial activity against *S. aureus, E. coli, S. mutants*, and *L. bulgaricus* at the zone of inhibition 16 mm, 15 mm, 15 mm, and 16 mm respectively in the highest concentration of 150 µg/ml. The results of the present study exhibited the efficacy of the betel leaf extract against dental carries bacterial causing pathogens. Notably, mouthwash is formulated with the help of natural phytoconstituents so it will not affect the normal cells. With the above results, formulated mouthwash will be one of the alternative elucidations against dental caries-causing bacteria.

Keywords: Betel extract, mouthwash, dental caries, phytoconstituents

Oral - 041

Formulation of mosquito repellent cream from bioactive fraction of lichen secondary metabolites

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Mosquitoes are the major transmitting vectors of many human diseases leading to millions of deaths every year by causing diseases like malaria, yellow fever, dengue etc., the dangerous health impacts of commercial repellents and the high cost of synthetic pyrethroids necessitate the need for developing safe and eco-friendly alternatives of natural origin. Lichens are symbiotic organisms demonstrating numerous biological activities such as antimicrobial, antioxidant, anticancer, antiinflammatory, larvicidal activities etc. Lichen belonging to the genus *Parmotrema* was chosen for the current study to explore larvicidal potential. The phytochemical analysis was performed to identify the presence of major bioactive compounds such as alkaloids, flavonoids, terpenoids, steroids and phenolic compounds. The secondary metabolites have been further identified by thin-layer chromatography. The antioxidant activity of lichen was demonstrated by DPPH and FRAP assays with the IC_{50} value of 16.08 µg/ml and 24.6 µg/ml respectively. The anti-inflammatory activity of lichen by inhibition of albumin denaturation resulted in the IC_{50} value of 17.02 µg/ml and protease inhibition showed IC_{50} value of 27.5 µg/ml. The repellent potential was evidenced by larvicidal, smoke toxicity and repellent activity test against third and fourth-instar larvae of *Aedes ageypti*. At 100 µg/ml, 90 % of the mortality rate was observed. The repellent activity test for cream formulation showed 86.6% protection and the smoke toxicity test for incense product showed 26.6 % protection against *Aedes ageypti*. Thus, the study revealed that lichen acts as a promising larvicidal agent.

Keywords: Mosquito repellent; Lichen; Secondary metabolites; *Aedes ageypti*; Larvicidal activity.

Oral - 042

Generation and characterization of chicken IgY against *Streptococcus mutans* and its *in vivo* and *in vitro* efficacay in testing animal model

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Dental diseases are among the most prevalent and costly diseases affecting industrialized societies, and yet are highly preventable. The microflora of dental plaque biofilms from diseased sites is distinct from that found in health, although the putative pathogens can often be detected in low numbers at normal sites. Klemperer in 1893 demonstrated that the immunisation of hens resulted in the transfer of antibodies from the hen to eggs which confer immunity to the young chicks. The avian egg is an important source of nutrients, containing all of the proteins, lipids, vitamins, minerals, and growth factors required by the developing embryo, as well as several defence factors to protect against bacterial and viral infection. Moreover, eggs are now understood to contain substances with biological functions beyond basic nutrition, and extensive research has been undertaken to identify and characterize these biologically active components hence Passive immunization involving the delivery of antibodies specific to pathogens of infectious diseases to the host has been an attractive approach to establish protective immunity against a variety of microbial pathogens, including *Streptococcus mutans*, which is the principal etiologic agent of dental caries in humans. The overall purpose of the present study was to determine the effectiveness of a mouth rinse containing antibodies to *S. mutans* in preventing the establishment of this bacterium in the dental plaque of humans. The antibodies were derived from egg yolks obtained from hens immunized with whole cells of *S. mutans* grown in a sucrose-containing medium. The IgY antibodies were purified by means of ammonium sulphate method, Nacl method and PEG method and DEAE cellulose ion exchange column chromatography. Further, the purity of IgY was determined by means of ELISA, Western blot and SDS PAGE method. The immunoglobulin derived from the yolks (IgY) of immunized hens was to be characterized *in vitro* and *in vivo* in Animal Model.

Keywords: *Streptococcus mutans*; dental caries; biofilm ; chicken egg yolk IgY; ELISA.

Oral - 043

Genomic Analysis and Drug Discovery (Colour Blindness)

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Colour blindness, also known as colour vision deficiency, is a common genetic disorder characterized by the inability to perceive or distinguish certain colours. It affects a significant portion of the global population, with varying degrees of severity. Traditional diagnostic methods and corrective measures, such as the use of colour filters or contact lenses, have been the primary approaches for managing colour blindness. However, recent advancements in genomic analysis and drug discovery techniques offer new avenues for understanding the underlying genetic mechanisms and developing targeted therapeutic interventions for colour blindness. Through the utilization of next-generation sequencing technologies, researchers have identified specific gene mutations and variations that contribute to different types of colour vision deficiency. With a better understanding of the genetic basis, researchers can target specific molecular pathways and develop novel therapeutics. The emerging field of gene therapy shows promise in treating colour blindness by introducing functional copies of defective genes or manipulating gene expression to restore colour vision. Additionally, small molecule-based approaches, including the modulation of ion channels or signaling pathways, offer potential strategies for drug development. The *OPN1LW* gene provides instructions for making a protein that is essential for normal colour vision. This protein is found in the retina, which is the light-sensitive tissue at the back of the eye. This invention involves the further study of *OPNILW* gene and provides new insight regarding this gene which will be useful for further advancements in this field. The elucidation of the genetic underpinnings of colour vision deficiency paves the way for personalized medicine approaches and precision therapeutics tailored to individual patients. Further research and collaboration among scientists, clinicians, and pharmaceutical industries are crucial in translating these findings into clinically viable solutions that can improve the quality of life for individuals affected by colour blindness.

Keywords: Colour blindness, NGS, OPN1LW gene, personalized medicine

Oral - 044

Green synthesis of silver nanoparticle using *Curcuma longa* extract and their anti-bacterial activity

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The green synthesis of silver nanoparticles from *Curcuma longa* is presented in this project. The utilisation of *C. longa* as a natural reducing and stabilising agent for the production of silver nanoparticles. It is the way of eco-friendly, with minimal energy consumption and waste generation. The product silver nanoparticles exhibit excellent stability and various potential application in fields such as catalysis, electronics and medicines. The green synthesis offers an environmental-friendly approach. Characterisation was done using ultraviolet-visible spectroscopy, XRD.

Keywords: *Curcuma longa,* eco-friendly, silver nanoparticles

Oral - 045

Green synthesis of silver nanoparticles from *Tectona grandis* leaf extract: characterization and mechanism of antimicrobial activity

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Green synthesis of silver nanoparticles uses plant constituents, like carbohydrates, fats, enzymes, flavonoids, terpenoids, polyphenols, and alkaloids, as reducing agents to synthesize silver nanoparticles. The present study for the first time utilized leaf extract of *Tectona grandis* (teak) for the reduction of 1 mM silver nitrate solution to silver nanoparticles. The method proved to be very simple, cost-efficient, and convenient. Synthesis of nanoparticles was confirmed by visual detection in which the colourless solution gets changed to a brown-coloured solution. Further characterization was done by UV-visible spectroscopy, XRD, FTIR analysis, SEM/EDS, and TEM. The size of silver nanoparticles was found to be 10–30 nm approximately as determined by transmission electron microscopy (TEM). Energy-dispersive spectra (EDS) revealed that nanoparticles contain silver in its pure form. Well distribution method showed the antimicrobial effect of AgNPs on different microorganisms with the zone of inhibition of 12 mm for *Staphylococcus aureus,* 10 mm for *Bacillus cereus*, and 15 mm for *E. coli*. Mode of action of antimicrobial activity of nanoparticles was studied by determining leakage of reducing sugars and proteins, suggesting that AgNPs were able to end membrane permeability.

Keywords: Silver nanoparticles, Green synthesis, Characterization, Antimicrobial activity

Oral - 046

Growth and development of *Lemna* spp, an untapped resources for edible protein

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Lemna spp., commonly known as duckweed, is a versatile and rapidly growing aquatic plant that holds great promise as an unutilized resource of future protein. *Lemna* sp. possesses several unique characteristics such as exponential growth rates, doubling its biomass within a short period, and high protein content, with some species containing up to 45 % protein on a dry weight basis. Its high protein content, coupled with its ability to grow rapidly and efficiently utilize nutrients, positions it as a promising candidate for the production of human food, and functional food ingredients. To optimize the growth and development of *Lemna* sp, several factors must be considered, including nutrient availability, light intensity, temperature, and pH. Nutrient-rich media, supplemented with essential macronutrients and micronutrients, have been shown to enhance *Lemna* spp. growth and protein accumulation. In the present study, the growth, productivity, yield and protein of *Lemna* were tested with various growth mediums such as Hoagland E+ medium, SH medium, Frass of black soldier fly and seaweed extracts. The maximum biomass productivity, yield and protein content were obtained with the one grown in Frass medium followed by Hoagland E+ medium and others. Based on the results, it is evident that organic nutrients like frass could be a potential candidate for the growth and production of *Lemna* sp. In conclusion, *Lemna* sp represents an untapped resource of future protein with its exceptional growth potential and high protein content in organic medium. Its sustainable production could contribute to addressing global protein demand while mitigating environmental concerns

Keywords: *Lemna* spp. productivity, biomass, growth medium, protein content

Oral - 047

Identification of biochemical predictors for cardiac impairments in diabetic cardiomyopathy

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Diabetic cardiomyopathy (DCM) is cardiac dysfunction driven exclusively by hyperglycemia, characterized by ventricular enlargement whose early prediction or diagnosis is unfocussed. The objective here is to identify significant clinical predictors for blood glucose and cardiac impairments. Experimental rats were divided into group 1- normal and group 2 - streptozotocin (SZ - 40 mg/kg, single dose, i.p). Blood glucose and electrocardiography (ECG) screening of P-wave (ms and mV); P-R interval (ms); QRS complex (ms); R-amplitude (mV); S-T segment (ms and mV); R-R interval (ms) and heart rate (bpm) were performed at the end of 60 days. Serum estimations of HbA1C; total protein; albumin; total cholesterol; triglycerides; HDL; LDL; VLDL cholesterol; NT-pro-BNP; homocysteine; Hs-CRP; C-peptide; troponin I; CK-MB; LDH; AST; ALT; sodium, potassium; creatinine; urea and uric acid were performed. Their concentrations were subjected to MetaboAnalyst 5.0 for determining their relationship with blood glucose and ECG parameters using Pearson's correlation and pattern search analyses. The strongly related parameters (coefficient > 0.7) were subjected to multiple regression analysis (MRA) using IBM SPSS 26 to determine the significantly potent predictors ($P<0.05$). ECG analysis indicated widened QRS complex with shortened R-amplitude, elevated S-T segment, prolonged R-R interval and reduced HR in group 2. Correlation and MRA indicated albumin, HDL cholesterol, R-R interval, homocysteine (Hcy), total cholesterol, R-amplitude, uric acid and sodium as the potent predictors of cardiac-ECG and blood glucose respectively. Hence, the concentration of identified predictors can be subjected to earlier prediction of *in vivo* cardiac changes aiding in the early prevention of heart risks.

Keywords: Diabetes, cardiomyopathy, ECG, predictor, correlation, regression

Oral - 048

Impact of south- west monsoon and post monsoon on the yield of Kharif and Rabi crops in India– A statistical analysis

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A majority of India's population depends on agricultural activities for their livelihood. This study was carried out to identify the impact of South-west monsoon and post-monsoon on the yield of Kharif crops and Rabi crops respectively in India from the period 1962-2022. The present study is based on secondary data of southwest monsoon and post-monsoon data during the 1962-2022 period which were collected from Indian Meteorological Department, Pune. Productivity data, area and yield/hectare were obtained from the Directorate of Economics & Statistics. The descriptive statistics, standard deviation, coefficient of variation (CV), skewness and kurtosis and area (million hectares), production (million tonnes) and yield (kg/hectare) of both kharif and rabi crops were selected for this particular study. The result indicates that both southwest rainfall and post-monsoon were positively correlated with the productivity of Kharif crops and Rabi crops, respectively. The descriptive statistics of rainfall during 1962-2022 indicate that the mean value of SW monsoon was -2.737 while that of post-monsoon was -2.810. Moreover. The descriptive statistics of crop yield, it was clear was the mean area of Kharif crop was 72.6927 million/hectare but the yield was 1589.77 kg/hectare. Comparatively, the mean area of the Rabi crop was 50.7737 million/hectare but its yield was higher than the Kharif crop which was 2168.77 (kg/hectare). Similarly, the median range for the area of Kharif crop was 72.6950 million /hectare but its yield was 1516.50 kg/hectare, but the median for the area for Rabi crop was 50.7650 million/hectare and its yield was 2091 kg/hectare. The skewness and kurtosis of the total area were -.711 and 3.274, respectively.

Keywords: Kharif crops, Rabi crops, statistics

Oral - 049

In silico screening, synthesis and *in vitro* evaluation of B-RAF (v600e) kinase receptor inhibitors for anticancer activity

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The current study aims to perform *in silico* screening and to propose a lead to synthesize, characterize and *in vitro* evaluation of mutated B-RAF (v600e) kinase receptor (3IDP) for anticancer activity. A set of 560 anticancerous compounds was taken for virtual screening based on the drug-likeness filters. A Pharmacokinetics study was performed to assess the absorption, distribution, metabolism, excretion and toxicology (ADME/T) of the compounds. The target protein was energy minimized to -1.4e+06 KJ/mol using an OPLS forcefield. The mechanism of binding of the ligands with BRAF kinase was interpreted by molecular interaction studies (Glide). The resulting lead compound Dalrubone (-10.54 KJ/mol) was synthesized by the chemical condensation method. FT-IR spectroscopy reveals that the synthesized compound has similar functional groups of Dalrubone. *In vitro* anticancer activity was performed for the compound on human cervical cancer cell-line (HeLa). The MTT assay showed that the cell proliferation was suppressed to about 15% only even at the highest concentration level of sample, which was 200 µg/ml.

Keywords: B-RAF, mutation, pharmacokinetics, OPLS, Dalrubone, anticancer

Oral - 050

In vitro woundhealing activity from ethanolic extract of *Acalypha indica*

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The present study was required to evaluate the wound-healing activity of the ethanolic extract of *Acalypha indica*. The leaves of *A. indica* were selected as the sample for the study and ethanolic extract was prepared from the sample and used for the studies. The qualitative phytochemical analysis was done followed by quantitative analysis of total phenols, total flavonoids and phytosterols. The ethanolic extract was analysed for *in vitro* antioxidant activity through DPPH free radical scavenging assay and total antioxidant capacity. The ethanolic extract was analysed for Antimicrobial activity was done. GCMS analysis was done to determine and identify compounds present in the leaf extract. Followingly, the extract was tested for invitro wound healing activity using wound scratch assay. It shows cell migration and cell-cell interaction. The level of wound healing at different extract concentrations was tested using a scratch assay cell line and it showed supportive evidence that the extract has proven the wound will be healed. The results of the study revealed the presence of phytochemicals and wound healing activity.

Keywords: *Acalypha indica,* ethanolic extract, phytochemical, Antimicrobial, GC-MS, scratch assay.

Oral - 051

Internet of things controlled biological nanopurifier for drinking water

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The invention relates to a bio-nano water purifier. The bio-nano water purifier is prepared from the following components: a nano oxidation mixture, cationic starch, dimethyl aminomethyl methacrylamide, graphene oxide, aluminum sulfate, ferric chloride, bamboo charcoal, pottery clay and the like. Aiming at solving the problem that a traditional sewage treatment agent is high in cost and low in efficiency, through the mixed nano water purifier, the defects that traditional inorganic and organic flocculants are simplex in ingredient and limited in efficacy are relieved, the use cost of the nano water purifier is significantly lowered and is about one-third of that of a common polyacrylamide water purifier, the operation cost of sewage treatment is greatly lowered, and the sewage treatment effect is improved and the efficiency of the set up is verified. The setup is monitored by sensors and controlled by IoT.

Keywords: bio nano water purifier, IoT, nano oxidation mixture, sewage treatment

Oral - 052

Investigation of interactions of Amprenavir, Lopinavir and Darunavir with wild-type and L76V mutant HIV-1 Protease enzyme via molecular docking, molecular dynamics studies and free energy calculations

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The protease (PR) enzyme present in the human immunodeficiency virus (HIV) is a key target for AIDS therapeutics. After the development of a highly active antiretroviral therapy (HAART) regimen AIDS-related deaths were rapidly decreased. However, the unusual development of drug-resistant viral strains poses a critical challenge and has fueled the design of novel investigational inhibitors. At present, there are several mutations in the PR gene which are associated with drug resistance, among them, the L76V mutation (the substitution of valine for lysine at position 76 of PR) shows more resistance to available FDA-approved PR Inhibitors. In the present work the first, second and third-generation inhibitors amprenavir, lopinavir and darunavir, respectively were selected to target the L76V-resistant variant of HIV-1 PR. It is mandatory to be aware of the structural changes in the mutant protein after the binding of known inhibitors for the effective designing of novel drugs. Hence, in the present study, these three generations of inhibitors were docked to the wild-type and L76V mutant proteins. Further molecular dynamics simulation was carried out to understand the structural modifications of the complex structures. The ligands (amprenavir, lopinavir and darunavir) and proteins (wild-type and D30N mutant) were prepared for docking using AutoDockTool 1.5.2. Molecular docking was performed using AutoDock Vina. Molecular dynamics (MD) simulation for 100 ns was carried out using Desmond. Post-analysis after MD simulation such as RMSD, RMSF, Rg and DSSP was carried out to understand the changes in stability and confirmation of wild type and L76V mutant protein with the selected inhibitors. The binding mode of all these inhibitors with wild-type and mutant L76V proteins has not changed during molecular docking analysis. During MD simulation binding of Lopinavir gets affected due to mutation than amprenavir and darunavir. This is due to the interaction between lopinavir and the substrate binding domain of PR protein. Such changes might have conferred resistance of the L76V mutant to lopinavir. Overall, the data from the present study gives an insight into the mechanism of resistance shown by L76V mutants towards these three-generation inhibitors.

Keywords: HIV-Protease, Protease inhibitors, Molecular docking, Molecular dynamics.

Oral - 053

Isolation of a highly efficacious bacterial strain of *Bacillus thuringiensis israelensis,* VCRC-B646 from clay soil for the control of mosquito vectors

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Mosquito vectors transmit pathogens that cause diseases like malaria, filariasis, and dengue. Mankind has developed various vector control strategies, like chemical control measures, which eventually result in detrimental effects on the surrounding ecosystem. Biological control using mosquitocidal bacteria, specifically killing at the larval stage, has shown better management with minimal effect on the environment. In the present study, an attempt was made to identify novel mosquitocidal bacteria from the natural environment to develop a newer biopesticide. From 2021 to 2022, a total of 240 soil samples were collected as part of the present study from the agriculture fields in the districts of Kanchipuram (140 samples) and Chengalpattu (100 samples), Tamil Nadu, India. Among these samples, only one highly potent mosquitocidal bacterium was isolated from the clay soil. Out of 240 soil samples screened, nine bacteria showed mosquitocidal activity, and within these nine samples, only one bacterium was highly efficacious (highly potential) against mosquito vectors. The LC_{50} and LC_{90} values of the bacterium were observed as 0.0057 and 0.010 mg/l for *Aedes aegypti*, 0.0059 and 0.011 mg/l for *Culex quinquefasciatus*, and 0.0062 and 0.011 mg/l for *Anopheles stephensi*, respectively. From these results, it was clear that the dengue vector, *Aedes aegypti*, was more susceptible, followed by the filarial and malarial vectors, *Culex quinquefasciatus* and *Anopheles stephensi*. Whole genome sequence analysis (Illumina) revealed that the bacterium belongs to *Bacillus thuringiensis israelensis* (VCRC-B646). Significantly, the new isolate did not show any adverse effects on non-target aquatic organisms.

Keywords: *Bacillus thuringiensis israelensis,* malaria, filariasis, dengue, mosqiuto

Oral - 054

L-Carvone from *Mentha spicata* L, leaves suppress oxidative stress and hypertrophy in the heart of isoproterenol induced rats

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The number of cardiac deaths was 0.07 million in 2020 (1). Left ventricular hypertrophy is independently associated with all-cause mortality (2). In the present study, an attempt has been made to investigate the biological activity of L-Carvone from *Mentha spicata* L., leaves extract attenuation of oxidative stress and cardiac hypertrophy in animal models. During qualitative analysis of leaves extract of different solvents, it was depicted that carbohydrate content was much less whereas terpenoids and phenols were sufficient to fulfil the metabolic needs. The essential phytochemical screening revealed the presence of terpenoid quantities at higher levels. The major monoterpenoid in *M. spicata* L., was L-Carvone which is involved in the reduction of cardiac risk factors and helps to secrete insulin (3). L-Carvone was isolated from leaves extract and an animal study was performed. The antioxidant activities such as SOD, CAT, GPx, Vit-C, Vit-E and GSH of L-Carvone are significant after treatment in cardiac hypertrophy rats. These contents will help to reduce individual risk factors including those related to cardiovascular diseases among humans and animals. ECG and histopathological reports showed better significance after treatment with L-Carvone compared to standard drugs. Antihypertrophic properties of L-Carvone make the herb stand on the safest nutritional path where the ECG results, biochemical parameters and histopathological studies showed better results.

Keywords: Cardiac hypertrophy, SOD, CAT, GPx, L-Carvone

Oral - 055

Lipid accumulation product: a promising tool to assess adiposity and its association with insulin resistance

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The onset of metabolic disturbances is caused differently for every obese individual depending upon the amount of fat distributed in the abdominal region. Lipid Accumulation Product (LAP), is a promising health assessment index to stratify adults for obesity phenotypes. Hence, clinical detection of fat has become increasingly important. The aim is to study the cut-off value of LAP, assess insulin resistance and associate LAP with insulin resistance among young adult women. The study was carried out among 150 obese and non-obese adult women each between the age group of 18-30 years were purposively selected depending on inclusion and exclusion criteria. Anthropometry (height, weight, waist and hip circumference, BMI, WHR, WHtR) and Biochemical Parameters (lipid profile, fasting blood glucose and insulin levels) were assessed and analysed using the standard protocol. Individual LAP and Homeostasis Model Assessment of Insulin Resistance (HOMA-IR) was calculated and evaluated. Statistical analysis was performed using the SPSS 21 statistical software. The mean lipid accumulation product and HOMA-IR was seen higher among obese compared to non-obese adult women which was statistically significant. The AUC of LAP was found to be 0.827 (0.784-0.871 95 % CI). The LAP and HOMA-IR were associated and hence LAP can be used as a surrogate marker to access adiposity among young adult women which is inexpensive and sustainable.

Keywords: Abdominal Obesity, Adult Women, HOMA-IR, Lipid Accumulation Product

Oral - 056

Luffa acutangula seed extract for inhibiting breast cancer

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Breast cancer is one of the highly malignant with considerable metastatic potential which urges the development of potential drugs to prevent metastasis. Hence, in this study, *Luffa acutangula* seed extract was studied against breast cancer cells. *L. acutangula* is a perennial plant that grows mainly in India, Southeast Asia and various other parts of Africa. It is widely used in the traditional Indian medicine system to treat various health conditions. Crude extract of the plant and its isolated compounds possess broad pharmacological activities such as antidiabetic, hepatoprotective, antiulcer, anticancer, immunomodulatory, anti-hyperlipidemic, anti-oxidant, antimicrobial, analgesic and anti-inflammatory. Thus, in the present study, we prepared seed extract of *L. acutangula* which was then analysed for various phytochemicals present and then studied to know its anti-oxidant, anti-inflammatory property and anti-cancer activity against breast cancer cells.

Keywords: Breast cancer, *Luffa acutangula,* Traditional Indian medicine system

Oral - 057

Microplastics - an invisible threat to lifeforms

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Production of plastics is increasing due to their feasible application in routine life. But global plastic production was estimated at 390.7 million metric tons in 2021. Even though the emerging microplastic contaminants in the environment are higher. MPs are generally referred to as plastic particles less than 5 mm in diameter. And continuous accumulation of MPs in the environment poses a global threat and affect all ecosystem. While the origin of plastic pollution has been studied and recognized mostly as land-based. Over all 46% of the plastic waste is landfilled. This review holds distribution, source and effects of MPs in soil and biodegradable strains of MPs found in soil. Furthermore, the review includes the separation methods of microplastics from the soil and analytical techniques of microplastic degradation. The review is focused on limiting microplastics in soil and it's also provided an insight for future research in microplastic degradation.

Keywords: Microplastics (MP), degradation, pollution, analytical techniques.

Oral - 058

Lysinibacillus fusiformis: A novel mosquitocidal bacterium from Western Ghats, India

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Mosquito control has major public health importance as they are vectoring deadly diseases such as dengue, malaria, chikungunya, filariasis, etc. Synthetic chemical insecticides were employed in past decades to control mosquito vectors. However, the development of resistance in target species has restricted the use of chemical insecticides. Bacterial pesticides are a suitable alternative as they are eco-safe and target-specific. In this study, our objective was to isolate novel potential mosquitocidal bacteria from soil samples collected from the Western Ghat region of the Wayanad district, Kerala, India. A total of 180 soil samples were collected and processed using serial dilution and spread plate method. Isolated bacteria were screened for mosquito larvicidal activity by conducting preliminary bioassays against late-third instar larvae of three major mosquito species: *Culex quinquefasciatus* and *Aedes aegypti*. Among these bacterial isolates, 12 bacteria exhibited mosquitocidal activity. Further detailed toxicity assays revealed that only one bacterium, isolated from forest loamy soil, exhibited promising mosquitocidal activity against *C. quinquefasciatus* (LC_{50}: 0.03 mg/L & LC_{90}: 0.07 mg/L) and *Ae. aegypti* (LC_{50}: 1.03 mg/ L & LC_{90}: 1.8 mg/L). The bacterium was identified as *Lysinibacillus fusiformis* by constructing phylogenetic tree analysis using 16S rRNA genome sequence. This is the first report of *L. fusiformis* from the Western Ghats, Kerala showing potential mosquitocidal activity against disease-transmitting mosquito vectors. However further studies on the formulation of this strain is progressing.

Keywords: Mosquito control, mosquitocidal bacteria, *Culex quinquefasciatus*, *Aedes aegypti*, *Lysinibacillus fusiformis*

Oral - 059

Neuroprotective Effect of *Sarasvata Ghrita* (A Classical Ayurvedic Medicine) in $AlCl_3$ induced Alzheimer 's disease Rat Model

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Alzheimer's disease is one of the most common neurodegenerative diseases and accounts for more than 80% of dementia worldwide in elderly people. Sarasvata ghrita is a classical ayurvedic medicine used widely for the management of various neurological diseases including Alzheimer's disease. The present work was carried out to assess the neuroprotective effect of Sarasvata ghrita in Aluminium chloride induced Alzheimer's disease in Wistar Rats. The study was conducted in detailed manner by including the quality assurance of the trial drug, safety and toxicity level of Sarasvata ghrtia and its neuroprotective effect in challenged animals. The study was conducted with the approval of IAEC. The study had six groups such as Healthy control group, disease control, Sarasvata treatment groups (low, average and high), and standard drug group; having 6 animals in each group comprising both male and female. The study duration was one month period and animals were provided with standard diet and water ad libitum. Aluminium chloride (300 mg/kg b.wt) was administered orally for inducing the disease. Periodical assessments were done; blood and tissues samples were collected at the end of the experiment for detailed investigations. The metabolic parameters such as liver function profile, renal function profile, parameters of carbohydrate, lipid and protein profiles, neuro chemical markers such as Brain derived neurotropic factor (BDNF), acetyl choline esterase (AChE), TNF alfa, Vit C were evidenced the enhanced regulations of these parameters and thereby improving the health conditions of the animals. The antioxidant components such as catalase, glutathione peroxidase, glutathione and superoxide dismutase were also showed positive effect. The study scientifically documented the neuroprotective property of the traditional Indian medicine Sarasvata ghrita, explaining its possible mode of action at tissue level through extensive validation of various neurochemical markers.

Keywords: Alzheimer 's disease, BDNF, Sarasvata ghrita, Neurochemical markers, AChE.

Oral - 060

Nitric oxide synthase II expression in breast cancer cells is stimulated by lipid A/interferon-gamma and requires JNK signalling

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Inducible nitric oxide synthase (NOS II) is the key enzyme catalyzing the production of high levels of nitric oxide (NO) that can mediate cell death in different types of cancer. NOS II is regulated at the transcriptional level by pro-inflammatory cytokines, such as tumor necrosis factor-alpha (TNF-α), interferon-gamma (IFN-γ) and interleukin-1 beta (IL-1β), or by hypoxia and bacterial lipopolysaccharide. Even though several signaling mechanisms have been reported to involve NOS II activation in different cell types, the information on how NOS II expression is cross-regulated by cytokine and LPS signaling pathways is low. In the present study, we describe how NOS II expression is induced in the murine mammary carcinoma cell line EMT-6H in the presence of Lipid A analogue and INF-γ. EMT-6H cells were treated with OM-174 and/or INF-γ in a time and dose-dependent manner to induce iNOS expression and the relative NO production was determined through Griess microassay. The induction of NOSII expression and the activation of downstream mechanisms were analyzed by immunoblotting. The results show that the lipid A analog OM-174 increases the phosphorylation of c-jun-NH2 terminal kinase (JNK), an effect enhanced with interferon-gamma (IFN-γ). Activation of the JNK pathway plays a central role in the synergistic OM-174/IFN-γ induction of NOS II expression in EMT-6H cells as SP600125, an inhibitor of JNK, attenuated the synergistic effect. These results show that the JNK signaling pathway is part of the regulatory mechanism of NOS II induction in mammary cancer cells triggered by the lipid A analog OM-174 and IFN-γ.

Keywords: Inducible nitric oxide synthase, pro-inflammatory cytokines, Lipid A analogue, INF-γ. EMT-6H cells

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Oral - 061

Pesticide-induced resurgence a hindrance in sustainable forestry: A case study with whitefly *Aleurolobus nandiensis* and mealybug *Planococcus bendovi* infesting *Gmelina arborea* in Tamil Nadu

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Gmelina arborea an indigenous tree species valued for its medicinal and timber properties are often attacked by numerous insect defoliators, miners, borers and sap feeders throughout the year including some major pests namely - *Calopepla leayana, Tingis beesoni, Prioptera punctipennis, Alcidodes ludificator, Myllocerus sp. etc*. As in agriculture the easiest management measure in forestry also comes in the form of different chemical pesticide treatments when the pest population is high and alarming. This investigation is a case study of such pesticide-induced resurgence among secondary insects of *G. arborea* in nurseries and plantations of Tamil Nadu. Two rare sap-feeding insects *Planococcus bendovi* and *Aleurolobus nandiensis* in the nursery condition have been exposed directly and indirectly to the different concentrations of chemical pesticide treatment from 2020-2022 repeatedly. Over time the maximum dose of organophosphate pesticide dimethoate 30 % EC (Rogor) failed to reach LC_{50} during insecticide efficacy (E_A) testing against *P. bendovi* bioassay. Similarly, neonicotinoids thiamethoxam 25 % WG (Actara) with maximum dose failed in *A. nandiensis* bioassay. Resurgence index (E_{HT}) showed a higher abundance of *A. nandiensis* and *P. bendovi* in treated nursery beds compared to untreated nursery and field conditions by causing the mortality of 10 to 20 % (average) of planting stocks respectively.

Keywords: *Gmelina arborea, Calopepla leayana, Tingis beesoni, Prioptera punctipennis, Alcidodes ludificator, Myllocerus spp.*

Oral - 062

Portable fruit and pesticide detector for farmers

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The existence of pesticides in fruits and vegetables has been a growing worry all over the world. This work tries to solve the problem on the customer side. The consumer should get to know whether the selected fruits and vegetables are safe to consume or not. The main aim of this work is to detect the amounts of pesticides on fruits and vegetables by calculating the normalized difference in vegetation index using a sensor. Here the work is done in two parts. The first part performs the identification of fruits and vegetables by using CNN. Here a set of image features such as colour, shape, and texture is trained using CNN for the identification of fruits and vegetables. In module 2, detect pesticides in fruits and vegetables in three ways calculating their NDVI, by using an IR sensor and gas sensor then compare the result. The program in the Arduino gives for the output display. The detection information will be displayed on the screen. And the output graph is plotted.

Keywords: NDVI, CNN, pesticides, IR sensor, gas sensor

Oral - 063

Predictive model for dynamic health disruption risk diagnostics

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Escalating events around the world like the pandemic and climate change have increased the need to move towards health disruption risk diagnostics and inferences. The present study focuses on the major health factors responsible for non-communicable diseases (NCD). Vulnerabilities in pivotal health factors leading to non-communicable diseases are responsive to health disruption risk and create ripple effects on health issues. The present research is proposed to develop a model framework that presents a systematic approach to generate insights towards the diagnostics of health disruption risk. The predictive model makes use of the Particle Swarm Optimization algorithm to identify the emerging vulnerabilities among the major factors responsible for overall health resilience.

Keywords: Non-communicable diseases, Health disruption risk factors, Health disruption risk diagnostics, Particle swarm optimization (PSO)

Oral - 064

Preliminary phytochemical analysis and antibacterial study of leaf extracts of *Syzygium samarangense*

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Phytochemical constituents are non-nutritive plant chemicals that have preventive and curative properties for the disease. The use of plants and phytochemicals, both with known biological properties, can be of great significance in treatment. The present study includes phytochemical screening leaf extract of *Syzygium samarangense*. Phytochemical screening of the plant leaf extracts with hexane showed the presence of glycosides, terpenoids, carbohydrates, and saponin and acetone showed the presence of flavonoids, amino acids, carbohydrates, phenols, tannins, glycosides, terpenoids, and saponin compounds. Antibacterial activity was performed with *E. coli, S. pyrogenes,* and *P. aeruginosa* and the study reveals that *P. aeruginosa* (36 mm) strains are more sensitive in hexane extract and *S. pyrogenes* (24 mm) in the acetone extract. The present study reveals that the leaf extract of *S. samarangense* is a potential source of phytochemicals for traditional use as therapeutics.

Keywords: *Syzygium samarangense* (water apple), leaf extract, phytochemical, antibacterial study

Oral - 065

Preparation of Topical wound healing ointment using *Tridax procumbens*

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Tridax procumbens is a medicinal plant commonly known as coat button in English or *kansari* in Hindi belonging to the family of Asteraceae. The researchers proved the leaf of *T. procumbens* showed antimicrobial properties against various bacterial and fungal pathogens. The previous studies stated that the leaf of *T. procumbens* has the capacity of wound healing. Our study is to develop the topical wound healing ointment using *T. procumbens*, that has the potential for antimicrobial activity. The plant samples were collected on the campus of Dr. N.G.P Arts and Science College and shade dried. The extracts were collected using water and ethanol using a Soxhlet extractor. The antimicrobial property of *T. procumbens* extracts was tested using the agar well diffusion method against *Escherichia coli, Bacillus subtilis, Pesudomonas aerogenosa, Aspergillus niger* and *Candida albicans.* The extracts showed considerable inhibition against *E. coli, B. subtilis* and *A. niger.* The topical ointment was prepared using bee wax, coconut oil and plant extract and the antimicrobial activity was tested. In conclusion, *T. procumbens* leaf Extract has the capability of antimicrobial activity and wound healing capacity.

Keywords: Topical, ointment, wound healing, Antimicrobial, Ointment, *Tridax procumbens*.

Oral - 066

Prepration of a forgotten Elixir: *Panchagavya* and isolation of GABA producing probiotics

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Psychobiotics are a special class of probiotics, which deliver mental health benefits to individuals. Psychobiotics have a broad spectrum of applications ranging from mood and stress alleviation to being an adjuvant in treatment for various neurodevelopment and neurodegenerative disorders. The current study aims to optimize and quantify the production of GABA from the isolates obtained from the *Panchagavya* and screened for GABA production using TLC and UV Vis spectrophotometer. The physical and chemical parameters such as temperature, pH, incubation period, and glutamic acid concentration were optimized for the maximum production of GABA by the selected isolates (V2, and V7) using the Box-Behnken method. The optimization studies showed that isolate V-2 produced more amount of GABA after the incubation of 48 h in the pH of 4.5 at 35 °C. The colonies with the selected strains V-2, and V-7 it was identified as *Enterococcus faecium* and *Alcaligenes* spp. respectively using 16S rRNA sequencing. Hence, the probiotic isolates derived from *Panchagavya* have the ability to serve as a potential starter culture for the production of GABA in the industrial sectors.

Keywords: Box-Behnken method; GABA; Neurotransmitter; *Panchagavya*; Probiotics

Oral - 067

Production and Characterization of iron-oxide immobilized bioflocculants in the removal of *Microcystis aeruginosa*

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Freshwater is a sustainable resource for all biotic forms and is predominantly polluted due to anthropogenic activities, favouring cyanobacterial growth. *Microcystis aeruginosa* forms blooming in freshwater, whereby it releases toxins that threaten both biotic and abiotic forms. Thus, removing harmful algae from the freshwater ecosystem is essential, and flocculation using synthetic flocculants is the preferred method to treat wastewater. However, prolonged usage of these synthetic chemicals produces carcinogenic and neurogenic effects on biotic forms. Hence, the replacement of synthetic flocculants with eco-friendly flocculants is highly essential. Therefore, the present work aimed to use iron oxide immobilized bioflocculants as an effective alternative to treat algal polluted water. The bioflocculants were isolated from the potential bacterial strain, *Bacillus subtilis* AJ3 and are optimized. It was observed that at pH of 7, the temperature of 35^{o}C, inoculum concentration of 3%, agitation rate of 165 rpm, 84 h of incubation time and using Ca^{2+} as cationic source, yeast extract as nitrogen source and guar gum as a carbon source have maximum bioflocculant activity. Under optimized conditions, 4.619 g/L of bioflocculant was produced by *Bacillus subtilis* AJ3. Then they are immobilized with iron oxide nanoparticles to improve the efficacy and reusability of bioflocculants. Iron oxide immobilized bioflocculants are further characterized and assessed for flocculation activity towards *M. aeruginosa*. Based on physicochemical and biological parameters, the algal polluted water after treating with iron oxide immobilized bioflocculant was observed to be within the permissible limit as per Indian standards for drinking water. Hence, the algal remediation water could be purified further for commercial drinking.

Keywords: Freshwater, Bioflocculants, *Bacillus subtilis*, Harmful algal blooming, *Microcystis aeruginosa*

Oral - 068

Production of ecofriendly alternative PHAs (Polyhydroxyalkanoates) by *Bacillus paralicheniformis* using waste as substrate

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Non-biodegradable nature of the synthetic polymers including plastic materials that originated from petrochemicals cause severe environmental problems and health disorders. These problems have forced us to create strategies to find an alternative to hazardous non-biodegradable synthetic polymers. Hence the biopolymers which are synthesized by using the microbes are the best alternatives to petro based polymers. The biopolymers which are produced using microbes have more advantages such as high biodegradability, eco-friendly nature and human safe. But the mass production of this biopolymer was hindered by high production costs. In this study, the waste materials were preferred to use as feedstock which reduce the production costs. *Bacillus paralicheniformis* was isolated from the samples collected from the Western Ghats of Tamil Nadu. The organism was screened and confirmed for the accumulation of PHA granules by using Sudan Black B staining. The bacteria was utilized for the production of cost-effective biopolymer from waste substrates such as sugarcane bagasse, groundnut shell and coconut oil cake. The Bacillus sp. produced a high amount of biopolymer using groundnut shell comparatively to other waste substrates and control. The biopolymer was purified by using sodium hypochlorite, chloroform and quantified by crotonic acid assay. FTIR analysis showed the distinct C=O stretch which showed confirmation of the presence of biopolymer Polyhydroxyalkanoates (PHAs). This eco-friendly biopolymer could be used as a cost-effective alternative to synthetic polymers.

Keywords: Biopolymer, *Bacillus paralicheniformis*, Waste, Biodegradable, Cost effective

Oral - 069

Production of paper using different parts of the plant *Eichhornia crassipes*

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Eichhornia crassipes also known as Water hyacinth is a freshwater weed causing harmful effects on the environment. Water hyacinth can cause many serious malefic effects on the environment because of its dense mat. It will grow up to 3 feet and fortifies the underground vegetation and causing malnutrition to many freshwater plants and fishes. It will restrict the underwater plants to get an adequate amount of sunlight for photosynthesis and the oxygen supply will be restricted. The weed can be used in many conventional ways to produce many products. One such product is paper production. Paper which is essential for writing purposes is made from cellulosic content pulp gained from the trees. Cutting down of trees can be replaced with the production of paper using water hyacinth. Water hyacinth is a great alternative for trees, it has high fiber content in the stem.

Keywords: *Eichhornia crassipes*, water hyacinth, weed

Oral - 070

Profiling of the phytoconstituents and free radical scavenging properties in the aqueous extract of stingless bee honey

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Most medicinal plants are one-of-a-kind in their potential for relieving and curing diverse human diseases due to the impact of multiple instructive phyto-compounds that inhabit diverse plant components. In traditional Indian medicine, medicinal plants have been deployed for ages to recuperate from diverse maladies. Unexplored medicinal plants may have bioactive characteristics that could be the basis for intriguing and efficacious medications. The purpose of this research was to examine the phytochemical profile, its characterization and its ability to neutralize free radicals. These were determined through different assays of 2,2-diphenyl-1-picrylhydrazyl (DPPH), Nitric Oxide (NO), Superoxide (O^2), and Hydrogen Peroxide (H_2O_2) against ascorbic acid, reference control using aqueous extract of SBH. Total protein, carbohydrates, tannins, phenols, and cardiac glycosides were determined to be 109.17 mg/g, 349.6 mg/g, 135.9 mg/g, 166.75 mg/g, and 1.517 %, respectively in the quantitative analysis of phytoconstituents. Sitosterol, stigmasterol and campesterol were shown to be the most abounding bioactive components in SBH after being analyzed by GC-MS. The IC_{50} values for the radical scavenging activities of DPPH (79.2 µg/ml), NO (69.91 µg/ml), superoxide (37.63 µg/ml), and H_2O_2 (62 µg/ml) were all lower than that of ascorbic acid (250 µg/ml). The findings of this research point to the phytochemicals present in the SBH extract as the cause of its therapeutic properties as an effective antioxidant due to its putative radical scavenging activities. The biological actions of this compound remain under investigation and the study is ongoing.

Keywords: Stingless Bee Honey, Phytochemicals, Free radicals, Traditional Medicine.

Oral - 071

Quality evaluation of Barnyard millet flour incorporated in traditional Kerala snack (*Avalose unda*)

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The technique for developing a new product from concept to market is commonly referred to as new product development. The production of innovative products is a challenge in the global market. This study aimed to develop and standardize a traditional Kerala snack (*Avalose unda*) made from barnyard millet flour. The objective of this study was to formulate and standardize barnyard millet flour incorporating the traditional Kerala snack (A*valose unda*), select the most acceptable proportion, carry out nutrient analysis, shelf-life analysis of the product packed in an airtight container, cost analysis, and popularize the developed product among adult women. Barnyard millet was purchased from a nearby market, cleaned, dried, ground to flour, and stored in an airtight container. The processed powder was incorporated into a traditional Kerala snack (*Avalose unda*) by substituting variable amounts (10%, 20%, 30 %, and 40 %) of the primary ingredients. Through sensory analysis, the best product was selected and subjected to nutrient, shelf life, and cost analysis. This product has also been popularized in adult women. The results of this study showed that barnyard millet flour containing 40 % *Avolose unda* is acceptable. The prepared product was high in calcium and iron compared with the standard. The prepared product was acceptable up to the seventh day without any microbiological damage. The cost of the best-prepared product was slightly higher (Rs. 57) than the standard (Rs. 49) per 100 g. In the popularization study, all the participants accepted the product. The study concludes that barnyard millet flour, which is rarely used, has abundant nutrients and many unidentified health benefits, and it enhances awareness of the benefits of underutilized millet to improve health status.

Keywords: Barnyard Millet, Traditional Kerala snack (*Avalose unda*), Standardization, Sensory evaluation

Oral - 072

Regional differences in tongue papillae density and its role on sweet and fat taste perception among subjects with varying BMI

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Taste perception is a deterministic aspect of unhealthy eating habits that contribute to overweight and obesity. Aside from many studies, the influence of papillae count on obesity is still debated. This study aimed to rule out the relationship between the number of papillae on different areas of the tongue and taste sensitivity in people (n = 150) with varied body mass index (BMI). Participants who were categorised as Normal, Overweight, and Obese were asked to rate the intensity of sweet and fatty tastes using the general labelled magnitude scale (gLMS). A digital photograph of the tongue was obtained and papillae in four regions of the tongue were counted manually. The results reveal that the total papillae density and BMI had a direct negative correlation (r = -0.43), with papillae density (PD) decreasing as BMI increased. Concurrently, persons with higher BMIs had lower papillae distributions (32.38 ± 1.85 PD/cm^2) and significantly lower perceptions of the intensity of fat and sweet taste. Although all four anterior regions (FR, FL, MR, and ML) of the tongue negatively correlated with papillae density and BMI, the front right part had the highest negative r value (r = -0.44), indicating the least papillae density when BMI was higher. The perceived intensity on the whole mouth was noticeably higher than the other two areas when the gLMS rating was further compared between the tip of the tongue, middle tongue, and whole mouth. Overall, the study showed a strong correlation between tongue papillae and BMI as well as taste sensitivity in the Indian population.

Keywords: Taste perception, body mass index, obesity, tongue papillae

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Oral - 073

Role of adipokines: Omentin and Visfatin in metabolic syndrome

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Metabolic syndrome (MetS) is characterised by a cluster of cardio-metabolic risk factors, including, obesity and visceral adiposity, insulin resistance, dyslipidaemia, hyperglycaemia, and hypertension associated with the development of comorbidities like cardiovascular disorders, type 2 diabetes mellitus and non-alcoholic fatty liver disease. Adipokines help in signal transduction, forming an indispensable link between adipose tissue metabolism and optimal body function. This study was aimed at the measurement of adipokines, Omentin and Visfatin and the comparison of their activity and association in MetS. A hospital-based case-control study of 84 subjects aged 18-55 years, who walked into the outpatient department for their routine health check was divided into groups; 42 cases who fulfilled at least three of the five criteria of MetS and 42 controls. Proforma was used to obtain anthropometric parameters, personal and medical history of the patient. FPG and lipid profiles were obtained from laboratory data. HOMA-IR was calculated using a computerised calculator. Serum insulin, omentin and visfatin were measured using commercially available ELISA kits. Serum levels of omentin and visfatin between the two groups were statistically significant($P<0.05$) Omentin levels were significantly correlated with waist circumference, blood pressure FPG, height and weight in controls. Correlation analysis of visfatin revealed a significant correlation between HDL-C and BMI in MetS patients. Coherent results on the role of anti-inflammatory adipokine, omentin, in the control group may be established with a larger sample size. However, the probable proinflammatory role of visfatin in studies targeting criteria of MetS may obtain substantial outcomes.

Keywords: Metabolic syndrome, omentin, visfatin, HOMA-IR

Oral - 074

Role of circadian rhythm and nutrigenomics in obesity

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Obesity is a global health problem, it has been estimated that approximately 1.5 billion adults worldwide are overweight. The obesity epidemic is closely associated with circadian rhythm. The human circadian system prepares for and adjusts to daily environmental changes in order to optimise behaviour for the time of day and temporally differentiate physiological activities that are incompatible. The body tissues are equipped with networks of molecular clocks, which make up the circadian system. Although circadian rhythms are independent, self sustaining, and temperature-sensitive, the circadian system is remarkably plastic, and feeding can alter circadian rhythms at all levels, from the cellular to the behavioural. The alteration of this normal pattern of circadian rhythm is called chronodisruption (CD). Disruption of circadian rhythms, which control hormones that control food and energy metabolism, may have negative metabolic effects. Nutrigenetics has shown that our actions can influence how our genes function and can lessen the negative effects of a particular risk mutation. The message from epigenetics is even more intriguing since it shows that we can influence our genomes by altering our lifestyles. Research to date has focused on leptin and ghrelin as regulators of food intake, and resting energy expenditure, all of which are known to exhibit circadian rhythmicity. In this article, we suggest changing "what, how, and when we eat" as an effective approach to lower our genetic risk, which will subsequently lessen CD and decrease obesity. In terms of preventing and treating obesity, this is a completely novel and incredibly promising subject at hand.

Keywords: Circadian rhythm, Obesity, Nutrigenomics, Chrono-Nutrition, Epidemic

Oral - 075

Rumen bacterial diversity of 75 to 110-day-old goat using 16S rRNA sequencing

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The ability of rumen microorganisms to use fibrous plant matter plays an important role in ruminant animals; however, little information about rumen colonization by microbial populations after weaning has been reported. In this study, high-throughput sequencing was used to investigate the establishment of this microbial population in 75 to 110-day-old goats. Illumina sequencing of goat rumen samples yielded 101,356,610 nucleotides that were assembled into 256,868 reads with an average read length of 394 nucleotides. Taxonomic analysis of metagenomic reads indicated that the predominant phyla were distinct at different growth stages. The phyla Firmicutes and Synergistetes were predominant in samples taken from 75 to 100-day-old goats, but Bacteroidetes and Firmicutes became the most abundant phyla in samples from 110-day-old animals. There was a remarkable variation in the microbial populations with age; Firmicutes and Synergistetes decreased after weaning, but Bacteroidetes and Proteobacteria increased from 75 to 110 days of age. These findings suggested that colonization of the rumen by microorganisms is related to their function in the rumen digestive system. These results give a better understanding of the role of rumen microbes and the establishment of the microbial population, which help to maintain the host's health and improve animal performance.

Keywords: Rumen microorganisms, goat rumen, Firmicutes, Synergistetes

Oral - 076

Screening of highly potent mosquito-pathogenic bacteria from diverse soil types in Vellore District, Tamil Nadu, India: An effective strategy for mosquito vector control

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Using entomopathogenic bacteria for mosquito control could be a highly feasible substitute, as it is target-specific and more eco-friendly in character than conventional synthetic pesticides. Also in the present scenario, frequent use of synthetic pesticides resulted in the emergence of resistance in the mosquito vectors. So, there is an urgent necessity to find and utilize diverse strains of mosquitocidal bacteria from various sources for mosquito control. So, in this study, we aim to extensively screen for highly potential mosquitocidal bacteria from the different agricultural soil types of the Vellore district of Tamil Nadu. A total of 315 soil samples were collected and processed to grow microbial colonies in the Nutrient Yeast Extract Salt Medium. 945 bacterial colonies were isolated and cultured (72 h) to screen for mosquitocidal activity. Out of these, only three bacterial isolates showed mosquitocidal potential, and two isolates were selected to study extensively. Growth, biochemical characters, and toxicity effect against non-target organisms for the isolates were studied. The first isolate has LC_{50} and LC_{90} values (mgL^{-1}) of 0.165 and 0.355 for *Culex quinquefasciatus* , 0.52 and 0.794 for *Anopheles stephensi*, and 0.757 and 0.963 for *Aedes aegypti* respectively. Likewise, bioassay of the second isolate exhibited strong toxicity against *Aed. aegypti* followed by *An. stephensi*, and *Cx. quinquefasciatus*. The LC_{50} values were 0.005, 0.009, and 0.009 mgL^{-1}, respectively. The LC_{90} values were 0.009, 0.02, and 0.018 mgL^{-1}, respectively. And it also demonstrated strong mosquitocidal efficacy than the WHO reference strain (*Bti* H14). It was identified through whole genome sequencing as *Bacillus thuringiensis* serovar *israelensis.* Therefore, these two novel isolates may have the potential to be used as a successful candidate for mosquito control.

Keywords: Entomopathogenic bacteria, mosquito control, *Culex quinquefasciatus*, *Anopheles stephensi, Bacillus thuringiensis*

Oral - 077

Sequestration of short-chain fatty acids using ion exchange resins for process control and enhanced biomethanation of food waste

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Biomethantion involves sequential biochemical processes to produce methane-rich biogas from organic components present in food waste. Ideal operating conditions and intermediate product concentrations are necessary for stable desired product formation. The rapid hydrolyzable property of food waste results in volatile fatty acid accumulation due to a kinetic imbalance between production and consumption rates. Short-chain fatty acids (SCFAs) are intermediate products formed by the breakdown of complex organic matter and comprise a significant portion of the total volatile fatty acid concentration generated during biomethanation. The SCFAs contribute to pH decrease intensification due to their higher concentration and lower pk_a value. As saturated and lipophilic, they can penetrate microbial cell membranes and dissociate within cells, causing detrimental effects on microbial growth and metabolic pathways. Employing ion exchange resin (IER) to extract excess SCFAs (among other intermediates) appears to be an effective technique for stabilizing biomethanation. Selective recovery of SCFAs either in dissociated (electronic interaction) or undissociated (Van der Waal's attraction) form by the active group of IER is achievable. Additionally, it appears that the high proton release tendencies of SCFAs increase the affinity of ions towards IER, which increases their adsorption. Subsequently, the IERs can be regenerated and reused for SCFA sequestration. The SCFAs removal can be coupled with biomethanation to favor process intensification and reduce product inhibition. The sequestrated SCFAs provide an additional benefit as a value-added product with a larger profit contributing to the circular economy.

Keywords: Food waste, Biomethanation, Short-chain fatty acid, Ion exchange resin, Circular economy.

Oral - 078

Small molecules targeting JAK 3 protein triggered by IL6 in Rheumatoid Arthritis

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Rheumatoid Arthritis is a progressive disorder triggered by a few specific interleukins and cytokines which play critical roles in the pathogenesis of immunological and inflammatory diseases. Developments of targeted therapy using small molecules have brought a new era of drugs specific towards the treatment of such diseases. JAK inhibitors have varied selectivity and are one such group of drugs that have the ability to suppress the intracellular signaling mediated by the cytokines and are involved in the pathogenesis of Rheumatoid Arthritis. Treatments based on the mechanism of JAK/STAT pathway often provide positive results as they minimize the use of gluco-corticoids and other non-specific drugs. In our study, we have targeted Janus kinase 3 commonly known as JAK 3, a protein belonging to the family of janus kinases and is majorly expressed in the immune system. We have screened a few chemical databases against JAK 3 protein with the help of Autodock vina, followed by cross-docking a tool to validate the specificity of the small molecules towards the protein, further studies include density functional theory (DFT) and molecular dynamic simulations to study the interactive properties of the small molecules with the target protein. From our results we can conclude that the selected small molecules could be proposed for further study to develop them as inhibitors of the above protein.

Keywords: Rheumatoid Arthritis, JAK 3 protein, Immune system, molecular docking, DFT, Molecular dynamic simulations.

Oral - 079

Structure-based *in silico* study of novel fat taste receptor agonists and *in vitro* evaluation of the signalling mechanisms mediated by these receptors

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The risk of obesity and its consequences, which are serious in developing nations like India, are influenced by a variety of variables, including genetic predisposition, sociocultural background, and excessive consumption of high-calorie, high-fat foods. Taste, which is impacted by a person's nutritional status and gustatory system, determines the choice of food and eating habits. Lipid sensors in the oral cavity play a significant role in maintaining lipid homeostasis in association with taste perception. Fatty acid uptake is facilitated by lipid sensing receptors, which may be a novel target for the treatment of obesity. This facilitates the synthesis of novel Fat Taste Receptor Agonists (FTRAs), which may be utilised to treat obesity by activating fat taste receptors. *In-silico* testing is used to evaluate FTRAs for their affinity for the fat taste receptors and drug-likeness. Additionally, the cytotoxicity levels of these agonists are examined. All of them lead to the identification of novel agonists as dietary substances that mimic fat without calories. This study significantly provides a scope and resource towards understanding the signalling mechanisms induced by FTRA as ligands for fat taste receptors in order to mitigate the possibilities of the development of obesity.

Keywords: Obesity, lipid sensing receptors, FTRA, docking.

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Oral - 080

Sweat sensor for diagnosis of Cystic Fibrosis

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Sweat sensors have become a potential instrument for real-time health evaluation among the many sensors. Sweat, a biofluid abundant in physiological indicators, can be used as a non-invasive diagnostic tool and provides important insights into a person's health status. Modern sensing technologies are used by sweat sensors to identify and examine particular biomarkers found in sweat, such as electrolytes, metabolites, and hormones. By monitoring the biomarkers, sweat sensors can provide crucial information on a person's level of hydration, electrolyte balance, glucose control, and overall physiological status. Chloride ions are important indicators of electrolyte balance and can provide valuable information about a person's health, particularly in conditions like cystic fibrosis. The inherited condition known as cystic fibrosis (CF) causes the body to produce thick, sticky mucus, which damages numerous organs but most noticeably the digestive and respiratory systems. For the management of CF to be successful, early and correct diagnosis as well as ongoing monitoring are essential. The gold standard for diagnosing CF is sweat chloride testing since elevated levels of chloride in perspiration are a defining feature of the condition. However, traditional techniques for sweat analysis take a long time, are difficult, and call for specialised facilities. Thus, in the present invention sweat based sensor was prepared for chloride detection using the electrochemical method and was studied using standards and various sweat samples to confirm its capacity and thereby using it for the detection of Cystic Fibrosis.

Keywords: Cystic Fibrosis, Sweat sensors, diagnosis

Oral - 081

Synthesis of potent antimicrobial agent from *Microbacterium barkeri* using waste substrate and evaluating its antimicrobial efficiency against various textile pathogens.

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The spread of pathogenic microbial infections through fabrics is a main problem in hospitals that cause serious life-threatening effects to patients and others too. Hence it is a need for the development of medical textiles with antimicrobial efficiency in order to control the spread of microbial pathogenic infections. The current study was focused on evaluating the efficiency of the secondary metabolite synthesized by EMB BAC 5 which was isolated from Pichavaram Mangrove forest, Cuddalore District, Tamil Nadu, India. The organism was identified as *Microbacterium barkeri* using 16S ribosomal RNA gene partial sequencing. The waste substrates such as coconut oil cake, groundnut oil cake, pomegranate peel, paddy straw and sugarcane bagasse were used as feedstock for the synthesis of antimicrobial agents using the isolate. The antimicrobial efficiency of the extracted metabolite with different concentrations such as 10, 20, 30, 40, 50 and 60 mg was checked by using well diffusion method against different pathogens collected from ATCC such as *E.coli* (ATCC 4157), *K. pneumoniae* (ATCC 13882), *M. luteus* (ATCC 10240), *S. aureus* (ATCC 25923), *S. flexneri* (ATCC 9199), *P. vulgaris* (ATCC 6380), *A. baumannii* (ATCC 19606) and *V. vulnificus* (ATCC 27562). The maximum zone formation was observed in the microbial metabolite extracted from coconut oil cake-based media followed by ground nut oil cake, sugarcane bagasse and paddy straw. The metabolite was further subjected to FTIR analysis to determine the functional groups. The extracted metabolite from *M. barkeri* has wide antimicrobial potential which could be further used in the medical textile industry to control microbial infections.

Keywords: Waste substrate, Textile pathogens, Well diffusion method, Antimicrobial agent, Medical textile.

Oral - 082

The battle against catheter-associated infections - Nanostructured coatings as antifouling tactic to prevent catheter-associated infectious pathogenic biofilms

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In the present study, lipopeptide biosurfactant with high emulsification capacity produced by human skin bacterium *Paenibacillus thiaminolyticus* was purified and subjected to FTIR and NMR spectral analysis which gave evidence of the active characteristics of the surfactant. To augment the anti-virulent potential further, a mix of copper and copper oxide nanoparticles (CuNPs) was synthesized, and characterized by UV-Visible spectroscopy, SEM-EDAX, TEM, and Zeta analysis. Here, we attempted to enhance the antimicrobial and antibiofilm activity with the assistance of encapsulated preparation of lipopeptide and CuNPs in multilamellar liposomes. The proposed mechanism of action of lipopeptide and CuNPs liposomal preparation negatively influenced the cell metabolism and secreted virulence-related factors such as staphyloxanthin, pyocyanin, and extracellular polysaccharides. The significant decline in the growth of MRSA and *Pseudomonas aeruginosa* in both planktonic form and biofilm by lipopeptide and CuNPs treatment were visualized using scanning electron microscopy and high content screening imaging system. *In vivo* studies revealed that treatment with lipopeptide and CuNPs in multilamellar liposomes extended the lifespan of infected *Caenorhabditis elegans* by about 75%. Therefore, this study suggests that lipopeptide and CuNPs could credibly be a substantial substitute over conventional antibiotics in averting the biofilm-associated pathogenesis of methicillin-resistant Staphylococcus aureus (MRSA) and *P. aeruginosa*.

Keywords: Lipopeptide biosurfactant, methicillin resistant *Staphylococcus aureus*, *Pseudomonas aeruginosa*, multilamellar liposomes, pyocyanin.

Oral - 083

The causal role of fat taster status on bitter taste perception – the impact of tongue papillae distribution

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Obesity is a complex nutritional disorder influenced by calorie intake and eating habits. Despite the many factors that contribute to weight gain and altered taste perception, identifying the relationship between papillae count and taste sensitivity to fat and bitterness has recently been a focus of attention. The purpose of the study was to rule out the association between the BMI (Kg/m^2), papillae density, and bitter taste sensitivity in persons (n=150) divided into groups based on their fat taste sensitivity. They were classified into three groups based on their suprathreshold fat taste sensation on the gLMS scale: high sensitivity, medium sensitivity and low sensitivity. The three-alternative forced choice technique (3-AFC) and the general labelled magnitude scale (gLMS) were used to ask study participants to identify and assess the intensity of each concentration of different tastes in various regions of the tongue. In addition, a photograph of the tongue was also taken using a digital camera, and the density of the papillae on the tongue was manually counted by three different operators. The study found a direct negative correlation between the anterior papillae density and BMI (r = -0.43), with papillae density decreasing as BMI increased. Persons with lower ratings of fat taste intensity were classified as having poor sensitivity, and they also had higher BMI and lower papillae distributions (32.38 ± 1.85 PD/cm^2) than other people. In contrast, individuals with high sensitivity to fat at the tip of the tongue, middle tongue, and whole mouth are more sensitive to bitter taste. Overall, the findings showed a robust link between taste sensitivity, BMI, and tongue papillae density.

Keywords: BMI, tongue papillae density, gLMS scale

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Oral - 084

Thidiazuron induced shoot regeneration from young leaf explants of *Enicostemma littorale Blume*

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An efficient plant regeneration protocol was successfully developed from the young leaf explants of *Enicostemma littorale* Blume (Gentianeceae) is one of the important medicinal plants widely distributed in India. It is an erect or procumbent perennial herb. This plant is characterized by the presence of flowered axillary clusters around the stem. Highly nutritious perennial medicinal plant and has anti-tumour activity and hepatoprotective activity. In the present investigation, a protocol for direct shoot induction from the young leaf explants of *Enicostemma littorale* Blume has been developed. Moreover, it is also aimed to determine the most appropriate growth regulator and its concentration and combination for direct shoot organogenesis. To achieve the goal, different concentrations and combinations of cytokinins, especially, BAP (6-Benzylaminopurine), KN (Kinetin) and TDZ (Thidiazuron) in combination with Auxins (IAA Indole-3-acetic acid), (IBA Indolebutyric acid) and NAA (Naphthalene acetic acid). were used for shoot regeneration directly from young leaves explants. The explants produce shoot on MS medium fortified with different concentrations of cytokinins (BAP, KN) ranging from 5 - 25 µM or in combination with TDZ (2 µM). The inclusion of TDZ into BAP+KIN supplemented medium triggered a high frequency of regeneration response from young leaf explants. Maximum numbers of shoots (16.3) with the highest shoot length (5.46 cm) were observed. The isolated shoots were cultured on full strength MS medium containing different concentrations of auxins (IAA, IBA and NAA) for root induction. The best rooting was observed on full-strength MS medium augmented with 2 µM NAA. The regenerated plantlets were successfully transferred to the soil through hardened polycups.

Keywords: Direct shoot induction, Regenerated shoots, Thidiazuron, Growth hormones.

Oral - 085

Unveling the impact of drug resistance on heightened susceptibility to infection

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In recent years, a noticeable increase in the susceptibility of individuals to infections has been observed, leading to concerns regarding the underlying causes and implications. This abstract aims to shed light on the role of drug resistance as a potential contributor to the heightened sensitivity to infections in contemporary times. The ability of microorganisms to resist the effects of antimicrobial medications is known as drug resistance, and it has become a significant worldwide health concern. Drug-resistant strains are developed and spread as a result of the abuse and overuse of antibiotics, both in medical and agricultural contexts. Drug resistance has a variety of negative effects, such as longer sickness, elevated mortality rates, and higher financial strains on healthcare systems. In order to combat the rapidly evolving extensively drug-resistant (XDR) and multiple-drug-resistant (MDR) *Mycobacterium tuberculosis* strains, stronger medications were urgently needed. The cytochrome b subunit of the cytochrome bc1 complex (QcrB) of Mycobacterium TB was identified as a possible therapeutic target in *M. tuberculosis*, and is the subject of the current investigation. In this study, we have aimed to investigate the potential of targeting the cytochrome b subunit of the cytochrome bc1 complex (QcrB) in *M. tuberculosis* as a novel drug target. The cytochrome bc1 complex is a vital component of the electron transport chain involved in energy generation. Inhibition of this complex disruption energy production and subsequently, the viability of the pathogen. To explore the potential of drug targets for QcrB In-silico screening and virtual compound libraries to identify potential inhibitor that binds to QcrB with high affinity and Specificity. A range of techniques and methodologies such as homology modelling, molecular docking etc. are used.

Keywords: Infectious disease, Drug resistance, *M. tuberculosis*, *In silico* drug designing

Oral - 086

Vegetative propagation of *Bruguiera gymnorrhiza*: An effort to conserve the rare degrading black mangrove of Indian West Coast

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Mangroves on the west coast are currently being apprehended by climatic fluctuations and other anthropogenic activities. The present work focuses on the vegetative propagation of *Bruguier gymnorrhiza* through the cut-propagule method. Vegetative propagation by the cut-propagule method is an alternate and cost-effective mode of enhancing the production of *Bruguiera*. Potting mixture constituted of on-site soil, sand, coir dust and compost mixed in equal amounts. The average root length, the number of roots, leaves, chlorophyll content and vigor was determined. The plant showed better growth response at 2500 ppm IBA. Other hormones such as NAA and a combination of NAA & IBA didn't have much effect when compared with IBA alone. This study will provide insight into the conservation of *B. gymnorrhiza* on the west coast of Kerala through cost-efficient means and also large-scale multiplication can be done to unlock the pharmaceutical importance of the plant.

Keywords: Vegetative propagation, Hormones, *Bruguiera*, Growth performance, Conservation ecology, Habitat restoration

Oral - 087

Xanthine oxidase inhibitory activity of Fruit and Seed extracts of *Citrus sinensis*, *Citrullus lanatus* and *Artocarpus heterphyllus* – Implication in the treatment of Gout Disease

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Growing awareness of using enviro-friendly and biologically compatible phytochemicals as natural xanthine oxidase inhibitors which are safe for the life of human beings led to conscientious efforts by researchers across the globe to search for alternative sources derived from medicinal plants for effective and reliable xanthine oxidase inhibitors. Encouraged by this, extracts were screened for xanthine oxidase inhibitory activity. Among all the extracts tested, the ethanol and water extracts of *Citrus sinensis* fruits showed maximum XO inhibition activity with an IC_{50} value of 32.56 and 22.45 µg/ml respectively. The water extracts of *Citrullus lanatus* showed maximum Xo inhibition activity with an IC_{50} value of 18.74 and 21.63 µg/ml respectively. The ethanol extract of *Artocarpus heterophyllus* fruits and seeds exhibited IC_{50} values of 29.29 and 39.18 µg/ml respectively. While the standard used was allopurinol showed an IC_{50} values of 11.39 µg/ml. The Michaelis-Menten graph and the Lineweaver-Burk plots were established for the determination of V_{max} and K_m where all the extracts inhibited xanthine oxidase in a mixed mode fashion. The results obtained displayed remarkable xanthine oxidase inhibitory activity of all the extracts suggesting exploration as a natural alternative to the synthetic compounds and find immense application in biopharmaceutical industries.

Keywords: Xanthine oxidase inhibition activity, *Citrus sinensis*, *Citrullus lanatus* and *Artocarpus heterphyllus* and kinetic parameters.

Oral - 088

A Study on Biosorption process of Calcium Alginate immobilized Eichhornia crassipes Biosorbent in the Bioremediation of Paper Mill Effluent

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Pulp and paper industries have evolved greatly in improving the treatment efficiency of the expelling effluents, and yet finding ways to improve the treated wastewater quality. This study is carried out to reduce COD, TDS, chloride, total nitrogen, total phosphate, colour and hardness of the paper board mill effluent using Calcium-Alginate immobilized dried *Eichhornia crassipes* as biosorbent. The biosorption ability of leaf, petiole and root portions in the effluent treatment process were separately studied and optimized using pH, time retention, bead concentration and bead dosage as parameters. About 100 % phosphate, ammonia, nitrate and 99.06 % nitrite were removed from the aqueous solution. And about 99.57 % total inorganic phosphate, 97.65 % total organic phosphate, 99.5 % filterable phosphate, 96.02 % ammonia, 65.44 % nitrate and 93.33 % nitrite levels were removed from the pooled paper mill effluent. Hence the biosorbent can be a promising passive treatment process for the tertiary treatment of paper mill effluent. Phosphate and nitrogen were well adsorbed by petiole and root biosorbents respectively. As *Eichhornia crassipes* are already a good source of potassium and sodium, the sorbed phosphate and nitrogen make them a potent source for the production of biofertilizers and the FTIR analysis of paper mill effluent before and after treatment results showed a significant reduction of nitrogenous compounds. The biosorption process also facilitates the reduction of bacteria in paper mill effluent to a certain extent which helps in the prevention of slime formation.

Keywords: Biosorbent, Eichhornia crassipes, Calcium-Alginate immobilization, Biofertilizer

Oral - 089

A study on hexavalent chromium removal by lignolytic fungi *Cladosporium uredinicola* GRDBF21 and *Bipolaris maydis* GRDBF23

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Chromium (Cr) is considered a toxic heavy metal contaminant and is the major source of heavy metal pollution. Chromium enters the environment from anthropogenic sources, through the effluents from various industries including, the leather tanning process, chromium plating etc. Removal of heavy metal chromium from wastewaters is a growing concern. Biological approaches using microorganisms offer the potential for highly selective removal of toxic heavy metals with considerable operational access. Among these techniques, biosorption of hexavalent chromium (Cr^{6+}) using microorganisms has gained considerable attention because of their high efficiency, low cost and easy handling. The present study was carried out to analyse the hexavalent chromium removal/ reduction abilities of two lignolytic fungi *C. uredinicola* GRDBF21 (Genebank Accession No. KJ913698) and *B. maydis* GRDBF23 (Genebank Accession No. KJ913699) from the aqueous solution by biosorption process. The MIC of and Cr^{6+} against the test fungal isolates *C. uredinicola* GRDBF21 and *B. maydis* GRDBF23 were 400 mg L^{-1} and 600 mg L^{-1}, respectively. *C. uredinicola* GRDBF21 and *B. maydis* GRDBF23 exhibited the highest Cr^{6+} tolerance index of 0.85 & 0.84, respectively at 30 mg L^{-1} of chromium concentration. *C. uredinicola* GRDBF21 and *B. maydis* GRDBF23 exhibited a biomass production of 1.5 g L^{-1} & 3.0 g L^{-1} and 2.3 g L^{-1}& 4.0 g L^{-1} in the culture broth with & without Cr^{6+}, respectively. SEM and FTIR analysis supported the evidence for Cr^{6+} adsorption by fungal biomass. Therefore, these molds could be effectively used in the removal/ reduction of hexavalent chromium from the aqueous environments.

Keywords: Hexavalent chromium, plating, lignolytic fungi, biomass and biosorption.

Oral - 090

A study on the effect of growth regulators on *Bacopa monnieri* callus induction, auxiliary budding and shoot proliferation

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Plant tissue culture is a process of growth and multiplication of tissues of plants in a liquid medium under an aseptic environment. The main advantage of plant tissue culture is to purify the compounds, crop improvement and to produce high-quality yield. In this study, we used a *Bacopa monniera* as a testing plant, which is used for the treatment of epilepsy, asthma, etc. The *B. monniera* contains nicotine, alkaloids, triterpenoid saponins and D-Mannitol. *B. monniera* possesses many pharmacological effects such as antioxidant, antimicrobial, anticancer, hepatoprotective and stabilising properties and memory-enhancing effects. The MS agar media along with sucrose was used as a growth media to check the optimum conditions such as growth, pH and temperature and other growth parameters. The *B. monniera* explants have been sterilized with cedaphol solution, 70 % ethanol, 0.2 % mercury chloride and distilled water. The various growth regulators such as Benzyl Adenine (BA), Indole Acetic Acid (IAA), Kinetin and 2,4-Dichlorophenoxyacetic Acid (2,4-D) were used to check the auxiliary budding, callus induction and direct shoot regeneration. These findings contribute to our understanding of the growth and development of *B. monniera* and offer potential avenues for further research in tissue culture techniques.

Keywords: Plant tissue culture; *Bacopa monniera*; Plant growth regulators; Phytochemcials; MS *media*.

Oral - 091

About Rambutan fruit

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The aim of the study is to project the importance and benefits of the Rambutan fruit. It is an exotic fruit native to Southeast Asia. The scientific name is *Nephelium Lappaceum*. It is a tropical fruit and belongs to the Sapindaceae family. Name Rambutan is derived from the Malay word Rambut, meaning hair. It has soft thorns in the outer covering with red pericarp. It mostly thrives best in tropical climates like Malaysia, Thailand, India and Indonesia. In America, production is entered in the countries of humid tropics like Colombia, Honduras, Cost Rica and Tobago, Cuba and Mexico. Rambutan is constituted by the following parts: 27.4 % total weight 1.2 % peel, 11.7 % pulp 2.53 % seed and 1.60 % embryo. In countries such as Malaysia and Thailand, this fruit is produced in the form of juices, jellies and jams. In Malaysia, the peel of dried rambutan is used for traditional medicine to treat fever, dysentery and diarrhoea, upset stomach and as anthelmintic. Rambutan is rich in nutrients and antioxidants. It is related to lychee, when peeled its appearance is white flesh and tastes sweet. Rambutan is rich in vitamin C, acts as an antioxidant, and protects body cells from damage. It promotes weight loss. Rambutan reduces the risk of cancer and heart disease and protects against diabetes. It has been proven to possess phytochemicals that demonstrate anti-allergic, anti-obesity, antimicrobial, anti hypercholesterolemic and antihyperglycemic effects.

Keywords: Rambutan, *Nephelium Lappaceum*, Tropical climates, diabetes, weight loss, heart disease, antioxidants.

Oral - 092

Analysis of serotonin and oxytocin level in schizophrenia patients

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Schizophrenia affects approximately 24 million people or 1 in 300 people (0.32 %) worldwide. This rate is 1 in 222 people (0.45 %) among adults. Neurotransmitters and a few hormones play a vital role in schizophrenia. The aim is to analyse the serum serotonin and oxytocin level in schizophrenia patients of Madurai District. The blood samples of 20 schizophrenia patients and age–sex-matched control in the age group 18 to 45 are collected from Government Rajaji Hospital, Madurai. The serum serotonin and oxytocin levels are analysed by ELISA kit method. The resulting mean value and standard deviation are calculated and compared with controls by ANOVA. The average serotonin level in schizophrenia patients is 169.1 ng/ml and that of control is 131.3 ng/ml. The average oxytocin level in schizophrenia patients is 1240 pg/ml and that of control is 2613.3 pg/ml. In schizophrenia patients serotonin level is higher and oxytocin level is lower when compared with control. At 5 % level of significance, the hypothesis is accepted. The serum serotonin and oxytocin levels of schizophrenia patients are significantly different from the control group. Serotonin and oxytocin levels are important in diagnosing schizophrenia.

Keywords: Schizophrenia, serotonin, oxytocin.

Oral - 093

Anticancer activity of green synthesized silver Nanoparticles by using *Citrus sinensis* peel extract

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Green chemistry is an emphasized area of research and requires some additional efforts for the implementation of sustainable methods in order to achieve the desired products as well as minimize and further eliminate the waste materials produced. Silver (Ag) NPs have generated substantial demand not only in fundamental research and development but also at the industrial scale due to their excellent properties. Orange is one of the world's largest fruit crops with a global production of 48.8 (2016/17) million tons. *Citrus Sinensis* Peels represent between 50 and 65 % of the total weight of the fruits and remain as the primary byproduct. So the present study aims to prepare and characterize silver Nanoparticles by using methanolic extract of *Citrus sinensis* fruit peel and to analyze the antioxidant and anticancer potential of green synthesized *Citrus sinensis* Silver Nanoparticles. Thus it can be concluded that using the *Citrus sinensis* peel extract otherwise will go to waste can be used for Nanoparticle synthesis. The synthesized silver Nanoparticles of *Citrus sinensis* peel extract exhibited characteristics of nano substances and the therapeutic efficacy was also enhanced as assessed by the cytotoxicity assays done in cell culture revealing their use in drug designing and development for oxidant-mediated diseases like leukemia and cancer.

Keywords: Silver Nanoparticle, *Citrus Sinensis*, Cytotoxicity assay, Anticancer

Oral - 094

Azo Dye Degradation by Bacteria – A Review

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Azo dyes are a class of synthetic dyes which is known for its vibrant colours due to the presence of one or more azo (-N=N-) bonds. It is widely used in various industries, including textile, printing, and pharmaceuticals and they become an integral part of human life. Due to their xenobiotic nature, they are recalcitrant against biodegradative processes and they become toxic and resistant, which is harmful to the environment and human health. To overcome this, Microbial degradation paves the way to degrade Azo dyes, especially bacteria play a major role in it. Bacteria could decolourise the dye by both Aerobic and Anaerobic possess with the help of an enzyme called azo reductase that breaks the azo bond (-N=N-) present in dyes making them harmless. This review article provides information about the degrading efficiency of aerobic and anaerobic bacteria and the mechanisms employed to decolourize the different kinds of Azo dyes.

Keywords: Azo bond, biodegradation, recalcitrant, Xenobiotic, Degradation

Oral - 095

Biogeography and pharmaceutical importance of the lichen genus *Parmotrema* in Idukki district, Kerala

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The foliose lichens belong to the genus Parmotrema restricted to higher elevations and low-pollution areas of the world. They are rich in therapeutically important secondary metabolites. Lecanoric acid Atranorin, gyrophoric acid, usnic acid and Salazinic acid are some important active compounds present in the members of the genus *Parmotrema.* In folk medicine and ethnic practices, these lichens are often referred to as *'Sila pushpa*' *or' Kalpasi*' and used as remedies for certain diseases like ringworm, skin disease, dysentery, hair tonic etc. In peninsular India, the Idukki district of Kerala shows luxuriant growth of the genus *Parmotrema.* Idukki district is an integral part of the Western Ghats. The study area includes three national parks such as Eravikulam, Anamudi Shola, and Pampadum Shola National Park and other protected areas like Periyar Wildlife Sanctuary. The present study shows 21 species of lichens present in the study area with the present scenario of the biogeography of the genus Parmotrema and also determines the hot spots of the lichens for intensive protective measures to preserve this potential bioresource. The study also investigates various compounds present in each species using the chromatographic techniques and investigates the therapeutic action of these compounds and also correlates with the indigenous practices of the ethnic groups of the study area with these lichens.

Keywords: Lichens, *Parmotrema*, biogeography, active compounds

Oral - 096

Carvacrol zinc oxide quantum dots (CVC-ZnO QDs) protects hepatic tissue damage against DMBA induced mammary carcinoma

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The study investigates the hepatoprotective effects of CVC-ZnO QDs (Carvacrol-loaded Zinc Oxide Quantum Dots) on DMBA (7,12-dimethylbenz[a]anthracene) induced mammary carcinoma in rats. Female Sprague Dawley rats were used, and mammary cancer was induced by a single subcutaneous injection of DMBA near the mammary gland. Different concentrations of CVC-ZnO QDs were orally supplemented to evaluate the optimum dose. We evaluated the biochemical parameters (antioxidant status, lipid peroxidation, detoxification enzymes, and lipid profile) and histopathological changes in the liver tissues. Our results indicate that CVC-ZnO QDs treated rats significantly decreased the lipid peroxidation levels and phase I detoxification enzyme activities and increased the phase II detoxification enzyme activities, and antioxidant status compared to the DMBA alone treated rats. CVC-ZnO QDs treatment also altered the lipid profile of liver tissue. Furthermore, histopathological results confirmed that the CVC-ZnO QDs protect against DMBA-mediated damage to the liver. The findings indicate that the CVC-ZnO QDs administered at 40 mg/kg b.w exhibited a significant hepatoprotective effect against DMBA-induced mammary cancer.

Keywords: Antioxidant; carvacrol; detoxification enzymes; DMBA; hepatocytes; mammary cancer; ZnO QDs.

Oral - 097

Comparative study on the bioremediation of household detergent present in waste water

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The impact of COVID-19 had an increased effect on sales of soaps, laundry detergents, hard surface cleaners, and other personal cleansing products as they are capable of breaking the cell membrane and act as a major toxic to aquatic bodies. There are still concerns about the biodegradability and eco-friendliness of surfactants. We aim to study the remediation of surfactants in water using adsorbents. The commonly utilized surfactants SDS (Sodium Dodecyl Sulphate) and CTAB (Cetyl Trimethyl Ammonium Bromide) were used in the current study for the remediation process using adsorption strategy. Various adsorbents such as Fish scales, sea shells and egg shells were analyzed for their adsorption capabilities. The key factors involved in the adsorption were optimized and were found at 120 rpm, pH 6.5 and 35O C a maximum removal of surfactants from the aquatic system was observed. The current study will provide a basis for research for the development of continuous reactors for the remediation of surfactant-contaminated water systems.

Keywords: Surfactant, Remediation, Adsorbent, toxicity

Oral - 098

Development of herbal oil for pain relief and *in-silico* analysis of secondary metabolites of *Vachellia leucophloea* against receptors of Arthritis

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Pain is a common symptom of many diseases including arthritis associated with inflammation leads to neurological and musculoskeletal issues. Arthritis - a chronic disease condition and a major cause of disability throughout the world. Globally more than 350 million people are reported to have arthritis and in India Arthritis is the second most rheumatological problem with a prevalence of 39 %. Over-the-counter and prescription drugs are often recommended for arthritic pain relief, but herbs and nutritional supplements may be safer and more effective options for long-term use. Topical analgesic therapies have become popular due to their effectiveness and lower risk of side effects and drug interactions. Herbs play a crucial role in the health care system of Ayurvedic medicine which is the trustworthy source of new therapy. The current research aims to develop herbal oil for pain relief and evaluate its activity for arthritis. The following plants were selected *Cardiospermum halicacabum, Aegle marmelos, Vachellia leucophloea, Cassia fistula, Pterocarpus marsupium, Butea monosperma* and *Terminalia paniculata* based on ethnopharmacological relevance for the preparation of oil. The formulated herbal oil was tested for its quality parametric analysis. *In silico* analysis of Catechin and Epi-catechin against Cox-1 & 2, MAPK, TNF AND IL-6 receptors of Arthritis were tested. Epi-catechin followed by Catechin exhibited the highest binding energy values against the receptors of Arthritis when compared to standard drugs. The efficacy of the secondary metabolites of other medicinal plants will be determined in future. The herbal drug was tested in patients suffering from Arthritis and evaluated to be effective.

Keywords: Arthritis, herbal oil, *Vachellia leucophloea*, phytochemicals.

Oral - 099

Development of *Lantana camara* extract based antimicrobial cotton napkins for the postpartum application

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Lantana camara is regarded both as a notorious weed and a popular ornamental garden plant and has found various uses in folk medicine in many parts of the world. *L. camara* produces a number of metabolites in good yields and some have been shown to possess useful biological activities. The present study focuses on the development of herb-loaded sanitary napkins for postpartum women. Methanolic leaf extract of *L. camara* showed maximum antibacterial activity against *Staphylococcus aureus, Klebsiella pneumoniae* and significant antifungal activity was observed against *Aspergillus niger*. The antioxidant potential of leaf extract was analysed by DPPH scavenging activity. FTIR characterization revealed the presence of the alcoholic group and aromatic group at 3201 cm^{-1} and 2887 cm^{-1} respectively. Coating of methanolic leaf extract on fabric was done by the pad dry cure method. AATCC 100 showed a 72 % reduction for *S. aureus* and a 73 % reduction for *Escherichia coli*, *K. pneumoniae* and *S. pyogenes*. The parallel streak method (AATCC 147) showed maximum activity against Gram-positive and Gram-negative bacteria. A sanitary napkin was developed using methanolic extract and tests for pH, ability to withstand pressure, liquid strike and wetback were done. Hygiene test - bioburden for napkin was done which was below the acceptable limit. Thus, this study proves to develop herb-based sanitary napkins for postpartum women.

Keywords: Antimicrobials, Pad dry cure, AATCC 147, Sanitary napkin, Bioburden test

Oral - 100

Dietary informatics to creating awareness on nutrition among school children

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Dietary informatics is an emerging area in the field of information technology and can help to enhance self-monitoring health and well-being. Informatics can be helpful to people to identify food items available in the market, determine the nutrient content of the food, assist them with their lifestyle changes and daily food habits and identifying food items they consume. The study assesses the awareness and usage of dietary informatics among school children. Five hundred school-going children were selected by purposive sampling from a private urban school in Coimbatore. Background Information and Dietary Habits were collected through an Interview schedule, Dietary informatics, information was recorded. An ICT tool namely software was developed regarding various nutritional facts and given to the students and the software was evaluated for usability using the System Usability Scale (SUS) questionnaire. One hundred per cent of the children used one of the mentioned ICT tools and seventy-eight per cent of children used Whatsapp. The software developed was found to be useful by eighty-two per cent of school children.

Keywords: Dietary Informatics, ICT tools, Dietary Habits, Software, SUS scale

Oral - 101

Effect of Arecanut leafsheath as substrate on P*leurotus ostreatus* (oyster mushroom) production

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The present study compares the effect of different substrates Arecanut leafsheath and paddy straw wastes on the growth and yield of mushroom production. *Pleurotus ostreatus* was grown alone and with different combinations of Paddy straw alone (T1), Arecanut leaf sheath alone (T2), 1:1 ratio of Arecanut leaf sheath and Paddy straw (T3), 2:1:1 ratio of Arecanut, paddy straw and orange peel (T4). The fastest spawn running, a minimum number of days taken for the appearance of Pinhead and Pinhead to be transformed into mature mushrooms, the highest rate of primordial formation, the average number of fruiting bodies formed and an average weight of individual fruiting bodies and higher yield are recorded in T4, followed by T2. The ultimate goal of consuming mushrooms is to enhance protein as well as low-calorie diet was possible through the T4 combination since an amount of 3.2 grams / 100 grams of protein with 31.84 calories was estimated. Additionally, qualitative analysis of flavonoid, saponin, glycosides, tannin and alkaloids were also observed in mushrooms grown in all substrates.

Keywords: Mushroom production, areca nut leafsheath, Oyster mushroom, Phytochemical analysis.

Oral - 102

Effective removal of copper by *Eichornia crassipes* mitigates bioaccumulation and enzymological changes in major carp C*atla catla* exposed to sublethal concentration of copper sulphate

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Phytoremediation is an effective, cheap and eco-friendly method of heavy metal removal from polluted aquatic environments. To analyze the efficacy of water hyacinth in copper removal can able to mitigate the copper-induced stress on fish or not, an Indian major carp *Catla catla* fingerlings were exposed to a sub-lethal concentration of copper sulphate alone (0.09 ppm) (Treatment-1) and sub-lethal concentration of copper sulphate treated along with water hyacinth (Treatment-2). Bioaccumulation in vital organs and transaminase activity in fish were analyzed at the end of the 5^{th}, 10^{th} and 15^{th} day from both treatments. The trend of copper accumulation was in the following order – Treatment-1: gills > kidney > liver and Treatment-2: kidney > gills > liver. In treatment-2 higher copper accumulation in the kidney may be due to the depuration process and translocation of metallothionein-bound copper from the liver. Likewise, lesser copper accumulation in gills up to the 5^{th} day than in treatment-1 may be due to hyperaccumulation in plant root via phytochelatin synthesis by glutathione synthase present in the root. Accumulation of copper in tissues disrupts the transaminase activity. Elevated GOT and decreased GPT activity in treatment-1 may be due to damages in the integrity of hepatic cells and cell organelles that leads to enzyme leakage to the blood, whereas in treatment-2 enzymes activity was not significantly varied from that of control. The present study reveals that prudent use of *Eichhornia crassipes* can effectively remove copper and reduce bioaccumulation in tissues, which in turn can mitigate copper-induced stress to fish.

Keywords: Copper sulphate, Bioaccumulation, Transaminase activity, *Eichhornia crassipes*, *Catla catla*.

Oral - 103

Efficacy of nutrients enriched rusk on serum haemoglobin and calcium among rural pre-menopausal women

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Among the various aspects of health promotion and lifestyle adaptation during the premenopausal period, nutritional habits are essential because they concern all women, can be modified, and impact both longevity and quality of life. Significant micronutrient deficiencies for menopausal women commonly are calcium and iron. Hence, the present study aimed to find the efficacy of nutrients enriched rusk on serum haemoglobin and calcium among rural pre-menopausal women. A questionnaire was framed to collect the data regarding socioeconomic status, anthropometric, biochemical profile, and 24 h diet recall. Nutrient-enriched rusk was developed for supplementation to improve serum haemoglobin and calcium status. Nearly 130 premenopausal women belonging to the Vedapatti suburb area were the subjects. Around 39 % were mild anaemic and 14 % had low calcium levels. It was observed that 53% were overweight and 7 % were obese. The nutrient analysis of the developed rusk revealed that energy comprised 397.41 kcals, carbohydrates 67.56 g, Protein 16.49 g, fat 6.09 g, fibre 9.12 g, Iron 14mg, and calcium 434.69 mg which was found to be enhanced when compared to commercially available rusk made by refined flour. The case-control study proved that the mean haemoglobin was increased by 1.7 gm/dl (t=6.521) and mean serum calcium was increased by 1.9 mg/dl (t= 8.386). This proves that there is a positive impact on iron calcium-enriched rusk supplementation among selected rural menopausal women. Initially, the serum haemoglobin and calcium levels were almost the same in both the cases and control subjects, and they were well correlated ($r2 = 0.841$) and there is no difference between the case and control groups ($P \leq 0.001$).

Keywords: anthropometry, micronutrients, pre-menopause, rusk, supplementation

Oral - 104

Establishment of shoot culture using fruits of *Phyllanthus amarus*

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Phyllanthus amarus is a potent medicinal plant used all over the world in traditional medicinal practices for its therapeutic efficiencies such as hepatoprotective, antidiabetic, anticancer, anti-inflammatory, antimalarial, antiviral and antioxidant properties. These properties have been confirmed by contemporary research. Phyllanthin and Hypophyllanthin - the two major lignans present in *P. amarus* are responsible for their therapeutic properties. Environmental conditions play an important role towards the content of Phyllanthin, however its yield varies based on its altitude and there is an increased percentage of metal contaminants as it has hyperaccumulating capacity. To avoid the variation in secondary metabolite content and metal toxicity in the final product, plant tissue culture under controlled growth conditions will be a better alternative. In the present study, *P. amarus* fruits, nodal segments and internodes were tried as explants. Surface sterilization of the explants was carried out using different percentages and combinations of sodium hypochlorite (NaOCl) and mercuric chloride ($HgCl_2$). Full-strength and half-strength MS mediums were tried for the proliferation of explants. Sterilization with 2.8 % NaOCl for 120 seconds was found to be effective. Among the explants used, fruits produced the maximum number of micro shoots within one month. Full-strength MS medium resulted in maximum proliferation in a short period of time compared to half-strength MS medium.

Keywords: *Phyllanthus amarus,* Phyllanthin, Hypophyllanthin, Hepatoprotective

Oral - 105

Evaluation of antibacterial potential of *Eichhornia crassipes* leaves

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The main objective of this study was to investigate the antibacterial potential of methanolic and chloroform extract of *Eichhornia crassipes* leaves. The phytochemical activity of the leaves of *Eichhornia crassipes* was assessed using methanolic and chloroform extracts. Among the leaves extract, methanolic leaves extract revealed a high content of phytochemicals. GC - MS Analysis of methanolic leaf extract of *E. crassipes* revealed 18 compounds. Some important bioactive compounds include hexa decanoic acid, cyclone barbital, quinoline and 5-methyl, 2-phenylindolizine. Methanolic extract of *E. crassipes* Exhibited antibacterial activity against *S. aureus, K. pneumoniae* and *Proteus spp* with a zone of inhibition 17-20 mm. The present study revealed that the methanolic extract of *E. crassipes* leaves has the potential as an antibacterial agent.

Keywords: *Eichhornia crassipes,* antibacterial activity, phytochemical, GC-MS, bioactive compounds.

Oral - 106

Evaluation of Antidiabetic Activity of Silver Nanoparticle of Ethanolic Extract of *Boerhavia diffusa* in Streptozotocin and Nicotinamide Induced Diabetic Rats

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Diabetes mellitus is a complex chronic metabolic illness that affects people all over the world and for which there is yet no effective treatment worldwide. The current study is to evaluate the antidiabetic activity of synthesized silver nanoparticles of ethanolic extract of *Boerhavia diffusa* (AgNPEBd). The antidiabetic activity was assessed in experimental rats induced with streptozotocin-nicotinamide (STZ-NI). STZ-NI (60 mg/kg to 120 mg/kg body weight) intraperitoneally for developing diabetes mellitus. AgNPEBd (10 mg/kg b.w.) and glibenclamide (10 mg/kg b.w.) were treated in diabetic control rats for 42 days. AgNPEBd (10 mg/kg b.w.) and glibenclamide (10 mg/kg b.w.) were supplemented to control and diabetic rats for 42 days. The parameters analyzed were hematological, enzymic, non-enzymic antioxidants and histopathological assay. The effects of AgNPEBd on the hematological parameters of diabetic rats were also examined. The findings revealed that the treated diabetic rats AgNPEBd showed a substantial ($P < 0.05$) rise in red blood cell count (RBC) and its indices, as well as a decrease in platelet count and white blood cells (WBC). The activities of enzymic antioxidants (Superoxide dismutase, Catalase and Glutathione peroxidase) and non-enzymic antioxidants (vitamin C, vitamin E and Glutathione) decreased significantly ($P< 0.05$) in diabetic rats. Moreover, the histology of the pancreas, liver, adipose tissue and kidney in diabetic rats revealed aberrant histo-architecture. The results of *in vivo* study of AgNPEBd were found to show a significant reduction in the abnormal structures in the pancreas, liver, adipose tissue and kidney. As AgNPEBd can have beneficial effects in the setting of the diabetes spectrum of insulin resistance, it might be suggested as a therapeutic adjuvant for diabetic patients.

Keywords: *Boerhavia diffusa*, Streptozotocin-Nicotinamide, antidiabetic, Hematological, Antioxidant

Oral - 107

Extraction of pectin from fruit peels and it's phytochemical analysis

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Pectin is a high-molecular-weight heteropolysaccharide present in plant cell walls where it contributes to the firmness and structure of the vegetal tissue. In this research, pectin was extracted from five different fruit peels (Dragon fruit, Fig, Kiwi, Longan, and Rambutan.) The extraction using hydrochloride acid had its optimum yield at pH 2, Among five peel samples fig gives the highest yield of 57 %, Kiwi gave 0.85 %, Longan gave 50 % and rambutan gave 1.89 %. The physicochemical parameters of the extracted pectin are dependent on the solvent used for extraction, the nature of the samples as well as extraction process. The pectin obtained was characterized using both qualitative and quantitative analysis. The result of qualitative analysis showed that the pectin from five samples was found to be in different colors, Dragon fruit-white, Fig-brown, Kiwi-white, Longan-brown and Rambutan-red respectively. As for the solubility, the sample fig was soluble in cold water whereas kiwi, longan and rambutan were insoluble in cold water but partially soluble in hot water. As for the solubility in alkali (NaoH), the resulting colour appearance was, Fig gave lite yellow when dissolved in cold alkali and colourless in hot alkali, Kiwi gives no colour when dissolved in both cold and hot alkali, longan gives yellow in cold alkali and pale yellow in hot alkali, rambutan gave pale yellow in cold alkali and colourless in hot alkali. Quantitatively, the equivalent weight (mg/mol) was 25 for dragon, 1.38 for fig, 1.19 for kiwi, 1 for Longan and 1.38 for rambutan. Methoxyl content was 17.3%, 54.5 %, 31 %, 15.7 % and 23.5 % for Dragon fruit, Fig, Kiwi, Longan and Rambutan respectively. The degree of esterification (%) was 39.3 for Fig, 22.6 for Kiwi, 11.7 for Longan, 17.5 for Rambutan and neutral sugar (%) was found to be 1.654, 2.064, 1.986 and 1.252 for Fig, Kiwi, Longan and Rambutan, respectively. The overall results showed that the pectin from these non-citrus fruit peels will be suitable for industrial use. After the extraction of jelly pectin, it was dried and the dry pectin was used as the material for bioplastic. Ethylene glycol was added for the rigidity of the bioplastic. Then the films were tested for FT-IR Spectroscopy. Most industries are dependent on plastics, hence the pectin extracted from five fruit peels was applied for the production of bioplastics, which is an alternative to plastics. The pectin samples from five different fruit peels are checked for antibacterial activity by disc diffusion method using MHA medium against E.coli. Except for the pectin of Fig, all other pectin samples show a zone of inhibition. Hence pectin of Dragon fruit, Kiwi, Longan and Rambutan has antibacterial properties. This study of pectin from different fruit peels enables us to use it in the industrial and medicine sector paving the way to sustainability.

Keywords: Pectin, Fig, Dragon fruit, Kiwi, Longan, Rambutan

Oral - 108

Formulation of *Moringa oleifera* incorporated *Thepla*

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The correlation between foods and all dimensions of health in the human body is irrefutable. Encouragingly, the search for a good healthy diet and the urge within people to shift towards healthy and value-added diet products is now more than ever. Thepla is an Indian flatbread that is one of the most popular items in the regional cuisine of the state of Gujarat. *Moringa oleifera* is the drumstick leaves which are rich sources of many nutrients like vitamins A, B, C and D and it contains essential amino acids, minerals, phosphorus and zinc. It contains a very low amount of fats and offers no harm cholesterol. Despite having many health benefits, the consumptions of this magical leaves was found to be less. Hence the study aimed to formulate *Moringa oleifera* incorporated thepla and to analyze its quality parameters. The *Moringa oleifera* incorporated *Thepla* was prepared by formulating three different variations such as variation I (95 % wheat flour and 5% moringa leaf), variation II (90 % wheat flour and 10 % moringa leaves), variation III (75 % wheat flour and 25 % moringa leaves) along with a control (100 % wheat flour). The sensory evaluation was carried out for the formulated products with 20 semi-trained panel members based on 9-point hedonic scale. Physio-chemical parameters like moisture and ash were determined. The nutrient content was calculated and microbial quality was analyzed. Among the formulated variations, variation II containing 90% wheat flour and 10 % moringa leaves was found to be highly acceptable in all organoleptic parameters**.** The selected thepla contains 9.5 % moisture and 4.7 % ash content and provides good quantities of energy (553 Kcal), carbohydrate (53.76 g), fat (5.06 g) and protein (17.5 g). The microbial load of the selected variation is 10 cfu/g. This study revealed that a value-added product can be made using moringa leaf which may offer health benefits to the human body.

Keywords: *Moringa oleifera,* value added products, *Thepla,* moringa leaves, drumstick leaves

Oral - 109

Gossypetin loaded zinc oxide nanoparticles induced apoptotic cell death through upregulation of GADD45 gene in multi drug resistant human breast cancer cells: An improved drug delivery system for cancer therapy

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Despite improvements in cancer chemotherapeutics, the survival rate of breast cancer patients had not reduced much due to the multi-drug resistance (MDR) in cancer cells. Even though numerous studies have been done to comprehend the mechanisms of chemoresistance, many issues still need to be resolved as it remains a prominent determinant in poor response and decreased overall survival of patients. In this work, gossypetin-loaded Zinc oxide nanoparticles (GP-ZNPs) have been synthesized and exploited to determine their efficacy against multi-drug resistant breast cancer cells. Various studies including cytotoxicity, morphology, fluorescent microscopic analysis (AO/EtBr & DAPI), flow cytometry, ROS assay, gene and protein expression analysis has been done. The GP-ZNPs had shown an IC50 at the concentration of 34.38 µg/ml. The morphometric and fluorescent microscopic analysis demonstrated that the GP-ZNPs had induced a dose-dependent activity against treated cells. Furthermore, the gene and protein expression analysis had shown a significant up regulatory pathway in GADD45 gene indicating the efficacy of GP-ZNPs in treating MDR cancer. Thus, we propound that this *in vitro* study would pave a new way in targeting multi-drug cancer cells with GP-ZNPs and also additional *in vivo* research was required before it could be applied to clinical treatment.

Keywords: Gossypetin; Zinc oxide nanoparticles; Multidrug resistance; Anti-tumour.

Oral - 110

Green synthesis and characterization of PVA encapsulated silver nanoparticles of ethanolic extract of leaves of *Pisonia grandis*

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Nanotechnology, a branch of nanoscience, is concerned with the study of nanoparticles with sizes ranging from 1 to 100 nm. Green synthesis of nanoparticle production is a more efficient, simpler and cost-effective technique. The current study is focused on the characterization of polyvinyl alcohol (PVA) - silver nanoparticles (PVA-AgNPs) hybrid of ethanolic leaf extract of *Pisonia grandis*. The crystalline nature of nanoparticles was confirmed by X-Ray crystallography (XRD) with peaks values obtained are 2θ values of 38°, 44.11°, 64.43° and 77.22° respectively. The spherical nature and elemental composition of nanoparticles were proven by scanning electron microscopy and energy dispersive X-Ray analysis (SEM EDAX). The sharp peak at 3.0 keV obtained, denoted the existence of metallic silver. The morphology and size of the silver nanoparticles were examined by Transmission Electron Microscopy (TEM). Strong absorption peaks were seen in the synthesised AgNPs' FTIR spectra obtained at 3302.01 cm^{-1}, 1635.64 cm^{-1}, 1404 cm^{-1}, 1327.03 cm^{-1}, 1226.73 cm^{-1}, and 686.66 cm^{-1}, respectively, which indicates the different functional groups present in the sample. The particle size and stability of nanoparticles were confirmed by the particle size analyzer and the average particle size was found to be 159.76 nm.

Keywords: Nanoparticles, Green synthesis, characterization, PVA encapsulation

Oral - 111

Green Synthesized Zero Valent Iron (ZVI) Nanoparticles from weeds and their efficiency in the removal of pharmaceutical contaminant acetaminophen

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Overuse of medicines tends to accumulate and contaminate the environment, especially water. Green synthesized nanomaterials that are produced phytochemicals from plant extract act as both stable and reducing agents and are preferred over chemical synthesis methods for their eco-friendliness and the synthesis process can be toxic and costly. The present study looks for the optimal conditions for the green synthesis of nano zero-valent iron (G-NZVI) using weeds. UV Spectrophotometry, Fourier transform infrared spectroscopy (FT-IR) and scanning electron microscopy (SEM) with energy-dispersive X-ray analysis (EDX) methods were used to characterize the properties of the G-NZVI**.** The results showed that the optimal conditions for the G-NZVI for acetaminophen removal were at 70 min.

Keywords: Green Synthesis; Zero Valent Iron Nanoparticles; FTIR; EDS; SEM

Oral - 112

In vitro neutralization potential of chicken egg yolk antibodies (IgY) against urinary tract infection causing *Escherichia coli, Pseudomonas aeruginosa* and *Staphylococcus aureus*

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Chicken Egg Yolk antibodies (IgY) as a source for antibody production represent a reduction in animal use as chickens produce large amounts of antibodies than other laboratory animals. Antibodies play an important role in the immune system, which serves to protect the body from foreign substances. This study aimed to characterize an IgY preparation to prevent *Escherichia coli*, *Pseudomonas aeruginosa* and *Staphylococcus aureus* infection in Urinary tract-infected patients. Antibiotics have saved many lives but to keep them potent and reduce the development & spread of antibiotic resistance we need to use a new alternative treatment strategy. The 21 week old leghorn chicken was immunized with formalin-killed *Escherichia coli, P. aeruginosa* and *S. aureus* to produce egg yolk antibodies. The egg purification was done by using polyethylene glycol and column chromatography. The specificity was checked by DOT-ELISA. *Escherichia coli, P. aeruginosa* and *S. aureus* causes Urinary Tract Infection (UTI). Immunoglobulin Y (IgY) is the major antibody found in eggs from chicken. Compared to mammalian antibodies IgY possesses several biochemical advantages and its simple purification from egg yolk prevents a stressful moment in animal handling as no bleeding is necessary. Generated specific antibodies have been a good approach against Urinary Tract Infection causing pathogens.

Keywords: Chicken Egg yolk antibodies (IgY), *Escherichia coli, Pseudomonas aeruginosa* and *Staphylococcus aureus*

Oral - 113

Influence of '*Shodhana*' Process on metabolic profiling for *Ashwagandha*

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The metabolic profiling of plant extracts is an essential part of drug standardisation. *Ashwagandha* is a revered herb of the Indian Ayurvedic system used specifically for various kinds of disease processes, especially as a nervine tonic. Traditionally in Ayurveda Roots of *Ashwagandha* is used in medicinal and clinical applications. The classical texts referred to a purification process for *Ashwagandha* roots using milk (*Shodhana*). The current study was framed to investigate the significance of *Shodhana* processed *Withania somnifera* roots in comparison with field grown roots using Metabolomic studies. The current study was done using GC-MS (Gas chromatography - Mass spectrometry) for sensitive identification and quantification of metabolites. Comparative studies reveal that among 21 compounds present in the field-grown roots, 18 compounds were found similar in *Shodhana* processed roots which were found to be the major components in the withanolide pathway. They includes Glycerol, Glycine, Glyceraldehyde, n-hexadecanoic acid, Palmitic acid, oleic acid, Octadecanoic acid, stearic acid, linoelaidic acid, valeric acid, Squalene, Beta-sitosterol. Results obtained provide an insight into the active components of plants belonging to the Solanaceae family

Keywords: *Withania somnifera*, *Shodhana*, GC-MS, Metabolic profiling

Oral - 114

Inhibition of DNA methylation using annonaceous acetogenins to prevent leukemogenesis – an *in silico* approach

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Leukemia is a haematological malignancy that affects blood and bone marrow. DNA methylation is an epigenetic dysregulation that plays a critical role in leukemogenesis. DNA methyltransferases (DNMTs) such as DNMT1, DNMT3A and DNMT3B are the key enzymes catalyzing DNA methylation. Inhibition of DNMT1 with secondary metabolites from medicinal plants helps in the reversal of DNA methylation. The present study focuses on inhibiting DNMT1 protein (PDB ID: 3PTA) with annonaceous acetogenins through *in silico* studies. The docking and molecular dynamic (MD) simulation study was carried out using Schrödinger Maestro (version 2023-1) and Desmond respectively. These compounds' drug likeliness and ADMET properties were analyzed using SwissADME and admetSAR. About 76 different acetogenins were chosen for this study, and the binding energy was between -5.0 to -10.266 kcal/mol. The compounds with the highest negative binding energy were found to be annohexocin (-10.266 kcal/mol), isoannonacinone (-10.209 kcal/mol) and annonacin (-9.115 kcal/mol). MD simulation results reveal that annonacin remained stable throughout the simulation time of 100 ns. From the above results, it can be concluded that annonacin has the potential to inhibit the DNA methylation process and prevent leukemogenesis.

Keywords: Leukemia, DNMT1, annonaceous acetogenin, molecular docking, molecular dynamic simulation

Oral - 115

Investigation of extracellular enzymes and hemolysins as putative virulence factors of *Candida albicans* from candidiasis

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Candida albicans is a unicellular, oval-shaped fungus, which appears in several morphological forms (blastospores, pseudohyphae, and hyphae). *C. albicans* is the most virulent pathogen among the *Candida* species and can cause several forms of candidiasis in humans and are the fourth leading cause of nosocomial infections in patients' bloodstreams. *Candida* species secrete different hydrolytic enzymes such as phospholipase, proteinase, esterase, and hemolysin, which contribute to host tissue invasion by disrupting host cell membranes. A total of 80 *Candida* isolates from various clinical specimens (urine, sputum, vaginal swab, ET tube and wound) were collected during the period between November 2021 and November 2022. The isolates were characterized using standard microbiological procedures. Production of various extracellular enzymes *viz*., phospholipase, proteinase & esterase on egg yolk agar, bovine serum albumin agar & Tween 80 agar, respectively and hemolysin on sheep blood agar was analyzed. Among the 80 clinical isolates, 21 (26.25 % of 80) showed phospholipase activity, 42 (52.5 % of 80) showed proteinase activity, followed by esterase (59; 73.75 % of 80). Hemolytic activity was observed among 55 isolates (68.75 % of 80). Extracellular enzymes seem to play an important role in *Candida* pathogenicity, as these enzymes facilitate adherence and tissue penetration and invasion of the host.

Keywords: *Candida albicans*, Phospholipase, Proteinase, Esterase, and Hemolysin

Oral - 116

Invitro Regeneration, Antioxidant, Antimicrobial and Anti-inflammatory activities in roots of *Chrysopogan nodulibarbis* (Hochst. ex Steud.) Henrard

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Grasses possess diverse medicinal properties by treating fevers, relieving anxiety, enhancing wound healing processes, reducing inflammation, and promoting overall wellness. The genus, *Chrysopogan* offers culinary, medicinal, and aromatic uses. This study aimed to develop a protocol for enhancing plantlet regeneration in *Chrysopogan nodulibarbis* (tussock grass) using a shoot base explant. *In vitro* plant regeneration has been successfully obtained from basal shoot explant of *C. nodulibarbis* through direct organogenesis. The explants were cultured in Murashige & Skoog's (MS) media supplemented with 2,4-D, NAA, BAP, and IAA in various concentrations. Among 17 combinations of growth hormones, 4 showed positive responses and 13 revealed negative responses. The highest induction was obtained with BAP 4 mg/l + NAA 3mg/l + Citric acid 25 mg/l. Lower frequencies of induction were obtained in BAP 3 mg/l + NAA 3mg/l, BAP 3 mg/l, and BAP 4 mg/l. 2,4-D and IAA did not favour shoot induction. The hexane root extract was prepared and subjected to antioxidant, antimicrobial and anti-inflammatory activities which exhibited substantial findings.

Keywords: Direct organogenesis, Antioxidant, Antimicrobial and Anti-inflammatory and *Chrysopogan nodulibarbisis*.

Oral - 117

Isolation and bioprospecting actinomycetes population of *Piper longum* rhizosphere

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Piper longum has been a known source of antimicrobials and insecticidal molecules. However, the Actinomycetes population of the plant's rhizosphere has remained untapped. Actinomycetes have been the major source of a plethora of bioactive molecules, therefore, the ones that is associated with *P. longum* could be an attractive source of bioactive molecules. To test this, the Actinomycetes population of *P. longum* rhizosphere was explored and we found that there werefour individual morphology different isolates. 16S rRNA gene sequencing was performed and there were three known species namely, *Streptomyces muensis*, *Streptomyces manipurensis* and *Streptomyces muensis* subspecies. One isolate had a meagre 87 per cent identity with the knownstrains confirming it as a novel species. All four strains were used for fermentation through shake flask culture using an in-house developed method. In this, the novel species exhibited a strong, specific activity against *Fusarium oxysporum* which is a notorious fungal pathogen which causes Fusarium wilt. Further, in pursuit to identify the active molecule, the ethyl acetateextract of the fermented spent medium was subjected to GC-MS analysis and upon comparisonof the m/z values, four molecules were identified. They are pentadecanoic acid, hexadecanoic acid, and octadecanoic acid, tetratriacontane and 2,3-dihydroxypropyl ester. Further modifications of these compounds could yield novel antifungal agents and is the ongoing prospects of this study.

Keywords: *Piper longum*, Actinomycetes, rhizosphere, GC-MS analysis , antifungal agents

Oral - 118

Isolation and characterization of pink pigmented facultative methylotrophs from *Oryza sativa* leaf as bioinoculant for sustainable agriculture

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Bacteria belonging to the genus Methylobacterium, also known as Pink Pigmented Facultative Methylotrophic bacteria (PPFMs). They are Gram-negative bacteria that can grow on single-carbon compounds such as formaldehyde or methanol and also on a variety of C2, C3, and C4 compounds. PPFMs are ubiquitous in nature and found in a variety of habitats such as the phyllosphere and rhizosphere of different plants, soil, dust and fresh water, paddy fields, air and sewage sludge. Methylotrophic bacteria on the plant surface act in as symbiotic relationship with the host plant. Methylobacterium sp., promotes growth of the host plant by producing indole acetic acid (IAA). They synthesise a variety of auxins and cytokinin that are utilized by plants for growth and development.

Keywords: PPFM, Methylotrophs, Plant growth promoter, Biofertilizer.

Oral - 119

Isolation and identification of PHB producing microorganisms from different soil samples

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PHB is a unique intracellular polymer that is accumulated under stress conditions and in the presence of an increased carbon source. Synthetic plastics have so many disadvantages and the main being the damage caused to the environment is taken into consideration and is being replaced by bioplastics. Bioplastics like PHB are being used as one of the best alternatives due to their effective biodegradability and several other efficient properties. Isolation of PHB-producing microorganisms was done by collecting soils from three different areas in order to compare the PHB production in these soil samples. The isolates obtained were cultured on Minimal Davis Agar and then primary screening was done by Sudan black staining. Confirmation of PHB production was done by performing FTIR and GCMS analysis. The result of FTIR indicated that only the organisms collected from organic soil samples showed the presence of PHB which had the bands representing C=O, C-O, CH3, CH2, C-H, and C-C stretchings. GC-MS spectrum of methanolized PHB was confirmed by a certain peak corresponding to 2 oxetanone, 4-methylene also known as 2-Butynoic acid (RT 21.1734).

Keywords: PHB, Biopolymer, Synthetic Plastics, FTIR, GC- MS.

Oral - 120

Jamun Seed Powder Incorporated Cookies, Cakes and Biscuits: An Overview

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The jamun tree is a medicinal plant, and it belongs to the Myrtaceue family. The jamun fruits are available yearly once, and the availability of the month is between June and July. The fruit is also known as Java plum, black plum, Indian blackberry, Portuguese plum, jambolan plum, etc. The jamun fruit is native to India, Nepal, Bangladesh, Pakistan, Sri Lanka and Indonesia. The jamun fruit consists of edible parts, seed and kernel. The jamun tree fruits, leaves, seeds and other parts are also used in Ayurvedic medicine. The fruit seed has a high amount of protein, dietary fibre, a good source of iron and minerals. The jamun fruit contains high levels of anthocyanins and phenolic compounds (mainly in flavonols). The jamun seed powder is a good source of vitamin C, vitamin B complex, dietary fiber, potassium, iron, sodium, magnesium, calcium and phosphorous. The jamun seed powder is low in fat and cholesterol. The powder has a high level of antioxidants. The jamun seed powder is used to maintain urination and sweating. It is also used to maintain blood sugar levels. The jamun seed powder is used to cure diabetes, diarrhoea, dysentery, blood pressure, gastrointestinal and cardiovascular problems. They used to incorporate this powder into cookies, cakes and biscuits. It improves the quality and quantity of the protein, fiber and carbohydrate content when it is mixed with wheat flour.

Keywords: Jamun seed powder, diabetes, protein, cookies, medicinal plant.

Oral - 121

Leaf litter leachates of invasive plant species affects seed germination and seedling growth of temperate vegetable crops

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Invasive plant species are the second largest threat to biodiversity. The leaf litter accumulation of invasive plant species may negatively affect the seed germination and seedling development of native plants by modifying the significant ecosystem processes. The present study was carried out to determine the effect of aqueous leaf litter extract of four invasive plant species including *Phytolacca octandra*, *Ageratina adenophora*, *Lantana camara*, and *Solanum mauritianum* on seedling growth of widely cultivated vegetable crop species in Nilgiris (*Beta vulgaris*, *Brassica rapa*, *Raphanus sativus*, and *Daucus carota*). The seeds of each crop species were placed in different concentrations of leaf litter extract (0 %, 25 %, 50 %, 75 % and 100 %) of invasive plant species in germination towels and maintained under laboratory conditions for 10 days. The study revealed that different concentrations of invasive plant leaf litter significantly and differentially influenced most of the seed germination and seedling growth characteristics of examined crop species. The leaf litter of invasive plant species suppressed seed germination of test crops at various concentrations when compared to control. Nevertheless, the leaf litter of *S. mauritianum* had a positive effect on seed germination and early seedling growth of test crops when compared to the other three invasive plants. Of all the examined invasive species, the leaf litter of *A. adenophora* showed the strongest allelopathic effect.

Keywords: Allelopathy, exotic plant, germination parameters, leaf litter extract, crop species.

Oral - 122

Media Formulation for *Solanum tuberosum* Callus Growth Optimization

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In vitro mass propagation of *Solanum tuberosum* (potato) explants provides an efficient and affordable technique. The composition of the culture media has significant effects on the efficacy of the development of callus and subsequent plant regeneration. This study aimed to optimize the media formulation for *S. tuberosum* callus growth by systematically evaluating the effects of different combinations and concentrations of plant growth regulators, carbon sources, and vitamins. By comparing the impacts of various combinations and quantities of plant growth regulators, carbon sources, macronutrients, micronutrients and vitamins, the medium composition for *S. tuberosum* callus development was optimised in this work. The callus growth traits, such as fresh weight, growth rate, and shape, were evaluated while testing different medium formulations. The findings indicated that the callus growth and development were significantly influenced by a specific auxin and cytokinin combination, a sufficient carbon supply, micro and macronutrients and vitamins. The modified medium (MM) formulation showed increased callus proliferation and offered an adequate substrate for eventual plant regeneration. Further studies on potato tissue culture and genetic progress will be considerably less difficult due to the support of this research to the development of an effective and repeatable technique for *S. tuberosum in vitro* mass propagation.

Keywords: *Solanum tuberosum, in vitro* callus growth, micro and macro nutrients, growth hormones, genetic progress

Oral - 123

Molecular profiling of Myeloproliferative neoplasm in patients from India

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The precise diagnosis of myeloproliferative diseases depends on the detection of chromosomal abnormalities. This study investigates the presence of JAK2 mutations (V617F) in Indian patients with a myeloproliferative disorder (MPD) diagnosed at Meenakshi Mission Hospital and research center Madurai. JAK2V617F involving the tyrosine kinase gene is a somatic gain of function mutation that occurs nearly in all patients with polycythemia vera but was also found to occur in variable proportion with other myeloid disorders. One hundred and twenty-four patients with unrelated patients suggestive of MPD were investigated Diagnosis of myeloproliferative neoplasm was determined by complete blood count, peripheral smear and bone marrow examination, lactate dehydrogenase test, and uric acid test. The median age of presentation was found to be 44.5 years of age (range 22 years to 80 years). Genomic DNA was screened for mutations by allele-specific PCR. Twenty-five patients (20 %) were found to be positive for JAK2V617F mutation. Further statistical analysis was carried out using Descriptive statistics, and the student t-test was to identify the significant difference between the parameters including the hematological parameters, using SPSS 22.

Keywords: JAK2V617F, myeloproliferative diseases, polycythemia vera

Oral - 124

Nutritional, chemical composition and antioxidant activity of *Celosia polygonoides* -a unexplored leafy vegetable

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Plants play a significant role in providing primary health care services to rural people. Each plant species has its nutrient composition besides having pharmacologically important phytochemicals. These nutrients are essential for the physiological functions of the human body. Such nutrients or functional foods like carbohydrates, fats and proteins play an important role in satisfying human needs for energy and life processes. A functional food is one that not only serves to provide nutrition but also can be a source for prevention and cure of various diseases. Vegetables have also been reported to be good sources of functional food. Hence, functional foods are often termed food supplements or nutraceuticals. Leafy vegetables are important as functional foods. Consumption of leafy vegetables satisfies the basic need of nutrition among them *Celosia polygonoides* (CP) is a leafy vegetable used by the Puliyar and Muthuvar tribes in Western Ghats. This present study aimed to explore the nutritional value of CP *by* minerals, amino acid estimation, antioxidant activity and GC/MS analysis. The nutritional composition of the leaf shows a significant amount of amino acids (144.33 mg/g) and starch (0.15 mg/g) when compared to other parts. The mineral and amino acid analysis of the leaf revealed that Na and P were predominant and also phenylalanine (0.72 %) was present at a higher level. The quantitative phytochemical analysis showed that phenolics, tannins and flavonoids were found to be higher in leaf ethyl acetate extracts (LECP). The antioxidant activity like $DPPH^{\bullet}$, nitric oxide, and superoxide was commendable and also GC/MS profiling of LECP trout out the presence of five important phytoconstituents. These results emphasize the nutraceutical properties of CP in a limelight, leap forward to scale up in further exploration.

Keywords: *Celosia polygonoides*, Leafy vegetable, Nutritional, Phytochemicals, Antioxidant, GC/MS

Oral - 125

Optimization and characterization of a bacterial exopolysaccharide

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The naturally occurring microbial-carbohydrate biopolymer known as exopolysaccharide (EPS) has found widespread use across a variety of industries. The growth medium in which the microorganisms are cultured has a major impact on the quantity of EPS they produce. This study investigated the ability of *Bacillus rugosus* L1C7T EPS to increase EPS production. Therefore, the best nitrogen, carbon, and pH sources in the *B. rugosus* L1C7T culture medium were chosen independently, and their optimum levels were statistically adjusted using Response surface methodology (RSM). EPS production increased 1.7 fold and its physical and chemical properties were assessed after optimization. According to FT-IR spectra, EPS from *B. rugosus* L1C7T contains hydroxyl, carboxyl, and carbonyl groups. The thermal gravimetric study revealed the presence of multistep decomposition in EPS, and the Coats and Redfern model demonstrated that thermal decomposition is not a spontaneous endothermic reaction. In addition to its potent radical scavenging capabilities against DPPH, this EPS showed strong water solubility, water-absorbing capacity, and oil-absorbing capacity (125 and 65 %, respectively). It is anticipated that the produced EPS could be used as a food additive, in a drug delivery system, or bioremediation.

Keywords: biopolymer, *Bacillus rugosus*, EPS, Response surface methodology

Oral - 126

Optimization of the biotechnological process using *Syzygium cumini* fruit pulp for the production of bioactive compounds

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The jambolan (*Syzygium cumini*) fruit pulp is rich in nutraceutical and nutriceutical compounds which are effective in the treatment of oxidative stress-related disorders. To enrich the value of bioactive compounds, the present study aimed to investigate *S. cumini* fruit pulp after solid-state fermentation treatment with *Aspergillus niger* at different times. The total phenolic and flavonoid contents in the fruit pulp and fermented fruit pulp were determined. The individual bioactive compounds such as phenolic and organic acid compounds contents were estimated by using HPLC-DAD system. The results reveal that *A. niger* fermented fruit pulp showed an increased amount of total phenolics (526.37 mg GAE/100 g sample) and flavonoids (284.75 mg QE/100 g sample) after 48 h compared to fruit pulp. Furthermore, HPLC-RID analysis showed that fruit pulp produced the maximum amount of catechin (0.20 mg/g sample) and citric acid (1.27 mg/g sample) after 24 h, whereas epicatechin (0.18 mg/g sample) and acetic acid (0.05 mg/g sample) were produced after 72 h solid-state of fermentation with *A. niger*. Thus, solid-state fermentation with *A. niger* is a good strategy to add value to the *S. cumini* fruit pulp by providing a significant increase in the synthesis of phenolic compounds with important biological functions.

Keywords: *Syzygium cumini*, nutraceutical, *Aspergillus niger*

Oral - 127

Organoleptic evaluation of cauliflower stem powder and beetroot stem powder incorporated cereal based products

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The recent trend for increasing the nutritional value of food products is the utilization of underutilized parts obtained from vegetables like stems and leaves. The aerial parts of Cauliflower are excellent sources of glucosinolates and antioxidants, which might be helpful in preventing degenerative diseases. The aerial parts of Beetroot contain flavonoids and phytochemicals, which might lower cholesterol and LDL levels. The objectives of the study were to dehydrate the green leafy vegetables stem and incorporate them into food products; to find the organoleptic evaluation of the formulated products. The cauliflower stem and beetroot stem were collected, cleaned, blanched and solar-dried for three days. After complete drying, the dehydrated stems were powdered and stored in air-tight containers for further use. The organoleptic and shelf-life evaluation of the stem powders was done. Popularization and cost calculation of the product was done. Each stem powder was incorporated at 10 %, 20 %, 30 % and 40 % separately, in cereal-based products like dosa and chapati. The formulated products were analyzed for their sensory attributes using a 9-point Hedonic Scale by 30 semi-trained panel members. The scores were consolidated and the products with the highest mean score were selected as the best product. The results of the study show that the product with 5 % of cauliflower stem powder in dosa and 10 % of beetroot stem powder in chapati was selected as the best product. There was a slight reduction in the cost of the formulated products. The products were accepted by the participants involved in the popularization study. Further study on nutrient analysis is needed.

Keywords: Under-utilized parts, Green leafy vegetables stem, Phytochemicals, Stem Powder, Cereal Products, Organoleptic evaluation.

Oral - 128

Phytochemicals as Alternative Antimicrobial Agents: A Promising Approach for Combating Microbial Infections

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The emergence of antibiotic resistance poses a significant challenge to public health, highlighting the urgent need for alternative antimicrobial strategies. Phytochemicals, natural compounds derived from plants, have gained attention as potential alternatives to conventional antibiotics. This review article provides an in-depth analysis of the role of phytochemicals as alternative antimicrobial agents. It explores their diverse mechanisms of action and effectiveness against various microorganisms, and discusses the challenges and prospects of utilizing phytochemicals in the fight against microbial infections.

Keywords: Phytochemicals, antimicrobial, antibiotics, microorganisms

Oral - 129

Post COVID 19 epidemiology of *Klebsiella pneumoniae* from COVID 19 recovered cases

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Klebsiella pneumoniae is frequently reported among neonates/children, adults as well as elderly persons either as nosocomial or as community-associated infections such as urinary tract infections, pneumonia and bacteremia. Remarkably, immunocompromised and patients with prolonged hospitalization are predominantly involved with bacterial infection. As the emergence of *K. pneumoniae* with multidrug resistance and possession of several virulence factors are common, a successful therapy of *K. pneumoniae*-infected cases has been a task. In particular, the clinical significance of pneumonia due to *K. pneumoniae* has currently been a concern in view of SARS- CoV2 caused COVID-19 pandemic as both cause a highly dreadful, difficult-to-treat lung infection. In this context, the present study evaluated the post-COVID-19 *K. pneumoniae* from both COVID-19 recovered cases as well as from non- COVID-19 cases but infected by *K. pneumoniae.* Accordingly, the study collected as many as 696 specimens from COVID-19 recovered causes but suffered from pneumonia between July 2022 and December 2022. The specimens were collected from the districts of Madurai, Dindigul and Sivagangai. Among 696 cases, the most number of cases (20 %; 139 of 696) was recorded in the month of September 2022 and only 14 % (97 of 696) were recorded during the month of December 2022. Among 696 cases, 188 (27 % of 696) were from the age group of 21- 30 years and the least number of cases was recorded in the age group of 91-100 years old. During the study period, females were observed to be highly 64 % (56 of 88) infected by *K. pneumoniae* than by male 36 % (32 of 88) patients; the total number of cases of *K. Pneumoniae* was higher in Madurai (67 %) district while Sivagangai (16 %) recorded the least. Other observed epidemiological findings of the pathogen were discussed in the study.

Keywords: *Klebsiella pneumoniae,* COVID-19, SARS – CoV2, drug resistance, pandemic

Oral - 130

Terpenoid phytocompounds from *Gymnema sylvestre* act as promising anti-diabetic agents screened through *in vitro* and *in silico* approaches

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Terpenoid class of phytocompounds possesses numerous medicinal properties including anti-diabetic properties that act against several hyperglycemic enzyme targets. The present study aims to explore and evaluate the anti-diabetic potential of terpenoid phytocompounds from two different leaf extracts of *Gymnema sylvestre*. Two Leaf extracts of *G. sylvestre* were screened through GCMS to explore its phytocompounds and its anti-diabetic medicinal properties. Upon exploration of *G. sylvestre* compounds most notably terpenoid compounds i.e. Lupeol, Gymnemasin A, Gymnemic Acids I from methanolic leaf extract and Gymmestrogenin, Gymnemoside A from chloroform leaf extract. *In vitro* anti-diabetic validation of two leaf extracts *G. sylvestre* revealed that chloroform leaf extract (IC50 11.20 µg/ml and 12.20 µg/ml) possess equipotent anti-diabetic potential when compared with standard drug acarbose (IC50 15.20 µg/ml and 9.40 µg/ml) against alpha-amylase and alpha-glucosidase enzymes. Further in silico docking analysis of phytocompounds from *G. sylvestre* against three diabetic target proteins (alpha amylase, aldose reductase, alpha-glucosidase) revealed that Gymnemic Acids I exhibit higher binding affinity with alpha-amylase with docking score of -10.3 Kcal/mol than standard drug acarbose -8.7 Kcal/mol. Similarly, Gymnemasin A and Gymmestrogenin exhibit the highest docking score with aldose reductase and alpha-glucosidase (-9.8 Kcal/mol & -8.9 Kcal/mol) than standard drug acarbose (-8.9 Kcal/mol & -8.2 Kcal/mol) respectively. Top-scored terpenoid compounds from *G. sylvestre* i.e. Lupeol, Gymnemasin A, Gymnemic Acids I, Gymmestrogenin, Gymnemoside A screened for further ADMET and DFT analysis along with standard drug acarbose and their results revealed that terpenoid compounds shown good pharmacokinetic and DFT indices. Finally, four complexes 1B2Y- Gymnemic Acids, 1B2Y- acarbose, 1US0)- lupeol, 1US0 - acarbose screened for MDS and MMGBSA analysis revealed that good simulation trajectories with anti-hyperglycemic target proteins. The findings of the current research studies demonstrated that terpenoid phytocompounds from *G. sylvestre* will fetch novel improvements for alternative medicine in the prevention and treatment of diabetes.

Keywords: Anti-daibetic; *Gymnema sylvestre*; Terpenoid; Gymnema sylvestre

Oral - 131

Preparation of Seaweed Liquid Fertilizer from *Spatoglossum marginatum* and its effect on *Vigna unguiculata* & *Pisum sativum*

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Seaweed is a crucial marine resource that is found all over the world. For several crops, liquid seaweed extracts have been used as foliar sprays with success for many years. The abundance of water-soluble potash, as well as the other minerals and trace elements, found in seaweeds, makes it easy for plants to absorb them and prevent nutritional deficits. The organic matter and carbohydrates included in seaweed alter the soil's chemical composition and improve its capacity to retain moisture. The specimen of marine brown algae *Spatoglossom marginatum* was collected from the Mandapam coast, Gulf of Mannar, Tamil Nadu. The combined effects of seaweed liquid fertilizer obtained from *S. marginatum* on seedling growth of *Vigna unguiculata* and *Pisum sativum* were the subject of experiments. The seeds were treated with different concentrations of SLF and pot experiments were conducted. Physical parameters included germination rate, root length, plant height, number of leaves, number of flowers, number of fruits, number of seeds, weight of fruits, weight of seeds, fresh weight, and dry weight of the plants were investigated. Biochemical parameters such as total chlorophyll, carotenoid, total carbohydrate, and total protein content were estimated. Plant physiological health is enhanced by growth-promoting chemicals generated by biofertilizers. Optimum concentrations of 20 - 40 % gave promising results in the enhancement of growth and yield parameters.

Keywords: seaweed, biofertilizer, *Vigna unguiculata*, *Pisum sativum*, germination

Oral - 132

Review on processing of soursop incorporated byproduct

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Soursop is a plant belonging to the Annona family that has been widely used globally as a traditional medicine for many diseases. The pulp of the soursop helps to produce a high amount of byproducts. Soursop contains many essential vitamins, minerals and phytochemicals. It contains antioxidants including phytosterols, tannins and flavonoids. It has anti-inflammatory, anti-bacterial and anti-tumour properties. Soursop fruit can be used medicinally to treat a wide range of conditions including diabetes, tumor, cancer, oxidative stress and blood pressure. The various research shows the incorporation of soursop in many products. The research paper showed the incorporation of soursop nectar in stirred yoghurts. Yogurt provided high percentage daily values of zinc, phosphorus, calcium and a good quality of protein. Research studies were carried out with the aim of utilizing soursop flour for the production of Chin chin. Chin chin is a fried snack from Nigeria. Soursop fruits are processed into flour and incorporated with wheat flour. Chin chin was prepared from a blend of wheat and soursop flower. One of the articles highlighted the incorporation of soursop pulp with papaya jam. Papaya fruit contains essential minerals, vitamins needed for good body development. The pulp was blended separately and lime juice was added to each of the pulp as a preservative. The study also showed that soursop flower was partially used as a substitution with wheat flour for bread making. It was found that the wheat flour would be substituted only partially with soursop flour due to the lack of gluten properties in the soursop.

Keywords: Soursop, antioxidants, tumor, yoghurt, jam

Oral - 133

Production and Characterization of lipids extracted from microalgae for biofuel production

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The demand for fossil fuels has resulted in their rapid depletion and increase in fuel costs. Moreover, fossil fuels negatively impact the environment due to their harmful emissions leading to global warming. Based on this, researchers intended to find a renewable alternative to fossil fuels and explore potential biofuel feedstocks. Biofuels are non-toxic, renewable, and have properties that are similar to conventional fuels. Microalgae are considered a viable biofuel feedstock due to several advantages over other plant-based feedstock. However, only large-scale production and commercialization can meet these requirements. The present study is focused on screening potential microalgae with a good amount of lipid content for further work to be carried out for biofuel production. The water samples which contain algae were collected from different locations in Pollachi and Coimbatore, Tamil Nadu, India. The algae were cultivated in BG11 medium and evaluated microscopically for the presence of lipids with Nile red staining. The selected strains were further cultivated and lipids were extracted using solvents. The extracted lipid oils were then converted into methyl ester through the transesterification process. The maximum yield of lipids was found to be in the range of 50 to 65 %. The fatty acid profile of Microalgae was analysed using GCMS. GCMS analysis revealed FAME profiles of *Oscillatoria* sp., From GCMS chromatogram of the algal extract of *Oscillatoria* sp., the peaks with a retention time of 30.075 and 29.781 represent hexadecanoic acid and 11-hexadecenoic acid indicate the properties of biodiesel. The isolated algal species could be used for large-scale production of biodiesel.

Keywords: Fossil fuels, Biofuel, Microalgae, Nile red, Transesterification

Oral - 134

Purification and characterization of antifungal peptides (AFPs) from *Pseudomonas* spp.

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Antifungal peptides (AFPs) possess a potent activity against a number of pathogenic fungal species. In this study, the antifungal peptide was obtained from *Pseudomonas* sp. with 48h incubation at optimum growth conditions. The 60% saturation fraction obtained through ammonium sulfate ($[NH_4]_2SO_4$) precipitation was exhibited. The molecular weight of the purified peptide was found to be ∼12 kDa, indicating a relatively low molecular weight. The peptide sequencing was performed by MALDI-TOF mass spectrometry and the results revealed a similar homology structure with other antimicrobial peptides. Moreover, the antifungal peptide exhibited a predominantly α- helical secondary structure, which is associated with membrane-disrupting activity commonly observed in antimicrobial peptides. From the antifungal activity tests, the highest antifungal activity against *Candida albicans* and *Aspergillus fumigatus* was observed. These findings suggest that the antifungal peptide from *Pseudomonas* spp. holds potential as a therapeutic agent against fungal infections.

Keywords: Antifungal peptides (AFPs), *Pseudomonas* spp., Ammonium Sulfate ([NH4]2SO4) precipitation, MALDI-TOF, SDS-PAGE

Oral - 135

Separation of major bioactive components and its antioxidant studies on *Solanum nigrum* extract

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Traditional medicine involves the use of different bioactive constituents present in medicinal plants. Hence *Solanum nigrum*, was investigated for its activity against the common pathogens. Methanol, chloroform, aqueous, petroleum ether, and acetone extract of *S. nigrum* was prepared, which was taken to determine the antibacterial activity against the chosen pathogen while compared to standard antibiotics. The methanol, Acetone and Chloroform showed the highest antimicrobial activity in comparison to others. The present study was carried out on the ethanolic extract of *S. nigrum* leaves which were analyzed through phytochemical, antimicrobial, and antioxidant properties in this study. The various phytochemical constituents like alkaloids, flavonoids, glycosides, phenols and saponins were revealed in selected plant extract by TLC. The antioxidant activity of the plant was analyzed using Fenton's reagent free radical scavenging studies and DPPH antioxidant activity was measured colorimetrically. The Preliminary phytochemical investigation revealed the presence of saponins, glycosides, tannins, alkaloids, and flavonoids. The antibacterial and antioxidant activity was expressed at varying concentrations and dose-dependent. The present study also focused on the analysis of the ethanolic extract of *S. nigrum* leaves by GC-MS. The study revealed the presence of phyto components such as Pyroquilon, palmitic acid, oxazole, phytol, hexacontan and ethyl linoleolate. The mass spectra of these compounds were matched with the National Institute of Standards and Technology (NIST) Library, which reveals the presence of bioactive components in *S. nigrum* suggest that the contribution of these compounds to the pharmacological activity.

Keywords: *Solanum nigrum*, antimicrobial activity, antioxidant activity, TLC, GC-MS

Oral - 136

Smoking temperature and its rate of oil absorption in blended oil

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Blending improves the physicochemical properties and essential fatty acid composition of vegetable oil. The smoking temperature of the oil and its physiochemical properties in particular are crucial indicators of its quality. The present study aims at studying the quality attributes of blended vegetable oil. Based on the polyunsaturated fatty acids and monounsaturated fatty acids content in five vegetable oils namely flaxseed, groundnut, safflower, gingelly, and sunflower oil were chosen and blended into six different combinations (blended-I 20 ml of flaxseed oil, 20 ml of sunflower oil, 20 ml of gingelly oil, 20 ml of groundnut oil, 20 ml of safflower oil: blended oil-II 50 ml of flaxseed oil,12.5 ml of groundnut oil, 12.5 ml of gingelly oil, 12.5 ml of sunflower oil, 12.5 ml of safflower oil: blended oil- III 50 ml of groundnut oil, 12.5 ml of gingelly oil, 12.5 ml of sunflower oil, 12.5 ml of safflower oil, flaxseed oil: blended oil-IV 50 ml of safflower oil, 12.5 ml of flaxseed oil, 12.5 ml of groundnut oil, 12.5 ml of gingelly oil: blended oil-V: 50 ml of gingelly oil, 12.5 ml of flaxseed oil, 12.5 ml of sunflower oil, 12.5 ml of safflower oil, 12.5 ml of groundnut oil: blended oil-VI: 50 ml of sunflower oil, 12.5 ml of flaxseed oil,12.5 ml of gingelly oil, 12.5 ml of groundnut oil, 12.5 ml of safflower oil). Using a standard process, the phytochemical properties, organoleptic evaluation, the smoking temperature and the rate of oil absorption in cooked food for different frying methods namely, deep fat frying, pan frying, and sautéing were carried out. Except for blended oil-III (132.4 ºC) all other blended oils reported higher smoking temperatures (157ºC-185 ºC). Variation- II blended with 50 % of flax seed, 12.5 % gingely, 12.5 % safflower oil12.5 % of sunflower oil and 12.5 % groundnut oil, showed the least absorption on deep fat frying followed the variation I and II (34.87 %, 12.74 %) compared to foods deep fried in gingerly oil (18.67 %), sunflower oil (12.53 %) and groundnut oil (24.83 %). Thus the study shows that vegetable oil blended with 50 % of flaxseed, 12.5 % of gingely oil,12.5 % of groundnut, 12.5 % sunflower, 12.5 % safflower can be suggested as a healthy alternative source for cooking oil.

Keywords: Deep Frying, Shallow Frying, Pan Frying, Vegetable oil, Blended oil

Oral - 137

Standardization of Auxiliary bud, Callus Induction and direct shoot proliferation from *Bacopa monnieri*

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Plant tissue culture is a process of growth and multiplication of tissues of plants in a liquid medium under an aseptic environment. The main advantage of plant tissue culture is to purify the compounds, crop improvement and to produce high-quality yield. In this study, we used the medicinal plant *Bacopa monniera*. The main indications for using Bacopa in Ayurvedic medicine are memory improvement and used for the treatment of epilepsy, asthma, etc. *B. monniera* contains nicotinine, alkaloids, triterpenoid saponins and D-Mannitol. B.monniera possesses many pharmacological effects such as antioxidant, antimicrobial, anticancer, hepatoprotective and stabilising properties. The chemical constituents of this plant are responsible for the memory-enhancing effects. MS Media, sucrose and agar are used as media for optimum growth. pH and Temperature are the physical parameters used in this study. The selected explant has been sterilized with cedaphol solution, 70 % ethanol, 0.2 % Mercury Chloride and rinsed with distilled water. Various media such as Benzyl Adenine, IAA, kinetin and 2,4-D are used for the growth of explants such as Auxiliary bud, Callus induction and direct shoot regeneration. From our observation, the growth of explant is exhibited in all the combinations of plant growth regulators.

Keywords: Plant tissue culture, *Bacopa monniera*, plant growth regulators, Ayurvedic medicine.

Oral - 138

Surveillance of soil quality of selected rural and industrial areas of Coimbatore district using geospatial techniques, Tamilnadu, India

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The study was to assess the impact of agricultural and industrial activities on soil quality. In this study, 20 samples were collected from different locations in agricultural and industrial areas using the systematic random sampling method at depths of 0–30 cm. The soil samples were recorded and analysed in a laboratory to determine the selected thirteen parameters: pH, electrical conductivity, organic carbon, available nitrogen, available potassium, total potassium, available phosphorus, total phosphorus, copper, zinc, iron, calcium, and magnesium. For this study, we used multivariate statistics like correlation matrix and factor analysis on the physicochemical variables of the soil to determine the dominant factors contributing to soil contamination in the area. In the analysis, six factors appeared to the significant contributors to soil quality. The total contribution of these six factors was more than 85 %. The factor analysis results show that the Kaiser-Meyer-Olkin measure of sampling adequacy is 0.774. A spatial interpolation technique, i.e., the inverse distance weighted method was used for generating the physicochemical parameter map with the help of geographical information system software. By overlay analysis, contamination index maps were generated for different depths by assigning ranking and weightage to the various chemical parameters. GIS model provides a better understanding of contaminants spread, and the identified interpolation techniques give closer values to their real existence in the field. The study reveals that analysing soil contamination provides a permanent base for monitoring contaminated sites and can provide important information for decision-making related to land use planning and management.

Keywords: Geographical information system, Inverse distance weighted method, multivariate statistics, soil analysis.

Oral - 139

Targeting potential biomarkers and its associated cellular signalling pathways in Colon Cancer by Scopoletin through Systems Biology approach

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Scopoletin is a coumarin phytoalexin which is biosynthesized by numerous plants include *Scopolia carniolica* or *Scopolia* japonica, *Artemisia scoparia* and *Viburnum prunifolium*. The primary goal of this research is to conduct systemic bioinformatic investigations of Scopoletin against Colon cancer. A holistic bioinformatics strategy was developed to predict the mechanisms of scopoletin for colon health protection. Comparative Toxicogenomics Database (CTD) and DisGeNET databases were utilised to discover potential genes. The Protein-Protein Interactions (PPIs) PPI network was built using STRING and visualized through Cytoscape software. Based on a multi-pathways network using the MCODE plugin of Cytoscape, it was observed that Scopoletin may protect colon cancer by suppressing the oxidative stress and inhibiting inflammation via regulation of Nuclear factor erythroid-related factor-2 (Nrf2) signalling pathway, inflammation associated pathways, apoptosis pathway, autophagy pathway, cell proliferation signalling and insulin-sensitizing pathway. Gene ontology (GO) analysis generates highly interconnected pathways underlying biological processes, molecular function and cellular components as well as pathway enrichment analysis. Our findings aided in the investigation of molecular mechanisms and identification of target potential biomarkers to treat colon cancer.

Keywords: Scopoletin, Colon cancer, autophagy, apoptosis, systems biology and gene ontology

Oral - 140

Taxonomical characterization of microbes from the rhizosphere of *Rauwolfia serpentina* L.

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Rauwolfia serpentina L. Benth Kurz, commonly called Sarpagandha, is a species of flowering plant in the family Apocynaceae that is used to treat a variety of diseases such as insanity, epilepsy, insomnia, hysteria, eclampsia, hypertension, and snake bites. The *Rauwolfia* species is mainly known for its phytochemical reserpine, which is an alkaloid found in the roots of *R. serpentina*. The root microbiome is beneficial for plant growth and fitness. The rhizospheric soil is rich in diverse ecosystems. The objective of this study is to sequence and analyze the root microbiome of *R. serpentina,* classify the root microbiome taxonomically through *in silico* analysis, and hypothesize the enhancement of reserpine production in roots by the soil microbiota. Here, microbes were isolated from the rhizosphere soil of *R. serpentina* by serial dilution. Then isolated microbes were sequenced using 16S rRNA amplicon sequencing (NGS Illumina sequencing) and analyzed using bioinformatics tools such as BLAST. A preliminary quantitative phytochemical analysis was carried out to quantify the alkaloids present in the various alcoholic extracts of the root part of *R. serpentina*. The results summarized herein show that phylum and their respective classes are detected, and taxon classification is identified from the 16S amplicon sequencing. From this study, it can be concluded that rhizosphere bacteria from the roots of the plant *R. serpentina* was taxonomically classified, and the root of the microbe-treated plant was found to have higher alkaloid content than that of the root of the control plant. Thus, this can be hypothesized that root microbiota plays a role in enhancing alkaloid production in the plant.

Keywords: *Rauwolfia serpentina*, Rhizosphere, Microbiome, Reserpine, Illumina sequencing, Taxonomical classification.

Oral - 141

The beneficial impact and nutrient profile of banana blossoms: A review

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The banana blossom (*Musa acuminata* Colla) is a vegan fish and also a male banana bud that is brimming with nutrition. It is an edible by-product of banana cultivation, which is common in many Asian nations, including Sri Lanka, Malaysia, Indonesia, Philippines, and India, owing to its high nutritional content. Banana blossoms are generally discarded by growers, producing enormous quantities of post-harvest waste. It is usually red or purple-red in colour and is attached to the end of the banana fruit bunch. The flowers are crunchy, nutty, and starchy. It is packaged with vital nutrients, such as iron, phosphorus, calcium, potassium, magnesium, and iron. Being the underrated part of the banana, it plays different roles in tackling health issues and infection. It has anticarcinogenic, anti-inflammatory, and cardioprotective properties owing to the presence of various bioactive compounds, such as polyphenols, phytosterols, and terpenoids, present in the inflorescence. The flower is used to treat ulcers, dysentery, bronchitis, menstrual bleeding and lactation and helps in overcoming diabetes, weight loss, and gastrointestinal health. Acceptability studies on glucose uptake, bread innovation, fiber enrichment, anemia treatment, and incorporation into breakfast cereals have a positive impact on the active use of these foods. The most innovative use of banana blossoms is the production of plant-based meat products, which are considered to be the future of food or a revolution that is replacing conventional beef in the sustainability of the world.

Keywords; Banana blossoms, nutritional properties, bioactive compounds, by-products

Oral - 142

The creation of selenium nanoparticles decorated with troxerutin and their ability to adapt to the tumour microenvironment have therapeutic implications for triple-negative breast cancer

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Despite advancements in treatment, managing aggressive types of breast cancer particularly Triple Negative Breast Cancer (TNBC) remains a daunting task. Although newer chemotherapeutics enhance the multidrug resistance in cancer cells making them untreatable. The current research work was framed to develop a novel therapeutic target by utilizing the flavanol, troxerutin (TXN) as a drug of interest to target TNBC. And also, to increase the efficiency of drug at the target site, a nanocarrier called selenium nanoparticles (SeNPs) had been exploited. Thus the anticancer efficacy of TXN and Se-TXN against TNBC (*in vitro* and *in vivo*) has been compared and analysed in the present study. Se-TXN was synthesized by precipitation approach and characterized by diverse analytical techniques which confirm the successful loading of TXN on SeNPs. The inhibitory concentration (IC50) of Se-TXN was determined to be 6.5 ± 0.5 µg/mL according to the in vitro data. Even at lower concentrations, the existence of apoptotic bodies shows that Se-TXN is effective against TNBC. Additionally, the Se-TXN expression study shows that the activation of the caspase cascade pathway, which results in apoptosis, occurs from the downregulation of anti-apoptotic proteins and genes and the upregulation of pro-apoptotic proteins and genes. And the *in vivo* investigations like histopathology, haematology and biochemical parameters revealed that the Se-TXN had significantly lowered the tumour volume of treated Balb/C mice without having any significant systemic toxicity when compared to other treatment groups. Altogether, our data suggest the efficacy of Se-TXN nanoconjugates as an effective management therapy for treating TNBC.

Keywords: Triple Negative Breast cancer: TNBC: MDA- MB- 231 cells: Selenium – troxerutin nanoconjugates (Se-TXN): Anti-cancer efficacy.

Oral - 143

The effectiveness of C*ycas revoluta* (Eggshell) nanoparticles to improve soil health

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Soil infertility is a major common problem which can be seen in our daily life. Lack of nutritional characteristics, insufficient chemicals, and unbalanced plant growth are the outcomes of infertile soil. Oxygen, water, and the natural growth of plants are disrupted by physical and chemical causes. One of the main causes of low crop productivity is soil loss. Deforestation, urbanization, industrialization, and the overgrazing of cattle are further causes. The focus of this study is to use nanoparticles synthesized from various bioorganic components to improve soil nutrients. Eggshell (*Cycas revoluta*) are the bioorganic material utilized here. Most eggshells are composed of calcium carbonate, which makes up around 95% of them, along with phosphorous, magnesium, and trace amounts of sodium, potassium, zinc, manganese, iron and copper. Wet chemical precipitation and calcination procedures were used to synthesize hydroxyapatite. The Eggshell nanoparticle was further characterized using FTIR & SEM Analysis. The Nanoparticles were effective in increasing the health of polluted soil collected from various contaminated places.

Keywords: *Cycas revoluta*, soil infertility, nanoparticles, FTIR & SEM Analysis.

Oral - 144

Transgenic crops- A revolution

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Here, I present the solution for the growing population by producing transgenic crops. Today biotechnology researchers are developing new products that they believe will offer better solutions for the growing population in this world. Within agriculture the principal goal of modern biotechnology is to improve the quality, quantity, nutrition, taste and shelf life to produce, ultimately enabling stakeholders to obtain greater yield with reduced energetic costs. By the year 2050, the population will reach nine billion. Food production will increase at the same rate or more in order to satisfy the needs of an enormous number of people in some older countries. So there is a need for the use of genetic techniques to improve the crops. We can eat transgenic crops or genetically modified plants and there are no evidence that they are dangerous to eat because of it. Through the use of transgenic, one can produce plants with desired traits and even increase the yield. The transgenics would allow for more crops that last longer and withstand pests and disease.

Keywords: Transgenic crops, Food production, genetically modified plants

Oral - 145

Ultrasensitive fluorescent detection of drugs by using carbon dots

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Water based epidemiology is gaining attention as a monitoring system for public health due to the recent epidemic outbreak. Carbon Dots (CDs) are considered promising in the last decade due to their outstanding optical properties, biocompatibility, negligible toxicity, great solubility, and facile synthesis. The present study is focused on the hydrothermal synthesis of carbon dots using pomegranate peel as a precursor. CDs expressed fluorescence while observing under the UV-Vis transilluminator. The UV-Vis spectrum shows an absorption peak at 276 nm with a shoulder at 247 nm. The DLS results showed nitrogen doping prevented aggregation, resulting in CDs with 0.7 nm in size and a zeta potential of -16.7. FT-IR results confirmed the presence of NH groups. The CDs were highly sensitive at lower concentrations, observed as follows 9 µl of CDs/3 ml at 340 nm gives a high-intensity peak of 559.99 nm and 1 µl doped CDs/3 ml dilution sample gives a higher fluorescence intensity of 986.89 nm. The CDs were found to be non-toxic in Vero cell lines. Several investigations at wastewater treatment plants have shown that carbamazepine is barely removed during sewage treatment (if any then less than 10 %). The antiepileptic drug carbamazepine is hardly removed in wastewater treatment plants and used as marker species in wastewater to identify and quantify sewer exfiltration. For the first time, CDs were used for sensing carbamazepine. Photoluminescence spectroscopy showed that the CDs bound with the drug and resulted in the reduction of the fluorescence intensity of the Carbon dots. The Results obtained strongly suggest that use of CDs can be used as sewage sensors for rapid detection of a range of drugs, providing a real-time monitor for public health assessment, also community-wide illicit drug consumption and pathogens for early warning of infectious disease outbreaks. To conclude, this study provides a perspective on the future use of the CDs-based sensing technology for rapid on-site monitoring of sewage for public health assessment and effective intervention.

Keywords: Water based epidemiology, Carbon Dots, Vero cell lines

Oral - 146

Unraveling microbial strategies to control pH fluctuations for enhanced biomethanation

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Biomethanation is a complex microbial process with tremendous potential for waste treatment, renewable energy production, and resource recovery. Microbial communities known for their metabolic flexibility have evolved mechanisms to mitigate fluctuations in the process parameters, including pH, which is crucial for the stability and efficiency of the biomethanation process. This study focuses on elucidating the contributions of diverse microbial communities to pH regulation during the biomethanation process. Hydrolytic bacteria such as *Ruminococcus, Prevotella,* and *Thermotoga* species produce hydrolytic enzymes capable of degrading complex carbohydrates, including cellulose and hemicellulose. Hydrolysis facilitates the release of metabolites that can decrease the pH marginally from 6.8 to 6.0. During the acidogenesis phase, the *Clostridium* and *Bacteroides* species ferment complex organic matter into volatile fatty acids such as acetic, propionic, and butyric acids, leading to a sharp decrease in pH up to 4.5 and affecting biomethane production. The *Methanosarcina* species metabolizes various substrates, such as acetate, methanol, and methylamines, and can produce alkali compounds, including ammonia, that collectively stabilize the process and resumes the pH between 6.5 and 7.2. Concurrently, the *Methanobacterium* species is a hydrogenotrophic bacteria that consume excess hydrogen ions (H^+) produced during acidogenesis and maintains a stable pH of around 6.8, enhancing biomethane yield. Moreover, the genetic engineering approach can also be explored for precise microbe-led process control. Hence, limiting and maintaining the appropriate microbial populations in the biomethanation reactor will help sustainably improve process control and desired product production.

Keywords: Biomethanation, pH fluctuation, Hydrolytic bacteria, Acidogenesis, Hydrogenotrophic, Methanogens.

Oral - 147

Value addition of underutilized green leafy vegetables in convenient foods

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Green leafy vegetables are edible parts of plants which are rich in many micronutrients and are the richest source of phytochemicals, antioxidants and nutraceuticals essential for wellbeing. These green leafy vegetables have anti-cancerous, anti-inflammatory, anti-microbial and hepatoprotective properties. For the study, underutilized green leafy vegetables of carrot, cauliflower, beetroot and drumstick were selected. The objectives of the study were to dehydrate the selected leaves and to formulate convenient food products. These leaves were solar and shade dried, then powdered and stored in air-tight containers for further use. There was no changes in the sensory attributes at the end of the shelf life study. Each leaf powder was incorporated at 10 %, 20 %, 30 % and 40 % in convenient foods like *sambar podi*, *sathumaavu* (health mix), *idly podi* and *parupupu podi* separately. The formulated products were analysed for its sensory attributes using 9-point hedonic scale and the products with highest mean score were selected as a best product. Nutrient analysis was done for the standard and selected products by factorial method. Cost analysis and popularization were also done. The samples with 10 % incorporation of dehydrated green leaves powders were highly acceptable among all the formulated products. The micronutrient content was high in the selected products when compared with the standard products. There was a slight reduction in the cost of the formulated products. The products were accepted by all the participants involved in the popularization study. These green leafy vegetables are rich in micronutrients and can bridge the gap in micronutrient deficiency among the population.

Keywords: Value addition products**,** Underutilized green leafy vegetables, Micronutrients, Convenient foods, Greens incorporated Products, Nutraceuticals.

Oral - 148

Zinc oxide nanoparticles in meat packaging

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Food spoilage, which may pose a great hazard to the global environment and human health. Amongst bio-safe material that retains photocatalysis and impacts, photo-oxidizing on biological and species chemical are ZnO nanoparticles (ZnO-NPs). This abstract covers a wide range of applications, starting from the ZnO-NPs synthesis and antibacterial potential to their functional application in meat packaging. A deep comparison of the physicochemical properties of ZnO-NPs synthesized through different routers was reported. In addition, a special focus has been given to antibacterial mechanisms that underlie synthesis parameters. This review also examined the ZnO-NPs impact on the chemico–physico–mechanical properties of the functional coatings/films features. The employment of ZnO-NPs in meat packaging was also evaluated. As safer nanoparticles, ZnO-NPs enhance stored meat product quality by microflora growth limitation and retards lipid/protein oxidation. Remarkably, active packaging comprising ZnONPs, synthesized or not by plants, showed an eco-friendly solution and future alternative in the packaging industry.

Keywords: photo-oxidizing, ZnO nanoparticles, antibacterial.

Oral - 149

A Study on the *in vitro* thrombolytic activity of *Oscillatoria* Sp.

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A thrombolytic disease such as myocardial, cerebral infarctions are serious consequences of the thrombus formed in blood vessels which are the most common causes of death worldwide. Thrombolytic agents like Urokinase (UK), Streptokinase (SK) and Tissue plasminogen activator (t-PA) are used to dissolve the already-formed clots in the blood vessels. These chemical agents used for thrombolytic activity causes side effects like allergic reactions, bleeding, hypotension, low-grade fever, rash, hypersensitivity, etc. An alternative to chemical agents is compounds from natural sources which prevent these side effects. Given this, the current study is aimed to identify the thrombolytic activity of the Algae species *Oscillatoria (cyanobacteria)*. Bioactive active compounds from the *Oscillatoria* were extracted using methanol. The methanolic extract is tested for its thrombolytic activity by RBC lysis method. The *in vitro* thrombolytic activity study of *Oscillatoria* algae revealed that the methanolic extract of the algae shows good clot lysis when compared with the negative control (water) and the mean clot lysis percentage difference was significant. From the *in vitro* study, suggested that the methanolic extract of *Oscillatoria* sp. can be considered a potential source of natural thrombolytic agents.

Keywords: *Oscillatoria* species, cyanobacteria, thrombolytic activity, RBC lysis.

Oral - 150

Development of a colorimetric method for rapid and quantitative detection of glucose in adulterated cow milk

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Cow milk adulteration is a rising public health concern. Adulterants are added to cow milk to meet quality standards and extend its storage life. Prolonged consumption of adulterated milk has long-lasting ill health effects. Glucose is among the carbohydrate-based adulterants added to cow milk to raise its density, hence better lactometer readings. Glucose is added to synthetic milk to boost the solids-not-fat (SNF) value and viscosity, thereby giving thick consistency. Excessive regular glucose consumption can harm human health, the most commonly observed being insulin resistance resulting in diabetes. Hence it is critical to detect adulteration of glucose in cow milk. The current work is based on glucose detection using the glucose oxidase-peroxidase (GOD-POD) method, achieved by immobilizing the enzyme solution on polystyrene enzyme-linked immunosorbent assay (ELISA) strips. The cow milk sample does not require any pre-treatment for the assay. The dual enzyme system of GOD-POD breaks down glucose and converts it to red quinoneimine dye as the end product. The intensity of the developed red colour confirms the presence of glucose. The detection strip can be assessed using an ELISA reader, which helps quantitatively measure the glucose concentration. The stability of the strip was confirmed by reusing enzyme-coated wells for 20 days with an accuracy of 85 – 90 % detection. Immobilization of enzymes on the polystyrene ELISA strip ensures a better shelf life and multiple usages of coated strips for glucose detection. The strip can be used at various milk distribution stages to ensure cow milk's safety.

Keywords: Cow milk, glucose, adulteration, detection methods, enzyme immobilization.

Oral - 151

Diosmin Inhibits scopolamine-induced neuroinflammation and improves behavioral changes in zebrafish larvae by regulating Nrf2/Keap1 signaling pathway

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The pathophysiological hallmarks of many neurodegenerative diseases rely heavily on neuroinflammation. Chronic neuronal injury is thought to result from hyperactivated microglia's role in managing unresolved inflammatory assaults. It has been established that microglia activity correlates with scopolamine-adduct production in the presynaptic neurons during scopolamine neurotoxicity. Therefore, blocking inflammatory mediators with a promising candidate is highly necessary to halt the development of the disease. Here, we investigated whether diosmin, a C-glycosylated flavone, could counteract the neuroinflammation-like responses caused by scopolamine in zebrafish embryos. Zebrafish larvae 3 days post fertilization (dpf) were treated with 100 μM scopolamine for 30 minutes and diosmin (150 μM) for 24 h. The effects of diosmin were evaluated using a series of behavioral, and molecular assays. Motor function was disrupted in scopolamine-treated larvae, and the expression of pro-inflammatory mediators was greatly increased. We further confirmed that elevated TNF-α activity causes microglia activation, and we discovered decreased expressions of neuroplasticity and antioxidant response makers (Nrf2, SOD-1, and CAT) in scopolamine-intoxicated larvae. Curiously, zebrafish larvae treated with diosmin showed a significant reduction in scopolamine-induced histological and behavioral abnormalities. Diosmin was also able to efficiently suppress TNF-α expression and reduce the discharge of pro-inflammatory mediators in scopolamine treated larvae. Finally, diosmin treatment restored the levels of neuroplasticity indicators and antioxidant markers that had been decreased in scopolamine-treated larvae. Overall, the findings from the current investigation suggested that diosmin might be useful as a therapeutic medication for reducing neuroinflammation.

Keywords: Neuroinflammation, diosmin, scopolamine, zebrafish, neuroprotection

Oral - 152

Eco friendly bio-polymer film production from *Pennisetum purpureum*

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Environmental pollution is increasing day by day due to the accumulation of plastic waste so there is an increasing demand for sustainable biodegradable plastics has led to a growing interest in the field of bioplastics. The research focuses on extracting cellulose fibers from *Pennisetum urpureum*, commonly called Elephant grass or Napier grass, through an alkali treatment and bleaching process. Then they are subjected to purification and modification steps to enhance the properties of biopolymer matrices. The resulting biopolymer is subjected to characterization by various ranges of techniques including tensile strength, biodegradability, PSA, FTIR, SEM. The production of bioplastics from this source offers a promising pathway for minimizing environmental impacts associated with plastic waste and is an alternative to traditional petroleum-based plastics. Thus it promotes a greener and more sustainable future.

Keywords: Bioplastics, nanocellulose, tensile strength, FTIR, biodegradable.

Oral - 153

Effect of quorum quenching molecules on rhizobial and passenger endophytes of groundnut

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Quorum sensing (QS) involves the production, exchange, and perception of bacterial substances known as autoinducers or N-acyl homoserine lactones and quorum quenching (QQ) is the interruption of such signalling mechanism. Quorum quenching molecules like lactonases and acylases will cleave the lactone ring leading to the formation of acyl-homoserine and acyl chains which leads to homoserine lactone and fatty acid, respectively. Other molecules like paraoxonase which has hydrolytic activity against N-acyl homoserine lactones. In pathogenic bacteria, quorum quenching leads to loss of virulence in the host. This study demonstrated the effect of these molecules on Plant Growth Promoting (PGP) traits of rhizobial (*Rhizobium mayense* S11R1, *R. pusense* S6R2, *R. phaseoli* S10R2, *R. phaseoli* S18), non-rhizobial endophytes (*Pantoea dispersa* YBB19B, *Paenibacillus illionoisensis* YBB20, *Burkholderia cepacia KBB3*, *B. cenocepacia* S4R2, *Methylobacterium populi* TMV7-4, *M. extorquens* VRI2-2, *M. extorquens* VRI2-7). Chemicals like salicylic acid (SA), disalicylic acid (DSA), gallic acid (GA) and botanicals *viz.*, turmeric and *nilavembu* extract were used as quorum quenching molecules. Chemicals at 50 mM concentration and botanicals at 1500ppm showed maximum inhibition of rhizobial and passenger endophytes. At this concentration, Plant Growth Promoting (PGP) traits like Indole Acetic Acid (IAA), exoplysaccharides (EPS), biofilm film formation and motility were greatly reduced. This study demonstrated that QS is responsible for the expression of PGP traits any interruption that would cause a greater reduction in the symbiosis with their eukaryotic host.

Keywords: Quorum quenching, lactonase, acylase, plant growth promotion.

Oral - 154

Exploration of freshwater algae and its application in Vellikalakulangara Temple Pond, Kozhikode, Kerala

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Freshwater microalgal diversity plays a crucial role in maintaining the ecological balance and functioning of freshwater ecosystems. This study explores the freshwater microalgal diversity from the freshwater source of Kerala and highlights their diverse applications across various fields. The present study was carried out at the temple pond of Vellikalakulangara Temple, Kozhikode district, Kerala. Water samples were collected with standard procedures. Examinations were employed to identify the species present in the sample. Microscopic examinations were done using LABOMED 300X. During the collection, physical parameters like temperature, humidity, water temperature, and rainfall were noted. Water samples for chemical parameters like chloride, nitrate, silica, sulphate, sodium, potassium, phosphate, fluoride, calcium, magnesium, BOD, and TDS were collected separately in PET bottles. The results revealed a *Botryococcus* algal bloom with various microalgae like *Spirulina*, *Closterium*, *Cosmarium*, *Staurastrum*, *Navicula*, *Euglena* etc. that belong to the classes Chlorophyceae, Cyanophyceae, Bacillariophyceae and Euglenophyceae. The applications of freshwater microalgae are diverse and promising. They are suitable for food and nutritional supplement production because of their high nutritional value, being rich in proteins, essential fatty acids, vitamins, and minerals, carbon sequestration, aquaculture, wastewater treatment, and biofuel production.

Keywords: Microalgal diversity, algal bloom, biofuel, aquaculture, Vellikalakulangara temple pond, *Botryococcus*, *Spirulina*

Oral - 155

Exploring multi-targeted functionality of herbal formulation using Network Pharmacological approach

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Network pharmacology is an emerging area in biological sciences used for studying multi-targeted mechanisms of action of herbal medicine using computational biological tools. In the present investigation, a herbal formulation MKA comprising of *Mimusops elengi*, *Kedrostis foetidissima* and *Artemisia vulgaris* was prepared and its anti-inflammatory potential in combating respiratory inflammation was investigated in LPS-induced macrophage cell line (RAW 264.7). MKA was found to inhibit the production of Reactive oxygen species and nitrite, the key inflammatory mediator. Also, lipid peroxidation, cycloxygenase and lipoxygenase activity were suppressed upon treatment with MKA. The multi-targeted mode of action of MKA was studied using a network pharmacological approach. The chemical database of the bioactive components present in MKA was created from a literature search and plant phytochemical databases. Respiratory disease-related protein targets for the bioactive/ ligands of herbal formulation were identified from the binding database and therapeutic target database. Signal transducer and activator of transcription-3 (STAT-3) inhibitors and epidermal growth factor (EGFR) inhibitors are known inhibitors of lung inflammation. β-sitosterol-β-D-glucoside in MKA was found to have an inhibitory action on STAT-3 while Quercetin and Quercetin-3-O-rhamnoside in MKA were found to have inhibitory action on EGFR. The bioactive in MKA were found to act on protein targets like TRPV1, PPARA, HMGCR, FABP1, SCD1, etc. The protein-protein interaction (PPI) network was constructed using STRING and Cytoscape software was used for the construction of a ligand-target respiratory disease network.

Keywords: Network pharmacology, STAT-3, EGFR, TRPV1, PPARA, HMGCR, FABP1, SCD1

Oral - 156

Synthesis and characterization of nano hydroxyapatite bioceramic for drug loading application

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Bioceramics is a class of materials that are used for repairing or replacing damaged bone tissues. Depending on the application, bioceramics can directly interact with the surrounding tissue, either supporting tissue growth or inducing new tissue regeneration for bioactive ceramics. The Hydroxyapatite nanoparticle was synthesized using a simple sol-gel method, which shows uniform morphology and meticulous size. The X-ray diffraction pattern of the synthesized HAP nanocomposite was compared with the standard JCPDS file, which gives good concession with high intensity and position of peaks. From the FTIR spectra, there is also the presence of carbonate groups that appear due to thermal reaction during the preparation of the sample, including the important functional groups that should appear in the spectra, such as the phosphate group and the hydroxyl group. Through the theoretical drug loading percentage, it is confirmed that 50 % HAp (1:3) doped ciprofloxacin is highly effective when compared to other concentrations. The crystallographic and chemical composition of synthesized hydroxyapatite nanoparticles is analogous to that of natural bone apatite. So the prepared HAP nanoparticle can be used in orthopaedic tissue implants with further confirmation.

Keywords: Bioceramics, Hydroxyapatite nanoparticle, HAP nanoparticle.

Oral - 157

Traditional and novel processes of plant-based milk and its health benefits

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Due to its various health benefits on the human body, the consumption of plant-based milk substitutes has quickly grown throughout the world. These drinks are preferred by those who are lactose intolerant, have hypocholesterolemia, or are allergic to cow's milk. Plant-based milk substitutes are a great option despite the extra sugar and low total protein intake since they include phenolic compounds, unsaturated fatty acids, antioxidant activity, and bioactive components including phytosterols and isoflavones. In addition to the health effects, this review includes conventional and novel processes for different plant-based milk substitutes including almond, cashew, coconut, hazelnut, peanut, sesame, soy, tiger nut, oat, rice, hemp, and walnut. The several processing methods for producing cereal, grain, and nut milk substitutes such as roasting, dry grinding, peeling, soaking in water, blanching, wet milling, filtration, addition of ingredients, fortification, sterilization, homogenization, and packaging were discussed. Ultrasound, High-intensity ultrasound irradiation, ohmic heating, pulsed electric field, ultra high-pressure homogenization, and high-pressure homogenizations were applied to plant-based milk production. Despite the high phenolic content of plant sources, several processing procedures reduce the end product's antioxidant activity and bioactive component content. Therefore,it is important to properly examine the production of plant-based milk substitutes and to come up with ways to lessen eutrophication and acidity.

Keywords: African breadfruit seeds, bread bar, whole wheat, dietary fibre, indigenous crop

Oral - 158

A small molecule inhibitor of Wnt/β-catenin signalling pathway induces apoptosis and senescence in human metastatic cervical cancer cells and decreases cervical cancer stem cell population

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Cervical cancer is the fourth most prevalent and deadly cancer among women and it accounts for 6,00,000 new cases and kills almost 3,00,000 women every year globally, posing a serious threat to most of the developing as well as least developed countries. Disease relapse, drug resistance and aggressive metastasis negatively impact the prognosis of cervical cancer patients. Although prolonged human papilloma virus (HPV) infection is considered as the first hit in the initiation of cervical cancer, dysregulation of wnt/β-catenin signalling pathway and its continuous activation have been observed in most of the cervical cancer cases. Therefore, we hypothesized that inhibition of Wnt/β-catenin signalling pathway using inhibitor of β-catenin-responsive transcription (iCRT-14) may suppress the growth of human metastatic cervical cancer cells. The aim is to target and suppress the Wnt/β-catenin signalling pathway using iCRT-14 and assess its effects on human metastatic cervical cancer cells. Methods: Human metastatic cervical cancer cells (ME-180) were treated with various concentrations of iCRT-14 (25, 50, 100 and 200 µM) for 72 h, and cell viability and proliferation were assessed by trypan blue and MTT assays, respectively. The iCRT-14 treated cells were also studied for cell migration by scratch assay, apoptosis by Annexin V staining using flow cytometry, cellular senescence by senescence-associated β-galactosidase staining and stemness by tumorosphere formation and cervical cancer stem cell (CSC) population by ALDEFLUOR assay. Moreover, we collected the tumorospheres and isolated the total RNA to analyze the mRNA expression

of critical signaling molecules involved in epithelial to mesenchymal transition (EMT), genes involved in cell migration, inflammation, angiogenic and stemness markers, sex steroid receptors, pro- and anti-apoptotic markers, tumour suppressor genes and critical genes involved in cell cycle regulation by real-time RT-PCR analysis. Data were statistically analyzed by one-way analysis of variance (ANOVA) followed by Students-Newman-Keuls test. iCRT-14 treatment significantly decreased the proliferation and migration of metastatic cervical cancer cells and induced apoptosis and senescence. Additionally, iCRT-14 treatment resulted in decreased stemness as observed in decreased number and size of the spheroids formed. Importantly, the CSC population was significantly decreased after treatment with iCRT-14. Furthermore, iCRT-14 significantly decreased the mRNA expression of SLUG, SNAIL and TWIST. It also decreased the mRNA expression of key genes such as MMP-2 and COX-2 that facilitate the dissemination of cancer cells. While iCRT-14 upregulated TNFα, it significantly downregulated the NFκB-P65 gene expression. Importantly, iCRT-14 significantly decreased the mRNA expression of angiogenic marker, VEGF as well as the stemness markers such as SOX2 and SOX9. While the iCRT-14 increased the mRNA expression of P53 and P21, it significantly downregulated the CYCLIN D1 and C-MYC mRNA expression. More importantly, iCRT-14 significantly downregulated the mRNA expression of the sex steroid receptors such as AR and ERα. Furthermore, iCRT-14 treatment upregulated the BAX and BAD expression, while downregulating the BCL2 mRNA expression. Our study demonstrated that the targeted inhibition of the Wnt/β-catenin signalling pathway decreases the growth of metastatic cervical cancer cells, emphasizing the possible use of iCRT-14 as a therapeutic agent for metastatic cervical cancer.

Keywords: Metastatic cervical cancer, Wnt/β-catenin pathway, iCRT-14, stemness, viability, EMT, apoptosis and senescence.

Oral - 159

A study on development of composite flour with Lotus seed flour incorporated products

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The study aimed at the production and quality evaluation of composite flours incorporated with lotus seed flour. Flour was respectively produced (conceptual framework). (A) Ready to prepare Roasted millet coarse grain products - *Idly, pongal, upma, adai*. (B) Ready to prepare Roasted composite flour mix products (1) Phase I steamed food – *puttu, idiappam* (2) Phase II Snacks items - *murukku, thattai* (C) Phase III sprouted Composite flour Bakery products –Biscuits, cake. This study focused on the use of sprouted millet flour and roasted millet flour mixed with antioxidant-rich lotus seed flour incorporated products developed in the form of Phase I, II and III were (1) Steamed food, (2) Snacks items, (3) Sprouted Composite flour Bakery products proportion of S1, S2, S3 list samples of roasted composite flour and sprouted composite flour (S1=55 gm R.R + 40 gm R.C.F + 5 gm L.F) (S2=30 gm R.R + 60 gm R.C.F + 10 gm L.F) (S3=10 gm R.R + 75 gm R.C.F + 15 gm L.F), S1, S2, S3, sprouted flour (S1=50 gm W.F + 45gm S.C.F + 5 gm L.F) (S2= 30 gm W.F + 60 gm S.C.F + 10 gm L.F) (S3=10 gm W.F + 75 gm S.C.F + 15 gm L.F) respectively before being analyzed for nutritional information and antioxidant assay and functional properties. The functional properties were found to be roasted composite flour. Nutritional value is 76.4 gm (Carbohydrate), 12.8 gm (Protein), 89.2 mg (Calcium), 3.1 mg (Iron). The sensory scores S1, S2, S3 and were compared with standard results showed S1 and S2 showed the highest mean value. The composite flour product produced by roasting and sprouting helps to enhance the bioavailability of the micronutrients and to improve the quality of millet diets by the way of incorporation of lotus seed flour helps to increase the antioxidant property (SCF Antioxidant value was 200 μg/g Ascorbic acid and RCF Antioxidant value result was showed 158 μg/g Ascorbic acid. The functional and nutritional properties of composite flour help to overcome lifestyle diseases like Diabetes, CVD and Obesity.

Keywords: Ascorbic acid, RCF Antioxidant, Diabetes, CVD, Obesity

Oral - 160

A Study on the *in vitro* thrombolytic activity of *Oscillatoria* Sp.

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A thrombolytic disease such as myocardial, cerebral infarctions are serious consequences of the thrombus formed in blood vessels which are the most common causes of death worldwide. Thrombolytic agents like Urokinase (UK), Streptokinase (SK), and Tissue plasminogen activator (t-PA) are used to dissolve the already-formed clots in the blood vessels. These chemical agents used for thrombolytic activity causes side effects like allergic reactions, bleeding, hypotension, low-grade fever, rash, hypersensitivity, etc. An alternative to chemical agents is compounds from natural sources which prevent these side effects. In view of this, the current study is aimed to identify the thrombolytic activity of the Algae species *Oscillatoria (cyanobacteria).* Bioactive active compounds from the *Oscillatoria* were extracted using methanol. The methanolic extract is tested for its thrombolytic activity by RBC lysis method. The *in vitro* thrombolytic activity study of *Oscillatoria* algae revealed that the methanolic extract of the algae shows good clot lysis when compared with the negative control (water) and the mean clot lysis percentage difference was significant. From the *in vitro* study, suggested that the methanolic extract of *Oscillatoria* sp. can be considered a potential source of natural thrombolytic agents.

Keywords: *Oscillatoria* species, cyanobacteria, thrombolytic activity, RBC lysis.

Oral - 161

Baicalein-loaded Iron Oxide Nanoparticles Altered the Gene Expression Profile and Modified Cancer Pathways in Triple-Negative Breast Cancer Cells (MDA-MB-231) by PCR Array

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A heterogeneous set of aggressive malignancies with a poor prognosis when compared to other kinds of breast cancer are referred to as triple-negative breast cancer. There is no targeted therapy for the illness, and chemotherapy is also not very successful because there aren't enough receptors. By employing drug delivery systems in this situation, treatment effectiveness can be increased and the drawbacks of traditional chemotherapy can be avoided. By improving the retention and permeability of compounds with low solubility and transporting them to the target site, nano drugs offer unique properties that help overcome the drawbacks of conventional drug delivery systems used in cancer therapy. The effectiveness of baicalein-loaded iron oxide nanoparticles in the triple-negative breast cancer cell line MDA-MB-231 was examined in this work using a breast cancer array. In order to map the expression of 84 genes indicative of 11 biochemical pathways involved in transformation and cancer, the Human Breast Cancer^{TM} RT^{2}Profiler^{TM} PCR array was used. Using a qPCR test, the fluorogenic intensities reflecting the degree of gene expression were measured in MDA-MB-231 cells that had not been treated and those that had been treated with baicalein iron nanoparticles. We discovered that exposure to nanoconjugates not only affects each pathway individually but also results in the interaction of elements along various pathways, revealing the intricate process at work in cancer cells. This therapy also increased the expression of genes linked to DNA damage and repair and apoptosis. It is abundantly obvious from the significant interactions between the elements of the various pathways that baicalein-loaded iron oxide nanoparticles play a significant role in the multifaceted attack on cancer cells.

Keywords: PCR array, Baicalein**,** Triple-negative breast cancer, Apoptosis, Cell adhesion

Oral - 162

Biosynthesis of Gold Nanoparticles from *Martynia annua* aqueous leaves extract and its antimicrobial activity against selected wound pathogens

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Nanotechnology is the most promising area in modern nanoscience and technology. The green biosynthesis of nanoparticles involves the selection of an environmentally acceptable solvent with eco-friendly reducing and stabilizing agents. Therefore, biological approaches to nanoparticle synthesis have been suggested as valuable alternatives to physical and chemical methods. Gold nanoparticles have been extensively used for biomedical applications in separation sciences and disease diagnosis. The leaves and fruits are biologically active parts of this plant which is used for the treatment of epilepsy, inflammation and tuberculosis. The juice of the leaves is used as a gargle for sore throat and the leaf paste for curing wounds in domestic animals. The leaves are found to possess antibacterial properties. In view of the above fact, the present study is focused on green synthesis of gold nanoparticles using aqueous leaf extract of *Martynia annua*. The result of the present study reveals that the initiation of the gold ion reduction process was confirmed based on the colour change of the reaction mixture from deep purple and synthesis was further confirmed by using UV Visible spectrometry in the wavelength range of 584 nm. The synthesized nanoparticles were further characterized using various analytical techniques. The synthesized nanoparticles possess efficient antioxidant activity and antibacterial activity against selected wound pathogens.

Keywords: Nanotechnology, Gold nanoparticles, *Martynia annua*, antioxidant activity

Oral - 163

Changing trends in food habits, food culture, and food choices among college students in the Malabar region of Kerala

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Food is a reflection of the culture and tradition of a society. There have been some changes in food habits and food consumption patterns of human beings all over the globe for years. There are various elements, like migration, tourism, numbers of wage earners, social media influences, advertising and utilization of leisure time, etc. promoted the changes speedily. Soft food culture is one of the important changes that are noticed in them. Foods like flattened rice, dry fish, dried tapioca etc are not preferred. Compared to the olden days, the frequency of visiting hotels and eateries is high. There is widespread usage of food flavours, colours and other food additives. Foods like rice juice are consumed by a very less number of students. There is observed a frequent consumption of cakes, ice creams, and puddings. The usage of convenient food ingredients like chilly sauce, tomato sauce, curry masalas, etc. is high nowadays. Commonly used traditionally cultivated agricultural materials like moringa leaves are less consumed. Apart from the significance of safety, the appearance of foods is given more value. New-generation drinks, sodas, and beverages are seen in many parts. There is a greater demand for snacks, juices and even replacing them with several main courses of time like lunch. But it is observed that large number of people are involved in innovative food preparations as an influence of social media. An appreciable number of people are using various food apps for choosing food centres.

Keywords: traditionally cultivation, New-generation drinks, food apps

Oral - 164

Detection of quorum sensing compounds in rhizobial and non rhizobial endophytes of groundnut (*Arachis hypogea*)

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The well-studied model system of mutualistic interactions between bacteria and eukaryotic hosts is the *Rhizobium* - legume symbiosis. Quorum sensing is a cell-to-cell signalling technique that allows bacteria to collectively adjust and synchronise behaviours, some of which are critical for interacting with eukaryotic hosts, using tiny diffusible chemical compounds. QS systems in rhizobia are often based on the production and detection of N-acyl-homoserine lactones (AHLs). These molecules are synthesised by LuxI-type synthases, and the associated LuxR-type receptors control target gene transcription in the presence of cognate AHLs.Perception of QS molecules in bacteria activates or deactivates transcription of numerous QS-regulated genes including virulence factors, Indole Acetic Acid (IAA), cytokinin signalling, exopolysaccharide production, biofilm formation, enhances defense mechanism, root length, root architecture, chemotaxis, biomass and abiotic stress. Gram-negative bacteria generally rely on the synthesis of autoinducers N-acyl homoserine lactones (AHL). Main aim of this study is to demonstrate the tripartite interaction among QS molecules rhizobial, non rhizobial endophytes and host for plant growth promotion in isolated from groundnut root nodules. The presence of AHL molecules was confirmed using biosensor *Chromobacterium violaceum* CV026 which produced violacein pigment when cross streaked rhizobial and non rhizobial endophytes. The rhizobial (bacteria name *Rhizobium mayense* S11R1, *R. pusense* S6R2, R. phaseoli S10R2, R. phaseoli S18) and non rhizobial endophytes (bacteria name *Pantoea dispersa* YBB19B, *Paenibacillus illionoisensis* YBB20, *Burkholderia cepacia* KBB3, *B. cenocepacia* S4R2, *Methylobacterium populi* TMV7-4, *M. extorquens* VRI2-2, *M. extorquens* VRI2-7) were grown on their respective broths until log phase, supernatants were extracted with equal volumes of acidified ethyl acetate and were analysed in HPLC. In HPLC analysis diverse molecules of AHLs like C6, C7, C8, C10, C12, 3-hydroxy-C8 and 3-oxo-C14 HSLs were detected. Out of C7 seven QS molecules, C7 and C10 HSL molecules were present in higher concentrations than other molecules. This study provided evidence that more than one type of QS molecule is present in one bacterium for cross-kingdom communication.

Keywords: *Rhizobium*, quorum sensing, symbiosis, N-acyl homoserine lactones, HPLC, cross-kingdom communication., LuxI-type synthases

Oral - 165

Determination of Carbon Footprint of selected major cereals

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Cereals are a group of grasses which serve as staple food sources for a large part of the world's population and also provide vital nutrients and energy. However, the overall global food system currently accounts for 30% of global greenhouse gas emissions. Greenhouse gas emissions are produced during the growth, processing, packaging, transportation, sale and consumption of food. Three main greenhouse gases are carbon dioxide, methane and nitrous oxide. Hence, this study aims to investigate the carbon footprint associated with the production and consumption of cereals in Coimbatore, a bustling city in Tamil Nadu, India. To determine the carbon footprint, all stages of cereal production including cultivation, water consumption, land use and transportation were considered. Primary data is collected through surveys and secondary data from scientific literature, government reports, and databases. The carbon footprint of the foods was determined per year. The study result highlights that rice (1252.01 kg CO_2 kcal /yr) has a high carbon footprint when compared to other cereals followed by Italian millet (860.48 kg CO_2 kcal /yr) which has a high negative impact on the environment whereas tender maize (100.35 kg CO_2 kcal /yr) emits less carbon compared to others and has a low impact on the environment. By providing a comprehensive analysis of the carbon footprint of cereals in Coimbatore, this study contributes to informed decision-making for sustainable agricultural practices. It offers valuable insights to policymakers, farmers, and stakeholders involved in the cereal supply chain, enabling them to implement targeted measures to mitigate emissions and improve environmental sustainability.

Keywords: Carbon footprint, Cereals, Cultivation, Water consumption, Land use and Transportation

Oral - 166

Development and Standardization of Tapiaco Powder incorporated Biscuit

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Tapiaco is the third-largest source of food. Carbohydrates in the tropics, after rice and maize, tapioca is a major stable food in the developing world, providing a basic diet for over half a billion people. Cassava has been exploited as raw material for human food production, animal feed, industry and alternative fuels. cassava flour, however, does not contain gluten and causes no allergic effects when consumed by patients with celiac disease. Research into gluten-free (GF) bakery products based on cassava flour would enhance its use in GF products in a particular, when gluten substitutes such as hydrophilic colloids are added to the formulation. The addition of Xanthan gum significantly improved the appearance, colour, flavour and overall acceptability of biscuits, demonstrating that biscuits, respectively prepared from foxtail Millet flour with Xanthan gum and guar gum, quino flour with tregacanth compared with prepared biscuits. In this study, the researcher incorporates Tapica, Bajra, Sugar and Butter to make a biscuit.

Keywords: Cassava Seed, Gluten Free, Hydrophilic Colloids.

Oral - 167

Studies on medicinal plants to cure kidney stones

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Plants are the most important biotic components – Autotrophic in nutrition, producers of the ecosystem, conserve soil fertility, prevent soil erosion, purify the air and are called the storehouse of medicines. A kidney stone is a crystallization or aggregation of salts found in the urine. An effective method to prevent and treat Urolithiasis is to control the crystal formation. The present study deals with the effective use of medicinal plants to cure Kidney stones and the diet to be followed to avoid recurrent kidney stones. Traditional medicinal plants play an important role and are cost-effective, readily available and easily affordable to cure urolithiasis.

Keywords: Biotic, Kidney stones, Crystallization, Aggregation, Diet, Urolithiasis.

Oral - 168

Development of a colorimetric method for rapid and quantitative detection of glucose in adulterated cow milk

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Cow milk adulteration is a rising public health concern. Adulterants are added to cow milk to meet quality standards and extend its storage life. Prolonged consumption of adulterated milk has long-lasting ill health effects. Glucose is among the carbohydrate-based adulterants added to cow milk to raise its density, hence better lactometer readings. Glucose is added to synthetic milk to boost the solids-not-fat (SNF) value and viscosity, thereby giving thick consistency. Excessive regular glucose consumption can harm human health, the most commonly observed being insulin resistance resulting in diabetes. Hence it is critical to detect adulteration of glucose in cow milk. The current work is based on glucose detection using the glucose oxidase-peroxidase (GOD-POD) method, achieved by immobilizing the enzyme solution on polystyrene enzyme-linked immunosorbent assay (ELISA) strips. The cow milk sample does not require any pre-treatment for the assay. The dual enzyme system of GOD-POD breaks down glucose and converts it to red quinoneimine dye as the end product. The intensity of the developed red color confirms the presence of glucose. The detection strip can be assessed using an ELISA reader, which helps quantitatively measure the glucose concentration. The stability of the strip was confirmed by reusing enzyme-coated wells for 20 days with an accuracy of 85 - 90% detection. Immobilization of enzymes on the polystyrene ELISA strip ensures a better shelf life and multiple usages of coated strips for glucose detection. The strip can be used at various milk distribution stages to ensure cow milk's safety.

Keywords: Cow milk, glucose, adulteration, detection methods, enzyme immobilization.

Oral - 169

Sensory and nutritional evaluation of sprouted ragi flour laddoo incorporated with sweet potato (*Ipomoea batatas* (L.) Lam) and niger seeds flour (*Guizotia abyssinica)*

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Finger millet (*Eluesine coracana* L.) or ragi occupies a significant position in India in terms of production and utilization and the entire world. It is one of the most stable food crops. Finger millet is superior to rice and wheat with respect to mineral, fiber and micronutrient contents. Its utilization in the daily diet at present is very limited in rural areas only. Finger millet belongs to the family Poaceae and the genus Eluesine. It is a self-pollinated crop. It is a grass crop grown in India, Africa, Nepal and many countries in Asia. Finger millet is rich in polyphenols, calcium and iron. Finger millet is one of the staple food crops of Central and eastern parts of Africa, Nepal and India. The study was planned to evaluate the sprouted ragi flour "laddoo" incorporated with sweet potato (*Ipomoea Batatas* Lam) and niger seed flour (*Guizotia Abyssinica*). The product was developed by sprouted ragi flour incorporated with sweet potato and niger seed flour. Four treatments were used sample code T0 (100 g - control), T1 (80-20), T2 (70-30), T3 (60-40), T4 (50-50) (i.e) 20, 30, 40, 50 per cent are the incorporation ratio of sweet potato and niger seed flour. The incorporated products were subjected to organoleptic and nutritional evaluation. The results were subjected to statistical analysis using ANOVA. Sensory evaluation of developed products was carried out using 5-point hedonic scale. The samples were further analyzed for moisture, ash, crude fat, crude protein and crude fiber, dietary fiber and minerals using standard methods.

Keywords: Ragi millet, Sweet potato, Niger seed, Sprouting, Nutritional Composition and Sensory Evaluation.

Oral - 170

Role of Polydopamine in Cancer Nanotheranostics

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Multifunctional nanomaterials such as those incorporating Polydopamine (PDA), are gaining increasing attention as a potential solution to address the existing challenges in cancer treatment. PDA has emerged as a versatile platform for cancer nano theranostics integrating diagnostics and therapeutic functionalities into a single system. This work aims to explore the applications and potential of PDA-based nano theranostics in cancer research. PDA nanoparticles (NPs) possess unique physiochemical properties that make them ideal for cancer therapy. Moreover, PDA NPs can act as photothermal agents (PTA) and also as a photosensitizer thus they can be utilized in photothermal therapy (PTT) and photodynamic therapy (PDT). PDA-based imaging agents provide real-time information about tumor location, size, and metastasis, aiding in accurate cancer diagnosis and treatment monitoring. PDA NPs can serve as efficient carriers for delivering anticancer drugs to tumor sites and the pH-responsive nature of PDA enables controlled drug release in the tumor microenvironment (TME), ensuring optimal drug concentrations at the tumor site. Furthermore, PDA-based platforms can be utilized in immunotherapy by enhancing immune cell activation, vaccine delivery, and TME modulations. Thus PDA holds promise for improved treatment outcomes, reduced side effects, and personalized medicine. However, further research is needed to optimize PDA-based nano theranostics systems and advance their translation into clinical practice, with the ultimate goal of improving cancer patient outcomes.

Keywords: Polydopamine, Nanotheranostics, Physiochemical properties, Metastasis, Immunotherapy, Targeted drug delivery.

Oral - 171

FruVegdip – An Organic Fungicidal Dip solution for increasing shelf-life of fruits and vegetables

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In recent days the spoilage of fruits and vegetables are prevented by edible environmentally friendly herbal coating methods. To effectively extend the quality and shelf life by the application of herbal-based solutions are safe alternatives to synthetic analogues to fruits and vegetables which are normally prone to easy microbial spoilage due to high nutrient composition. Prevention of the loss by infection of microorganisms, oxidative browning and liquid oxidation can be achieved by the method of edible coating. The natural barrier of fruits and vegetables is improved by herbal coating. In the present study aqueous extract of *Azaridachta indica* (neem) and *Ocimum tenuiflorum* (tulsi) was prepared with other organic chemicals which add value as preservatives and its fungicidal effect has been evaluated on Fruits and Vegetables like Apple, Amla, Brinjal, Ivy gourd, Mango, Potato and Tomato. The study samples were dipped in the prepared organic fungicidal formulation and kept for assessment of parameters using chemical methods. Ash content, Moisture content, Vitamin C, Titratable acidity and pH, crude fibre and Total sugar contents were estimated and found to be more preserved than the untreated fruits and vegetables compared to treated samples.

Keywords: Fungicidal herbal dip, Fruit and vegetable Dip, Shelf-life of fruits and vegetables.

Oral - 172

Phycoremediation of textile dye effluent from in and around Aruppukottai – Virudhunagar district by using microalgae

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In this research study, microalgae have sufficient biodegradation potential for removing blue dye and red dye from its aqueous solution under optimized conditions. The physio-chemical parameters were analysed from a textile factory located in and around Aruppukottai – Virudhunagar district from January to December 2023. The raw water (textile wastewater) was analysed the parameters like pH, Chloride, TDS, Carbonate and Bicarbonate and Dissolved oxygen from five locations. TDS was highest 263.6 mg/l from location – 5 (Puliyampatti) carbonate was highest 4.32 mg/l from location–1(Pavvadithoppu) Bicarbonate is highest 3508 mg/l from location – 3 (Melatheru) Dissolved oxygen 7.5 mg/l from location – 2 (Kilatheru). From location – 1 data was analysed 50 % of BG-11 medium and 50 % textile water gradually reduced Chloride 7.3 mg/l TDS 11.8 mg/l Carbonate 112mg/l Bicarbonate 150mg/l Dissolved oxygen 4.6. From location -2 data was analysed 25% BG-11 medium and 70% textile wastewater and respectively. TDS -3.36 mg/l, Carbonate – 116 mg/l, Bicarbonate- 223 mg/l , Dissolved oxygen – 1.3 mg/l. Overall analysis the textile dye effluent water 50% medium and 50% textile waste water are well as 75 % textile water and 25 % BG-11 medium were biodegraded very efficiently. It has been also found that *spirulina* sp. has more potential for biodegradation than *oscillatoria* sp. keeping in view this research study, concludes that both species of algae can be used for removing blue and red dye from collected samples. The textile wastewater reduces very effectively from these sites. Knowledge from present work may be employed on a large scale at actual contamination sites.

Keywords: Microalgae, Textile wastewater, BG11 medium.

Oral - 173

Isolation of alkaline protease from fruit waste and its application as detergent

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The modernization of society has made the environment a series of changes. One among them is the enzymatic method produced by microorganisms from any waste. Considering the fruit waste globally several industrial uses have been fulfilled by the fruit waste. The most abundant enzyme nowadays is protease from papaya waste isolated from *Bacillus spp*. Alkaline protease has been chosen for the detergent industries widely since it has pH range over 7.5. It performs more effectively in decomposing proteins. Since it is stable over a wide temperature and pH range. The study aimed to isolate alkaline protease enzyme from fruit waste and its applications as a detergent against three different stains such as blood stain, banana stain and tea stain.

Keywords: Alkaline Protease, *Bacillus species*

Oral - 174

Nutritional quality of tomato, brinjal and okra in response to the application of amino acids formulation

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In order to achieve the Zero hunger goal of Sustainable Development Goals, it has become necessary to adopt sustainable agricultural practices. Supply of bio-stimulants such as amino acids would increase the crop yield as well improve the quality of the agricultural produce. In this context, the present study was contemplated, with foliar application of amino acids-based formulations to enhance the physiological attributes and the quality of vegetable crops. Field experiments on tomato (Cultivar PKM-1), brinjal (CO-1) and okra (Parbani Kranti) were conducted at various locations in and around Coimbatore, Tamil Nadu, India to evaluate the effects of amino acid formulation (10 % free amino acids). The treatments were imposed on the test crops as 10 % amino acid formulation at the rate of 1.0 lha^{-1} x 4 sprays, 1.5 lha^{-1} x 4 sprays and 2.0 lha^{-1} x 4 sprays. The application of amino acids significantly improved the quality parameters of tomatoes such as Total Soluble Sugars, amino acid and protein content, ascorbic acid content, sugars and lycopene. Similar results were observed in Brinjal and Okra. In Okra, the potassium and fibre content also showed a significant increase. The treatment with amino acid formulation 10 % @ 2.0 lha^{-1} proved to be superior in all three vegetable crops.

Oral - 175

Qualitative and quantitative analysis of the unexplored fern, *Thelypteris meeboldii* from Southern Western Ghats, Tamil Nadu

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The present study was to screen the presence of phytochemicals in the petroleum ether, chloroform, ethyl acetate and methanol of fern *Thelypteris meeboldii* species by composed with qualitative and quantitative screening methods. In qualitative analysis, the presence of pharmacologically active phytochemicals such as alkaloids, flavonoids, glycosides, steroids, tannins, terpenoids, saponins, phenols, volatile oils and resins were screened. The methanol fern extract performed well to show positivity rather than other studied fern extracts. Methanol extract showed strong positivity for 6 phytochemicals out of 10 phytochemicals tested. In quantitative analysis, the important secondary metabolites such as total phenols, total tannins, total alkaloids, total flavonoids, total saponins and total terpenoids content were tested.

Keywords: phytochemicals, qualitative, quantitative, *Thelypteris meeboldii*, methanol.

Poster Presentations

Poster - 001

A comparative study on anatomical and biochemical mechanisms acclimatizing to environmental pollution

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This study explores how plants adapt to environmental cues through phenotypic plasticity. By modifying their morpho-anatomical traits, plants can respond to changing conditions and enhance their survival. The study focuses on four common plants from polluted and non-polluted environments, investigating their morphological and anatomical structures. The area selected is the ACC cement factory, Coimbatore which is polluted, and the campus of PSG College of Arts & Science which is non-polluted. The areas were selected according to the convenience of the study in the Coimbatore district. Two plants were selected for the comparison study. The selected plants are *Melia azedarach* L., *Simarouba glauca* DC, *Leucaena leucocephala* (Lam.) and *Diospora virginiana* (L.) which are found commonly in both the study sites. The cytological organization, pH, Relative water content, and biochemical parameters such as chlorophyll, Ascorbic acid, Soluble sugars, Protein, and amino acid content. The air pollution tolerance index (APTI) reflects a plant's ability to tolerate air pollution. Plants with higher APTI can act as a source of pollution alleviation, whereas plants with lower APTI can be an indicator of air pollution levels. In conclusion, the morpho-anatomical mechanisms of environmentally induced plasticity in plants involve adaptations at the whole-plant, leaf, and root levels. These modifications in architecture, anatomy, and vascular tissue enable plants to respond and acclimate to environmental changes. This knowledge has implications for agriculture, conservation, and ecosystem management amid global environmental shifts.

Keywords: Environmental conditions, Anatomical structure, Morphological structure, Physiochemical and biochemical properties.

Poster - 002

A review on application of ozone in food industry

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Ozone an unstable gas which obtained high energy UV radiation has been used in the food preservation and sterilization process. It is one of the innovative and emerging technologies in the food industry to prevent residual contamination, oxidation, disinfectant and microbial inactivation which helps to eliminate unfavourable pathogens in the food product. It is also used in the process of sanitization of equipment, packaging materials and processing environment. The recent trend of using sustainable and environmentally friendly ozone technology is a greener food additive to preserve fruits, vegetables, meat, spices, dairy products and sea food products. The ozone application to the food products also maintains the physicochemical, sensory and nutrition characteristics of the products. Ozone (aqueous gas and ozonized water) act as the strongest oxidizer when compared to chlorine. They are also widely used not only in the food industry but also in the agriculture process, waste treatment and process of water. Ozonation technology is also considered as eco–sustainable as they disappear in a shorter period and do not contain any residues of ozone. Food preservation using the ozone, non-thermal processing technology not only preserves the food it also improves the quality and shelf life of the product and it also enhances food security and food safety.

Keywords: Ozone, preservation, additive, disinfectant, sustainable, technology.

Poster - 003

A review on the phytochemical and pharmacological characteristics of some medicinally important *Argyreia* species

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The genus *Argyreia* is known as 'woolly morning glory' or 'small wood rose'. It includes about 90 species and is found in tropical continental Asia, Australia and Malaysia. 46 species are found in India. *Argyreia* is the second-largest genus in the family Convolvulaceae. This review focuses on the phytochemical analysis and pharmacological studies done on the seven *Argyreia* species. Qualitative phytochemical studies showed the presence of Alkaloids, Flavonoids, Phenols, Terpenoids, Steroids, Saponins, Tannins, Glycosides, Proteins and Amino acids in most of the *Argyreia* species. *Argyreia nervosa* possesses bioactive compounds like Psychotropic LSD, Ergoline Alkaloids, Coumarin Glycosides, Kaempferol, Quercetin, Lysergamides, Eragine, Isoeragine which are having Anti-Aging, Nootropic, Hallucinogenic, Analgesic, Anti-Inflammatory, Gastroprotective, Antiviral, Antidiabetic, Aphrodisiac, Anticonvulsant, Antioxidant, Anticancer, Antidiarrheal, Antiulcer and Nematocides activities. Compounds like Embelin, Citronellal, Propafenone, Baicalin, Tentoxin, Ricinoleic acid, Mupirocin, Lupeol and Zingerone present in *Argyreia cuneata* and *Argyreia setosa* have antioxidant, antimicrobial, anti-Inflammatory and antidiabetic activities. *Argyreia Pilosa*, *Argyreia roxburghii*, *Argyreia cymosa* and *Argyreia pomacea* contain Alkaloids, Flavonoids, Phenols, Tannins, Steroids, Fixed Oils, Glycosides, Amino acids, Carbohydrates and Proteins. They are responsible for antipyretic activities, antioxidant activities, wound healing activities and cardiovascular effects. Hence, these potent natural bioactive compounds present in the above-mentioned *Argyreia* species may be utilized as components in herbal medicines.

Keywords: *Argyreia nervosa*, Amino acids, Cardiovascular, herbal medicines.

Poster - 004

A study on prevalence of cardiovascular risk factors, usage and knowledge of supplements and development of complete cardiac health supplement

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Cardiovascular diseases are the conditions that affect the heart and blood vessels which account for 31% of mortality all over the world killing 17.9 million people every year. Deaths from cardiovascular disease occur 5–10 years earlier in South Asian nations than in Western countries. Incidence of cardiovascular disease in people aged >50 years decreased whereas in younger individuals (aged 18-50 years) has increased over the same period. These can result from a combination of factors, including lifestyle choices, genetics, and other underlying health conditions. As Young adults were unconcerned and unaware of the link between their current health behaviours and the risk of developing CVD in the future it is important to manage the modifiable risk factors by imparting an integrated approach of pharmacological and non-pharmacological therapy (Supplementation/Balanced diet) along with lifestyle modification it will prevent and delay cardiovascular diseases. Functional foods are whole foods or food products that naturally or intentionally contain bioactive compounds which act as cardio protective by providing benefits primarily through improving hypertension management, endothelial function, platelet aggregation, and antioxidant activity. So, our study focuses on the formulation and development of economical/eost effective supplements using functional foods which should be cardiac-supportive and easily assimilable.

Keywords: Cardiovascular disease, Supplement, Lifestyle modification, Young, Functional foods

Poster - 005

An investigation on the impact of sprouting and roasting on the selected biochemical and nutritive composition of Kodo millet

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In many malted millet foods, the grains are germinated and dried which leads to a lot of biochemical changes in nutritive composition. Hence, the study was taken up to analyze the biochemical and nutritive factors of the Kodo millet during the process of sprouting and roasting for making a value-added food product. The comparative analysis of the composition of processed and unprocessed sample will showed that the sprouted sample was enriched in nutritive content and essential minerals. From the nutritionally enriched sprouted sample millet ice cream was made with the two variants such as adding sugar and without adding sugar. The survey was taken and it reveals that without adding sugar ice creams were liked by most of the people. From this investigation, it was concluded that Kodo millet ice creams were nutritionally enriched.

Keywords: Kodo millet, Sprouting and Roasting, Nutritive analysis, Mineral analysis, Ice cream making.

Poster - 006

AKI603, an inhibitor of Aurora kinase-A; Potentiates inhibition of cell growth, cell cycle progression, and induces cell death in human colorectal cancer cells: A therapeutic strategy

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Colorectal cancer (CRC) is a leading cause of cancer-related deaths worldwide. Despite significant advances in understanding CRC, the molecular mechanisms underlying its progression and poor survival rates remain poorly understood. This study aimed to investigate the role of Aurora kinase A (AURKA) in CRC using web-based tools and biological assays. Analysis of various cancer databases revealed significantly elevated expression levels of AURKA in CRC compared to normal adjacent tissues. Gene set enrichment analysis (GSEA) further suggested that AURKA expression is positively upregulated in CRC and is highly involved in cell cycle regulation and apoptosis. Furthermore, using web-based tools such as GEPIA and KM plotter, we observed that AURKA is highly upregulated and associated with poor survival rates in CRC. To investigate AURKA inhibition, we identified the potent AURKA inhibitor AKI603, which exhibited high binding affinity against AURKA using molecular docking. Biological assays including MTT assay and Western blot analysis were performed using CRC cell lines (HCT116 and HT29). The results demonstrated that AKI603 effectively inhibited cell growth and reduced AURKA protein expression in CRC cells. Flow cytometry analysis revealed that AKI603 specifically inhibited G0/G1 phase cell cycle progression and induced both early and late apoptosis in HCT116 and HT29 cells. These findings were further supported by changes in protein expression levels of cell cycle regulators and apoptosis-related targets. Our study provides molecular insight into the oncogenic role of AURKA in CRC and highlights AKI603 as a potential therapeutic candidate for CRC treatment by targeting AURKA-mediated cell cycle dysregulation and apoptosis evasion.

Keywords: Colorectal cancer, AKI603, Cell growth, Cell death, Molecular Docking, therapeutic targets.

Poster - 007

Antimicrobial Finishes on Cotton Fabric Using Nanocapsulated Chitosan Herbal Extract

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Textile fabrics can serve as a breeding ground for microorganisms, leading to various problems such as odour and fabric degradation. To address this issue, antimicrobial finishes are applied to textiles to prevent bacterial growth and protect the wearer's health. This study focuses on the use of nanocapsulated chitosan herbal extract as an antimicrobial finish on cotton fabric. Chitosan, derived from a crab shell, is synthesized into nanoparticles and used to encapsulate herbal compounds extracted from *Tagetes erecta* (Marigold flower). The herbal chitosan nanoparticle is then coated on cotton fabric by pad dry cure method. The physical and antimicrobial efficacy of the finished fabric was determined. The study revealed that it is possible to develop innovative and hygienic finishes for cotton fabric, providing a sustainable and eco-friendly solution to combat microbial growth and enhance textile performance.

Keywords: Cotton fabric, Chitosan, *T. erecta*, nanoparticle.

Poster - 008

Antioxidant and anti-inflammatory activities in aqueous leaf extract of *Mitrephora heyneana* – An *in vitro* and *in silico* approach

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Medicinal plants are regarded as rich resources of antioxidants. Antioxidants can prevent or slow damage to cells caused by free radicals. Factors that increase the production of free radicals in the body can be internal, such as inflammation, or external. Certain plant-based foods are thought to be rich in antioxidants. *Mitrephora heyneana*, a plant species from Annonaceae, consists of sterols, triterpenoids and coumarins as major secondary metabolites. The plant leaves were extracted with water and used for evaluations of various *in vitro* antioxidant assays, including enzymatic, free radical scavenging, total antioxidant assays and anti-inflammatory assays. Ascorbic acid was used as a standard for antioxidant assays followed by diclofenac for anti-inflammatory. In the super dioxide dismutase assay the percentage of inhibition was high (43.03 ± 1.17 µg/mL) with IC_{50} of 18.92 ± 6.16 µg/mL when compared to the standard (42.71 ± 1.66 µg/mL) IC_{50} of 15.75 ± 2.34 µg/mL. Free radical scavenged through Ferric Reducing Antioxidant Power assay (FRAP) inhibition (61.63 ± 2.84 µg/mL) IC_{50} of 42.54 ± 1.55 µg/mL was relatively equal to standard (59.14 ± 1.17 µg/mL) IC_{50} of 34.21 ± 2.10 µg/mL and total antioxidant was high. The extracts also exhibited a decrease in serum albumin (BSA) denaturation and showed significant inhibition of inflammation. This study indicates the presence of potential sources of antioxidants from nature which can be further used as an excellent pharmaceutical product as a natural antioxidant and anti-inflammatory agent.

Keywords: *Mitrephora heyneana*, antioxidant, free radical scavenging, FRAP, anti-inflammatory.

Poster - 009

Autophagy and oxidative stress in radiation induced lung injury

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Radiation induced lung injury (RILI) is one of the most common complications occurring as a result of radiotherapy of the thorax region. Radiotherapy not just affects the tumor cell but normal lung tissue is also injured during the process. The objective is to unravel the interlinking mediators of oxidative stress particularly Nrf-2 signaling pathway and autophagy mediators particularly p62 and its associated proteins in radiation induced lung injury. In vivo studies using C57BL/6J mice were performed. Bronchoalveolar lavage fluid was collected with an aim to assess the infiltration of lymphocytes which showed the presence of inflammation gradually following irradiation. Antioxidant analysis showed radiation induced ROS production and as the duration increased the levels of antioxidants increased at the 4^{th} week time duration. BAL fluid analysis from the lung was aspirated and taken for cell count and protein expression which showed significant increase during 3-, 6-, and 9^{th} day after irradiation. At 28^{th} day decrease in inflammation was noted. Histopathological analysis showed destruction of the alveoli and altered morphology with infiltration of lymphocytes progressing upto mild fibrosis during the chronic stage. The result confirmed the interplay of the oxidative stress at different time periods. Development of safe and effective radioprotector would serve as an therapeutic approach towards mitigation of RILI.

Keywords: Radiation, lung injury, BAL fluid, ROS, Antioxidants

Poster - 010

Antioxidant and organic dye removal potential of green synthesised nanoparticles using *Prosopsis Juliflora* Leaf Extract

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During recent decades, water contamination has been a major problem in many developing countries around the world. We can protect water by its treatment with many different techniques—and nanotechnology is one of them. Copper-nickel bimetallic nanoparticles of *Prosopsis juliflora* leaves (Cu-Ni PJ BNPs) were fabricated using an eco-friendly green method of synthesis. The characterization studies of Cu-Ni PJ BNPs were performed by different techniques including UV/Vis spectrophotometer, FTIR, XRD, and SEM. Spectrophotometric studies (UV-Vis and FTIR) confirmed the formation of bimetallic nanoparticles. The SEM studies indicated that the particle size ranged from 50 to 100 nm. Analysis of the BNPs by the XRD technique confirmed the presence of both Cu and Ni crystal structures. The synthesized nanoparticles were then tested for their catalytic potential for photoreduction of methylene blue dye in an aqueous medium and for DPPH radical scavenging in a methanol medium. The BNPs were found to be efficient in the reduction of methylene blue dye as well as the scavenging of DPPH free radicals such that the MB dye was completely degraded in just 20 mins at the maximum absorption of 660 nm. Therefore, it is concluded that Cu-Ni PJ BNPs can be successfully synthesized using *P. juliflora* leaf extract with a suitable size that exhibited potent catalytic and radical scavenging activities. The synthesised nanoparticle can be applied both for waste water treatment and also for medicinal purposes.

Keywords: Bimetallic nanoparticles, *Prosopsis juliflora*, UV spectrophotometer, FTIR, XRD, SEM, dye degradation, DPPH scavenging

Poster - 011

Breakthrough biotechnology: Extrusion-based bioprinting for healthcare

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Extrusion-based bioprinting has the potential to revolutionize sustainable healthcare, as it allows for the precise deposition of bioinks composed of living cells and biomaterials. The capability to modify bioink formulation, printing parameters, and the bioprinter setup, allows for the fabrication of intricate tissue structures with control over cell placement and organization. This technology can be utilized to develop organ transplantation alternatives, personalized drug testing, and disease modeling. Additionally, it permits the efficient use of resources and reduces the need for animal experimentation. The application of extrusion-based bioprinting in biofabrication and its cost-effectiveness are invaluable for the advancement of advanced tissue and organ constructs, thereby paving the way for sustainable healthcare practices.

Keywords: Bio printing, bioinks, tissue, healthcare.

Poster - 012

Callus induction of *Strobilanthes cordifolia* and comparative screening of antibacterial activity from *in vivo* leaf and *in vitro* callus extracts

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Plant tissue culture as an important tool for the continuous production of secondary metabolites. Current-day pharmaceuticals are typically based on plant-derived metabolites, with new products being discovered constantly. One alternative for the production of important plant active compounds is *in vitro* plant tissue culture, as it assures independence from geographical conditions by eliminating the need to rely on wild plants. *Strobilanthes cordifolia* is endemic to the Western Ghats, belonging to the family Acanthaceae. The objective of the study is to establish an efficient protocol of callus induction to conserve and also to serve as alternative for the extraction of secondary metabolites. An efficient *in vitro* protocol was established through leaves using MS medium fortified with different concentrations of growth hormones (BAP, NAA and 2,4 D). The best callus production was obtained at the BAP (0.5 mg/L) and 2,4 D (0.2 mg/L). A comparative study between the leaf and callus with respect to the screening of antimicrobial activity was done. The ethanolic leaf extract and callus extract showed a significant zone of inhibition against gram-positive bacteria (*Staphylococcus*, *Bacillus, Klebsiella*) and gram-negative bacteria (*Proteus*, *Escherichia coli*, *Pseudomonas*). Consequently, the leaf and callus have good antibacterial properties. Furthermore, it could be developed into a plant-based drug formulation in future.

Keywords: *Strobilanthes cordifolia*, Callus induction, growth hormones, antibacterial activity

Poster - 013

Cholesterol metabolism and cancer - Friend or foe

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In the cancer community, there is debate over the roles that cholesterol plays in the emergence of cancer and the possibility of therapeutically addressing cholesterol homeostasis. While some epidemiological studies contend there is no connection between cancer and blood cholesterol levels or statin use, others disagree. Additionally, the Cancer Genome Atlas (TCGA) project has profiled the mutational status and expression levels of all the genes in various cancers, including those involved in cholesterol metabolism, using next-generation sequencing. This provides correlative support for the hypothesis that the cholesterol pathway plays a role in the development of cancer. Finally, preclinical studies have a tendency to more strongly suggest a role for cholesterol in cancer, with many showing that genes involved in cholesterol homeostasis can influence development. An essential part of cancer is played by cholesterol and its metabolites (precursors and derivatives). The roles of cholesterol metabolism in the control of tumour biological processes, including oncogenic signalling pathways, ferroptosis, and tumour microenvironment, have been extensively studied in recent years. Cholesterol is a precursor of steroid hormones and sterols, which can then be altered to form compounds that trigger particular biological reactions. Contradictory results have been found in epidemiological studies that have examined the role of cholesterol in the risk of breast cancer. Some cholesterol metabolites have the ability to either promote or repress breast cancer. This brings up the crucial question of whether and how to control or inhibit the cholesterol metabolic pathway as part of a cancer treatment strategy.

Keywords: Preclinical studies, biological studies, breast cancer and therapy

Poster - 014

Community structure and nitrification impulse of the nitrifying bacterial consortia in a nitrifying bioreactor connected to recirculating aquaculture system

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The Nitrifying Bacterial Consortia (NBC) in a nitrifying bioreactor connected to a Recirculating Aquaculture System (RAS) of shrimp maturation system was scrutinized by way of amplified ribosomal DNA restriction analysis (ARDRA) of 16S rRNA gene fragments. The NBC on operation in the RAS underwent differential conglomeration based on locales in which the system was performed. The vital characteristics of the consortia were the steady-state biofilm kinetics with respect to substrate utilization making the system ammonia free. The heterogeneity of the NBC biofilm explored by the sequence results of phylotypes from the ARDRA dendrogram pattern with the richness of heterotrophic bacterial population comprised of diverse proteobacterial groups, Bacteriodetes, Planctomycetes, *Chloroflexi. Flavobacterium* and *Paenibacillus* throughout the stages of RAS. Metabolic interactions with cooperation between different groups of bacteria in the biofilm controlled the dynamic structure of the biofilm community. Ammonia removal in the nitrifying bioreactor indicated strong metabolic interactions between ammonia oxidizers and nitrite oxidizers quantified as the nitrifying potential of the system. Conglomeration of the heterogeneous population increased with an increase in time, building up the capacity of the system to be used as the potential aquaculture wastewater treatment technology.

Keywords: Nitrifying Bacterial Consortia, nitrifying bioreactor, Recirculating Aquaculture System, ARDRA.

Poster - 015

Comparative studies on isolation and characterization of microorganisms from agricultural and garden soil in Udumalpet areas

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Soil microbiome studies are becoming increasingly important for understanding the roles and functions of microorganisms play in agricultural productivity. Microbes are the key player in the biochemical and biological processes of the soil and govern soil health and sustainability. Without microbes and their functions, there would be no other life forms. It plays a crucial role in the cycling of almost all the major plant nutrients and the energy flow of either natural or anthropogenically altered soils. The extent of the diversity of microorganisms in soil is seen to be critical to the maintenance of soil health and quality, as a wide range of microorganisms is involved in important soil functions. Soil microbial community is an important measure of sustainable land use and is sensitive to changes in the soil's chemical properties. In this work, comparative studies were done for the isolation and characterization of microorganisms from agricultural and garden soils in Udumalpet areas. From the result, it was noted that several bacteria, fungi and actinomycetes were isolated from two different soils, using the serial dilution method. Bacteria were further identified on the basis of colony morphology, Gram staining, biochemical tests and using selective and differential media. Isolation and identification of fungi were carried out by culturing on potato dextrose agar medium and Sabouraud's dextrose agar media and microscopic method. There are 4 species of bacteria, 10 species of fungi and 2 species of actinomycetes that were observed and identified with the help of Bergey’s manual and manual of soil fungi by Gilman. The parameters were compared for both the soil such as soil pH, texture, moisture content, soil colour, density, capability in plant growth and nutrient management needed for the plant growth were noted. Thus soil microorganisms play an important function in the biodegradation of solid agriculture waste and also it helps in crop production. Hence, it is concluded that agricultural soil may be considered as potential plant growth than garden soil.

Keywords: Garden soil, Agricultural soil, Microbes, Udumalpet areas, Bacteria, fungi and Actinomycetes.

Poster - 016

Comparative study on biodegradation of LDPE using bacterial strains isolated from Chennai dumpyards

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The current scenario explains the need of the hour to eliminate plastics from the environment. A variety of treatment processes indulged in converting plastic waste to fuel, plastic waste to concrete blocks, plastic waste to roads etc. Ultimately, these wastes remain in the environment and in future it requires proper treatment processes to eliminate the plastics. Physical, chemical and biological methods are the conventional techniques used to degrade pollutants in general. As concerned with plastics, the complex structure and unmatchable resistivity require an effective, eco-friendly approach to eliminate it. Biological degradation helps to decode the degradation mechanism of plastics. The present study aims in comparing the plastic wastes biodegradation process by various bacterial strains isolated from Chennai dump yards. The maximum weight loss % was observed to be 4.70221 ± 0.45103 % by HB1 bacterial strain while the minimum weight loss % resulted to be 0.62872 ± 0.04826 % by HB3 bacterial strain. The process of degradation was carried out for 60 days and the GC-MS analysis resulted in the breaking of C-H backbone by the terminal oxidation process. Each bacterial strain was hypothesized to degrade in a different mechanism (cyclization, fragmentation, oxidation etc.) by forming alkanes, alkenes, alcohols, aldehydes, ketones and carboxylic acids.

Keywords: Biodegradation, GC-MS, aldehydes, conventional technique.

Poster - 017

Determination of efficient degradation approach for crude oil using biosurfactant producing bacterial strain

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Petroleum pollution is a developing environmental issue that has negative consequences for both terrestrial and marine ecosystems. This is because marine oil spills may have a significant economic impact on coastal operations and those who utilise the sea's resources. As a result, communities in danger of oil catastrophes must foresee and prepare for the repercussions. Oil spills have a significant impact on marine and coastal ecosystems. Oil degrades the insulating capabilities of fur-bearing mammals like sea otters, as well as the water repellence of a bird's feathers, exposing these animals to the elements. Microbial biosurfactants are gaining popularity in the field of environmental bioremediation and biodegradation. Because of unique properties such as simple biodegradability, lower toxicity, and better stability, many researchers now acknowledge biosurfactants as an efficient tool for remediating harmful petroleum-based hydrocarbon pollutants. Furthermore, numerous biosurfactants are physiologically active in severe pH and salinity environments. The current study aims to study the potential biosurfactant producing marine bacteria to degrade Crude oil. The bacterial isolates were screened for biosurfactant production. Optimization of biosurfactant production was performed through Response Surface Methodology which was observed to be 7 pH and 37 °C. Biosurfactant was identified through FTIR and GCMS analysis. A preliminary test using plate assay was performed to study the degradation efficiency of the bacterial strains. Further degradation of crude oil was evaluated for direct crude oil and chemically degraded samples, and it was confirmed through GCMS.

Keywords: Biosurfactants, bacterial isolates, GCMS, lower toxicity.

Poster - 018

Development and acceptability study of composite flour invigorated waffle

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The aim of the study is to develop a composite flour invigorated waffle and find its acceptability. Pearl millet, Proso millet and Pumpkin seeds are selected to prepare composite flour. Composite flour is formulated by substituting maida with four different proportions of selected millets and seeds. The variations are 30 %, 40 %, 50 % and 60 %. Variation IV was selected as the best variation in which 60 % of the composite flour is added with 40 % maida, identified by sensory analysis using a five-point hedonic scale by a group of 30 semi-trained panel members. The water retention capacity was 66 % for composite flour and 63 % for maida. The swelling capacity of composite flour was 0.14 and maida was 0.1. The sedimentation value rate of composite flour is equivalent to 33 ml. Composite flour has a bulk density of 0.68 g/ml. The spread ratio of composite flour was 7.2 mm and maida was 9.08 mm. The protein, calcium and iron content of the standard product was 12.6 g/100g, 2.7 mg/100g and 28.4 mg/100 g; the selected product was 11.2 g/100g, 3.5 mg/100g and 37.84 mg/100g respectively. The ash and moisture content of the standard product was 2.05 and 11.64 % and the selected product was 2.25 and 7.97 % respectively. Air-tight container and Poly ethylene cover was used for packaging and had a shelf life of 32 days. Standard products cost Rs. 40/100 g, while the selected product costs Rs.58/100 g. The popularization study shows that the product was accepted by adolescents. The product was nutritionally good and will help them in their health status.

Keywords: Composite flour, Sensory analysis, Quality attributes, Nutrient analysis, Shelf life, Popularization

Poster - 019

Development and formulation of chocolate-coated seeds bar

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Among vitamins, E, D, and B6; minerals including zinc, selenium, and amino acids like glutamine play a vital role in developing immune systems in the body. Seeds are rich in proteins, healthy fats, fibers, and minerals such as magnesium potassium, calcium, iron, and zinc and contain vitamins such as B1, B2, B3, and vitamin E. Commonly edible seeds used in the human diet are pumpkin seeds, flax seeds, sesame seeds, sunflower seeds, mustard seeds, amaranth seeds, oat seeds, barley seeds, black rice seeds, brown rice seeds, quinoa seeds, nigella seeds, and millet seeds. Adequate nutrients are required for all cells to develop immune systems. Based on the sensory evaluation The Chocolate Coated Seeds Bar contains 25 % pumpkin seeds, 10 % watermelon seeds, 10 % sunflower seeds, 10 % flax seeds, 5 % sesame seeds, 20 % dates, and 25 % dark chocolate.

Keywords: Dates, Dark chocolate, Sesame seeds, Sunflower seeds, Pumpkin seeds, Watermelon seeds

Poster - 020

Effect of citric acid modification of mango kernel starch and its chemical, functional and structural properties

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Mango (*Mangifera indica L.*) kernels are a by-product of the food sector that contain significant amounts of starch that can be used in a variety of industrial processes. The purpose of this study was to alter the starch from mango kernels using citric acid hydrolysis at 5 % concentration and citric acid with heat treatment at 120 °C for 15 min (CAH+HT). The present study was carried out on the functional, chemical, and structural properties of the starches. In terms of yield, pasting clarity, amylose, and amylopectin, acid-modified starch differed significantly from acid hydrolysis and heat-modified starch. The peak temperatures of gelatinization for acid hydrolysed with heat-treated starch were greater than those for acid-hydrolysed starch. After acid alteration, the mango kernel starch granules retained their ellipsoidal shape, but acid with treatment revealed a colloidal structure. After the acid modification, 16 bands could be seen with the FTIR, and 9 bands could be seen with the acid heat modification. According to the findings of this study, mango kernel starch can be modified best by citric acid and employed in the food processing industry.

Keywords: Mango, kernel, starch, FTIR

Poster - 021

Effect of different manure compost on the growth, yield and nutritional composition of mushroom

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The present study was conducted to compare the effects of different manure compost on the growth, yield, and nutritional composition of *Pleurotus florida*. *P. florida* was cultivated on different substrates such as rice straw, rice straw + cow dung compost (1:1), rice straw + sheep dung compost (1:1), rice straw + poultry manure compost (1:1), rice straw cow urine compost (1:1), rice straw + silkworm dung compost (1:1) and rice straw + *panchakavya* compost (1:1) and their growth was determined. All the compost was prepared using rice straw (60 %), rice bran (5.5 %), chicken manure (31 %), urea (0.5 %) and gypsum (3 %). The results indicated that different substrate formulas gave a significant difference in the growth, yield, biological efficiency and nutritional composition of oyster mushrooms (*P. florida*). The substrate without supplement of compost gives a better result on yield and biological efficiency basis. In all the different compost prepared, initially, the temperature was very low and it was increased during the 4^{th} day with the maximum of 69, 59, 54, 61, 65 and 63 °C for T1, T2, T3, T4, T5 and T6 respectively. The maximum yield of *P. florida* was observed in the yield of 443 g. The substrate with the supplement of compost gives a better nutrient value then compared to the control-grown mushroom.

Keywords: Panchakavya, mycelium, *Pleurotus florida*, compost.

Poster - 022

Effect of orange peel powder and flax seed powder incorporation on the quality characteristics of wheat rusk

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Flax seed and orange peel powder have been the focus of recent studies for rusk formulations. Different ratios, ranging from 5 to 10 %, were employed to incorporate the orange peel powder into the rusk by replacing the maida with wheat. We looked at the near composition, physical and chemical characteristics, and sensory attributes (appearance, colour, flavour, taste, and texture) of rusks including orange peel powder and flax seed powder. Based on all sensory attributes, rusks produced with 10 % orange peel powder were found to have higher acceptance than other samples. It was also found that the rusks' fatty acid content increased as the proportion of orange peel powder increased. The average results show that consumers favoured the rusks with orange peel and flax seed powder with a shelf life extension of 60 days.

Keywords: Rusk, orange peel powder, sensory, physico chemical, fatty acids

Poster - 023

Enhanced bioactivity of natural products loaded hydroxyapatite based composite for hard tissue engineering applications: *In-vitro* biological and *in-silico* analysis

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One of the most interesting ceramic biomaterials for bone and hard-tissue replacement and regeneration is hydroxyapatite (HAP), a bioactive material. In spite of its significant osteoconductivity, biocompatibility, and compositional similitude to that of natural bone, it has been studied widely for orthopedic applications. However, the engagement of HAP in bone tissue engineering is as yet restricted because of its poor mechanical (low crack sturdiness and bowing strength) and antibacterial properties. These contests lead to the effort of fabricating and developing new HAP based composites via various pathways. In this study, to improve the bioactivity, modulate an inflammatory response, oxidative stress, increase the gene expression accompanying osteogenic differentiation and cell viability, we have fabricated the novel HAP / Vanillin / *Psoralea corylifolia* seed extract (HAP/VAN/PCSE) composite using step by step fabrication approach. The initial qualitative phytochemical screening of aqueous extract of *Psoralea corylifolia* seed indicated the presence of alkaloids, flavonoids (16.2 mg/g), phenols (40.6 mg/g), tannins (14.8 mg/g), and lipids and the absence of carbohydrates, proteins, and cardiac glycosides. The formation of HAP/VAN/PCSE composite was confirmed by UV-visible and FT-IR spectroscopy analyses. The morphology and particle size of the composite were analyzed by SEM and DLS experiments, respectively. The *in vitro* anti-oxidant analysis revealed that the composite has potent anti-oxidant power like the control ascorbic acid. The MTT assay on MG-63 cells reveals that the HAP/VAN/PCSE composite has reducing power on cell viability in dose-dependent manner. However, the ALP and Calcium deposition assay confirms the osteogenic differentiating ability of HAP/VAN/PCSE composite for 14 days of the treatment period. In addition, the drug-likeness analysis was performed for the phytochemical compounds *psoralen*, isopsoralen, daidzin, neobavaisoflavone, sophoracoumesten A and vanillin. These all compounds are obeying Lipinski's rule of five. All these studies indicated that the composite has significant osteogenic differentiating ability than its individual composition. This composite would serve as a better platform for hard tissue repair after *in-vivo* and clinical validations.

Keywords: Hard tissue repair; Hydroxyapatite; Osteogenic differentiation; *Psoralea corylifolia* seed; Vanillin

Poster - 024

Evaluation of antibacterial activity and antibiotic resistance of *Lactobacillus* strain isolated from cow's milk

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Lactic acid bacteria (LAB) are commonly found in milk and dairy products, and their probiotic characteristics make them valuable for use in food products. Understanding the antibiotic susceptibility of LAB is crucial to ensure the safe use of LAB-based products. This study investigated the safety aspects including antibiotic susceptibility and antibacterial activity of a strain isolated from raw cow's milk. Pure colonies were identified by 16S rRNA gene sequencing as *Limosilactobacillus reuteri.* The antibacterial activities of an overnight culture of *Lactobacillus reuteri* against five test microorganisms: *Bacillus cereus, Klebsiella pneumoniae, Escherichia coli, Pseudomonas aeruginosa, and Staphylococcus aureus* were assessed using the agar well diffusion method. Antibiotic susceptibility profiles of the isolated strain were tested using disc diffusion method for ciprofloxacin (8 mcg), ceftazidime (10 mcg), ampicillin (10 mcg), penicillin (10 mcg), amoxiclav (10 mcg), amoxicillin (30 mcg), amikacin (10 mcg), methicillin (5 mcg), chloramphenicol (30 mcg) and moxifloxacin (5 mcg). The results showed that *Limosilactobacillus reuteri* exhibited an inhibitory effect against test microorganisms, indicating its potential use as a natural antibacterial agent. Further, the isolated strain was found to be resistant to the antibiotics used in this study. The findings indicated the antibiotic susceptibility profile and the beneficial property of isolated Lactic Acid Bacteria (LAB) strain as a starter culture for safe utilization in commercial food products.

Keywords: Cow Milk, Lactic acid, antibacterial activity, antibiotics.

Poster - 025

Formulation and evaluvation of Beetroot rasmalai for school going children (8-16years)

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Mithai (sweets) are confectionery and desserts of Indian subcontinents. The aim is to develop a value-added recipe for school-going children. Beetroot was subjected to the primary process, and boil them in distilled water (beetroot extract), cuddling was done using 5 ml of lemon juice. Now knead them and make balls, cook rasmalai balls for 15 min along with beetroot extract. Strain and dry the balls for 5 minutes. Now make a malai with the standardized milk (50 ml) boil it and blend the edible portion of the beetroot and strain the puree. Mix the puree in standardized milk and boil it to get a thick consistency. Now add the rasmalai balls in a malai and heat it for 3mintues, Soak for an hour and add the chopped nuts during serving. By three standard variations I, II, and III with the ratios of variation I 40:15:40:5, variation II 45:5:45:5, and variations III 50:10:35:5. Through sensory analysis, the most acceptable sample is variation III had higher acceptability. Nutrient content in variation III energy 337.52 g, carbohydrates 28.91 g, protein 6.02 g, phosphorous 28 mg, iron 0.68 mg, potassium 0.68 mg, beta carotene 10.08 mg, folate 18 mg, fiber 1.02 mg per 100 g of formula respectively. The above formula comprises considerable nutrients that help children's growth and development. Beetroot provides a wide range of possible health benefits improving digestion.

Keywords: Healthy dessert, beetroot rasmalai, good dessert for all aged group.

Poster - 026

Formulation and Quality Evaluation of Foxtail Millet Flour Incorporated in Chocolate

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Millet is a collective term referring to a number of small-seeded annual grasses that are cultivated as grain crops, primarily on marginal lands in dry areas, subtropical and tropical regions. Foxtail millet is rich in Vitamin B12 which is essential for maintaining a healthy heart, smooth functioning of the nervous system, good for skin and hair growth, helps to improve glycemic control and reduces insulin, cholesterol and fasting glucose in Type II diabetes patients. The objectives of this study were to evaluate the best proportion of foxtail millet flour incorporated in chocolate and to analyze the nutrient content of the selected product. The foxtail millet was cleaned, dried, powdered and incorporated into the product in the proportions of 10 %, 20 %, 30 % and 40 %. Sensory evaluation was done by 30 panel members and 20% foxtail millet flour incorporation in chocolate was selected as the best product and its score the highest. Protein (4.27 g) and Calcium (25.7 g) were high in the selected best product. The airtight container was used as the best packaging material for the product. Microbial analysis and shelf analysis were done from the first day to the seventh day and the results indicated it was stable for a period of seven days. It was concluded that the selected best product was accepted by the participants in the popularization study.

Keywords: Foxtail millet, glucose, chocolate, microbial analysis.

Poster – 027

Formulation and shelf-life assessment of watermelon (*Citrullus lanatus*) seeds chikki

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Food production and consumption generate a significant amount of processing waste, with fruit waste accounting for a large portion. Cucurbits with thick rinds, such as watermelons, musk melons, and pumpkins, produce large amounts of waste during their consumption. However, using natural 'food waste,' such as seeds and peels, which are high in vital nutrients, is being promoted as a long-term solution to food insecurity. Watermelon seeds were chosen for this study because they are the most discarded fruit seed. The procured watermelon seed was analysed for its proximate composition which is composed of good amounts of protein and fat (28.3 g and 47.2 g/100g). Three different varieties of Chikkis were made from watermelon seeds, but Variation II is the one used for the proximate analysis of Chikkis because it had the highest mean score during the organoleptic evaluation. The carbohydrate and protein contents of the watermelon seed Chikkis were 52.5 g and 14.1 g per 100 g respectively. Chikkis were packed in an air-tight container and stored at room temperature to evaluate moisture loss or gain over a period of 50 days. Overall, the results suggest that the utilization and consumption of watermelon seeds can promote and preserve health and the use of watermelon seeds for consumption will be a step forward for sustainable development to reduce food waste.

Keywords: Fruit waste, food insecurity, watermelon seeds, Chikkis, Food sustainability.

Poster - 028

Formulation of traditional Ready- to- Eat (RTE) Galactagogues

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This study aimed to develop ready-to-eat and frozen foods which would include traditional recipes from different regions. As there is a huge and exponentially growing demand represented by a market of one billion people spending an average of about 50 per cent of household expenditure on food coupled with a scenario of rapid urbanization and changing lifestyle. Thus, the main aim is to localize different traditional foods available in our local market which would reduce the pre-preparation time. It would also be a good change from a nutritional perspective. It would give a dramatic change in our food preference pattern. Acceptable microbiological quality of ready-to-eat foods to which spices or spice ingredients have been added was associated with premises that had management food hygiene training and hazard analysis in place. The Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) have recently launched risk assessment studies of a number of pathogens–food commodity combinations to be used to lower the risk associated with these food-borne diseases and ensure fair practices in the international trade of food.

Keywords: Ready to eat, Traditional recipes, microbiological quality, Frozen food.

Poster - 029

Formulation, standardization and shelf life study of trio fruit seeds infused cookies

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Cookies are one of the most commonly used snacks. The cookies are used as a vehicle for adding nutrients to various age groups. The seed powders are underexploited ingredients which are rich in phytochemicals and nutrients Watermelon seeds are known to be a source of protein, B vitamins and minerals (such as magnesium, potassium, phosphorus,) phytochemicals. Jamun seeds are used in the treatment of diabetes, allergies, infections, inflammation and stomach pain. Grape seeds contain high levels of antioxidants. The ingredients were obtained and then sun-dried for 4-6 days and then powdered and stored in airtight container. The selected powders were incorporated at 10 %, 20 %, 30 % & 40 % separately into the cookies. The standardized products were evaluated for their sensory attributes using a scorecard with a 5-point hedonic scale. The 20% incorporation of the powdered was accepted as the best product. The Nutrient analysis of the Watermelon seed powder incorporated cookies was rich in carbohydrates (54.5 g/100g), Protein (16.8 g/100g) and the Jamun seed powder incorporated cookies were rich in carbohydrates (57.4 g/100g), Fiber (8 g/100g) and the Grapes seed powder incorporated cookies were rich in protein (13.7 g/100g), fiber (12.5 g/100g). Shelf life Analysis of the standard and selected products were stored in a Plastic air-tight container for 15 days and were analyzed their sensory attributes and total microbial load after packing, at an interval of 1^{st}, 7^{th} and 15^{th} days. The cost of the sample product was a little high in cost compared to the standard product. The popularization study was conducted among 30 adult men and women. There was an increase in the protein and fibre content in the incorporated products. The result of the popularization study shows that the products are highly acceptable.

Keywords: Antioxidants, Physiochemicals, Jamun seed, Watermelon seed, Grape seed

Poster - 030

Foxtail Millet Bran Oil

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Foxtail millet bran oil is designed in a way to increase the production and consumption of Millet as well as to promote a healthy lifestyle. Oil is the basic essential requirement in cooking. In Indian Cooking, edible oils play a huge role, and mainly it is difficult to cook most dishes without them. Nowadays, all age groups especially children and youngsters are mostly addicted to bakery products and junk foods. Oil is one of the major reasons for such tasty junk foods. Bakery products which are fortified or enriched with millet Bran oil play a healthy role in our health. It helps to prevent diseases. Just like Rice bran oil, Millet Bran oil is healthy for our lifestyle. Foxtail millet bran had a fat content of 9–10% mainly comprising of γ-tocopherol, linolenic and oleic acid. These are helpful to protect from heart attack and cancer. Further, decent quantities of total dietary fiber (34 %), protein (6–10.4 %), and total phenol content (145.57 – 510.53 mg GAE/100 g) are also present in foxtail bran. It is also suggested that protein from foxtail millet bran could suppress the growth of colon cancer cells in mice. Even the polyphenol (bound polyphenols of inner shell) present in foxtail bran demonstrated anticancer activity against colorectal cancer. To increase millet consumption, this product is very useful. This innovative product is essential to our society to lead a Healthy lifestyle. This product has high potential in the market due to its nutritious nature.

Keywords: Millet bran oil, fortification in bakery products, edible oil, health benefits, prevention from heart attack and cancer.

Poster - 031

Health benefits of papaya seeds

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Papaya is a fruit beloved for both its delicious flavor and exceptional nutrient profile. Unfortunately, many people often discard its seeds and flavor the fruit's sweet flesh. What they don't realize is that the seeds are not only edible but also highly nutritious. Eating these seeds on an empty stomach in the morning reduces swelling quickly. Eating papaya seeds daily can relieve viral fever as it contains anti-viral elements that provide relief from various diseases. Papaya seeds are highly nutritious, and their extracts have been associated with a number of health benefits, including cancer prevention and kidney protection. High doses may cause side effects, but these issues can easily be avoided by not consume more than 1 teaspoon of papaya seeds per day. You can eat papaya seeds raw, roasted, or dried. Grinding them is the best way to get the full amount of nutrition from them. They are quite nutritious and can add fiber, protein, and healthy fats to your diet. These seeds also lower the risk of heart disease because they help the body keep its blood pressure at a healthy level. Papaya seeds are a great way to get rid of toxins. These tiny seeds are full of properties that fight bacteria, inflammation, and viruses. They help the body get rid of waste and digest food better.

Keywords: Papaya, inflammation, viral infection

Poster - 032

Horse gram - An underutilized pulse crop: an overview

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After cereals, which have been an essential component of a healthy human diet for millennia, pulses and legumes are the second-most significant group of crops. Horse gram is one of the highly nutritious vegetable pulse crops with ethno-medicinal values in India, which is commonly known as *Kollu* (Tamil). Horse gram is a pulse crop that is underutilized and may be cultivated in a variety of unfavourable environmental conditions. With a wealth of protein, minerals, and vitamins, it plays a significant role in human nutrition. Due to the presence of antinutritive and bioactive compounds, it has been associated to a lower risk of developing a number of diseases in addition to its nutritional value. These bioactive compounds, including fiber, enzymatic proteinase inhibitors, phytic acid, and phenolic acid, have profound physiological and metabolic impacts. The value of horse gram as a potential therapeutic agent to treat kidney stones, urinary disorders, piles, the common cold, throat infections, fever, etc. was well acknowledged by alternative or traditional medicine. The demand for nutraceutical and functional foods has increased as a result of the development of the nutraceutical concept and rising health consciousness. Horse gram is a legume that has seen a surge in the isolation and use of possible antioxidants as it lowers the risk of intestinal illnesses, diabetes, coronary heart disease, dental caries prevention, etc. The present review applied with recent scientific knowledge towards the prospects of researching the horse gram, as a source of food and nutraceuticals components, with an eye on the growing demand for food with nutraceutical qualities.

Keywords: antinutritive, antioxidants, bioactive compounds, nutraceutical, functional foods

Poster - 033

Increasing ß-glucosidase activity in using algal biomass production for hydrolyze cellulose in seawater

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A desirable alternative fuel for transportation is renewable biofuel. The most prevalent naturally occurring feedstock that can be hydrolyzed to create biofuels is cellulose. Cellulase consists of at least three hydrolytic enzymes. Endoglucanase (EG), which cleaves the 1,4-glycosidic bond of long-chain cellulose polymer to generate short-chain oligomers, and cello-biohydrolase (CBH), which transforms oligosaccharides into cellobiose unit. Cellobiose is subsequently broken down by the enzyme beta-Glucosidase (BG) at the 1,4-glycosidic bond to produce glucose units, which microorganisms can utilise to produce biofuels. Cellobiose hydrolysis by beta-Glucosidase is a limiting step because glucose, a chemical byproduct, can reduce beta-Glucosidase catalytic efficiency by feedback inhibition. The primary components of algae cells are proteins, lipids, and carbohydrates. Some algae strains have large amounts of oil that can make up more than 50% of the dry weight of their ash-free cells. Compared to lignocellulosic plants, algae have a greater potential for producing bioethanol because they lack lignin and hemicellulose, which may encourage the breakdown of polysaccharides to provide glucose for fermentation processes. Fungal or Bacteria species are well recognised for producing a range of beta-glucosidases with desirable properties such as high substrate specificity, glucose tolerance, and thermostability. Industries producing biomass keep low temperatures and use pure water. Therefore, research into the ß-Glucosidase activity of Bacteria in seawater at various pH levels and temperatures may aid in the production of more biomass at a lower cost. Utilising the marine, halotolerant microorganisms could dramatically progress the current freshwater-based saccharification process to other solvents and lessen the financial and environmental burden of producing biofuels.

Keywords: Biofuel, ß-Glucosidase, hydrolytic enzymes, fermentation.

Poster - 034

Interlinking factors regulating oxidative stress in cancer

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Oxidative stress is considered the main cause of DNA damage, which happens due to a loss of balance in the amount of oxidants and antioxidants in the body and can promote and suppress cancer. Reactive Oxygen species (ROS) cause major oxidative damage and are produced in the body as by-products of various cellular functions, thus used as a biomarker for cancer. A high level of ROS can initiate cell death by mechanisms including necrosis, apoptosis, and autophagy whereas a low level of ROS can lead to the initiation of development and progression of cancer. Many signalling pathways are responsible for the activation and suppression of cancerous cell formation. Disruption in the signalling pathway is responsible for the specific characteristics of tumor cells. Mutations in Ras protein and other receptor genes can result in faulty Ras-Raf-MEK-ERK signalling cascade activation, which can lead to hepatocellular carcinoma and breast cancer. Wnt/beta-catennin signalling become hyperactive when APC gene is mutated, resulting in leukemia, breast and gastrointestinal cancers. Nrf2 signalling pathways can resist apoptosis. TGF beta regulator can activate transcription of cell cycle initiator or apoptosis regulators whereas activation of P13k/Akt signalling pathway occurs in response to the DNA damage. Targeted therapy is becoming successful in cancer treatment. Integrin, RTK inhibitors and HERG channels, Ras-Raf-MEK-ERK signalling inhibitors are identified as a therapeutic target which has to be blocked and drugs are available in the market. The cellular redox pathway is a target and agent Nov-002 casfosfamide is in phase III trial. Advancements in technologies can make therapeutic target therapies can be the most efficient treatment method for cancer.

Keywords: Oxidative stress, ROS, mutation, cancer, signalling pathways, therapeutic target therapy

Poster - 035

Isolation and identification of fungal isolates from wasteland soil

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Microorganisms play a significant role in large-scale industrial operations due to their efficacy in multiple sectors like food, textile, pharmaceutical, etc. Microbial enzymes obtained from different microorganisms are known to be superior, particularly for applications in industries on commercial scales. Many of these enzymes find numerous applications in various industrial sectors, e.g. in food, detergent, paper, and textile industries and thus hold a leading position among commercially produced industrial enzymes. Microbial enzymes are the preferred source for plants or animals due to several advantages such as easy, cost-effective, and consistent production. Multiple industrial sectors have made extensive use of microbial enzymes derived from bacteria, fungi, and yeast. Since millions of beneficial microbes are reported to be existing in soil, this resource can be exploited for successful isolation and can be employed in biotechnological processes. The current study was carried out to determine the fungal diversity of Wasteland soil in the Ukkadam region, Coimbatore. Soil samples were collected from five different locations in the study area. The pour plate method involving serial dilution was employed for the isolation of fungi. The media used for the isolation was Potato Dextrose Agar (PDA) medium. A total of six species were obtained of which *Aspergillus* genus was the dominating one. Based on the macro and micro morphological characteristics the isolates obtained were namely *Aspergillus fumigatus*, *Penicillium sp*., *Trichoderma viridae*, *Aspergillus niger*, *Aspergillus flavus*, *Aspergillus melleus*. These isolates can be further utilized for multiple industrial purposes based on their extracellular enzyme-producing capabilities.

Keywords: Microbial enzymes, *Aspergillus fumigatus, Penicillium* spp., *Trichoderma viridae, Aspergillus niger, Aspergillus flavus, Aspergillus melleus*

Poster - 036

Isolation and optimization of exopolysaccharide production from shrimp associated V*ibrio* spp.

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Marine animal consists of diversed microbial community which play a crucial role in the physiology of macro-organisms and share metabolic pathways to produce value-added bioactive metabolites. Shrimp sourced from the seafood industry is the choice of the marine microbial community. Two differential cultivation media such as Zobell marine agar and Reasoner's 2 A agar media with 5 % NaCl concentration were preferred for the isolation of shrimp-associated bacterial isolates. Polyphasic determination of bacterial isolates indicates that the organism would be *Vibrio harveyi* and *Vibrio parahaemolyticus.* The antibiotic sensitivity/resistant pattern of selected shrimp-associated isolates was also been determined. The antibiotic aztreonam failed to produce an antibiogram against the isolates *Vibrio sp.* Both the isolates were screened for their exopolysaccharide production and optimized with different carbon, nitrogen, pH and temperature regimes. pH-7 and temperature 28-37 °C enhances the growth, carbon source lactose and peptone as nitrogen source influences the EPS formation. Exopolysaccharide was purified by selective precipitation and dialysis. Partially purified EPS metabolite was subjected for estimation of carbohydrate, uronic acid. The bioactive potential of EPS sourced from Vibrio sp., selectively screened for their antioxidant, metal chelation and also for anti-inflammatory activity. It was observed that increasing the volume of EPS metabolite showed better efficacy on each assay parameter. Exopolysaccharide metabolites were also been characterized through FT-IR and TLC analysis. The peak spectrum obtained at 2924 cm^{-1} (OH or NH stretching), 1653 cm^{-1} (C=C stretching or C=O stretching), 1331 cm^{-1} (C–O stretching) and phenolic COH stretching at 3287 cm^{-1} indicates the presence of exopolysaccharide. It could be authenticated that the Vibrio-derived exopolysaccharide will be the choice of preference as a bioactive metabolite for therapeutic application.

Keywords: Exopolysaccharide, bacterial isolates, *Vibrio harveyi* and bioactive metabolite.

Poster - 037

Isolation and screening of extracellular enzymes in endophytic fungi from T*hevetia neriifolia*

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This work aims to isolate endophytic fungus from *Thevetia neriifolia.* A total of 12 fungi were isolated from root samples and screened for extracellular enzymes produced by endophytic fungi including proteases, cellulases, amylases, and lipase laccases, using agar-based techniques. From the 12 isolates, 7 isolates were found to possess cellulase degrading ability, and 5 isolates showed the highest amylase activity. The 3 isolates showed positive results in protease production. Among 12 isolates R6 show positive results in amylase, proteases, and cellulases, enzymes qualitative assays. The goal of the current work is to discover the potential applications of extracellular enzymes that are based on endophytic Fungal. Fungal enzymes are widely used in food and beverages, confectionaries, textiles, and leather industries to simplify the processing of raw materials.

Keywords: Endophytic Fungi, Proteases, Cellulases, Amylases, Laccases.

Poster - 038

Life Style, Dietary habits and Stress level of the selected women IT Professionals in Coimbatore

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The nutrition of women is a critical part of their overall health status. A heavy workload may push a woman with marginal food intake into a state of malnutrition. Work-related factors that can sometimes generate intense levels of stress involve performance appraisals, procedures used for evaluating employees' performance. To assess the dietary habits of the women working in the Information Technology sector, to assess the lifestyle of the women, to assess the stress level of the women working in the Information Technology sector. Two hundred women were selected and their age, educational qualification, income, lifestyle pattern, anthropometric assessment, dietary habits and Stress level were studied. The mean of the anthropometric measurement of height was159.75 ± 9.2, Weight was 58 ± 2 and BMI was 24.19 ± 5.02. Many of the women were found to be underweight. 44.5 % of the respondents have consumed two meals away from home. 44.5 % of the women were skipping meals due to dislike of the food and lack of appetite. 45 % of the respondents were eating highly without hunger due to stress. The majority 44.5 % of the women were eating junk food twice a week. Eye irritability was the major health complaint affected by most of the respondents.

Keywords: Stress, IT sector, Lifestyle, anthropometric.

Poster - 039

Medicinal properties of *Cardiospecmum halicacabum*

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The study describes the major properties of the Indian herbal leaf *Cardiospecmum halicacabum*. The plant is widely spread in India and has been used as a medicinal herb by the people. The southern part of India has more usage of the plant in preparing different recipes. They have a lot of functional properties in the plant. The plant is commonly used in Ayurveda and medicine for the treatment of pulmonolgical issues. The plant is also used in the treatment of rheumatism, stiffness of limbs and snake bites. *C. halicacabum* is a rich source of tannins, flavonoids, terpenoids, and alkaloids. The scavenging of the free radical and the oxidant from the body during the cellular metabolism is been another property. The overview of the properties of the plant *C. halicacabum* is given below in the content.

Keywords: *Cardiospecmum halicacabum,* medicinal herb, rheumatism, snake bites

Poster - 040

Molecular Insights on PS-PLA1 Lipase Activity of Human ABHD16B Protein

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Lipids are essential macromolecules that play a pivotal role in various physiological processes and cellular homeostasis. ABHD16B, a member of the α/β-hydrolase domain (ABHD) protein family, has emerged as a key player in lipid metabolism. However, the biochemical role and structural aspects of human ABHD16B in lipid metabolism remain unclear. Here putative human ABHD16B protein was overexpressed in *Saccharomyces cerevisiae* for its biological activity. *In-vitro* enzymatic assay of the recombinant ABHD16B protein with fluorescently tagged glycerophospholipids revealed that the PLA_1 activity was observed with phosphatidylserine (PS). In addition, it efficiently hydrolyzed monoacylglycerol over triacylglycerols. Further, molecular dynamic simulations revealed that the origin of PS-specific PLA_1 activity of ABHD16B is due to the electrostatic interaction of the PS head group with K8, R319, and E178, which led to having the hydrogen bond interaction of *sn-1* acyl chain ester to the catalytic site residues. Site-directed mutagenesis of the ^{245}G*X*S*X*G^{249} motif of ABHD16B reduced the maximal lipase activity of PS and MAG. In summary, these results revealed that ABHD16B plays a vital role in PS selectivity that in turn, controls the specific subcellular pools of 2-Lysophosphatidylserine (2-LysoPS) metabolism.

Keywords: Lipase; PS-PLA_1; lipase motif; site-directed mutagenesis; molecular simulation

Poster - 041

Nitrate assimilation by stem nodulating *Rhizobium* sp strain KV Sj 51 under aerobic and microaerobic conditions

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The influence of oxygen on nitrate assimilation by a stem nodulating strain of *Rhizobium* sp strain KV Sj 51 from *Sesbania javanica* Miq is considered here. Under microaerobic conditions, chlorate (20 mM) caused a reduction of *in vivo* nitrate reductase activity (25 per cent), nitrite excretion (25 per cent) and ammonia excretion (9 per cent) in *Rhizobium* spp strain KV Sj 51, as compared to nitrate grown cultures. Furthermore, the magnitude of *in vivo* nitrate reductase, nitrite excretion and ammonia excretion were higher with 0.2 mM nitrate, but declined when grown with higher concentrations of nitrate (5 mM or 10 mM). A progressive increase in nitrate uptake, nitrite excretion and *in vivo* nitrate reductase activity with time was found both in aerobic and microaerobic cultures. In contrast, ammonium excretion was maximum in microaerobic cultures and minimum in aerobic cultures at 48h. It appears that the product of nitrate assimilation- NH_3 is inhibitory to NO_3 uptake by the strain under microaerobic conditions. Further, the strain appears to be insensitive to chlorate.

Keywords: Nitrate assimilation, *Rhizobium*, Stem nodules, Ammonia

Poster - 042

Optimized electro-fenton process with sacrificial stainless steel electrodes for cod removal from electroplating industrial effluent

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Wastewater from electroplating contains hazardous chemicals which are harmful to living organisms. In the present investigation, the Electro Fenton process (EF) is utilized for the removal of % COD in the electroplating wastewater using stainless steel as sacrificial electrodes. The effects of the various operating parameters including the pH (2-5), hydrogen peroxide concentration, reaction time, electrolyte concentration and Fe^{2+} concentration were investigated. EF treatability studies gave the best results (over 90 % COD removal) under optimized conditions of pH 2, Fe^{2+} concentration 0.005 M, Na_2SO_4 concentration 0.05 M, H_2O_2 concentration 0.5 M and RPM of 450. Therefore, the sacrificial electrodes can be efficient in the removal of % COD.

Keywords: Electroplating wastewater, Chemical oxygen demand, Electro Fenton, Sacrificial electrodes.

Poster - 043

Phosphorus fractions in selected lake sediments of Coimbatore, Tamilnadu

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Phosphorus (P) released from sediment driven by oxidation-reduction potential can increase the concentrations of dissolved P in the overlying water, which triggers widespread algal blooms. Therefore, the identification of sediment P sources is critical for the management of P and the restoration of eutrophic aquatic ecosystems. Sediments selected from two different wetlands in Coimbatore were collected and analyzed by the sequential extraction procedure. Five fractions of sedimentary phosphorus namely NH_4Cl-P, BD-P, NaOH -P, HCl-P, Residual- P, and Total phosphorous were extracted and analyzed using the sequential extraction scheme developed by Psenner *et al.,* (1984) with the modifications of Hupfter *et al.,* (1995). The order of different phosphorus fractions in Singanallur and Krishnampathy Lake are NaOH-P > FE-P > RP > HCL-P > NH_4CL-P and NaOH-P > FE-P > RP > NH_4CL P > HCL-P, respectively. The results reveal that the Metal oxide-bound phosphorus (NaOH - P) forms a major part of the total P in both lakes. Since NaOH – P is used as an indicator of algal available phosphorus. Hence, there will be a high chance of eutrophication which affect the water quality in lakes.

Keywords: Phosphorous fractionation; Eutrophication; Sediments; Sequential extraction.

Poster - 044

Phytochemical screening and GC-MS analysis of *Syzygium samarangense* leaf

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The study is meant to detect the presence of phytochemicals present in the *Syzygium samarangense* leaf and compare it with results obtained from different solvent extracts. Two solvents namely methanol and water were used for this study to compare the results obtained from the two samples. Secondary metabolites are the compounds that help in the survival and proper functioning of the plant. The secondary metabolites could be used in the medicinal field to develop drugs for various diseases. *Syzygium samarangense* leaves were analyzed for the presence of Alkaloid, Flavanoid, Glycoside, Saponin, Tannin, Terpenoids, Carbohydrates and Sterols. The current study showed the presence of Alkaloid, Flavanoid, Glycoside, Saponin, Tannin, Terpenoids and Carbohydrates in the methanol extract whereas Sterols were absent. While in the water extract Alkaloid, Flavanoid, Glycoside, Tannin, Terpenoids, Carbohydrates and Sterols were shown to be present while Saponins were found to be absent. Also, the study includes the GC-MS analysis of the sample on which 31 peaks were observed with different peak areas, peak heights and retention time was observed. The different peaks represent the different chemical compounds that are present in the plant under study.

Keywords: *Syzygium samarangense,* Methanol, Water, Phytochemicals, Secondary metabolites, GC-MS analysis

Poster - 045

Preparation of phosphorus nanoparticles using *Bacillius subtilis* to evaluvate their potential on corn and green gram seeds

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Nowadays the bringing up in the farming creations is expected to satisfy the need for developing populations. Other than macronutrients it guarantees efficiency as well as high horticultural quality. The action of these components is significantly impacted by tiny changes in natural factors like pH, mechanical arrangement and natural matter in the dirt. Hence, there should be one more approach to carry these components to the harvest successfully. This prompts innovative work of another manure to give supplements more. We studied the preparation of composite Nano-phosphorous by using agricultural promising strains namely lactic acid solubilizing bacteria. The harvested material collected was taken in two flasks and inoculated with *Bacillus subtilis* in each flask respectively for the production of Nano-phosphorus based Gluconates and Nano phosphorous based Lactates. Also, the HPLC results revealed the concentration of Gluconates and lactates. The AAS method helped to prove the presence of phosphorous. Moreover, the filter paper assay revealed that the prepared Nano phosphorous-based gluconates and Nano phosphorous-based lactates have a good influence on the germination rate and growth of both corn seeds. Seed germination and growth of plants were found comparatively well in Nano-multi nutrient-based gluconates than in Nano-multi nutrient-based lactates.

Keywords: *Bacillus subtilis*, HPLC, Nano phosphorous, Seed germination.

Poster - 046

Prevention of Non-Communicable Diseases through Integrated Nutrition and Management through lifestyle modifications: A Review

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Non-communicable diseases (NCDs) are illnesses that cannot be spread from one person to another directly. Chronic diseases, commonly referred to as non-communicable diseases (NCDs), are illnesses with a protracted course and typically gradual progression. Non-communicable diseases (NCDs) are estimated to cause 75 % of all deaths worldwide by 2030, posing a serious danger to human life. These disorders may be brought on by a mix of risk factors like physiological, environmental, lifestyle, and hereditary factors. Diabetes, chronic respiratory illness, cancer, and cardiovascular disease are the four primary categories of NCDs, according to WHO. Unhealthy eating habits and lifestyle choices are the roots of lifestyle diseases. The way forward is seen through the changes in lifestyle and behaviour. In all regions and social groups, nutrition is crucial for promoting human health to free from non-communicable diseases (NCD) and improving quality of life. Likewise, explains how to manage lifestyle disorders and prevent risk factors for NCDs through daily and seasonal regimen advice, some bio-purification and detoxification procedures, medication, and rejuvenation therapies. In contrast, drug-free medical practices like yoga and naturopathy have been successful in addressing all health dimensions. Yoga and naturopathy educate and encourage people to take control of their mental health through their holistic approaches. Thus, the objective of this review is to highlight the importance of an integrated approach of holistic Nutrition, Ayurveda, Naturopathy and Yoga for the prevention and management of NCDs through sustainable lifestyle changes and to mention the government plans and policies for the prevention of NCDs.

Keywords: NCD, lifestyle, naturopathy, nutrition.

Poster - 047

Role of autophagy in lung cancer development and progression

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Autophagy is implicated in various biological processes such as programmed cell death, stress responses, elimination of damaged organelles and development and is considered to be vital sensor redox signalling in pathological response. Mitochondrial ROS (mROS) works as redox messengers at a physiologically low levels in intracellular signaling. Oversupply of mROS causes oxidative damage to cellular constituents and leads to cell death. Autophagy is a multifaceted process and alterations in autophagic signaling pathways are frequently associated with cancer and many other diseases. During tumour development autophagy has paradoxically been reported to have roles in promoting both cell survival and cell death and also controls processes in the aetiology of malignant disease, including oxidative stress, inflammation and both innate and acquired immunity. Autophagy also plays a role in regulating ligand-activated MET/HGF receptor tyrosine kinase (RTK) signaling formed by MAP1LC3C autophagy protein which is induced by starvation. LC3C mediates selective autophagy of the MET RTK, inhibiting cancer cell invasion. Tumor development in early and advanced stages the expression of beclin 1 (BECN1), a mammalian orthologue of the yeast autophagy-related gene Atg6 which lowers the capacity of tumour through induction of autophagy. A remarkable increase in lung cancer can be visualized in Becn1+/− of mice. Autophagy is induced mainly through the phosphatidylinositol 3-phosphate kinase (PI3K)–AKT–mTOR (mammalian target of rapamycin) signaling pathway. The research concludes that autophagy in cell signaling pathways plays an important role in lung cancer development and progression.

Keywords: Mitochondrial ROS, BECN1, RTK Signalling, (PI3K) -AKT-mTOR.

Poster - 048

The potential use of antimicrobial peptides from Cyanobacteria and Eukaryotic Microalgae as antibiotics

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Nowadays, there is a rapid increase in Multi-Drug Resistance exhibited by majority of the bacteria that exist. Therefore the use and efficiency of conventional antibiotic drugs have been reduced and there is a huge need for novel antibiotic drug discovery. The next generation of antibiotics is antimicrobial peptides which are bioactive small proteins that are derived from Cyanobacteria, Eukaryotic Microalgae and many other bacterial species. They show a wide spectrum of inhibition and defense mechanism against many bacteria, fungi and viruses. These antimicrobial peptides are produced naturally by many plants, bacteria, fungi and many marine microorganisms. Cyanobacteria and eukaryotic microalgae are oxygen producing photosynthetic unicellular organisms. They are able to survive under all extreme environmental conditions. Therefore they are exposed to large variety of microbial pathogens and develop resistance against them. Though phylum Cyanobacteria comprises 1528 species only the species that contain the highest amount of alkaloids, fatty acids and phenolic compounds account for the major antimicrobial activity. Likewise, Eukaryotic Microalgae also have a huge diversity of species. Some of the major microalgae that account for the antimicrobial property are *Rhodophyta, Chlorophyta* and *Dinophyta*. The first isolated microbial antibacterial compound is chlorellin from the genus chlorella which showed an efficient antimicrobial property. *Tetraselmis suecica* is a marine green microalga that is widely used as live food in aquaculture also been a source of antimicrobial peptides. These *T. suecica* antimicrobial are very much active against Gram – positive and Gram – negative bacteria.

Keywords: antibiotic, alkaloids, fatty acids, microalgae

Poster - 049

The use of endophytic fungi as biocontrol agents for plant production

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In the recent era, many plant species are grown in greenhouses. The protection method of these plants includes the use of chemical pesticides. However, these are harmful to the environment and the living organisms that consume them. As an alternative, various species are being studied of and one of them with major innovations in the current is the use of endophytic fungi. Endophytic fungi are useful organisms that live in association with various tissues and organs of terrestrial and aquatic plants. They promote plant growth, induce defense and produce secondary metabolites like insecticides, antioxidants and antimicrobials, thereby acting as antagonists to plant pathogens. Amongst them, Downy Mild dew *Peronosclersopora* spp. which causes a major disease leading to loss in yield in maize has been studied in Indonesia. Four isolates of fungi such as *Aspergillus, Trichoderma, Beauvaria, Gilicocladium*. Among these, endophytic fungi *Beauvaria* has more efficiency in eliminating the pest. *Duponchelia fovealis* (zeller) is a European moth that is a pest to strawberries. Endophytes fungi isolated from the strawberry leaves themselves have been used as a control for the pest. Cotton leaf worm, *Spodoptera littoralis* affects cotton plants. With the use of Egyptian weeds like *Chenopdium* album and the medicinal plant *Melia azedarach*, endophytic fungi were isolated. *Fusarium oysporum* was one among the endophytic fungi extracted. With the use of such endophytes fungi, various bio pesticides have been isolated and used in the market. *Beauvaria bassiana* is the most used species as a biocontrol agent.

Keywords: Downy Mild dew, Cotton leaf worm, antioxidants and antimicrobials

Poster - 050

Wind Rack

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This project describes the design and implementation of a Vertical axis wind turbine (VAWT) with IOT system using an Arduino Microcontroller. Wind energy is less-attended renewable energy due to the lack of information about its potential. We employ an Arduino-based IOT system that measures and transmits the data like humidity, weather, and heat in the surroundings. The parameters that are to be monitored are current, voltage, speed and vibration in the turbine. These parameters are sensed and given to the Arduino. The VAWT air foil is redesigned and improved the performance. The NACA0012'1 air foil is improved from NACA0012. This innovative wind turbine is fixed on the sides of the rail roads to produce electricity which can be used for various purposes. This technology will reduce pollution and provide economic savings. Wind turbine technologies offer two significant environmental advantages over non-renewable energy sources

Keywords: VAWT, IOT, wind energy, Arduino, air foil, H-darious and SDGs.

Poster - 051

Advances of hydrogel coating and antibacterial agents in urinary catheters

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Catheters are commonly used in hospital treatment, but most of the materials used in the production of catheters are hydrophobic in nature. In order to minimize the effect of commercial catheters, a hydrogel coating is done which contains hydrophilic properties, increased water content and porous structures which helps in reducing the friction between the urinary tract and urethra. The advantages are lubricity, antimicrobial and antifouling properties, bactericidal coatings and contact-killing properties. *In vitro* adhesion assays shows complete inhibition of bacterial adhesion of urinary catheters, silver alloy impregnators and antibiotic impregnators such as minocycline and rifampicin in combination help in reducing UTI infections in adults such as bacteriuria. CAUTI is one of the most common nosocomial infections found in hospitals. The most common organisms found in CAUTI are *E. coli* 0157: H7 strain and *Proteus mirabilis*. It should be reduced by using liposomal hydrogel catheters along with a coating of Antibacterial agents.

Keywords: catheter, CAUTI, antibiotics, hydrogel coating.

Poster - 052

Antioxidant and inhibitory pharmacological activity in the cold macerated extract of bee pollen

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Bee pollen is the most valuable product collected by the worker bees for the nutritional source of the bee hive with a high level of protein, carbohydrates and vitamins. Therefore, analysing the properties of bee pollen in every aspect serves as an important role in the field of medicine and therapeutic aspects. To achieve this, the pellets of bee pollen were extracted by ethanolic cold maceration technique with a total yield of 5 %. The preliminary phytochemical screening in the cold macerated ethanolic extract detects the presence of acids, anthraquinone, alkaloids, carbohydrates, flavonoids, glycosides, phenol, proteins, quinones, resins, saponin, steroids, tannins and terpenoids. The depleting enzyme like elastase, affects the most important protein in the connective tissue, i.e. elastin, which can be protected only by anti-elastase activity. Therefore, uncovering the total elastase inhibition from the bee pollen extracts might be useful for the medication of ageing effects. The advanced phytochemical screening of volatile chemical constituents was analysed using Agilent GC 7890A/MSS5975C, Gas Chromatography - Mass Spectrometry. After 28 minutes of run time, the GC-MS results showed 40 volatile chemical compounds which they are engaged to have certain properties like anti-inflammatory, antioxidant, antimicrobial, hypocholesterolemic and anticarcinogenic. From the GC-MS chromatogram, the compounds such as hexadecanoic acid, pentadecanoic acid, pyrrole indole, and alpha amyrin were selected as ligands and Ro 48-8071 fumarate as a standard enzyme inhibitor for molecular docking analysis. Furthermore, the hypocholesterolemic effect of bee pollen was analysed by the *in silico* docking method using Autodock 4.0. In the study, Oxidosqualene Ianosterol cyclase (OSC) was taken as a target enzyme that aids in cholesterol biosynthesis. The result depicted that all the ligands are efficiently bound with the target enzyme OSC. Therefore the positive side of these activities shows that bee pollen has numerous pharmacological activities that might be liable for the therapeutic potential and serve as a health complement.

Keywords: Bee pollen, Molecular docking, Ianosterol cyclase (OSC), Pharmaclogical activity

Poster - 053

Green synthesis and characterization of silver nanoparticles using S*trychnos potatorum* for effective photocatalytic decolourization of methylene blue dye

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In this study, we report the synthesis and characterization of silver nanoparticles from *Strychnos potatorum* Linn seeds by green chemistry approach. The aim of this study is to the green synthesis of silver nanoparticles by a simple, eco-friendly and cost-effective method for effective photocatalytic decolorization of dye (Methylene Blue). The green synthesized silver nanoparticles were characterized by FT-IR, XRD and FESEM analysis. The synthesized nanoparticles were spherical in shape and crystalline in nature with an average size of 45-60 nm. The green synthesized nanoparticles were then used for photocatalytic decolourization of methylene blue dye. The optimum and highest decolourization was observed at 8mg concentration of silver nanoparticles in 10 ppm of dye concentration with pH 6.0 at 12h of exposure to nanoparticles for the photocatalytic decolourization process. Therefore, this study proves that the silver nanoparticles synthesized using *Strychnos potatorum* seed extract show effective photocatalytic decolourization of dye and can be plausibly used as a photocatalytic agent for dye degradation and wastewater treatment.

Keywords: Decolourization, EDX, FESEM, Methylene Blue, Photocatalytic activity, Silver nanoparticles, *Strychnos potatorum.*

Poster - 054

Health food: development of functional cookies

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Cookies are easy to prepare and carry, ready-to-eat products consumed by people of all age groups. Cookies are a popular medium of nutrient fortification. Growing urbanisation, the increasing trend of working women, changing social economic status and lifestyle have also contributed to the enhanced consumption of processed and convenience food products. Paneer is an acid-coagulated dairy product rich in protein and calcium. The shelf of paneer at room temperature is very low. The majority of the cookies available in the market are based on refined wheat flour which is inadequate in quantity as well as quality protein. Lack of high-quality protein is one of the most common causes of nutritional deficiency. There is no scientific literature available on the preparation of paneer-incorporated cookies. Protein-incorporated cookies are not available for the consumer. A pilot study was made to develop paneer-incorporated cookies. Paneer cookies were prepared with paneer at 10 to 50% level replacement with wheat flour (Control – wheat flour 60 %). The optimum level of paneer to be incorporated in cookies was selected based on sensory evaluation. 30% incorporation of paneer in cookies was preferred by the sensory panel. It had better appearance, texture, flavour and overall acceptability. The nutritional and textural qualities of the developed cookies were analysed. It was concluded that the cookies prepared by 30 % replacement with paneer would serve as good protein supplements with better sensory qualities and long shelf life.

Keywords: Cookies, Paneer cookies, nutrient fortification

Poster - 055

Insilico approach to the identification of novel deleterious mutation of human SLC17A5 protein through screening and molecular stimulation

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Infantile sialic acid storage illness is a rare autosomal recessive inborn lysosomal storage condition that is brought on by a flaw in the transporter that removes free sialic acid from the lysosome, the lysosomal membrane protein sialin. Free sialic acid that has been accumulated in several tissues, including the skin, kidney, liver and brain, is expelled at a significant level in urine. As a result, in silico SNP analysis is necessary to filter out the harmful SNPs.10 bioinformatics tools were used and were compared with normal protein. The impact of these anticipated harmful SNPs on protein stability, dynamic, behavior and secondary structure were thoroughly investigated and several other parameters are under investigation. In our study, we analyzed, A349T mutation may lead to a loss of stability in SLC17A5 protein structure. This can cause change in its function and occur mutation in A349T may cause sialuria disease.

Keywords: Sialic acid, sialin, SLC17A5, sialuria disease

Poster - 056

Molecular insight into mu-opioid receptor variants and their binding interaction of opioid drugs: A molecular simulation approach

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The μ opioid receptor (MOR), a member of the class A subfamily of G-protein coupled receptors (GPCRs), is a major target for the treatment of acute and chronic pain. Although MORs is related to the primary target for opioid drugs, including prescription painkillers like morphine, codeine, oxycodone, etc. We have used ITASSER (Iterative Threading ASSEmbly Refinement) for utilizes a multi-step approach to predict protein structures based on their amino acid sequences. Then, the main objective of this work is to identify mu (μ) opioid receptor deleterious single nucleotide polymorphism (SNPs) by computational analysis and Docking-based virtual screening (DBVS) methods to explore the behavior of small molecules in the binding pocket of targets. We use one such open-access tool PyRx 0.8 and implement molecular dynamic simulation (MDS) to study the structural and functional properties of native and mutant proteins. We found A6V, N40D, N152D, R265H, and S268P as the most neutral and disease-linked by using different bioinformatics tools such as ANNOVAR (SIFT & POLYPHENE2) annotation, SNPs & GO, SNAP2, I-Mutant2.0, DynaMut, CASTp, MutPred. Molecular dynamics simulations explored the detailed interaction mechanism of proteins with small molecules under dynamics. Here, we discuss observations from MD simulations of opioid receptor crystal structures with reference to protein-ligand interaction.

Keywords: MOR-μ opioid receptor, SNPs-Single Nucleotide Polymorphism, MDS Molecular Dynamic Simulation, I-TASSER.

Poster - 057

Organoleptic evaluation of H*yrocotyle vulgaris* L. - Araliaceae (*Neer vallarai*) incorporated in convenient products

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Pennyworth is a creeping or floating perennial herb. Stems are slender, creeping and rooting at the nodes. The leaf stalk is attached to the leaf blade in the center of the under-surface. Flowers are white, tinged with pink to purplish green. The plant has an umbrella-like leaf and lives commonly in wet places such as wetlands, marshes and swamps, sometimes even in deeper water. It grows as a perennial herbaceous plant and only reaches stature heights of 5 to 20 centimetres. With a slight smell of carrot, it is edible. A valuable medicine for its diuretic properties; has long been used in India as an aperient or alternative tonic, useful in fever and bowel complaints and a noted remedy for leprosy, rheumatism and ichthyosis; employed as a poultice for syphilitic ulcers. .This study aims to develop and formulate a convenient product by incorporating *Hyrocotyle vulgaris* (*Neer vallarai*) to make the food healthier. *H. vulgaris* (*Neer vallarai*) were sun-dried, shadow dried and hot air oven-dried. These powders were incorporated into noodles, sevai, bread, rusk, idli powder and soup mix. In the variation of 5 g (V1), 10 g (V2), 15 g (V3) by using wheat flour as a base for extruded and bakery products. Pure wheat flour taken as control for extruded and bakery products. The sensory analysis was done by 30 semi trained panel members. In all the products variation 2 was most acceptable than other variations.

Keywords: Health, powder, extruded, bakery, convenient.

Poster - 058

Potential drug target from breast milk *Lactobacillus* against vaginal pathogens

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The term "Probiotics" refers to the micro-organisms that confer health benefits to hosts when administered in adequate amounts. In this work, *Lactobacillus* was isolated from the breast milk of a 26 yr old woman and was treated against vaginal pathogens by varying in different concentrations (50 µl, 40 µl and 30 µl). Identification of *Lactobacillus* was carried out by motility, gram staining and biochemical test. The antibacterial effects of the *Lactobacillus* against vaginal pathogens were carried out by disc Agar diffusion method and an Antibiotic sensitivity test was also analysed for the pathogens. The antimicrobial activity of the sample revealed that the *Lactobacillus* isolated from breast milk showed significant effectiveness against vaginal pathogens especially higher for *Klebsiella pneumonia.* GC-MS was carried out to identify bioactive compounds, followed by the identification of novel bioactive compounds in the corresponding fraction. The main aim is to assess the probiotic nature of *Lactobacillus* in preventing cervical pathogens by studying the effectiveness of antimicrobial activity against vaginal pathogens by identifying the effective compounds by GC-MS and they may widen up the panorama in research and may act as a promising natural human source based drug in the medical field without taking any chemical drugs which cause side effects.

Keywords: Probiotic, Vaginal pathogens, *Lactobacillus*, LMW compounds, GC-MS, Antimicrobial compounds

Poster - 059

ReadyGelPro: SDS-PAGE Kit with Instant Gel and Pre-Formulated Stains

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This research proposes the development of a comprehensive SDS-PAGE kit that includes ready-made gel powder, dried reagents for gel formation, and pre-made staining and destaining dyes. The kit aims to provide users with a convenient and reliable solution for protein separation and analysis. The ready-made gel powder offers extended shelf life compared to liquid gel solutions and eliminates the need for users to prepare gels from scratch. The dried reagents simplify the experimental setup by removing the requirement for measuring and mixing components. Additionally, the pre-made staining and destaining dyes save time and effort by eliminating the need for users to prepare these solutions separately. The kit focuses on standardization, ensuring consistent and reliable results across experiments. Considerations such as clear reconstitution instructions, stability testing, compatibility validation, and rigorous quality control measures are crucial for ensuring optimal performance and user satisfaction. By addressing these considerations, this research aims to provide researchers and laboratories with a user-friendly and efficient SDS-PAGE gel kit for protein analysis in various scientific applications.

Keywords: SDS- PAGE gel kit, Pre-made staining, Destaining dyes, Protein analysis.

Poster - 060

Structural and functional consequences of non-synonymous single nucleotide polymorphisms (nsSNPs) in the CRTAP protein associated with Osteogenesis Imperfecta

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Mutations in the cartilage-associated protein (CRTAP) cause recessive Osteogenesis Imperfecta (OI), a rare genetic disorder characterized by easily fractured bones. CRTAP protein is a component of the prolyl 3-hydroxylation complex, which is important in the post-translational modification of collagen molecules. CRTAP is involved in the ER quality control pathway, ensuring that misfolded or defective collagen molecules are recognized and targeted for degradation, preventing their accumulation and potential cell harm. In our study, mutation L67P in CRTAP protein is seen to decrease protein stability, and mutation L67P in CRTAP protein leads to loss of relative solvent accessibility and its ability to properly interact with collagen molecules, resulting in impaired prolyl 3-hydroxylation. This could lead to collagen instability, affecting the structural integrity of collagen-rich tissues, such as bone, cartilage, and connective tissues, which can cause OI. In correlation to the previous research studies on the stability of this protein, we carried out Molecular dynamics (MD) simulation. We analyzed the SNP results of 7 nsSNPs obtained from dbSNP using SIFT, polyphen, I-Mutant, SNP&GO, SNAP2, and Mutpred to predict the role of nsSNPs in CRTAP. MD simulation is carried out and plots for RMSD, RMSF, Rg, H-bond, and PCA are obtained to check and prove the stability of the wild type and the mutant protein structure. The protein is tested for aggregation, and the results showed changes in the protein structure that could lead to function loss.

Keywords: CRTAP, ER quality control pathway, Osteogenesis Imperfecta (OI), Collagen, Loss of Relative solvent accessibility, Loss of Stability.

Poster - 061

A study on relationship between breakfast skipping and psychological disturbances among college students

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A total of 346 college students were examined to find the relation between skipping breakfast and depression. The hypothesis of the study was who slips breakfast would be more likely to experience stress and depressive moods Analyzing the psychological disturbances of the college students, 29 of them felt depression every day and 49 felt depression more than half of the day.169 college students feel depressed for several days. The hypothesis was tested using a t-test for equality of means and the result showed the value of t-test value is 2.621 which is greater than the critical value 2.590 at a 1 % level of significance concluding that there are no significant differences in the depression score between breakfast takers and non-takers. There is not much correlation between skipping breakfast and depression. This was due to the ignorance in the choice of food lack of sleep and frequently skipping breakfast. The result of the study depicted that whether the student consume or do not consume breakfast, they were found to be in depression state. Irrespective of breakfast consumption, the participants were disturbed mentally. The study concluded that mental depression is not only due to the skipping of breakfast but also due to the following factors such as family circumstances, and social wellbeing. The most serious problem addressed is the fact the 15 students have thought of hurting themselves nearly every day. The depression severity was found to be severe in 8% of the respondent. Their severity of stress levels must be treated to avoid harmful consequences.

Keywords: Breakfast, Depression, College students.

Poster - 062

A study on the prevalence of skipping breakfast among college students

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The "most important meal of the day" is often thought to be breakfast. It is the "first meal of the day that breaks the fast after the longest length of sleep and is consumed within 2 to 3 hours of awakening," according to researchers. Knowing college students' breakfast habits is the primary goal of the study. The aim of the current study was to determine the prevalence of skipping breakfast among college students living in Coimbatore. A cross-sectional survey was conducted. This kind of observational study analyzed information from a population at a specific period. It was an inexpensive research strategy. The study included 346 respondents in total. There are 80 male students and 260 female students present. The majority of them are between the ages of 22 and 21. Most of the students usually consume their breakfast (281) while the remaining 65 students avoid breakfast completely. Among 346 students, 49 of them reported they were not hungry for not having breakfast. Whereas 7 respondents were on a diet. The food choices preferred to consume are found to be Indian food (259) for their breakfast. In addition, 24 include coffee or tea beverages. Considerably more than 300 are geared up to unfold nutrition knowledge whereas sixteen students are not willing to share their nutrition thoughts. Overall, the conclusion of the pilot study depicts that most of the students were not used to skipping breakfast.

Keywords: Breakfast, College students, Diet, Nutrition, Prevalence

Poster - 063

Analysis of active components of *Leucas aspera* and *Vitrex negundo* evaluating their antimicrobial activity

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Leucas aspera is a plant species inside the class *Leucas* and the family Lamiaceae. It shown to be antifungal, antioxidants, antimicrobial, antinociceptive and cytotoxic activity. They act as an antidote to snake venom. *Vitrex negundo* medical plant leaves for steam trapping process to control virus growth in respiratory system. It is used to treat ailments, including swelling and headaches. Secondary metabolites are non-essential for the vegetative growth of producing organisms but are in a heterogeneous group. The methods were used for phytochemical screening and Fourier transform infrared (FTIR) analysis of root and leaf extracts. Phytochemical analysis components are terpenoid, alkaloids, flavonoids are used as drugs to prevent fungal infection. FTIR analysis identified the compounds as hydroxy group, vinylidene, aromatic and aryl disulfide. The antifungal activity has been performed with *Aspergillus flavus* species. An inhibitory zone was formed around the well of *V. negundo* sample.

Keywords: *Leucas aspera*, *Vitrex negundo*, antifungal, antioxidants, antimicrobial, antinociceptive

Poster - 064

Using Digital Haemoglobin meters for screening of Iron deficiency Anemia

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Malnutrition manifests itself as both overnutrition and undernutrition often described as the dual burden of malnutrition. It leads to far-reaching consequences affecting a nation's, family's and individual's productivity. Despite the giant leaps in technological advancement, India continues to be a major contributing nation to the worldwide occurrence of Malnutrition. Early detection of malnutrition will aid in early intervention thereby limiting the progress of malnutrition. It is therefore imperative to identify and develop simple, effective and inexpensive tools to detect and predict malnutrition. Accurate assessment of malnutrition paves the way for early identification and intervention. However, traditional methods of nutritional assessment are cumbersome as they are heavily resource reliant. The accuracy and reliability of data become a challenge, especially in the field where large-scale assessment is required within a short span of time. Sustainable technology encompassing digital and technological tools which integrate traditional methods with technological components enables better access, care and follow-up, especially in large populations. Nutritional screening for deficiencies using technology is a reliable tool to use in field settings, especially among children. Digital Hemoglobinometers provide a convenient alternative to the arduous task of drawing blood, storing and transporting it for analysis and are reliable devices that can instantaneously analyse the blood to provide haemoglobin as well as haematocrit levels. The nutritional status of school children in the union territory of Puducherry belonging to the age groups 8-14 years was elicited along with haemoglobin levels for iron deficiency anaemia using digital haemoglobinometers. It was found that though a majority of the school-going children had normal haemoglobin levels (44%) however 13% of the boys and 7% of the girls were found to have low levels of haemoglobin i.e less than 10 g/dl.

Keywords: Malnutrition, Screening, Iron deficiency, Digital haemometers

Poster - 065

Development and physical properties analysis of value-added cookies

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Cookies are one of the best-known quick snack products among all age group people. Value-added cookies are enriched and more beneficial to human health. This study was conducted and evaluated the physical properties of value-added cookies incorporating kidney bean flour and brown rice flour as main ingredients whereas wheat flour, moringa powder, orange juice, walnut and spices blend as added ingredients. The cookies were developed in 5 variations by adding kidney bean flour, brown rice flour and wheat flour. The variations were 60 g, 15 g and 10 g (variation 1), 50 g, 20 g and 15 g (variation 2), 30 g, 25 g and 30 g (variation 3), 40 g, 10 g and 35 g (variation 4), 20 g, 15 g and 50 g (variation 5) of kidney bean flour and brown rice flour respectively. Moringa powder, orange juice, walnut and spices blend in the proportion of 2.5 g, 5 g, 5 g and 6 g for all the variations. The sensory analysis for developed cookies was done using 9 points hedonic scale for the variation 1 to variation 5 among them variation 3 had higher acceptability because of its good taste, colour, texture and flavour. Followed by the physical properties such as bulk density, foaming capacity, water absorption, oil absorption and swelling capacity were performed for the developed cookies. The developed cookies were tested for shelf life by being stored in a zip lock cover at room temperature, variation 3 cookies were excellent for up to 22 days compared with the other variation.

Keywords: Cookies; Kidney bean flour; Brown rice flour.

Poster - 066

Extraction of bioactive compounds from *Tamarindus indica, Carica papaya l. a*nd assessing their anti-fungal activity

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In this study, the anti-fungal properties of the *Tamarinus indica* methanol extract against the species *Fusarium* sp. were examined. The existence of secondary metabolites such as flavonoids, phenols, terpenoids, steroids, saponins, glycoside, quinine, and tannins was examined using biochemical techniques. The findings proved *T. indica*'s ability to fight off fungi while also shedding light on its secondary metabolites. According to the research, *T. indica* has a wide variety of phytochemicals that can be used as potent therapies for a range of illnesses and medical issues. These phytochemicals have the potential for use in medicine, either by themselves or in combination with other substances. The study also discovered several *T. indica* and *Carica papaya* sections as sources of highly valuable phenolics and flavonoids, which have potent anti-fungal properties. It has been established that these plants are full of natural substances that can be used as medicines. Additionally, because the samples were gathered from biological waste, it is now simpler to produce fungicides to combat plant fungi. The prepared plant sample can also be utilized to treat human fungal infections. The potential of *T. indica* and *C. papaya* as useful sources of natural chemicals with therapeutic characteristics, notably in battling fungal diseases, is highlighted by this study's result.

Keywords: *Tamarinus indica*, *Fusarium* spp., *Carica papaya*

Poster - 067

Extraction of secondary metabolites from plant samples and check their anti fungal activities against different fungal strains

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The secondary metabolism of plants is crucial for features like flower colour, food flavour, pest and disease resistance. Using chromatographic methods, we isolated many secondary metabolites from various classes and clarified their structure using Spectroscopic techniques. The secondary metabolites are extracted from papaya leaf and pumpkin seed and taken as samples. This study shows that the *Carica papaya and Cucurbita maxima* methanol extract shows that it has an anti-fungal activity against the species *Candida Albicans*. The biochemical tests are performed and show positive results for the secondary metabolites including flavonoids, phenols, terpenoids, steroids and saponins. This study is helpful in a reliable understanding of the secondary metabolites and their antifungal activity. These tests and techniques have proved that plant samples are rich in natural components which can be used as medicine in various treatments.

Keywords: *Carica papaya*, *Cucurbita maxima*, secondary metabolites

Poster - 068

Formulation and development of protein rich edible cup incorporated with almond flour and quinoa flour

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Rapid industrialization and urbanization have caused the production of enormous amounts of solid waste. Many nations today are facing environmental pollution due to improper solid waste disposal. Especially plastic waste disposal has increased rapidly in the last few decades. Researchers are working on safely disposing the solid waste and recovering wealth from these waste materials. This project of "Edible cup" which is made with quinoa flour and almond flour which are rich in protein is done with a view of reducing plastic waste disposal and protecting the health of people. This edible cup is biodegradable. Cups used for hot drinks like tea and coffee are constructed of materials like steel, glass, plastic, etc. Edible cups provide an option to such cups by introducing some flavour to drinks. A cup is used for drinking wine, beverages, juices and also used for eating a scoop of ice cream in the cup. The quinoa flour is naturally gluten-free and makes a nutritious choice for people who have celiac disease. This cup would be cost-effective, reducing paper cup use. Hostels, clinics, and every business may use this cup. We created the Good-Edi cup to provide a sustainable and eco-friendly choice when opting for a single-use takeaway cup. We believe that edible cups could be a potential source for the replacement of plastic cups and paper cups, thereby providing scope for environmental protection and leading to sustainable development.

Keywords: Waste management, Edible cup, Quinoa flour, Almond flour, Biodegradable

Poster - 069

Formulation and nutritional analysis of *Nelumbo nucifera* based products

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Lotus stem is a traditional plant exploited for its medicinal properties. It is rich in iron, hence this study aimed at assessing the impact of supplementation of lotus stem powder is incorporated in cookies and chikkies. The prevalence of anaemia among adolescent girls is around 70 per cent. *Nelumbo nucifera* is rich in nutrients and it's a good Supplement for Anaemia. The RDA of iron for the adolescent age group is 28 mg for boys and 26mg for girls. According to our study, Iron composition per cookie is 4.4 mg so an approximate consumption of 4 Cookies a day (17.6 mg) can meet 1/3rd of the iron requirement. The iron composition per Chikki is 1.05 mg. An approximate consumption of 10 Chikkies per day (10.5 mg) can meet half the iron requirement. It is highly nutritious and it can be greatly included in our diet, especially in the form of snacks like Cookies and Chikkies. Thus, the *N. nucifera* has ways of impact for the betterment of a balanced diet for healthy living of all age groups. The Nutritive Composition of *N. nucifera* incorporated cookies(20 g/Cookie) is Energy 403.06 kcal, Protein 4.34 g, Fat 25.38 g, Iron 4.4 mg, Calcium 47.2 mg, Crude fibre 2.44 g, Phosphorous 126.92 mg, Carbohydrates 41.54 g. The Nutritive Composition of *N. nucifera* incorporated chikkies (10 g/Chikki) is Energy 92.33 kcal, Protein 2.68 g, Fat 4.49 g, Iron 1.05 mg, Calcium 17.35 mg, Crude fibre 0.53 g, Phosphorous 31.91 mg, Carbohydrates 10.26 g.

Keywords: *N. nucifera,* Anaemia, Snacks, age groups.

Poster - 070

Formulation and standardization of jam using *Tridax procumbence*

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According to WHO, there are 1.5 million deaths directly caused by diabetes in many rural areas. *Tridax* is available worldwide. A novel food product of jam derived from *Tridax procumbens* plant to examine the formulation and properties of *Tridax* jam. The jam was prepared using a combination of *Tridax* leaves, sugar and lemon juice and sodium benzoate. The study employed a laboratory-based methodology involving extraction, blending, and heating techniques. The *tridax* is proven to have anti-diabetic, anti-inflammatory, hepato-productive, anti-cancer activity and wound healing. Nutritional analysis showed that the jam was rich in vitamins, minerals, and antioxidants. The results obtained are 24 semi-trained members who studied food. This study belongs to the comparison of two variations of the products with white sugar (variation 1) and brown sugar (variation 2). Variation 1 was not selected due to liquid consistency and retains the raw flavour and aroma of *tridax* leaves. Variation 2 was selected with good taste, appearance and colour. Most of the people liked variation 2. The product was suitable for all people including diabetic patients and helps to control diabetes if used frequently. Further research are required to prevent cancer and to explore the commercial viability of *Tridax* jam.

Keywords: *Tridax* procumbence, *Tridax* leaves, Brown sugar, *Tridax* jam, formulation.

Poster - 071

Formulation of nutrient rich *kulfi* with sprouted finger millet milk and black nightshade plant leaves

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Nutritional well-being is a long-term force for human health, development, and genetic potential maximisation. As a result, a community's nutritional status has been considered a significant indication of national growth. In other words, malnutrition is a roadblock to national development and so qualifies as a national issue. Dietary quality should be considered while addressing the problem of deep-seated food poverty and malnutrition. *Kulfi* is a frozen dairy dish that originated in the 16th century on the Indian subcontinent during the Mughal Empire. It is a classic delicacy from the Indian subcontinent that is commonly referred to as "traditional Indian ice cream. Value-added milk products have piqued consumer interest in recent years. Functional foods are becoming more popular as consumers become more health conscious. Humans have employed a variety of medicinal plants from the dawn of time, long before "medicines" or "medical science" existed. *Solanum nigrum*, often known as "Black nightshade," belongs to the *Solanaceae* family. *Manathakkali* is the Tamil name for it. Antimicrobial, antioxidant, and cytotoxic properties, as well as anti-ulcerogenic and hepatoprotective action, are all present. The present study was taken up to develop healthy nutritious *kulfi* using sprouted finger millet milk and black nightshade leaves due to their packed nutrients.

Keywords: *Kulfi*, Functional food, *Solanum nigrum*, Anti-microbial, Finger millet

Poster - 072

Glim criteria for malnutrition diagnosis - A narrative review

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Malnutrition is a complex and multifactorial condition in hospital settings, affecting more than30-50 % of the general hospitalized patients in India. Early identification of malnutrition in certain conditions is crucial as it can have a significant impact on disease management and outcomes. The Global Leadership Initiative on Malnutrition (GLIM) published a set ofevidence-based criteria as a framework for malnutrition diagnosis in adults. A narrative review was conducted to understand how the GLIM criteria have been used in different clinical conditions to diagnose malnutrition. GLIM follows a simple two-step process that starts with nutritional risk with a validated screening tool and is followed by an in-depth assessment for diagnosis and grading of the severity of malnutrition. It consists of two etiological criteria and three phenotypic criteria. The presence of at least one of each type of criteria can aid in establishing a diagnosis of malnutrition, and the phenotypic criteria can be used to grade its severity. The GLIM criteria address the limitations of previous malnutrition screening tools byincorporating multiple criteria. This comprehensive approach improves the accuracy of identifying malnutrition in patients, leading to better targeting of interventions and improved patient outcomes. Applying the GLIM criteria in clinical settings is much beneficial to diagnose malnutrition and develop appropriate treatment plans.

Keywords: Malnutrition; GLIM; Screening; Assessment

Poster - 073

Health benefits of phytochemicals

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Phytochemicals are the bioactive non-nutrient plant compounds in fruit, vegetables, grains, and other plant foods that have been linked to reductions in the risk of major chronic diseases. It is estimated that more than 5000 phytochemicals have been identified. Fruit and vegetables contain a wide variety of antioxidant compounds (phytochemicals) such as phenolics and carotenoids that may help protect cellular systems from oxidative damage and lower the risk of chronic diseases. In 128 of 156 dietary studies, the consumption of fruit and vegetables was found to have a significant protective effect. Several crops including grains, oilseeds and horticultural crops are rich sources of phytochemicals. The identification, isolation and characterization processing of these phytochemicals has led to strong interest in the area of functional foods. Cereals such as wheat, barley and oats, oilseeds such as canola, flaxseed and mustard and horticultural crops such as grapes and sea buckthorn. These crops particularly help to cure cancers. Phytochemicals have antioxidant properties and offer protection that decreases the risk of many diseases. The inclusion of phytochemicals-rich foods in the diet helps to prevent cancer, improve immune function, protect our brain, support the cardiovascular system & help with neutralizing free radicals, which can damage the DNA. Phytonutrients present in foods are good in colour and smell, though there are still phytochemicals in white foods such as onions and garlic. Eating a colourful diet is an easy way to make sure to get all types of phytochemicals.

Keywords: Phytonutrients, phytochemicals, antioxidants, cereals,

Poster - 074

Influence of screen time on sleep quality among college students

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The objective of this study is to assess the relationship between screen times and sleep quality of the age group 17-24. This is a cross-sectional study. The study will be conducted on the students of a private institution in Coimbatore. A total of 200 undergraduate and postgraduate students are approached in a private institution in Coimbatore. The sampling technique to be used is random sampling. The research instrument comprised 3 parts i) Demographic profile, ii) Sleep quality measures using Pittsburgh Sleep Quality Index (PSQI) iii) Screen time usage measures using the Digital screen time exposure questionnaire (DSEQ). The Mean Cumulative Score and the Odds Ratio are to be used to analyse the screen time and sleep quality among college students. The students of the private institution in Coimbatore will be experiencing poor sleep and acquiring infrequent troubles with sleeping, and passing more time watching televisions, computers, mobile phones, and portable video devices. This study researches the effect of screen watching on sleep length and sleep quality, within a private institution in Coimbatore. As negative impacts are determined within sleep length, sleep quality, and increased screen watching of multiple versions of the devices, influencing the commended level of screen watching among college students is an affair of public health. Custom-made health training programs ought to be originated based on the results of different studies to preclude college students from enduring the negative impacts caused by long screening times.

Poster - 075

Nutritional benefits of millet grains: A synopsis

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Millets are the least used of all the grains, although being regarded as a significant one globally. Millet grain is ideal as food and feed since it is rich in minerals and phenolic compounds that have positive health effects. The range of minerals and phenolic compounds found in finger and pearl millet are strong indicators that choosing millet for use as food or feed requires careful consideration. Millets include phenolic characteristics that include phenolic acids, flavonoids, and tannins, all of which are good for human health. In addition, finger millet has a phenolic profile that is remarkably distinct, more varied, and plentiful than pearl millet. The significant antioxidant activity of millet phenolic components has been demonstrated through research. Because millet grains contain phytochemicals, they improve human health by reducing phytates and cholesterol levels. The quest for substitute grains is necessary to relieve the pressure caused by the frenetic demands on maize and its uses in numerous industries. The performance of the various animals improved when maize was replaced in their diets with pearl and finger millets. Including these grains in the diet may enhance well-being and lower disease risks. Use of pearl millet in broiler diets of at least 50% is permitted without having a negative impact on broiler performance or egg output. Recently, millet grain has been added to other dishes and used to create classic drinks. Therefore, the main goal of this review is to shed light on millet's nutritional and phenolic status and their effects on people and livestock.

Keywords: Feeds, finger millet, health, millet, nutritional composition, phytochemicals

Poster - 076

Prevalence and antibiogram of aerobic bacterial isolates from pus samples in a tertiary-care hospital of North Kerala, India

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Pyogenic infections by multi-drug resistant pathogens are significant in causing 13% of morbidity rate and 0.4% – 0.5% of mortality worldwide. Assessment of pathogens' diversity and their evolving drug-resistant pattern is quite essential in the systematic management of causative agents. The study aimed to determine the bacterial pathogen responsible for pyogenic infection in 1350 pus samples collected from individuals attending a tertiary care hospital in Northern Kerala. Collected pathogens were identified based on the standard tests including colony morphology, microscopic examination, and biochemical characteristics. The drug-resistant pattern of pathogens was analysed against currently used 29 common antibiotics using the Kirby-Bauer technique. From the collected wound samples, about 84.44 % of samples showed significant bacterial infection. The causative organisms were identified as *Staphylococcus aureus* (28 %), *Escherichia coli* (13 %), *Pseudomonas aeruginosa* (12 %), *Klebsiella pneumonia* (10 %), *Staphylococcus* sp., coagulase negative (8%), *Proteus mirabilis* (6%),*Streptococcus* sp., (2%), *Enterococcus faecalis* (2 %), *Acenitobactorbaumanii* (1 %), *Citrobactorkoseri* (2 %), *Enterococcus faecium* (2 %), *Enterococcus* sp., (2 %), *Morganellamorganii* (1 %), *Proteus. vulgaris* (2 %), and other less prominent bacterial (3 %) isolates. The isolated Gram-negative bacteria were sensitive to antibiotics such as Amikacin>Imipenem>Meropenem>Tazobactum> Gentamycin > Chloramphenicol > Ciprofloxa-cin > Levofloxacin and were resistant to Clindamycin, Erythromycin, Linezolid, Oxacillin, Penicillin, and Vancomycin. In Gram-Positive Bacteria, susceptible to Linezolid > Vancomycin > Tetracycline > Clindamycin > Chloramphenicol > Gentamycin > Ciprofloxacin, and resistance to Amikacin, Imipenem, Meropenem, and Tazobactum were observed. Gram-positive bacteria were found a significant cause of pyogenic infections. *Staphylococcus aureus* was the predominant cause of pyogenic diseases. A conducive environment influences normal flora to become opportunistic pathogens and leads to pyogenic infections as the normal flora develops resistance to many of the available antibiotics.

Keywords: Bacterial pathogen, Drug resistance, Pyogenic infections, *Staphylococcus aureus*, Surgical site infection.

Poster - 077

Screening and evaluation of bioactive components of *Curcuma caesia* and isolation of miRNA

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Abnormal gene function and altered patterns of gene expression are the key features of cancer. Reports show that acquired epigenetic abnormalities with genetic alteration cause this dysregulation. Experiments in various organisms have revealed that miRNA has the ability to regulate the cellular processes involved in cancer. Rhizome of *Curcuma caesia* is used for curing many diseases such as nausea, piles, fertility, cancer, fever, cough, cold, asthma and wound healing. Phytolipids of the rhizome have antifungal, anti-asthmatic and antioxidant activity. In the present study, the phytolipid present in the extract of *C. caesia* has been analysed. miRNA from the lymphocytes has been isolated after being treated with the aqueous and lipid extract of *C. caesia* and the level of miRNA present after treatment. The protein denaturation property of lipid and aqueous extract has been observed by anti-inflammatory activity screening and by calculating the percentage inhibition. The hemo protective effect of lipid and aqueous extract has been analysed by hemolysis assay. The presence of active compounds like phenol, steroids, tannins, flavonoids, alkaloids and saponin in the aqueous extract was absent in the lipid extract except of alkaloids. GCMS analyses to characterize active components showed the presence of isospathulenol, curcumenol, 3,7-cyclodecadiene-1-one, beta-cyclocostunolide, zederone the component phytolipids of *C. caesia*.

Keywords: Rhizome, *Curcuma caesia,* hemo protective effect, phytolipids

Poster - 078

Strategies to improve menopausal quality of life: A systemic review

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"Quality of life" is people's perception of their position in social and cultural life, with regard to their goals and standards. Evidence shows that an estimated one billion women have experienced menopause worldwide. The experience of menopause is influenced by beliefs and values prevalent in the sociocultural setting, the background of the women, and the ways in which the women approach changes in this phase of life. Independently of the circumstances involved, women experiencing menopause need to have their care needs and corresponding support identified based on their personal and contextual perspectives. Hot flushes and night sweats are the strongest symptoms of those reported by women affected by the changes experienced during menopause. The positive or negative ways in which each woman approaches the changes during menopause are influenced by their personal, family and sociocultural background. Different educational and counselling methods, participating in physical activities, using medical plants containing phytoestrogens and isoflavones and using food supplements such as soy, licorice, red clover, and fish oil to improve and enhance the quality of life in menopausal women. Healthcare providers pay little attention to women´s perceptions regarding menopause. Considering menopause is a time when women feel vulnerable, personal and tailored healthcare according to individual needs, preferences and expectations should be provided. Coping strategies regarding the effects of menopause should be determined in creative and dynamic ways through the identification and consideration of the complex issues involved. These measures are essential to ensuring effective support for menopausal women.

Keywords: Menopause; change events; life experiences, quality of life

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His foundation is focused on making a sustainable change in primary healthcare by building impactful and dynamic partnerships with community leaders, governments, other non-profit organizations, and corporate sponsors to improve the health outcomes of rural communities. After meeting initial success, he opened the foundation to more youth volunteers.

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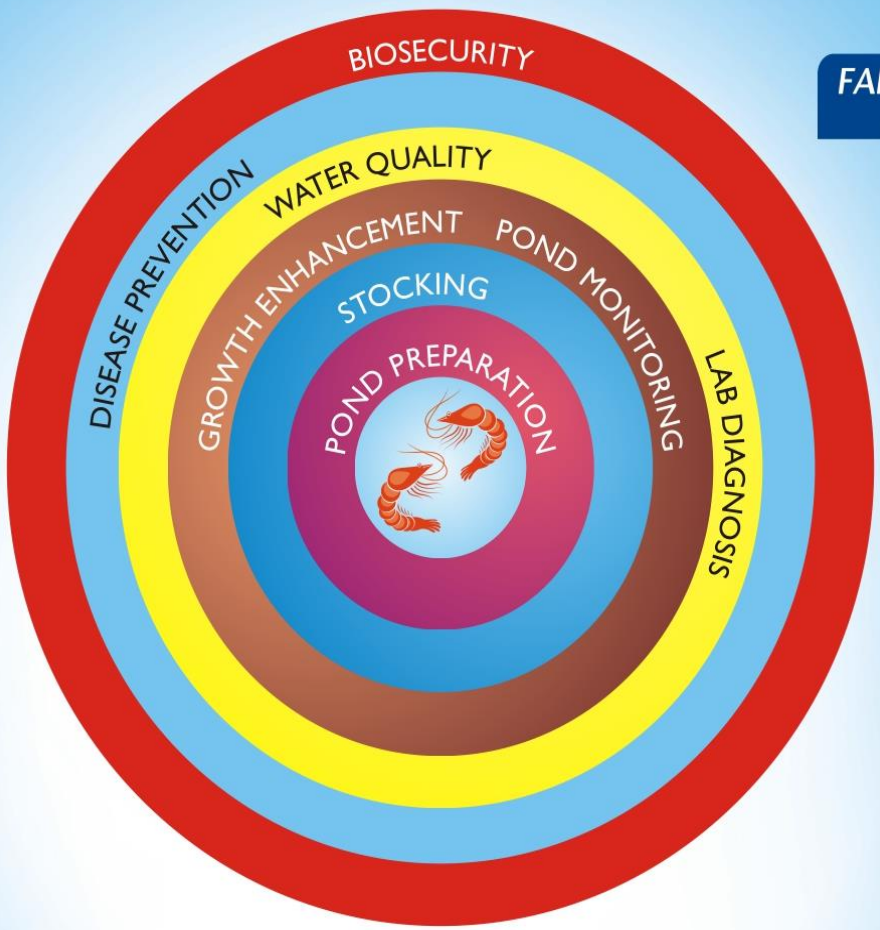

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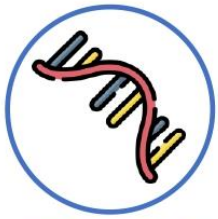

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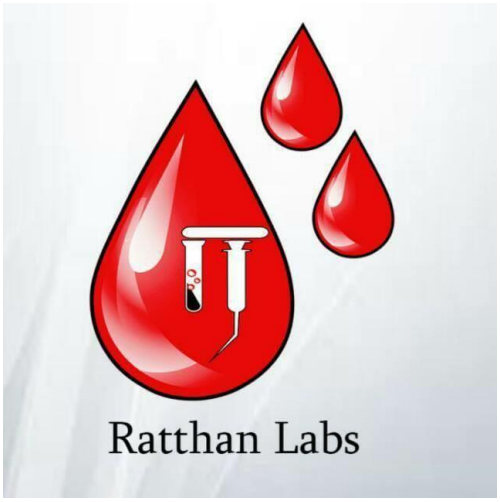

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The PSG Center for Academic Research and Excellence (PSG CARE) was founded in October, 2015 by the PSG & Sons Charities Trust with a mission to promote teaching excellence in all the colleges under the Trust. Towards this end, The Center encourages the use of learner-centric pedagogical practices that facilitate effective learning and fosters dialogue and reflection on effective teaching through workshops, seminars, one-to-one consultation and other activities among the PSG Institutions. The Centre also focuses on creating and sustaining effective faculty-student relationships.

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