

# Dr. VISHALDEEP KAUR

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Education: MSc Chemistry (Hons.)

PhD (Chemistry)

Gender: Female

Nationality: Indian

Date of Birth: 30-12-1996

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## RESEARCH INTERESTS

Organic chemistry, Natural products, Plant essential oils and extracts, Organic synthesis, Biological and pharmacological properties, Bioactive compounds.

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## JOB EXPERIENCE

Assistant Professor (Chemistry) at Baba Farid Group of Institutions, Bathinda, Punjab.

Joining date: 22/1/2025 till date

Additional responsibilities: Coordinator of Student Innovation Council  
Admission cell counselor

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## EDUCATION

### Ph.D. Chemistry

2021-2024

OGPA: 8.68/10

Specialization: Chemistry

Minor: Biochemistry

Punjab Agricultural University, Ludhiana, Punjab, India

### 5-Year Integrated MSc. Chemistry (Hons.)

2015-2021

OGPA: 8.78/10

Specialization: Chemistry

Minor: Biochemistry

Punjab Agricultural University, Ludhiana, Punjab, India

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## RESEARCH PROJECT

**Ph.D. Thesis Title:** Physicochemical, antimicrobial and cytotoxic studies of Nutmeg and Mace (*Myristica fragrans* Houtt.)

**Masters' Thesis Title:** Chemical Investigation of Dill seed essential oil and its potential as fungicide

## TECHNICAL EXPERIENCE

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- Proximate analysis, mineral analysis and physicochemical properties of plant material.
- Extraction of essential oil by using Hydrodistillation method.
- Preparation of plant extracts using Maceration, Sonication, Soxhlet, orbital shaker and microwave assisted methods of extraction.
- Preparation of water extract to limit the use of chemical solvents.
- Phytochemical screening of plant essential oils and extracts.
- GC-MS analysis of essential oils and extracts.
- Isolation of major compounds of the essential oils using Column Chromatography.
- Derivatization of the isolated major compounds.
- Characterization of compounds by various spectroscopic techniques i.e., IR, <sup>1</sup>H-NMR, <sup>13</sup>C-NMR.
- Testing of cytotoxic potential of essential oils, their extracts, isolated and derivatized compounds against cancer cell lines by MTT assay method.
- Testing of antifungal potential of essential oils, their extracts, isolated and derivatized compounds against phytopathogenic fungi using Poisoned Food Technique (*in vitro* and *in vivo*).
- Testing of antibacterial potential against various human and plant pathogens using Agar-well diffusion technique and Broth Macrodilution method.
- Use of UV-Visible spectrophotometer, rotary evaporator, centrifuge, sonicator and ELISA plate reader.
- Chromatographic techniques including thin layer, paper and column chromatography.
- Biochemical tests including determination of sugars (total, reducing, non-reducing), protein content, amino acids, total phenolic content and starch content.

## PUBLICATIONS

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1. **Kaur V**, Kaushal S, Panwar H and Bajaj H (2026) Comparative analysis of essential oils and oleoresins from seed and aril of *Myristica fragrans* Houtt.: Chemical composition, antioxidant, anti-inflammatory and cytotoxic activities. *New Zealand Journal of Crop and Horticultural Science* 54(1): [10.1002/nzc2.70139](https://doi.org/10.1002/nzc2.70139) (IF = 1.5).
2. **Kaur V**, Kaushal S, Kalia A, Jangra R and Sharma P (2025) Antimicrobial, synergistic and antibiofilm activities of *Myristica fragrans* Houtt. Bioactive compounds and their derivatives. *Scientific Reports* 15: 33041. (IF = 3.9).
3. **Kaur V**, Kaushal S, Hunjan M, Singh K, Kaur Y and Heena (2025) *Myristica fragrans* Houtt. as botanical fungicide against foot rot of rice caused by *Fusarium verticillioides*. *Phytoparasitica* 53(82): <https://doi.org/10.1007/s12600-025-01311-5> (IF = 1.5).
4. **Kaur V**, Kaushal S, Kalia A and Heena (2024) Nutmeg vs mace: Evaluation of functional, nutritional, antioxidant and antimicrobial traits to employ as a food preservative. *Food Bioscience* 62: 105193. <https://doi.org/10.1016/j.fbio.2024.105193> (IF=5.2)
5. **Kaur V**, Kaushal S, Heena and Utreja D (2024) Occurrence, isolation, pharmacological potential, metabolism, and toxicity of Myristicin: A naturally occurring alkoxy-substituted allylbenzene. *Mini-Reviews in Organic Chemistry* 21: 477-493. DOI: 10.2174/1570193X20666230314105024 (IF=2.1)
6. **Kaur V**, Kaushal S, Kalia A and Heena (2024) Effect of different hydrodistillation pretreatments on the yield, chemical composition, antibacterial and antioxidant potential of nutmeg and mace (*Myristica fragrans* Houtt.) essential oils. *Chemical papers* 78: 1125-1138. <https://doi.org/10.1007/s11696-023-03151-1> (IF=2.2)

7. **Kaur V**, Kaur R, Bhardwaj U and Kaur H (2021) Antifungal potential of Dill (*Anethum graveolens* L.) seed essential oil, its extracts and components against phytopathogenic maize fungi. *Journal of Essential Oil-Bearing Plants* 24: 6, 1333-1348, DOI: 10.1080/0972060X.2022.2026252 **(IF=2.4)**
8. **Kaur V**, Kaur R and Bhardwaj U (2020) A review on dill essential oil and its chief compounds as natural biocide. *Flavour and Fragrance Journal* 00:1–20, <https://doi.org/10.1002/ffj.3633> **(IF=2.6)**
9. Heena, Kaushal S, Kalia A, Panwar H, **Kaur V** (2024) Unraveling the chemical composition, antibacterial, antioxidant and cytotoxic potential of *Citrus reticulata* Blanco dropped fruit extracts. *Biocatalysis and Agricultural Biotechnology*. 57: <https://doi.org/10.1016/j.bcab.2024.103104> **(IF=4)**
10. Heena, Kaushal S, **Kaur V**, Panwar H, Sharma P, Jangra R (2024) Isolation of Quinic acid from dropped *Citrus reticulata* Blanco fruits, its derivatization, antibacterial potential, docking studies and ADMET profiling. *Frontiers in Chemistry* 12: [doi:10.3389/fchem.2024.1372560](https://doi.org/10.3389/fchem.2024.1372560) **(IF=5.5)**
11. Katnoria H, Kaushal S, Hunjan MS, **Kaur V**, Sharma P and Jangra R (2024) Chemical characterization and antifungal potential of *Trigonella foenum-graecum* L. followed by molecular docking studies. *Journal of Essential Oil-Bearing Plants*. 27: 57-72. <https://doi.org/10.1080/0972060X.2024.2302110> **(IF=2.4)**
12. Sidhu R, Kaushal S, **Kaur V** and Sharma P (2023) Chemical composition, synergistic antimicrobial and antioxidant potential of *Hibiscus rosa sinensis* L. leaves essential oil and its major compound. *Journal of Essential Oil-Bearing Plants*. 26: 469-485. DOI: 10.1080/0972060X.2023.2189529 **(IF=2.4)**
13. Heena, Kaushal S, Kalia A and **Kaur V** (2022) Proximate, mineral, chemical composition, antioxidant and antimicrobial potential of dropped fruits of *Citrus reticulata* Blanco. *Journal of Food Measurement and Characterization*. 16(1): 4303-4317. <https://doi.org/10.1007/s11694-022-01532-w>. **(IF=3.4)**
14. Kaur R, Kaushal S, **Kaur V**, Kumar V and Kalia A (2024) Optimization and Comparison of microwave and ultrasound assisted extraction of oleoresins from *Syzygium aromaticum* (L.) Merr. and L.M. Perry (cloves) buds in terms of chemical composition, antimicrobial and antioxidant potential. *Journal of Food Measurement and Characterization*. 18(12): 9999-10017. <https://doi.org/10.1007/s11694-024-02937-5>. **(IF=3.4)**
15. Singla D, Kaushal S, Hunjan M and **Kaur V** (2025) Preparation and characterization of Bael (*Aegle marmelos*) leaf essential oil nanoemulsion with enhanced antifungal activity against *Drechslera oryzae*. *Chemistry and Biodiversity* 22(8): <https://doi.org/10.1002/cbdv.202500192>. **(IF=2.3)**
16. Bajaj H, Kaushal S, Hunjan M, Kaur Y, Singh K, Goyal B and **Kaur V** (2025) Exploring the antimycotic potential of dropped citrus fruit extracts as a biopesticide against phytopathogenic fungi in rice accompanied by molecular docking studies. *Waste and Biomass Valorization* 16: 3519-3534. <https://doi.org/10.1007/s12649-024-02865-x>. **(IF=3.1)**

## CONFERENCES

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- Presented paper in 2<sup>nd</sup> Annual National Conference SPARK on the topic ‘Insomnia in Youngsters’ organized by Baba Farid Group of Institutions, Bathinda, Punjab held on 8-9 April, 2025.
- Delivered poster presentation in “1<sup>st</sup> International conference on Molecules to Materials: Chemistry for Sustainable Future (M2ChemSF)” organized by Department of Chemistry, NIT Hamirpur, Himachal Pradesh during 21-22 November, 2024 on the topic ‘*In vitro* and *in vivo* antifungal evaluation of *Myristica fragrans* Houtt. seed and aril for sustainable agriculture’.

- Delivered poster presentation in “International conference on Global Challenges in Environment, Food and Biotechnology for the Sustainable Development” held in Hisar during February 21-23, 2024 on the topic ‘Antioxidant and cytotoxic potential of Nutmeg and Mace essential oil and oleoresin against HT29 and LNCaP cell lines’.
- Delivered poster presentation in “National Conference on Natural and Organic Farming for ecological, economical and nutritional Security” held at CSK HPKV Palampur during June 7-9, 2023 on the topic ‘Antifungal potential of nutmeg and mace essential oil and oleoresin (*Myristica fragrans* Houtt.) against phytopathogenic rice fungi’.
- Delivered poster presentation in “National Symposium on Sustainable Development in Chemical Sciences Innovation” (February 21-22, 2023) at Panjab University, Chandigarh on the topic ‘Isolation and Preparation of nutmeg and mace essential oils and oleoresins by green methods and their antibacterial potential’.
- Delivered oral presentation in ‘The International Conference on Advanced Functional Materials: Future Perspectives’ on the title ‘Nutraceutical potential of *Myristica fragrans* Houtt.’ held in August 2022.
- Delivered Poster presentation at 12<sup>th</sup> National Conference on ‘Chemical and Environmental Sciences: Advanced Innovations – 2020’ held on February 19-20, 2020 at Punjabi University, Patiala.

## **TRAININGS**

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- Participated in Faculty Development programme (FDP) “NEP 2020 Orientation & Sensitization Programme” under Malaviya Mission Training Programme (MM-TTP) of UGC organized by Central university of Punjab, Bathinda from 21-30 July, 2025.
- Participated in Faculty Development programme (FDP) “NEP 2020 Orientation & Sensitization Programme” under Malaviya Mission Training Programme (MM-TTP) of UGC organized by Central university of Punjab, Bathinda from 3-12 March, 2025.
- Attended Accelerate Vigyan Karyashala: Hands on Training on Sophisticated Instrumentation Techniques: Spectroscopy, Chromtography & Advanced Microscopy organized by CIL, Central University of Punjab, sponsored by SERB (29-2-24 to 7-3-24).
- Attended onsite training programme on Blended Learning Platform organized by PAU, Ludhiana (5-6 February, 2024)
- Attended 7 day's Faculty Development Programme on Research methodology, Bibliometric analysis and data analysis using R (22-28 july, 2023)
- Attended one-week short term training programme on Material Characterization and Analytical Techniques for Research Applications held at SLIET, Longowal during July 01-05, 2019 which includes the visit to IIT, New Delhi to familiarize with various research techniques.

## **COMPUTER SKILLS**

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- Basic proficiency of MS Office- Excel, Word, Powerpoint
- Chem Draw ultra software, SPSS, Mol inspiration, SMILES format for naming of drugs

## **AWARDS AND HONORS**

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- Won Best Camper Award (2015-16) during NSS special camp held at PAU, Ludhiana
- Won Interdepartmental slogan writing competition (2017)
- University Merit certificate in post-graduation
- Awarded PAU merit fellowship during Ph.D. (1st rank holder)

- Awarded Piara Singh Parmar memorial student fund during Ph.D.
- Qualified UGC-NET in Environmental Sciences (December, 2023)
- Awarded with “Young Agri Researcher Award” for outstanding research in natural product chemistry at “4<sup>th</sup> International Conference on Recent Advances in Agriculture for Atamanirbhar Bharat” jointly organized by CCSHAU, Hisar in collaboration with ICRISAT, Hyderabad; University of Agricultural Sciences, Dharwad; KSNUAHS, Shivamogga Karnataka; AGRI MEET Foundation U.P.; Junagadh Agricultural University, Junagadh; GBPUAT, Pantnagar; and Directorate of Cashew Research, Puttur from 19-21 April, 2024.
- Awarded with “Ph.D. Best Thesis Award” at International Conference on Navigating Unique Trends in Agricultural Research, Innovation, Engineering, Nutrition and Technology “NUTRIENT-2025” organized by BGGI, Sangrur Punjab and Agri Meet Foundation Bharat in collaboration with ICAR New Delhi, SKLTGHU Telangana, PAU Ludhiana Punjab, Royal Society of Agriculture India, Southern Federal University Russia, ICARDA Lebanon, NDRI Karnal, MHU Karnal & ICAR ATARI Jabalpur MP, held on during 20-21 Feb, 2025.

## **VOLUNTEERSHIP**

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- Volunteered to organize Blood Donation Camps at university campus.
- Volunteer at PAU Farmers’ Fairs under the National Service Scheme.
- Attended various National Service Scheme Camps organized by Punjab Agricultural University, Ludhiana, Punjab.
- Have effective poetry writing skill and won Interdepartmental slogan writing competition.

## **REFERENCES**

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- Dr. Sonia Kaushal ([drsonia@pau.edu](mailto:drsonia@pau.edu))  
(Chemist)  
Department of Chemistry,  
Punjab Agricultural University, India.
- Dr. Manjeet Kaur Sangha ([manjeet\\_kaursangha@pau.edu](mailto:manjeet_kaursangha@pau.edu))  
(Principal biochemist-cum-head)  
Department of Biochemistry,  
Punjab Agricultural University, India.