PHYTOCHEMISTRY AND UTILIZATION OF PLANT RESOURCES

'GAS CHROMATOGRAPHIC TECHNIQUES IN AROMATIC PLANTS RESEARCH'

REFRESHER COURSE FOR FACULTIES

DBT Skill Vigyan State Partnership Programme

at

Central Instrumentation Facility
Jawaharlal Nehru Tropical Botanic Garden and Research Institute
(KSCSTE-JNTBGRI), Palode, Thiruvananthapuram-695562, Kerala

Supported by

The Department of Biotechnology, Government of India
Kerala Biotechnology Commission, KSCSTE, Govt. of Kerala

Programme date: August 22nd to September 6th 2024 (14 Days)

Number of participants: 20

Registration link: skillvigyan.kscste.kerala.gov.in

No course fee; TA (upto 2nd AC train fare on producing the bills) and accommodation at JNTBGRI Guest House (on sharing basis) will be provided to the participants without any payment. The cost of food (arranged at JNTBGRI canteen) has to be met by the participants.

Introduction to the Programme

The plant kingdom represents an extraordinary reservoir of molecules, synthesized from the fascinating laboratory of plants, and Phytochemistry deals with the diversity of such compounds. Out of the diverse plant resources, aromatic plants and the aroma chemicals are widely being utilized in various sectors such as perfumery, cosmetics, medicines, preservatives,nutraceuticals and food additives. The diversity of aroma chemicals also has significant role in plant taxonomy, chemical ecology, atmospheric chemistry and agriculture sectors. Though our country is endowed with a variety of aromatic plants, most of the plants, especially the endemic species, are yet to be investigated for their aroma constituents or potential utility. In this background, KSCSTE-JNTBGRI, with the support of DBT, Govt. of India and KBC, KSCSTE, Govt of Kerala, is organizing Refresher Courses for scientists/ college level teachers on the diversity of aromatic plants, their chemical profiling through various phytochemical techniques, especially GC-MS. The sessions include field visits, lab visits, theory classes, practical sessions, hands on training on GC-MS and other instruments such as Flash chromatograph, HPTLC, HPLC and LC-MS. Welcome to KSCSTE-JNTBGRI to explore the plant resources through modern Science and Technology tools.

Prof. K.P Sudheer
Director, KSCSTE- JNTBGRI
Chairman, CIF-JNTBGRI

Dr. Rameshkumar K B
Principal Scientist and Sc i/c, CIF-JNTBGRI
Course Coordinator, DBT Skill Vijyan programme CIF-JNTBGRI

Gas Chromatographic Techniques in Aromatic Plants Research

Refresher Course for Faculties at KSCSTE-JNTBGRI (August 22nd to September 6th 2024)

Programme Schedule

Day and Date	Theory/Lecture Topic	Hands on Session/Practical
First 22.08.2024 Thursday	Inaugural session Diversity and significance of aromatic plants Aromatic plants in Ayurveda Aromatic plants in Sidha Diversity of spice plants	Field visit: JNTBGRI Medicinal and Aromatic Garden. Herbarium visit
Second 23.08.2024 Friday	Introduction to Phytochemistry Phytochemical Techniques Extraction techniques Separation techniques Characterization techniques	Extraction techniques in phytochemistry Separation Techniques: TLC, HPTLC Column Chromatography, Flash Chrom., HPLC Interpretation of UV, IR, NMR and MS
Third 24.08.2024 Saturday	Gas Chromatography - Mass Spectrometry (GC-MS) instrumentation	GC-MS: Basic hardware GC-MS: Basic software GC MS: Method development GC-MS: Sample run, essential oil
Fourth 26.08.2024 Monday	Gas Chromatography - Mass Spectrometry (GC-MS) instrumentation	GC-MS: Fixed oil analyses through FAME GC-MS: RRI determination GC-MS: Non-polar and polar columns GC-MS: Post run analysis
Fifth 27.08.2024 Tuesday	Gas Chromatography- Mass Spectrometry (GC-MS) techniques in aromatic plants research	GC-MS: Enantiomeric analysis, chiral column GC-MS: Maintenance and trouble shooting GC-MS: Mass spectra interpretation
Sixth 28.08.2024 Wednesday	Recent advances in aromatic plants research- Chemical ecology	GC-MS: Head space analysis
Seventh 29.08.2024 Thursday	An introduction to Biostatitics Recent advances in aromatic plants research- Chemotaxonomy	Volatile chemical profiling and SPSS dendrogram and PCA
Eighth 30.08.2024 Friday	An introduction to LC-MS analytical technique	Basic hardware of LC-MS Basic software of LC-MS LC-MS analysis- Method development LC-MS- Sample preparation and run LC-MS: Post run analysis LC-MS: Data interpretation
Ninth 31.08.2024 Saturday		Tropical forest visit: Visit to Ponmudi forests and exploration of aromatic plants Visit to clove plantation, Tea processing unit
Tenth 02.09.2024 Monday	Recent advances in aromatic plants research- Bioactivities Recent advances in aromatic plants research- Molecular biology	Antimicrobial evaluation of aromatic plants Tissue culture of aromatic plants DNA isolation, RTPCR analysis
Eleventh 03.09.2024 Tuesday	Pharmacognostical techniques in aromatic plants research	Histochemistry and Pharmacognosy of aromatic plants
Twelfth 04.09.2024 Wednesday	Herbal Technology Start-ups in aromatic plants sector The chemistry of perfumes	Value added products from aromatic plants- Soap, Incense stick, Sanitizer etc. Perfume creation
Thirteenth 05.09.2024 Thursday		GC-MS analysis of aromatic plants: Case studies and research paper writing by delegates
Fourteenth 06.09.2024 Friday	Visit to different laboratories at JNTBGRI	Valedictory session Feedback from delegates Certificate distribution