

Ajay Sharma, PhD

Office: Postdoctoral Research Associate, Department of Biomolecular Sciences, School of Pharmacy, Thad Cochran Research Center, The University of Mississippi, University, MS 38677-1848, USA

Home: VPO Bhaddi, Teh. Balachour, Dist. SBS Nagar, Punjab, India – 144521

sharmaajay9981@gmail.com, asharm18@olemiss.edu (+91) 8283000481, (+1) 662-550-9946

Important link

- **Google Scholar:** <https://scholar.google.co.in/citations?user=DTAxnFQAAAAJ&hl=en>
- **Research Gate:** <https://www.researchgate.net/profile/Ajay-Sharma-39/stats>
- **Linkedin:** <https://www.linkedin.com/in/ajay-sharma-58751591/>

Summary

- Experienced analytical chemist with a strong foundation in mass spectrometry, food chemistry and biochemistry. Skilled in characterization and identification of compounds using a diverse range of analytical techniques, Mass spectrometry, LC-MS/MS, GC-MS, GC-MS/MS and GCGC-TOF. Additionally, well-versed in method development and validation for the identification of various small molecules, contaminants, adulterants and plant toxins using chromatographic techniques coupled with Mass spectrometry.

Core competencies

- I am self-motivated and highly organized with the ability to work in an interdisciplinary environment to meet the deadlines with logical and analytical approach.
- Beside creative and open-minded approach, I also have the potential to integrate existing scientific knowledge to formulate a new research problem.
- Alongside developing a new network and collaborations, I also have the ability to grasp and learn new things quickly.

Technical skills

- **Analytical Chemistry:**
 - New method development and validation for contaminants (fumigants and pesticides), adulterants (mineral oils and illegal dyes) and plant toxins.
 - Development and validation of novel and innovative extraction, isolation and purification processes.
 - Protein separation and purification by SEC and HIC chromatography. Fast photochemical oxidation of Protein.
 - Qualitative and quantitative analysis of various contaminants, adulterants and plant toxins using LC-MS/MS, GC-MS/MS and GCGC-TOF.
- **Instrumentation:** RP-HPLC-DAD, LC-MS/MS, GC-MS/MS, GC-GC TOF, SEC-MALS, HIC.
- **Applications:** SciFinder, Microsoft office, Chem-Draw, Chem-Scach, Origin, Statistica, NIST EI database.

Education

Ph.D.

July 2012 - Jun 2019

SLIET, Longowal, Sangrur, Punjab, India

Research topic: Isolation and characterization of major compounds from *Nepeta leucophylla*, their derivatization and evaluation of biological potential

MS, Chemistry

April 2012 – September 2011

Punjab Agricultural University, Ludhiana, Punjab, India

Research topic: Chemistry and evaluation of Neem extracts against *Tribolium castaneum* (Herbest)

B.Sc., Chemistry

April 2006 – 2009

Govt. College Hoshiarpur, Panjab University, Chandigarh, India

Examination	School / College / Institute	Name of the Board / University / Institution	Marks Obtained (with Max. Marks)	Distinction/ Class / Division//Grade	Date of Passing	Duration of course
Matriculation (10 th)	Sen. Sec. School, Bhaddi	PSEB, Mohali	690/850 81.18%	1 ST	2004	1 YEAR
Intermediate (10+2)	Sen. Sec. School, Nawan Shahar	PSEB, Mohali	296/450 65.78%	1 ST	2006	1 YEAR
Bachelor's degree	Govt. College Hoshiarpur	P U Chandigarh	1507/2000 75.35%	1 ST	2009	3 YEARS
Master's degree	CBS&H PAU Ludhiana	PAU Ludhiana	3220/3800 84.74%	1 ST	2011	2 YEARS
Ph.D.	Depart. Of Chemistry, SLIET, Longowal	SLIET, Longowal	-	S (satisfactory)	2019	6.5 YEARS
CSIR-UGC NET (LS)			93.5/200 46.75%	Rank 27/1106	Jun 2012	

Honors and Awards

- **MHRD fellowship Award for Ph.D** (July 2012 to Jan 2013, Topper of All India SLIET Ph.D entrance test).

- **Award of INSPIRE fellowship (JRF)** for Pursuing Ph.D. given by DST Govt. of India (INSPIRE CODE IF-120715), (February 2013 to May 2015).
- **Award of INSPIRE fellowship (SRF)** for Pursuing Ph.D. given by DST Govt. of India (INSPIRE CODE IF-120715), (May 2015 – July 2017).
- **Role of honor from PAU Ludhiana** for highest percentage in M.Sc., 2011.
- **1st Prize In Poster Award in National Conference (NICS-2016)** October 21-22, 2016, Department of Chemistry, SLIET, Longowal, Sangrur (PB).
- **Best Poster Award in (TSFS-2016)**, 7-8, Oct, 2016, Department of Food Engineering and Technology, SLIET, Longowal, Sangrur (PB).
- **Merit Certificate** of academics and sports during M.Sc. and B.Sc [PAU Ludhiana (2009-2011) and Govt. College Hoshiarpur(2006-2009)].
- **Merit-cum-topper scholarship during** M.Sc. (PAU Ludhiana), 2009-2011.
- **First and Second Prizes** in Science fair at district level during schooling, 2002-2006.
- **Gold medal** in middle school (for achievement in academics and sports), 2002.

Experience

University of Mississippi

Postdoctoral Research Associate (Department of Biomolecular Sciences)

Oxford, Mississippi, USA

April 2024 – Till date

- Conducting research on protein purification using SEC and HIC chromatography, protein oxidation via FPOP, digestion, LC-MS/MS analysis, and data interpretation using BYONIC and Foxware software.
- Designing and optimizing experimental protocols, as well as contributing to academic writing and publication efforts.
- Providing guidance and support to graduate and undergraduate students in the laboratory.
- Managing laboratory operations, including oversight of analytical work (e.g., HPLC, LC-MS/MS, FOX), consumable inventory, service management, and addressing equipment breakdowns.
- Participating in training programs, national and international conferences, and faculty development initiatives.

Nestle R&D Centre

R&D Senior Executive (NFSI Adulteration)

Manesar, Gurugram, India

July 2022 – March 2024

- Project management activity for food adulteration related projects, which includes time management, finance management, I2L project management, internal lab instruction/R&D report publications.
- Lead, manage and support projects to deliver business needs aligned to global strategy in collaboration with NIFSAS/NR/R&D/NQAC.
- Plan and deliver technical and scientific experiments for projects together with NR/R&D/NQAC
- Lab management – New lab setup, analytical work monitoring (instruments like GC-MS, GCXGC-TOF, LCMS, HPTLC), consumable and service management, breakdown management.

- Collaboration with various academic institutes for food adulteration related Nestle R&D projects. Development of intern/trainee/ FSSAI Junior food analyst.

Chandigarh University

Assistant Professor

Punjab, India

August 2018 – July 2022

- Teaching of M.Sc. and B.Sc. classes (Bio-organic Chemistry, Heterocyclic Chemistry, Medicinal Chemistry, Spectroscopy and Computational Techniques etc.
- Supervision of various chemistry teaching laboratories.
- Supervision of Ph.D, M.Sc. dissertation students, summer training students, seminar students.
- Evaluation of answer booklets of internal and final examinations.
- Demonstrated how to write effective drafts, present during seminars, and work safely in the lab while handling hazardous chemicals.
- Academic duties such as training placement coordinator, laboratories in-charge, student mentors examination duties etc.
- Designing experiments and statistical interpretation of research results.
- Proposing, writing and reviewing research articles, review papers and book chapters.
- Participation in training programs, conferences (national and internationals) and faculty development programs.

Mentoring Experience

1. Sarvpreet Singh (M.Sc, 2017-19) Dissertation Title: “Green synthesis of metal nanoparticles using polyphenolic rich root extract of *Codonopsis clematidea* and evaluation of their biological potential” Chandigarh University, Mohali.
2. Sharmila Wahengbam (M.Sc, 2018-20) Dissertation Title: “Green Route for The Synthesis of Zinc Oxide Nanoparticles using Sea buckthorn Leaves and Giloy Twig Extracts and Evaluation of Their Antioxidant Potential” Chandigarh University, Mohali.
3. Anikesh Bhardwaj (M.Sc, 2018-20) Dissertation Title: “Green synthesis of TiO₂ nanoparticles using *Nepeta leucophylla* root methanol extract and phytochemical analysis of plant extract” Chandigarh University, Mohali.
4. Aheibam Denish Singh (M.Sc, 2019-21) Dissertation Title: “Efficient green synthesis of monodispersed silver nanoparticles using bioactive Sea buckthorn extract and its characterization” Chandigarh University, Mohali.

SLIET Longowal

Senior Research Fellow – INSPIRE DST (Ph.D)

Punjab, India

May 2015 – July 2017

- **Project 1:** Isolation of major compounds from biologically active extracts with the help of chromatographic techniques. Derivatization of isolated pure compounds.
- **Project 2:** Isolation of essential oils from different parts of *Nepeta leucophylla*, their characterization using GC-MS and evaluation of their biological potential.

- Published one research article and one review article from the work of project 1 and 2 and one is submitted for publication.

SLIET Longowal

Punjab, India

Junior Research Fellow – INSPIRE Fellowship DST (Ph.D)

February 2013 - May 2015

- **Project 1.** Isolation of bioactive extracts using different organic solvents from different parts of *Nepeta leucophylla* and evaluation of their biological potential.
- **Project 2.** Qualitative and quantitative phytochemical analysis of isolated extracts using RP-HPLC-DAD and GC-MS.
- Published three research articles and book chapter from the work of project 1 and 2.

SLIET Longowal

Punjab, India

Junior Research Fellow – MHRD fellowship (Ph.D)

February 2013 - May 2015

Publications (* corresponding author)

Research Papers

1. **Sharma A.*** and Cannoo D. S. (2016) Comparative evaluation of extraction solvents/techniques for antioxidant potential and phytochemical composition from roots of *Nepeta leucophylla* and quantification of polyphenolic constituents by RP-HPLC-DAD. **Food Measure. 10:** 658–669. DOI: 10.1007/s11694-016-9349-5
2. **Sharma A.** and Cannoo D. S. (2016) Effect of extraction solvents/techniques on polyphenolic contents and antioxidant potential of the aerial parts of *Nepeta leucophylla* and the analysis of their phytoconstituents using RP-HPLC-DAD and GC-MS. **RSC Adv. 6:** 78151-78160. DOI:10.1039/C6RA12038E
3. **Sharma A.** and Cannoo D. S. (2017) A comparative study of effects of extraction solvents/techniques on percentage yield, polyphenolic composition and antioxidant potential of various extracts obtained from stems of *Nepeta leucophylla*: RP-HPLC-DAD assessment of its polyphenolic constituents. **J. Food Biochem.41:**e12337-12348. DOI: 10.1111/jfbc.12337
4. Patial P.K. **Sharma A.** Kaur I. and Cannoo D.S. (2019) Correlation study among the extraction techniques, phytochemicals, and antioxidant activity of *Nepeta spicata* aerial part. **Biocatalysis and Agricultural Biotechnology 20:** 101275. <https://doi.org/10.1016/j.bcab.2019.101275>
5. Bhardwaj P. Thakur M.S. Kapoor S. Bhardwaj A.K. **Sharma A.** Saxena S. Chaurasia O.P. and Kumar R (2019) Phytochemical screening and antioxidant activity study of methanol extract of stems and roots of *Codonopsis clematidea* from trans-himalayan region. **Phcog J., 11(3):**536-546. DOI:[10.5530/pj.2019.11.xx](https://doi.org/10.5530/pj.2019.11.xx).
6. Kaur M. **Sharma A,*** Bhardwaj P. Kaur H. Uppal S K (2020) Evaluation of physicochemical properties, nutraceuticals composition, antioxidant, antibacterial and antifungal potential of

- waste amla seed coat (*Phyllanthus emblica*, variety Neelam). *Food Measure*. 1-12. <https://doi.org/10.1007/s11694-020-00721-9>.
7. Dugala N. S. Goindia G. S. and **Sharma A** (2020) Evaluation of physicochemical characteristics of Mahua (*Madhuca indica*) and Jatropha (*Jatropha curcas*) dual biodiesel blends with diesel. *Journal of King Saud University - Engineering Sciences*. <https://doi.org/10.1016/j.jksues.2020.05.006>.
 8. **Sharma A.**,* Bhardwaj G., & Cannoo D. S. (2021). Antioxidant potential, GC/MS and Headspace GC/MS analysis of essential oils isolated from the roots, stems and aerial parts of *Nepeta leucophylla*. *Biocatalysis and Agricultural Biotechnology*, 101950. <https://doi.org/10.1016/j.bcab.2021.101950>
 9. Thakur D., Kaur M., Malhi D.S., Gard S., **Sharma A.**, and Sohal H.S. (2021) 2,2'-(Arylmethylene)bis(3-hydroxy-5,5-dimethylcyclohex-2-enone) crystals formation via atom economy reaction and their antioxidant activity. *Monatsh Chem* (2021). <https://doi.org/10.1007/s00706-021-02767-x>,
 10. Dugala N.S., Goindia G.S., and **Sharma A** (2021) Experimental Investigations on the Performance and Emissions Characteristics of Dual Biodiesel Blends on a Varying Compression Ratio Diesel Engine. *SN Appl. Sci.* 3, 622 (2021). <https://doi.org/10.1007/s42452-021-04618-0>
 11. Kumari N, Aulakh MK, Sareen S, **Sharma A**, Sohal HS, Verma M, Mehta SK, Mutreja V (2022) Greener Synthesis of Zirconium-Based Nanocatalyst for Transesterification. *Topics in Catalysis*. 2022, 65(19):1811-20. <https://doi.org/10.1007/s11244-022-01652-z>
 12. Verma M, Thakur A, Kapil S, Sharma R, **Sharma A**, Bharti R. Antibacterial and antioxidant assay of novel heteroaryl-substituted methane derivatives synthesized via ceric ammonium nitrate (CAN) catalyzed one-pot green approach. *Molecular Diversity*. 2022 :1-2. <https://doi.org/10.1007/s11030-022-10461-1>
 13. Sareen S, Kaur S, Mutreja V, **Sharma A**, Kansal SK, Mehta SK (2022) Coral-Reef Shaped Mesoporous Silica Obtained from Coal Fly Ash with High Adsorption Capacity. *Topics in Catalysis*. 2022 65(19):1791-810. <https://doi.org/10.1007/s11244-022-01670-x>
 14. Thakur A, Verma M, Setia P, Bharti R, Sharma R, **Sharma A**, Negi NP, Anand V, Bansal R (2022) DFT analysis and in vitro studies of isoxazole derivatives as potent antioxidant and antibacterial agents synthesized via one-pot methodology. *Research on Chemical Intermediates*. 2022, 23:1-25. <https://doi.org/10.1007/s11164-022-04910-7>
 15. Kaur H, Anand V, **Sharma A**, Verma M, Sareen S, Mehta SK, Mutreja V (2022) Mechanistic investigation of formation of highly-dispersed silver nanoparticles using sea buckthorn extract. *Nanotechnology*. 2022, 34(8): 085703. DOI 10.1088/1361-6528/aca20d
 16. Sehrawat S, Sandhu N, Anand V, Pandey SK, **Sharma A**, Yadav RK, Singh AP, Singh AP (2022) Study of 5-Bromo-2-thiophene carboxaldehyde derived novel Schiff base as a biologically active agent as well as X-ray crystallographic study of CS coupled benzothiazole. *Journal of Molecular Structure*. 2022, 1269:133782. <https://doi.org/10.1016/j.molstruc.2022.133782>

17. Kumari N, Aulakh MK, Anand V, Sareen S, Verma M, **Sharma A**, Kataria R, Mutreja V (2022) Visible-Light Driven Degradation of Tetracycline Hydrochloride Using Zirconia Nanoparticles as Photocatalysts. *Topics in Catalysis*. 2022, 65(19): 1938-50. <https://doi.org/10.1007/s11244-022-01735-x>
18. Kathuria D, Bhattu M, **Sharma A**, Sareen S, Verma M, Kumar S (2022) Catalytic Reduction of Water Contaminants Using Green Gold Nanoparticles Mediated by Stem Extract of *Nepeta Leucophylla*. *Topics in Catalysis*. 2022, 65(19): 1899-909. <https://doi.org/10.1007/s11244-022-01704-4>
19. Kumari N, Anand V, Sareen S, Choudhary P, Kondal N, Aulakh MK, **Sharma A**, Verma M, Mehta SK, Mutreja V (2023) Synthesis of low-band gap porous zirconia nanoparticles via greener-route: Mechanistic investigation and their applications. *Materials Chemistry and Physics*. 2023, 15; 294:127004. <https://doi.org/10.1016/j.matchemphys.2022.127004>
20. **Sharma, A.**, Kathuria, D., Kolita, B., Gohain, A., Das, A. K., Bhardwaj, G., & Simal-Gandara, J. (2023). Greener approach for the isolation of oleanolic acid from *Nepeta leucophylla* Benth. Its derivatization and their molecular docking as antibacterial and antiviral agents. *Heliyon*, 9(8).
21. Thakur, A., Verma, M., Sharma, R., **Sharma, A.**, Gupta, A., & Sharma, V. (2023). Ultra-Sonicated One-Pot Synthesis of Potent Bioactive Biscoumarin and Polycyclic Pyranodichromenone Scaffolds in Aqueous Media: A Complementary Tool to Organic Synthesis. *Synthesis*.
22. Rogeboz, P, Latado, H, **Sharma, A**, Chaubey, N, Kadian, S, Chavez, E, Do, T.K.T, Dubois, M, Giuffrida, F, Patin, A. and Marin-Kuan, M (2024). Oil Adulteration Evaluation Using High Performance Thin Layer Chromatography. **Food Analytical Methods**, pp.1-12.

Review Papers

1. **Sharma A**, and Cannoo DS (2013) Phytochemical composition of essential oils isolated from different species of genus *Nepeta* of Labiatae family: A review. *Pharmacophore*, Vol. 4 (6), 181-211.
2. **Sharma A**, Bhardwaj G. and Cannoo D. S. (2018) Overview of phytochemistry and pharmacology of *Adhatoda vasica*. *IJAMTES* 8: 1286-1302.
3. **Sharma A,*** Cooper R, Bhardwaj G. and Cannoo DS (2020) The Genus *Nepeta*: Traditional uses, Phytochemicals and Pharmacological Properties. *Journal of Ethnopharmacology*, 113679, <https://doi.org/10.1016/j.jep.2020.113679>.
4. Bhardwaj, A., **Sharma, A.,*** Cooper, R., Bhardwaj, G., Gaba, J., Mutreja, V., & Chauhan, A (2021) A comprehensive phytochemical, ethnomedicinal, pharmacological ecology and conservation status of *Picrorhiza kurroa* Royle ex Benth.: An endangered Himalayan medicinal plant. *Process Biochemistry*, 2021, <https://doi.org/10.1016/j.procbio.2021.07.003>.
5. Malhi, D.S., Kaur, M., **Sharma, A.**, and Sohal, H. S. (2020). History of Coronavirus and Medicinal Plants as Contenders in The Treatment of Covid-19 Caused by Novel Sars-Cov-2. *Plant Cell Biotechnology and Molecular Biology*, 21: 122-138.

6. Thakur, N., Choudhary, P., Kaushik, N. & **Sharma, A.**, (2021) A review on pharmacological and pharmaceutical properties of Genus *Stelletta* from Marine Sponges. *Materials Today: Proceedings*. <https://doi.org/10.1016/j.matpr.2021.04.375>
7. Kaur, L., Malhi, D.S., Cooper, R., Kaur, M., Sohal, H.S., Mutreja, V. and **Sharma, A.**,* (2021). Comprehensive review on ethnobotanical uses, phytochemistry, biological potential and toxicology of *Parthenium hysterophorus* L.: A journey from noxious weed to a therapeutic medicinal plant. *Journal of Ethnopharmacology*, p.114525.
8. Kaur H, Sareen S, Verma M, Vashisht A, **Sharma A**, Kataria R, Mehta S K, Park J & Mutreja V (2021) Effect of Synthesis Methods and Conditions on Properties and Applications of Carbon Dots for the Detection of Potential Water Contaminants: A Review, *Critical Reviews in Analytical Chemistry*, DOI: 10.1080/10408347.2021.1977608
9. Pundira M, **Sharma A** and Kumar J (2021) Pundir, M., Sharma, A. and Kumar, J., 2021. Phytochemicals used as inhibitors in the treatment of ovarian cancer: A Mini-review. *Materials Today: Proceedings*. <https://doi.org/10.1016/j.matpr.2021.09.505>
10. Singh A D, **Sharma A**,* Mutreja V, Sohal H S and Bhardwaj G (2021) A review on phytochemistry and pharmacology of an unexplored ethnomedicinal plant: *Meyna spinosa* Roxb. Ex. *Materials Today: Proceedings*. <https://doi.org/10.1016/j.matpr.2021.09.423>
11. Sharma A, **Sharma A**,* Thakur S, Mutreja V and Bhardwaj G (2021) A brief review on phytochemistry and pharmacology of *Taxus baccata* L. *Materials Today: Proceedings*. <https://doi.org/10.1016/j.matpr.2021.09.468>
12. Sunaina, Kaur H, Kumari N, **Sharma A**, Sachdeva M and Mutreja V (2021) Optical and Electrochemical Microfluidic Sensors for Water Contaminants: A Short Review. *Materials Today: Proceedings*. <https://doi.org/10.1016/j.matpr.2021.09.534>.
13. Gohain A, **Sharma A**, Gogoi HJ, Cooper R, Kaur R, Nayik GA, Shaikh AM, Kovács B, Areche FO, Ansari MJ, Alabdallah NM (2022) *Bergenia pacumbis* (Buch.-Ham. ex D. Don) CY Wu & JT Pan: A Comprehensive Review on Traditional Uses, Phytochemistry and Pharmacology. *Plants*. 2022, 11(9):1129. <https://doi.org/10.3390/plants11091129>
14. Yadav S, **Sharma A**, Nayik GA, Cooper R, Bhardwaj G, Sohal HS, Mutreja V, Kaur R, Areche FO, AlOudat M, Shaikh AM (2022) Review of Shikonin and Derivatives: Isolation, Chemistry, Biosynthesis, Pharmacology and Toxicology. *Frontiers in Pharmacology*. 2022, 13:905755. doi: 10.3389/fphar.2022.905755
15. Garg S, Sohal HS, Malhi DS, Kaur M, Singh K, **Sharma A**, Mutreja V, Thakur D, Kaur L (2022) Electrochemical Method: A Green Approach for the Synthesis of Organic Compounds. *Current Organic Chemistry*. 2022, 26(10):899-919. <https://doi.org/10.2174/1385272826666220516113152>
16. Choudhary D, Garg S, Kaur M, Sohal HS, Malhi DS, Kaur L, Verma M, **Sharma A**, Mutreja V (2022) Advances in the Synthesis and Bio-Applications of Pyrazine Derivatives: A Review. *Polycyclic Aromatic Compounds*. 2022, 17:1-67. <https://doi.org/10.1080/10406638.2022.2092873>

17. Jaiswal R, Mutreja V, Sohal HS, **Sharma A*** (2022) A Review on Current Status of Traditional Uses, Phytochemistry, Pharmacology and Conservation of *Inula racemosa* Hook. f. *Materials Today: Proceedings*. <https://doi.org/10.1016/j.matpr.2022.06.261>
18. Aggarwal G, Kaur G, Bhardwaj G, Mutreja V, Sohal HS, Nayik GA, Bhardwaj A, **Sharma A*** (2022) Traditional Uses, Phytochemical Composition, Pharmacological Properties, and the Biodiscovery Potential of the Genus *Cirsium*. *Chemistry*. 2022, 4(4):1161-92. <https://doi.org/10.3390/chemistry4040079>
19. Kumari N, Sareen S, Verma M, Sharma S, **Sharma A**, Sohal HS, Mehta SK, Park J, Mutreja V (2022) Zirconia-based nanomaterials: recent developments in synthesis and applications. *Nanoscale Advances*. 2022. DOI: 10.1039/D2NA00367H

Books (published)

1. **Sharma, A., & Nayik, G. A.** (Eds.). (2023). *Immunity Boosting Medicinal Plants of the Western Himalayas*. **Springer Nature**.
2. **Sharma, A., Bhardwaj, G., and Nayik, G.A.** eds., (2023). *Phytochemistry and Nutritional Composition of Significant Wild Medicinal and Edible Mushrooms*. **Royal Society of Chemistry (RSC)**
3. **Sharma A, Bhardwaj G and Nayik, G.A.** eds., (2023). *Edible and Medicinal Mushrooms of the Himalayas: Climate Change, Critically Endangered Species and the Call for Sustainable Development*. Volume in: *The Natural Products Chemistry of Global Plants Series* by **Taylor and Francis, CRC Press**.
4. Kathuria D, **Sharma A**, Verma M, Nayik GA eds., (2024) *Bioprospecting of Natural Sources for Cosmeceuticals*, **Royal Society of Chemistry (RSC)**
5. Kathuria D, **Sharma A**, Gandara JS, Verma M, eds., (2024) *Plant Based Secondary Metabolites as Potent Cosmeceuticals: Present and Future Perspectives*, **Academic Press, Elsevier**
6. Das AK, **Sharma A**, Bhardwaj G, Mutreja V and Nayik, G.A. eds., (2024). *Chemistry and Biology of Lichen, its role in ecology and economy*, **Wiley**.
7. Kumar M, Kathuria D, **Sharma A**, eds., (2024) *Natural Products Loaded Scaffold and their Applications in Tissue Engineering*. **Springer Nature**.

Books (Proposal accepted and under production)

1. **Sharma A, Kathuria D**, eds., (2024) *Fruit Waste Utilization: Health Promoting Potential and Industrial Applications*. **Taylor & Francis, CRC Press**

Book Chapter Published

1. **Sharma A.*** Nayik G.A. and Cannoo D. S. (2019) Pharmacology and toxicology of *Nepeta cataria* (Catmint) species of genus *Nepeta*: A review. *Plant and Human Health*, Volume 3, Edited by **Hakeem**, Khalid Rehman, **Ozturk**, Munir, Springer International Publishing, pp 382. DOI: 10.1007/978-3-030-04408-4
2. **Sharma A.*** Bhardwaj P. Bhardwaj G. and Cannoo D. S. (2020) Medicinal Plants of the Trans-Himalayas (Chapter 3). *Natural Products of Silk Road Plants*. Edition 1, Edited by **Raymond Cooper and Jeffrey Deakin**, **CRC Press, Taylor & Francis**, pp 74-96. ISBN 9780367184339. <https://www.routledge.com/Natural-Products-of-Silk-Road-Plants/Cooper-Deakin/p/book/9780367184339>
3. **Sharma A.,*** Bhardwaj G., Gaba J., Cannoo D.S. (2020) Natural Antioxidants: Assays and Extraction Methods/Solvents Used for Their Isolation. In: Nayik G.A., Gull A. (eds) Antioxidants in Fruits: Properties and Health Benefits. Springer, Singapore. https://doi.org/10.1007/978-981-15-7285-2_1. Springer Nature Singapore Pte Ltd. eBook ISBN 978-981-15-7285-2,
4. Gaba J., Bhardwaj G., **Sharma A.** (2020) **Lemongrass**. In: Nayik G.A., Gull A. (eds) Antioxidants in Vegetables and Nuts - Properties and Health Benefits. Springer, Singapore. Pp 75-103. https://doi.org/10.1007/978-981-15-7470-2_4. eBook ISBN: 978-981-15-7470-2.
5. Garg, S., Malhi, D.S., Kaur, M., Sohal, H.S., **Sharma, A** (2021) Recent Advances in the Synthesis and Bio-applications of some Oxygen and Sulphur Containing Seven Membered Heterocyclic Compounds, "**Advances in Organic Synthesis (AOS)**" **Volume 14, Pp. 107-179 (73)**. Edited by **Atta-ur-Rahman, Bentham Science Publishers**. ISSN: **2212-408X (Online)** ISBN: **978-981-18-0374-1 (Online)**
6. Gohain A. Saikia D.S. Baruah S. Das A.K. & **Sharma A*** (2021) Overview of Phytochemistry and Pharmacology of Nilakanthi (*Ajuga bracteosa* Wall. ex Benth.). *Frontiers in Natural Product Chemistry: Volume 7, 7*, 139-157. Edited by **Atta-ur-Rahman, Bentham Science Publishers**. ISBN: **978-1-60805-676-7, ISSN: 1574-0897 (Print)**
7. Sharma A, Dhiman B, Mangla M, Rana S, **Sharma A**, Singh A P (2021) Synthesis and Applications of Small Fluorescent Molecules, *Synthesis and Applications of Small Fluorescent Molecules*. *Advances in Organic Synthesis: Volume 15, 5*, 151. Edited by **Atta-ur-Rahman, Bentham Science Publishers**. ISSN: **1574-0870 (Print), ISSN: 2212-408X (Online)**
8. Bhardwaj G, **Sharma A***, Gohain A, Sohal HS, Bhatia T, Mutreja V (2022) Extraction Techniques, Production and Economic Importance of Asafoetida Oleoresin. In *Handbook of Oleoresins 2022* (pp. 101-128). CRC Press.
9. Bhatia T, Bhardwaj G, **Sharma A**, Pandey V (2022) Paprika Oleoresins: Chemistry and Properties. In *Handbook of Oleoresins 2022* (pp. 399-422). CRC Press.
10. **Sharma A***, Bhardwaj G, Sohal HS, Gohain A (2022) Eugenol. In *Nutraceuticals and Health Care 2022 Jan 1* (pp. 177-198). Academic Press.

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13. Kumar V, Ranjan N, Kumar R, **Sharma A**, Kathuria D (2023) A Case Study of 4D-Imaging-Assisted 4D Printing for an Efficient Drug-Delivery System for Veterinary Cancer Patients. In *4D Imaging to 4D Printing 2023* (pp. 137-152). CRC Press.
14. **Sharma A,*** Gumber, K., Gohain A, Bhatia, T., Sohal H.S., Mutreja V. & Bhardwaj G., (2023) Importance of essential oils and current trends in use of essential oils (aroma therapy, agro-food, non-food uses and their economic importance). In: Nayik G.A., Ansari M.J. (eds) "Essential Oils: Extraction, Characterization, and Applications, (pp. 53-83) Elsevier Inc. Cambridge, MA, USA, Imprint: Academic Press. <https://doi.org/10.1016/B978-0-323-91740-7.00002-5>
15. Thakur S, Bhardwaj G, Mutreja V, **Sharma A*** (2023) Trends and future perspectives in nanoencapsulation of plant-based polyphenolics (flavonoids, Anthocyanins, tannins). In: Kour, J., Ul Haq, R., Wani, S.A., Jyoti, B. **Handbook of nutraceutical**, CRC Press, Taylor & Francis. DOI: **10.1201/9781003259183-14**
16. Dulta, K., Kaur, G., Kumar, K., Mazhar, M., Bhardwaj, G., & **Sharma, A.** (2023). Species of Arnebia Genus Found in the Western Himalayas: Arnebia euchroma (Royle ex Benth.), Arnebia benthamii (Wall. Ex G Don) Johnston, Arnebia guttata Bunge. **Immunity Boosting Medicinal Plants of the Western Himalayas**, (pp. 77-105). Singapore: Springer Nature Singapore.
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19. Thakur, S., Mutreja, V., & **Sharma, A.*** (2023). Nanoparticles Function as Delivery Systems for Immune Potentiation. In *Nanovaccinology: Clinical Application of Nanostructured Materials Research to Translational Medicine* (pp. 193-211). Cham: Springer International Publishing.

Manuscript and book chapter submitted

1. Gohain A, Bhardwaj G, **Sharma A,*** Mutreja V and Sohal HS (2024) "Nano enabled systems for the delivery of Camptothecin." "Nanodelivery of anticancer drugs of natural origin", Edited by Santwana, Anindita B and Eric. **To be published by Springer. (Submitted)**

2. Gohain A, **Sharma A**, Kathuria D, Sareen S, Kolita B, Das AK, (2024) Identification of Potential Natural Phyto-constituents against COVID-19 Using Molecular Modeling Approach", Journal of Molecular Modeling. **(Submitted)**

Peer Reviewer

Project Reviewed

1. Invasion Biology, Ecology and Management of Parthenium Weed in Sultanate of Oman; Sharma, Ajay - Govt of Oman
2. Geochemical characterization and origin of listwaenite (Oman Mountains) – a potential host for gold and platinum-group elements, and carbon sequestration; Sharma, Ajay - Govt of Oman
3. Biochar-impregnated self-floating system based on Omanis date palm fiber and Arabic gum for solar steam generation and environmental applications; Sharma, Ajay - Govt of Oman
4. Circular Economy of Sustainable Packaging Solutions in Oman’s Food Industry: Cost Efficiency, Functional Preferences, and Willingness to Pay Assessment; Sharma, Ajay - Govt of Oman

Book Reviewed

1. Care and Cure From Prairie Greens - **Bentham Science Publisher**
2. Phytochemicals: Chemistry, Bioavailability and Therapeutic Properties – **Springer**
3. **Bentham Briefs in Biomedicine and Pharmacotherapy'**- Anthraquinones as Bioactive Multifaceted Therapeutic Agents, Volume 3 - **Bentham Science Publisher**

Journal Peer reviewer (paper reviewed)

1. ASC Omega (2)
2. Advances in Pharmacological and Pharmaceutical Sciences (1)
3. BMC Complementary Medicine and Therapies (1)
4. Cell Biochemistry and Biophysics (1)
5. Chemistry & biodiversity (7)
6. Chemistry Select (2)
7. Critical Reviews in Food Science and Nutrition (1)
8. Dermatologic Therapy (1)
9. Discover Plants Springer (3)
10. Environmental Monitoring and Assessment (1)
11. Evidence-Based Complementary and Alternative Medicine (2)
12. Food and Bioproducts Processing (1)
13. Future Postharvest and Food (1)
14. Genetic Resources and Crop Evolution (1)
15. Horticulture Research (2)
16. Heliyon (1)

17. Interactions (2)
18. Journal of Advanced Research (2)
19. Journal of Biologically Active Products from Nature (1)
20. Journal of Food Biochemistry (2)
21. Journal of Food Quality (1)
22. Journal of Food Measurement and Characterization (1)
23. Journal of Herbal Medicine (4)
24. Materials Today Proceedings (2)
25. Medicinal Plant Biology (2)
26. Natural Product Communications (2)
27. Nutrition and Food Science (1)
28. Process biochemistry (4)
29. Royal Society Open Science (2)
30. Scientific Reports (9)

Presentations and Short term training course

Total = 18; Poster Presentations = 10; Oral Presentations = 2 ; Participation = 2; Short term training course: 4

Presentations

1. **Sharma A**, Chahal KK (2012) Insecticidal Potential of Neem Seed Kernels Extracts against *Tribolium castaneum* (Herbst). 15th Punjab Science Congress, Feb 7- 9, 2012, **GNDU Amritsar, India (Oral Presentation)**
2. **Sharma A**, Chahal KK (2013) Chemistry and Protection Potential of Hexane Extract of Neem Seed Kernels and its fractions against *Tribolium castaneum* (Herbst). 16th Punjab Science Congress, February 7-9, 2013. **Baba Farid University of Health Sciences, Faridkot.** (State)
3. **Sharma A**, Cannoo DS (2013) Chemistry And Biological Potential Of Compounds Obtained From Genus *Nepeta* of Labiatae Family Recent Advances in Chemical & environmental Sciences (RACES – 2013), Jan 31, 2013. **Multani Mal Modi College, Patiala.**
4. **Sharma A**, Cannoo DS (2014) Phytochemical composition and in vitro antioxidant potential of different extracts obtained from roots of the Himalayan aromatic plant: *Nepeta leucophylla*. 4th Biennial International conference on New Developments in Drug Discovery from Natural Products and Traditional Medicines (DDNPTM, NIPER-2014), November 20-22, 2014. **Department of Natural Products, National Institute of Pharmaceutical Education and Research (NIPER)**, Sector-67, SAS Nagar, Punjab. (International)
5. **Sharma A**, Cannoo DS (2014) Comparative Study of Antioxidant Potential and Phytochemical Composition of the Himalayan Aromatic Plant: *Nepeta leucophylla*. 13th Eurasia Conference on Chemical Sciences, December 14-18, 2014, **Indian Institute of Science, Bangalore, India.** (International)

6. **Sharma A**, Cannoo DS (2014) Phytochemical Composition and Biological Potential of *Adhatoda vasica* (Vasaka). Innovative Techniques in the Development of Functional Foods and Nutraceuticals (NCCFN-14), February 14-15, 2014. **The Department of Food Engg. and Technology, SLIET, Longowal, Sangrur, (Pb).**
7. **Sharma A**, Cannoo DS (2015) Antioxidant potential and phytochemical composition of different extracts obtained from stems of *Nepeta leucophylla*: The Himalayan aromatic plant. 17th CRSI National Symposium in Chemistry, February 6-8, 2015, **CSIR- National Chemical Laboratory, Pune, India.** (National)
8. **Sharma A**, Cannoo DS (2016) RP-HPLC-DAD and GC-MS analysis of phytochemical composition of various extracts obtained from aerial parts of *Nepeta leucophylla*. National Conference on NASCENT INNOVATIONS IN CHEMICAL SCIENCES (NICS-2016) October 21-22, 2016, Department of Chemistry, SLIET, Longowal, Sangrur (PB). **Best Poster Award**
9. **Sharma A**, Cannoo DS (2016) A comparative study of effects of extraction solvents/techniques on percentage yield, polyphenolic composition and antioxidant potential of various extracts obtained from stems of *Nepeta leucophylla*: RP-HPLC-DAD assessment of its polyphenolic constituents. National Conference on Technologies in Sustainable Food System (TSFS-2016), 7-8, Oct, 2016, Department of Food Engineering and Technology, SLIET, Longowal, Sangrur (PB). **1st Prize in Poster Award**
10. **Sharma A**, Cannoo DS (2018) RP-HPLC-DAD Analysis of Polyphenolics of Various Extracts Isolated from Aerial Parts of *Nepeta leucophylla*: A Himalayan Aromatic Plant. 21th Punjab Science Congress, Feb 7- 9, 2018, PAU, Ludhiana, India. **(Oral Presentation)**
11. **Gohain A, Sharma A (2020)** A Review on the Phytochemicals and Pharmacological Properties of *Bergenia ligulata*: A High Valued Bioresource of Assam. **State Level e-Poster Competition** organized by the Science Forum, Devicharan Barua Girls' College, Jorhat, to mark the World Environment Day, 5th June, 2020, Theme: Biodiversity in the backyard.
12. **Sharma A**, Bhardwaj G, Cannoo D.S (2021). Antioxidant potential, GC/MS and Headspace GC/MS analysis of essential oils isolated from the roots, stems and aerial parts of *Nepeta leucophylla*. International Conference (Virtual) on Recent Advancements in Chemical Sciences - 2021 [ICRACS-2021] July 14-16, 2021, Organized by DEPARTMENT OF CHEMISTRY, **J. C. Bose University of Science and Technology, YMCA, Faridabad.**

Participation

1. **Sharma A** (2012) National Conference on Global challenges New frontiers in Chemical Sciences (GC:NFCS-2012), Sept 22-23, 2012, **Kurukshetra University, Department of Chemistry. (Participetion)**
2. **Sharma A** (2020) International Virtual Conference on Modern Instrumental and Characterization Techniques in Applied Sciences – 2020 (MICTAS – 2020), July 5-6, 2020, Organized by **MIET Kumaon and USERC Department of Science & Technology, Govt. of Uttarakhand. (Participetion)**

Short term training course

1. Two Days Training Programme on **Advanced Fluorescence Spectroscopy**, March 27-28, 2013. **Sant Longowal Institute of Engineering and Technology, Longowal, Sangrur, Punjab.**
2. Five days Online Short-Term Course on **“Analytical Techniques in the realm of Molecules & Materials”** (ATRMM-2020) June 26-30, 2020. **Sant Longowal Institute of Engineering and Technology, Longowal, Sangrur, Punjab.**
3. Six days Online Workshop on **“Role of Technology and Some Specific Tools in Research”** June 28 to July 3, 2021. SGT University, Gurugram Delhi NCR
4. **One-week Online Workshop on “Applied Chemistry: A catalyst for scientific transformation”** 23-28 August, 2021. SGT University, Gurugram Delhi NCR

Languages

- English
- Hindi
- Punjabi

References

1. **Joshua S. Sharp (Ph.D)**, Acting Associate Dean of Research and Triplett-Behrakis Endowed Professor of Pharmacology, School of Pharmacy, Director, Glycoscience Center of Research Excellence (GlyCORE), Associate Professor of Chemistry and Biochemistry, The University of Mississippi, MS 38677-1848, USA
Email: jsharp@olemiss.edu, Contact: +1 662-915-1758
2. **Sumit Bandyopadhyay**, Head - Quality Assurance & Nestlé Food Safety Institute, Manesar, Gurugram, India
Email: Sumit.bandyopadhyay@rd.nestle.com, Contact: +91-9650735544
3. **Renu Sharma (Ph.D)**, Professor & Head, Department of Chemistry, Chandigarh University Mohali, Punjab, India.
Email: hod.chemistry.uis@cumail.in, Contact: +91-7888770346
4. **Harish Kumar Chopra (Ph.D)**, Professor & Head, Former Registrar, Department of Chemistry, SLIET Longowal, Sangrur, Punjab, India
Email: hk67@rediffmail.com, Contact: +91-9417666437
5. **Sandeep K Misra (Ph.D)**, Core Manager, Analytical & Biophysical Chemistry Core, Glycoscience Center of Research Excellence (GlyCORE), The University of Mississippi, MS 38677-1848, USA
Email: skmisra@olemiss.edu, Contact: +1 662-915-2207
6. **Yadwinder Singh Mann (Ph.D)**, Scientist, Labcorp, Madison (WI)-53704, U.S.A.
Email: yadwindersingh.mann2@covance.com, Contact: +1 209-561-0107
7. **Vishal Mutreja (Ph.D)**, Research Scientist, Queensland Micro and Nantechonology Centre, Griffith University, Australia.
Email: v.mutreja@griffith.edu.au, vishal.mutreja@gmail.com, Contact: +61478897771
8. **Shalu Jhajra (Ph.D)**, Manager, Nestlé Food Safety Institute, Nestlé R&D Center Manesar, Gurugram, India.
Email: shalu22nipер@gmail.com , Contact: +91-9729281419