

INTERNATIONAL CONFERENCE ON
'ADVANCEMENTS AND INNOVATIONS IN PHYTOCHEMISTRY, NUTRACEUTICALS AND
FUNCTIONAL FOODS'

Organized by

**Mar Athanasius College for Advanced Studies Tiruvalla (MACFAST) Tiruvalla,
Pathanamthitta, Kerala, India**

and

**Kerala Academy of Sciences
Thiruvananthapuram, Kerala, India**

at

MACFAST, Tiruvalla, Pathanamthitta, Kerala, India

on

11th and 12th November, 2024

Report

Annual Seminar on Phytochemistry and allied subjects is one of the flagship programmes of Kerala Academy of Science (KAS), and the tenth in the series has been organized in association with Mar Athanasius College for Advanced Studies Tiruvalla (MACFAST), on November 11 and 12, 2024. This year, the International Seminar was on the topic 'Phytochemistry, Nutraceuticals and Functional Foods. The sessions consisted of keynote presentations, theme presentations, endowment lecture, endowment awardees presentation, and oral and poster presentations by researchers.

The conference was officially opened with an inaugural session, and Dr. Varghese K. Cheriyan, the esteemed Principal of MACFAST, extended a warm welcome to all the delegates and invited guests. Dr. Rameshkumar, General Secretary KAS and Organizing Secretary of the conference gave a brief overview of the seminar's objectives and themes. The traditional lighting of the lamp was led by Dr. C. Anandharamakrishnan, Director of CSIR-NIIST, along with all the dignitaries. Dr. C. Anandharamakrishnan, addressed the current food and nutrition challenges faced by India, stressing the importance of tailored nutritional strategies for improving the public health landscape. He encouraged participants to contribute to this evolving field by focusing on innovative research and applications that respond to global health needs and consumer expectations. Following the inaugural remarks, Dr. G.M. Nair delivered the Presidential Address, with a compelling exploration of the interconnections between phytochemistry, functional foods, and the critical health challenges facing modern society. Dr. Nair further discussed the emerging field of nutrigenomics, which studies the relationship between nutrition and gene expression. Rev. Dr. Father Mathew Mazhavancheril graced the inaugural session with a heartfelt felicitation address, acknowledging the significant contributions of the distinguished guests and speakers to the field of scientific research and public health. Formal release of the conference's seminar proceedings and abstracts was done by Dr. Sreejith, Controller of Examinations at Mahatma Gandhi University by handing over a copy of the seminar proceedings to Dr. G.M. Nair. Another notable event during the inaugural function was the signing of a Memorandum of Understanding (MoU) between MACFAST College and SBM Pharma Tech., Pune, to foster collaboration and advancing research in the fields of phytochemistry, nutraceuticals, and related pharmaceutical technologies. The inaugural session concluded with vote of thanks by Dr. Sreejith, Joint Secretary of KAS.

One of the highlights of the conference's opening day was the keynote lecture delivered online by Dr. Kholis Abdurachim Audah from Swiss German University, Indonesia. Dr. Audah highlighted the biodiversity of Indonesia and especially the mangrove diversity and its Phytochemical explorations. He also elaborated the advances in natural products research being carried out at Indonesia. Dr. Ramchand delivered an insightful lecture on the emerging fields of phytopharmaceuticals and nutraceuticals, with a focus on the concepts of reverse pharmacology and nutrigenomics. His presentation offered a comprehensive look into the processes and scientific principles underlying the development of novel nutraceutical products. He outlined the steps involved from identifying and isolating bioactive compounds to conducting preclinical and clinical trials to ensure efficacy and safety. Prof. Faridah Abas, President of the Malaysian Natural Product Society from Selangor, Malaysia, joined the conference virtually to deliver a special address. In her talk, Prof. Faridah highlighted the importance of natural products in advancing healthcare and sustainable development, sharing insights into the significant strides made by researchers in Malaysia in the field of natural product chemistry. Prof. Lalith Jayasinghe, Senior Research Professor at the National Institute of Fundamental Studies in Kandy, Sri Lanka, also joined the conference online, delivering an inspiring special address. Prof. Jayasinghe focused on the significance of integrating traditional knowledge with modern scientific research, especially in regions rich in biodiversity, like Sri Lanka. He discussed the role of natural compounds in combating chronic diseases and enhancing overall health, emphasizing the urgent need to conserve these natural resources. Prof. (Dr.) GM Nair, President, KAS, Thiruvananthapuram chaired the session.

In the afternoon session, Prof. (Dr.) Bipin Nair, Dean of the School of Life Sciences at Amrita Vishwa Vidyapeetham, Kollam, delivered an impactful talk on the role of life sciences in advancing nutraceutical and functional food research. He emphasized the interdisciplinary nature of nutraceutical research, which brings together molecular biology, pharmacology, and nutrition science to develop innovative health-promoting products. Dr. KG Raghu, Former Chief Scientist, CSIR- NIIST & Vice-President, KAS made an interesting presentation on his experience in 'Promising plants against life style related disorders'. Dr. AG Pandurangan, Former Director of KSCSTE- JNTBGRI chaired the session.

A public lecture on the topic 'Nutrigenomics Products for Precision Health' was presented by Dr. A Sreekumar, Founder, AHAM Precision Wellness Palliative Care Hospital and a well known personality in the field of integrative medicine. His talk was highly appreciated and the message of integrated health management was well assimilated by the delegates.

Research presentations by the delegates was the major part of the conference, where parallel sessions on phytochemistry, Phytopharmacology, Plant Biotechnology and food science were held. Eminent scientists and academicians in respective fields participated as Chairs in the sessions.

After oral presentation, attendees gathered to enjoy a cultural program, which featured vibrant performances of students from MACFAST. The first day concluded with a communal dinner, allowing participants to connect and network further, strengthening professional bonds and collaborations.

The second day of the conference started with a talk by Dr. Vinaya K.K. from MagGenome Technologies Pvt Ltd, Cochin on the topic 'heterotrophic bacterial flora associated with intertidal macroalgae', focusing on their secondary metabolites. Dr. K.R. Anilkumar from Amala Cancer Research Centre (*Former Scientist, Defence Food Research Laboratory, Mysore*) delivered an insightful presentation on the development and benefits of functional foods and nutraceuticals. Dr.

Kaustabh Kumar Maiti, Senior Principal Scientist from CSIR-NIIST, delivered an engaging talk on the topic, *Exploring Theranostic Assessment of Phytochemical Entities Through Surface Enhanced Raman Spectroscopy (SERS)*. Dr. Maiti introduced the concept of theranostics, a field at the intersection of therapy and diagnostics, and explained how phytochemical entities could be evaluated for their therapeutic and diagnostic potential using advanced spectroscopic techniques. Prof. (Dr.) Jayachandran K, Mahatma Gandhi University, Kottayam and Rev. (Dr.) Mathew Mazhavancheril, Research Director, MACFAST chaired the sessions.

The conference progressed into a series of oral presentations organized into multiple themed sessions, as a following session of the previous day presentations. Both oral and poster presentations featured a diverse array of research topics under major themes, including Biotechnology, Phytochemical Analysis, Phytopharmacology and Nutraceuticals. These sessions brought together leading researchers, postdoctoral fellows, and students from various institutions, presenting pioneering research in fields such as Computational Biology, Botany, Zoology, Chemistry, Microbiology, Nanotechnology, Biochemistry, and related disciplines. Dr. KG Raghu, Former Chief Scientist, CSIR-NIIST; Prof. (Dr.) Pramod Gopinath, CUSAT, Cochin; Dr. Sasidhar B S, CSIR-NIIST, TVPM; Dr. Sreejith P, University of Kerala, Karyavattom; Dr. Jacob Thomas, Mar Thoma College, Tiruvalla; Prof. Dr. JG Ray (Rtd), School of Biosciences, MG University; Prof. (Dr.) Jayachandran K, Mahatma Gandhi University, Kottayam; Dr. Renjith Thomas, St Berchmans College, Changanassery; Dr. Hari N, CMS College, Kottayam; Dr. Sarika A R, KSCSTE, Thiruvananthapuram; Dr Nitha B, Sree Ayyappa College, Chengannur; Dr. Chinchu Bose, Amrita Vishwa Vidyapeetham, Kollam; Dr. Lakshmi Mohan, Saintgits College of Engineering, Kottayam and Dr. Jenny Jacob, MACFAST, Tiruvalla served as chairpersons in the parallel sessions held for 2 days. The oral presentation and poster presentations by research scholars and faculties were evaluated by a jury chaired by Dr. Ruby John Anto, Centre of Excellence in Nutraceuticals, TVPM and the following participants won the best presentation awards.

Oral Presentation Awards

Phytochemistry

Abhirami S, Research Scholar, Department of Biochemistry, University of Kerala

Title: Investigating the antioxidant and anti-inflammatory potential of oil extracts of *Paspalum scorbiculatum*- an *in vitro* study

Phytopharmacology

Shalu Saseendran, Student, B.Sc.-M.Sc. (Integrated) Biotechnology, College of Agriculture, Vellayani, KAU, Thiruvananthapuram

Title: Antiangiogenic And Cytotoxic Activity of *Pogostemon Quadrifolius* (Benth.) Leaf Extract Against Lung and Breast Cancer Cell Lines

Plant Biotechnology

Sijo A, Research Scholar, School of Biosciences, MACFAST College, Tiruvalla

Topic: Evaluation of Antimicrobial resistance patterns in *Klebsiella pneumoniae* from a Tertiary Care Hospital in Kerala, India

Pema Lhamo, Research Scholar, Karunya Institute of Technology and Sciences

Title: Enhancing polyhydroxyalkanoate (PHA) production in large scale fermenters: a comparative study

Functional Foods and Nutraceuticals

Raveena Natakakath Kaliyathan
CSIR-SRF, Ph.D. Scholar, CSIR-NIIST

Title: Phytochemical and Bioactive Carbohydrate Profiling of Banana Grit: A Novel Functional Food from Unripe Nendran Bananas

Oral Presentation Faculty

Dr. Shidhi PR, Chief Ministers Nava Kerala Post-Doctoral Fellow, Dept. of Zoology,
University of Kerala, Karyavattom

Title: A System-Based Approach to Identify an Antihypertensive Lead Molecule 12

Poster Presentation Award

Deepak Gowda HS, Research Scholar, Department of Studies in Botany, Davangere University,
Davangere, Karnataka

Topic: Antioxidant, Antimicrobial, and Antimitotic Potential Green Synthesized Zinc and Magnesium Oxide Nanoparticles from *Parmotrema perlatum*

Swapna John, Research Scholar, Govt College for Women, Trivandrum

Topic: Phytochemical Screening of *Elaeocarpus serratus* L. foliar galls

Prof. Hisham Endowment Award function, to commemorate the contributions of late Prof. Dr.A. Hisham in the field of Phytochemistry, was one of the major events of the programme. Dr. K M Seethi, Director, IUCSSRE, Mahatma Gandhi University, Kottayam shared his experience and memories with the late Prof. Hisham. Dr. Sathyanshu Kumar, ICAR- Directorate of Medicinal and Aromatic Plants Research, Anand, Gujarat delivered the Prof. Dr. A Hisham Endowment Lecture in Phytochemistry-2024 on the topic 'Phytochemical Leads from Indian Medicinal Plants for Societal Benefits'. The prestigious Prof. Dr. A. Hisham Endowment Award was presented to Ms. Sangeetha Mohan, a dedicated research scholar from the Chemical Science and Technology Division of CSIR-NIIST, Thiruvananthapuram by Prof. (Dr.) GM Nair, President, KAS and Smt. Alpha Hisham, wife of the late Prof. Hisham. This award recognizes her exceptional contributions to research in the field of phytochemistry. Ms. Sangeetha Mohan delivered a compelling presentation on her research topic: *Rational Design and Discovery of Natural Product-Inspired Chemical Entities Active Against Multifaceted Inflammatory Targets*. She highlighted the significance of her work in addressing complex inflammatory diseases, emphasizing the potential of these natural product-inspired compounds as therapeutic agents. In the programme Smt. Alpha Hisham delivered the welcome speech, while the word of thanks was delivered by Dr. Sasidhar BS, CSIR-NIIST, TVPM.

The valedictory session of the International Conference was held in an elegant ambience with esteemed guests, organizing members and delegates, marking the formal conclusion of the event. Prof. (Dr.) Pramod Gopinath, CUSAT, Cochin, extended a warm welcome to all participants and guests. Dr. Smitha Vijayan, Organizing Secretary at MACFAST, Thiruvalla, presented a detailed report on the conference proceedings, summarizing key presentations, sessions, and outcomes. Prof. G.M. Nair and Varghese K. Cheriyan delivered special addresses, sharing insights and commendations for the conference's contributions to the fields of Phytochemistry, Nutraceuticals, and Biotechnology. Dr. Jogy Alex, Member Syndicate, MG University, Kottayam, provided the presidential address, highlighting the academic significance of the conference and encouraging continued collaboration and research. Prof. Dr. A. Sabu, Member Secretary of KSCSTE, Government of Kerala delivered the valedictory address. Dr. Sabu also distributed awards to the best presentations in each category, acknowledging the hard work and research excellence demonstrated by the participants. Dr. Beena Cherian, Convenor at MACFAST, Thiruvalla, expressed gratitude to the

speakers, organizers, participants, and supporters for their valuable contributions to the success of the conference.

The event brought together researchers, academicians, and industry professionals to discuss recent advancements and innovations in the fields of phytochemistry, nutraceuticals, functional foods, and related areas. The conference served as an interdisciplinary platform, encouraging knowledge exchange and fostering collaborative opportunities among researchers from various sectors. A total of 414 participants attended the conference, comprising 204 attendees from 40 colleges and various industries, along with 210 participants from MACFAST. As the eminent scientists pointed out in the deliberations, the advances in the phytochemistry field need to be explored further to translational aspects, and has huge scope in the food sector. The conference concluded with a sense of accomplishment and anticipation for future advancements in the fields discussed throughout the conference.

Let us extend our sincere thanks on behalf of KAS and MACFAST, to all the invited guests, speakers, session chairs and delegates for their gracious presence, intellectual deliberations and wholehearted support to the programme. We also acknowledge KAS office bearers and EC members, MACFAST faculties and students for their seamless effort in organizing the seminar. Thank you once again and hope to meet you in the next session.

Also please find attached the 'Proceedings and Abstracts' with ISBN number.

With warm regards

Prof. (Dr.) G. M. Nair
President, KAS

Dr. K. B. Rameshkumar
Gen. Sec., KAS & Org. Sec

Dr. Smitha Vijayan
Org. Sec., MACFAST