

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: 15th to 31st January, 2024 (14 Days)

Number of participants: 20

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

Last date for registration: December 22nd, 2023

No course fee; TA and accommodation will be provided to 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. The awareness towards natural options in every walk of life has created a new thrust for plant products and phytochemicals especially, and herbal technology is emerging as a new knowledge-based economy sector for India as well. 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, the refresher course intends to provide an in-depth knowledge and practical exposure to 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.

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Gas Chromatographic Techniques in Aromatic Plants Research
Refresher Course for Faculties at KSCSTE-JNTBGRI (15th to 31st January, 2024)

Programme Schedule

Day and Date	Theory/Lecture Topic	Hands on Session/Practical
First 15.01.2024 Monday	Inaugural session Diversity and distribution of aromatic plants Aromatic plants in Ayurveda Aromatic plants in Sidha Diversity of spice plants	Field visit JNTBGRI Medicinal and Aromatic Garden and identification of aromatic plants. Herbarium visit
Second 16.01.2024 Tuesday	Introduction to Phytochemistry Phytochemical Techniques Extraction techniques Separation techniques Characterization techniques Pharmacognosy of aromatic plants	Histochemistry and Pharmacognosy of aromatic plants
Third 17.01.2024 Wednesday	Instrumentation techniques in aromatic plants research Hyphenated analytical techniques	Extraction techniques in phytochemistry Separation Techniques: TLC, HPTLC Column Chromatography, Flash Chrom., HPLC Interpretation of UV, IR, NMR and MS
Fourth 18.01.2024 Thursday	LC-MS introduction	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: Trouble shoot LC-MS: Data interpretation
Fifth 19.01.2024 Friday	GC-MS introduction	Basic hardware of GC-MS Basic software of GC-MS GC MS: Method development GC-MS: Sample run, essential oil GC-MS: Post run analysis
Sixth 20.01.2024 Saturday		Fixed oil analyses through GC-MS: FAME analysis GC-MS: RRI determination GC-MS: Non-polar and polar columns
Seventh 22.01.2024 Monday		GC-MS: Enantiomeric analysis through chiral column GC-MS: Mass spectra interpretation
Eighth 23.01.2024 Tuesday	Recent advances in aromatic plants research- Chemical ecology Recent advances in aromatic plants research- Chemotaxonomy and Biostatitics	Head space GC-MS analysis SPSS dendrogram analysis
Ninth 24.01.2024 Wednesday	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 RT-PCR analysis
Tenth 25.01.2024 Thursday	The chemistry of flavour The chemistry of perfumes	Flavor creation Perfume creation
Eleventh 27.01.2024 Saturday		Value added products from aromatic plants Soap, sanitizer etc.
Twelfth 29.01.2024 Monday		GC-MS analysis of aromatic plants: Case studies and research paper writing by delegates
Thirteenth 30.01.2024 Tuesday		Tropical forest visit: Visit to Ponnudi forests and exploration of aromatic plants. Visit to clove plantation, Tea processing unit
Fourteenth 31.01.2024 Wednesday	Visit to different laboratories at JNTBGRI	Valedictory session Feedback from delegates Certificate distribution