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C-H Activation & Phytochemistry Laboratory

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RESEARCH FOCUS

Phytochemical Investigation of Medicinal Plants: Our group mainly focuses on scientific validation of traditional knowledge on plants where we isolate marker compounds, use them as standards for quality control, and evaluate the respective biological activities. Developing innovative approaches, including a) Replacing traditionally used organic solvents for targeted extraction with eco-friendly and reusable **Natural Deep Eutectic Solvents (NADES)**; b) Developing a **Chemomatrix** Data Base for quality assurance of medicinal plants & c) **Biochemomatrix** Approach for the identification of putative marker compounds, to achieve these targets is the main goal.

Synthesis of Bioactive Molecules via C-H Activation: One of the aims of our group is to develop green and efficient catalytic methods for synthesizing bioactive molecules *via* C-H activation/functionalization. Mainly we focus on the functionalization of *N*-heterocycles by employing novel catalytic techniques with an in-depth study of the reaction mechanism. Recently we have initiated work on atroposelective C-H activation.

PROFESSIONAL EXPERIENCE

September 2021 to present	Principal Scientist, CSIR-IHBT, Palampur, India
September 2017 to August 2021	Senior Scientist, CSIR-IHBT, Palampur, India
September 2014 to August 2017	Scientist, CSIR-IHBT, Palampur, India
March 2014 to August 2014	Postdoc Fellow, KAIST, South Korea
May 2013 to March 2014	Young Scientist-DST Fast Track, IIT Bombay, India
November 2012 to May 2013	Research Assistant, IIT Bombay, India

EDUCATION

2012	Ph.D. (Organic Chemistry)	Awarded	GNDU, Amritsar/CSIR-IHBT, Palampur
2005	M.Sc. (Chemistry)	1 st Division	DAV Collage Jalandhar, GNDU, Amritsar
2002	B.Sc. (Non-Medical)	1 st Division	Himachal Pradesh University

AWARDS AND FELLOWSHIPS

Fellow of Royal Society Chemistry (FRSC), London, UK.
Life member of the Chemical Society of India
Life Member of the Catalysis Society of India
Life member of the Analytical Society of Analytical Scientists
One Year Advance Promotion *i.e.*, Merit Promotion from Scientist to Senior Scientist
Early Career Advisory Board of *Asian Journal of Organic Chemistry* (2020-) and *Science of Synthesis* (2021-)
Manjushree Pal Memorial Award from Ethanopharmacology Society of India, Kolkata (2017)
Thieme Chemistry Journal Award (2016)
D S Kothari Postdoc Fellowship (2012)
Fast Track Young Scientist project for three years (2012)
Postdoc Fellowship KAIST, South Korea (2014)
CSIR Junior/Senior Research Fellowship (2007, 2009)

HUMAN RESOURCE DEVELOPMENT

12 students awarded PhD degrees.

Six Research Associates, twenty-one project assistants, and twenty-four MSc trainees worked in the lab.

INSTITUTIONAL RESPONSIBILITIES

Member, Technical and Purchase Committee (2018-)

Member, Students selection committee in Chemical Sciences

DAC Member, Ph.D. students enrolled in AcSIR, Ghaziabad-201002, India

Member, Publication Committee

Member, Lab Health, Safety and Environment Management Committee

PROJECT HANDLED: 25

Completed: 17

Current: 08

External Funded: 06

RESEARCH PUBLICATION: 178

Patents: 3

Citation: >5386

h-index: 37

i-10 index: 114

Book Chapter: 11

Popular Hindi Article: 06

REPRESENTATIVE PUBLICATIONS IN LAST THREE YEARS

Natural Product Chemistry	Organic Synthesis
Trends in Chem., 2024; doi.org/10.1016/j.trechm.2024.03.007.	Coord Chem Rev. 2024; 499: 215453.
J Ethanopharmacol. 2024; 320: 117385.	Synthesis 2024, 56; 751.
Fitoterapia, 2024: 175: 105925.	Mol. Catal. 2023; 551, 113597
Nat Prod Res. 2024; 38: 440.	Org Lett. 2023; 25: 2627.
Steroids 2023, 199: 109293.	Chem Commun. 2023; 59: 9646.
Eur J Med Chem. 2023; 260: 115748.	Chem Euro J., 2023, 29: e202301360.
J Ethanopharmacol. 2023; 310: 116389.	J Org Chem. 2023; 88: 2314.
J Cleaner Prod. 2023; 356: 135639.	Chem Commun. 2022; 58: 13151.
Ind Crops Prod. 2023; 202: 117040.	Adv Synth Catal. 2022, 364, 897.
Biomass Convers Biorefin. 2023; 13: 311.	J Org Chem. 2022; 87: 9069.
Sep. Purif Technol. 2022; 294: 121105.	Catal Rev. 2022; 64: 716.

