Dr. Sarita Singh
M.Pharm, Ph.D.
Assistant Professor
Institute of Pharmacy
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Current Employment

- Working as Assistant Professor at Deen Dayal Upadhyaya Gorakhpur University U.P. in the Dept. Institute of Pharmacy from 18/09/2024.
- Worked as associate professor at Shri Sai College of Pharmacy, Handia, Prayagraj U.P. from 1/04/2022 to 17/09/2024.

Research Experience

S. No.	Organization	Duration		Post	Project Code	Project Title
		From	To			
1.	CSIR-Central Institute of Medicinal and Aromatic Plants, Lucknow, India	19/03/ 2015	31/03/ 2017	Project Assistant II	CSIR Funded BSC-0203	Chemical biology of *Ocimum* and other aromatic plants
2.	CSIR-Central Institute of Medicinal and Aromatic Plants, Lucknow, India	17/10/ 2017	31/03/ 2020	Project Assistant II	CSIR Funded HCP-0007	CSIR-Aroma Mission

Academic Profile

Degree	Discipline	Institution/University	Session	Marks
Ph.D	Chemical Sciences	(AcSIR) Phytochemistry Division, CSIR-CIMAP, Lucknow	2018-2022	--
M.Pharm	Pharmaceutical Chemistry	Banasthali Vidyapith, Jaipur, Rajasthan	2012-2014	81.16%
B.Pharm	Pharmacy	Bundelkhand University, Jhansi, Uttar Pradesh	2008-2012	71.53%

- **Ph.D. awarded in the discipline of Chemical Sciences**
- **Institute Name:** Academy of Scientific and Innovative Research (AcSIR), CSIR-Central Institute of Medicinal and Aromatic Plants,Lucknow, 226015, U.P., India
- **Supervisor:** Dr. Atul Gupta (Principal Scientist) a.gupta@cimap.res.in, mob; 9889012071
- **Title:** Structural modifications of flavonoids for evaluation of their pharmacological activity

Overview of Ph.D. thesis

The work of my thesis is divided into total six chapters. The first chapter, highlights the usefulness of plant secondary metabolites such as flavonoids particularly isoflavonoids, their reductive metabolites such as equol, and other related oxygen hetero-cycles such as chromene

and coumarins in the development of novel ER ligands and related biological activities. Taking learning from this, second chapter presented isolation, structural modification and biological evaluation of tambulin. Tambulin, is a natural compound of flavonol category was used for structural modification and studied for anticancer activity. It was isolated from the fruits of *Z. armatum* and was taken up further for the structural modification in anticipation of potent anticancer agents. Twelve amide derivatives were made and evaluated for their anticancer activity against five different panels of cancer cell lines by SRB assay. In third chapter, 3-arylbenzopyran based non-steroidal compounds have been synthesized using simple and efficient chemistry and evaluated for osteogenic activity in mouse calvarial osteoblast cells. Tested compounds found effectively increased osteogenic activity at 1 pM concentration and safe up to 1 μM. Further, in next chapter, 3-arylbenzopyran based non-steroidal compounds have been synthesized as amide derivatives in continuation of previous study and evaluated for *in-vitro* cytotoxicity in MG63, MCF-7, and MDA-MB231 cell lines and osteogenic assay in MC3T3-E1 cell line. The most active compound was further evaluated for mechanistic study of cytotoxicity and osteogenic activity, along with toxicity profiling by *in-vitro* and *in-vivo*. In fifth chapter, in the anticipation of anticancer agents, benzopyran-based platinum II complexes were synthesized and evaluated in MCF-7 and MDA- MB231 breast cancer cell lines. The lead compound was evaluated for *in-vivo* toxicity profile and found safe up to 1000 mg/kg body weight as a single acute oral dose. In last chapter, the thesis included the value addition of scopoletin which was isolated from the bio-waste stem part of *A. annua*. Scopoletin was structurally modified to their derivatives chromeno-coumarin hybrid and evaluated for their vasorelaxant activity in the precontracted main mesenteric artery (MMA). Thelead compound was found more potent than the parent compound scopoletin.

Area of Research

- Natural product chemistry, extraction, isolation and identification of natural products.
- Structural modifications of natural products.
- Synthesis of novel compounds using simple and efficient chemistry.

Skill and Expertise

- Extraction and isolation of natural products through Soxhlet, Flash and different columnchromatographic techniques.
- Different spectroscopic techniques such as Nuclear Magnetic Resonance (NMR), Infra-Red (IR), and Mass spectroscopy.
- Data analysis and determination of physico-chemical properties of compound.

Publications

1. Atul Gupta, Imran Ahmad; Jyoti Kureel, Mohammad Hasanain, Praveen Pandey, **Sarita Singh**, Aijaz A. John, Jayanta Sarkar, Divya Singh; Induction of targeted osteogenesis with 3-aryl-2H-benzopyrans and 3-aryl-3H-benzopyrans: Novel osteogenic agents; *Journal of Steroid Biochemistry and Molecular Biology;* 158 (2016); 63-75.

2. Hardesh K. Maurya, Mohammad Hasanain, **Sarita Singh**, Jayanta Sarkar, Vijaya Dubey, Aparna Shukla, Suaib Luqman, Feroz Khan, Atul Gupta; Synthesis of 4-phenyl-5,6-dihydrobenzo[h]quinazolines and their evaluation as growth inhibitors of carcinoma cells; *RSC Advances;* 22 (2016); 18607-18618.

3. **Sarita Singh**, Ateeque Ahmad, Dushyant Singh Raghuvanshi, Mohammad Hasanain, Karishma Agarwal, Vijaya Dubey, Kaniz Fatima, Sarfaraz Alam, Jayanta Sarkar, Suaib Luqman, Feroz Khan, Sudeep Tandon, Atul Gupta; Snthesis of 3,5-dihydroxy-7,8-dimethoxy-2 (4-methoxyphenyl) benzopyran-4-one derivatives as anticancer; *Bioorganic*

& Medicinal Chemistry Letters; 21 (2016); 5322-5327.

4. Imran Ahmad, Dushyant S. Raghuvanshi, **Sarita Singh**, Aijaz A. John, Ravi Prakash, Kripa S. Nainawat, Divya Singh, Shubhandra Tripathi, Ashok Sharma, Atul Gupta; Design and synthesis of 3-arylbenzopyran based non-steroidal vitamin-D_3 mimics as osteogenic agents; *Med. Chem. Commun;,* 2016.

5. **Sarita Singh**, Karishma Agarwal, Hina Iqbal, Pankaj Yadav, Deepika Yadav, Debabrata Chanda, Sudeep Tandon, Feroz Khan, Anil Kumar Gupta, Atul Gupta; Synthesis and evaluation of substituted 8,8-dimethyl-8*H*-pyrano[2,3-*f*] chromen-2-one derivatives as vasorelaxing agents; *Bioorganic & Medicinal Chemistry Letters;* 30 (2020); 126759**.**

6. **Sarita Singh,** Surendra Chandra Verma, Vinay Kumar, Kriti Sharma, Diksha Singh, Sana Khan, Neelam Gupta, Romila Singh, Feroz Khan, Debabrata Chanda, Durga Prasad Mishra, Divya Singh, Partha Roy, Atul Gupta; Synthesis of amide derivatives of 3-aryl-3H-benzopyrans as osteogenic agent concomitant with anticancer activity; *Bioorganic Chemistry* 133 (2023) 106380.

7. Kripa Shankar Nainawat, **Sarita Singh,** Karishma Agarwal, Hina Iqbal, Poonam Rani, Divya Bhatt, Sana Khan, Debabrata Chanda, Dnyaneshwar Umrao Bawankule, Sudeep Tandon, Feroz Khan, Anil Kumar Gupta, Atul Gupta; Synthesis of 6-alkoxy and 6-hydroxy-alkyl amine derivatives of braylin as vasorelaxing agents; *Bioorganic & Medicinal Chemistry Letters*; 9 (2023) 129311.

8. **Sarita Singh,** Swati Singh, Asha Budakoti, Neha Kumari,RamSwaroopVerma,ArvindSingh Negi, Karuna Shanker, Sudeep Tandon, Alok Kalra, Atul Gupta;An environmentally benign process to synthesize vanillin and other substituted phenyl aldehydes using natural phenylpropenes; *Food Chemistry*; 463 (2025) 141320.

Patents

1. Atul Gupta, Ram Swaroop Verma, **Sarita Singh**, Swati Singh, Arvind Singh Negi, KarunaShanker, Sudeep Tandon, Alok Kalra; A process for the preparation of vanillin and other substituted phenylaldehydes; Indian and PCT Patent.

Attended Workshop/Training

1. One week Faculty Development Programme on "Recent Advancement in Pharmaceutical Discoveries and Developments" from 16th to 21th August, 2022 at IFTM University, Moradabad, 244102, U.P.
2. One week Hands on Training on "Practical Aspects of Liquid Chromatographic Techniques" from 7th to 11th November, 2022 at CSIR- Central Institute of Medicinal and Aromatic Plants, Lucknow, 226015, U.P.
3. One week Hands on Training on "Pre-Clinical Development of Medicinal and Aromatic Plant based Leads" from 18th to 22th September, 2023 at CSIR- Central Institute of Medicinal and Aromatic Plants, Lucknow, 226015, U.P.
4. One week Faculty Development Programme on "Recent Advancement in Pharmaceutical Discoveries and Developments" from 18th to 23rd March, 2024 at Dattakala Shikshan Sanstha's, Institute of Pharmaceutical Sciences and Research (For Girls) Maharashtra, 413130.

Conferences/Seminars

1. 6th International Symposium on "Current Trends in Drug Discovery & Research" 25-28 February 2016, CSIR- Central drug Research Institute (CSIR-CDRI) Lucknow U.P.

2. JIGYASA-2017 “Recent Exciting Development in MAPs” 22-23 February 2017, CSIR- Central Institute of Medicinal and Aromatic Plants (CSIR-CIMAP), Lucknow U.P.
3. INSA JIGYASA-2018 “MAPs for Health & Well-being” 09-10 March 2018, CSIR-Central Institute of Medicinal and Aromatic Plants & INSA Lucknow Chapter, U.P. (OralPresentation)
4. 7th International Symposium on “Current Trends in Drug Discovery & Research” 20-23 February 2019, CSIR- Central drug Research Institute (CSIR-CDRI) Lucknow U.P.(Poster Presentation)
5. 8th International Symposium on “Current Trends in Drug Discovery & Research” 12-14 March 2022, CSIR- Central drug Research Institute (CSIR-CDRI) Lucknow U.P. (Poster Presentation)

References

Dr. Atul Gupta	**Dr. Ram Swaroop Verma**
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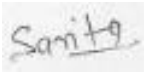
Declaration

I hereby declare that the information provided above is true to the best of my knowledge and belief.

Place: Gorakhpur, U.P. India



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