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Educational qualifications

- Pursuing Ph.D. at Centre of Experimental Medicine and Surgery, Institute of Medical Sciences, Banaras, Hindu University, Varanasi, India under the supervision of Dr. Vibhav Gautam, Assistant Professor.
- M.Sc. in Botany (2020) from Banaras Hindu University Varanasi, Uttar Pradesh with 9.06 CGPA (first division)
- B.Sc. in Botany (2017) from Banaras Hindu University Varanasi, Uttar Pradesh with 8.07 CGPA (first division)

Publications

1. Bhardwaj N, Gupta P, Tripathi N, Chakrabarty S, **Verma A**, Kumari S, **Gautam V,** Ravikanth G, Jain SK. New ring-A modified cycloartane triterpenoids from Dysoxylum malabaricum bark: Isolation, structure elucidation and their cytotoxicity *(2024)*. 205:109390. **Impact factor- 2.7** https://doi.org/10.1016/j.steroids.2024.109390

2. Tiwari, H., Gupta, P., Verma, A., Singh, S., Kumar, R., Gautam, H. K., & Gautam, V. (2024). Advancing Era and Rising Concerns in Nanotechnology-Based Cancer Treatment. *ACS Chemical Health & Safety*, *31*(2), 153-161. **Impact factor- 3.0** https://doi.org/10.1021/acsomega.3c04587

3. **Gupta P**[#], Singh S[#], Rai N, Verma A, Tiwari H, Kamble SC, Gautam HK, Gautam V (2023). Unveiling the cytotoxic and anti-proliferative potential of green-synthesized silver nanoparticles mediated by *Colletotrichum gloeosporioides*. **RSC Advances**, 10.1039/d3ra06145k, **Impact factor- 4.0** https://doi.org/10.1039/d3ra06145k

4. Debnath N, Yadav P, Mehta PK, **Gupta P**, Kumar D, Kumar A, Gautam V, Yadav AK (2023). Designer probiotics: Opening the new horizon in diagnosis and prevention of human diseases. **Biotechnology & Bioengineering,** 10.1002/bit.28574, **Impact factor- 3.8** https://doi.org/10.1002/bit.28574

5. Singh S, Rai N, Tiwari H, **Gupta P**, Verma A, Kumar R, Kailashiya V, Salvi, P, **Gautam V*** (2023). Recent Advancements in the Formulation of Nanomaterials-Based Nanozymes, Their Catalytic Activity, and Biomedical Applications. **ACS Applied Biomaterials**, https://doi.org/10.1021/acsabm.3c00253, **Impact factor- 4.7** https://doi.org/10.1021/acsabm.3c00253

6. Verma A, Tiwari H, Singh S, **Gupta P**, Rai N, Singh SK, Singh BP, Rao S, **Gautam V*** (2023). Epigenetic manipulation for secondary metabolite activation in endophytic fungi: current progress and future directions. **Mycology**, 1-17. https://doi.org/10.1080/21501203.2023.2241486, **Impact factor- 4.2** https://doi.org/10.1080/21501203.2023.2241486

7. Tiwari H, Rai N, Singh S, **Gupta P**, Verma A, Singh AK, Kajal, Salvi P, Singh SK, **Gautam V*** (2023). Recent Advances in Nanomaterials-Based Targeted Drug Delivery for Preclinical Cancer Diagnosis and Therapeutics. **Bioengineering**, 10, 760. https://doi.org/10.3390/bioengineering10070760, **Impact factor- 4.6** https://doi.org/10.3390/bioengineering10070760

8. Verma A, Rai N, **Gupta P**, Singh S, Tiwari H, Chauhan SB, Kailashiya V, **Gautam V*** (2023). Exploration of *in vitro* cytotoxic and *in ovo* antiangiogenic activity of ethyl acetate extract of *Penicillium oxalicum*. **Environmental Toxicology**, 1-15. https://doi.org/10.1002/tox.23889, **Impact factor- 4.5** https://doi.org/10.1002/tox.23889

9. **Gupta P**, Rai N**,** Verma A, **Gautam V*.** Microscopy based methods for characterization, drug delivery and understanding the dynamics of nanoparticles. ***Medicinal Research Reviews*** *(2023)*. **Impact factor-13.3.** https://doi.org/10.1002/med.21981

10. Rai N**, Gupta P**, Verma A, Singh SK, **Gautam V***. Isolation and characterization of *N*-(2-Hydroxyethyl)hexadecanamide from *Colletotrichum gloeosporioides* with apoptosis-inducing potential in breast cancer cells. ***BioFactors*****,** *(2023)*, 149, 663-683. **Impact factor-6.0.** https://doi.org/10.1002/biof.1940

11. Rai N**, Gupta P**, Verma A, Tiwari RK, Madhukar P, Kamble SC, Kumar A, Kumar R, Singh SK, **Gautam V***. Ethyl acetate extract of *Colletotrichum gloeosporioides* promotes cytotoxicity and apoptosis in human breast cancer cells. ***ACS Omega***, *(2023)*, 8, 3768–3784. **Impact factor-4.1.** https://doi.org/10.1021/acsomega.2c05746

12. **Gupta P**, Rai N[#]**,** Verma A[#], Saikia D, Singh SP, Kumar R, Singh SK, Kumar D, **Gautam V***. Green-based approach to synthesize silver nanoparticles using the fungal endophyte *Penicillium oxalicum* and their antimicrobial, antioxidant, and *in vitro* anticancer potential. ***ACS Omega***, *(2022)*, 7, 46653−46673. **Impact factor-4.1.** https://doi.org/10.1021/acsomega.2c05605

13. Rai N**, Gupta P**, Keshri PK, Verma A, Mishra P, Kumar D, Kumar A, Singh SK, **Gautam V***. Fungal endophytes: an accessible source of bioactive compounds with potential anticancer activity. ***Applied Biochemistry and Biotechnology***, *(2022)*, 194, 3296–3319. **Impact factor-3.09.** https://doi.org/10.1007/s12010-022-03872-1

14. Rai N, Keshri PK, **Gupta P**, Verma A, Kamble SC, Singh SK, **Gautam V***. Bioprospecting of fungal endophytes from *Oroxylum indicum* (L.) Kurz with antioxidant

and cytotoxic activity. ***PLOS ONE,*** *(2022),* 17(3):e0264673. **Impact factor-3.24.** https://doi.org/10.1371/journal.pone.0264673

15. Verma A, **Gupta P**[#], Rai N[#], Tiwari RK, Kumar A, Salvi P, Kamble SC, Singh SK, **Gautam V***. Assessment of Biological Activities of Fungal Endophytes Derived Bioactive Compounds Isolated from *Amoora rohituka*. ***Journal of Fungi,*** *(2022);* 8(3), 285. **Impact factor-4.7.** https://doi.org/10.3390/jof8030285

16. **Gupta P**, Verma A, Rai N, Singh A, Singh SK, Kumar B, Kumar R, **Gautam V***. Mass spectrometry-based technology and workflows for studying the chemistry of fungal endophyte derived bioactive compounds. ***ACS Chemical Biology,*** *(2021*); 16, 11, 2068–2086. **Impact factor-4.0.** https://doi.org/10.1021/acschembio.1c00581

Book chapters

1. Rai N[#]**, Gupta P**[#], Verma A[#], Singh S, Tiwari H, Kumar R, Singh SK, **Gautam V*** (2023). Fungal endophyte mediated green synthesis of silver nanoparticles as potential anticancer agent: Current perspective and challenges. In: Kaur IP & Sobti RC (Eds.), *Handbook of Oncobiology: From Basic to Clinical Sciences*, Springer Nature, Singapore. https://doi.org/10.1007/978-981-99-2196-6_70-1

2. Gautam V, **Gupta P**, Salvi P, Sharma A, Kumar D, Dwivedi A. miRNA Mediated Signaling Involved in *Arabidopsis thaliana* Root Development. *Rhizobiology: Molecular Physiology of Plant Roots* 2021 (pp. 93-113). Springer, Cham.

Academic Achievements (Ph.D.)

1. Best oral presentation award in the **International Conference on Traditional Medicine & Phytopharmaceuticals (ICTMP) & 11th International Congress of Society for Ethnopharmacology (SFEC 2024)** held at CSIR-Indian Institute of Integrative Medicine, Jammu, India on February 16th -18th 2024

2. **Poster presentation** at ***92nd Annual Meet of the Society of Biological Chemists*** (INDIA) held at BITS Pilani, K K Birla Goa campus on December 18-20, 2023.

3. **Poster presentation** in the International Conference on "**Trends in Emerging Nanoscience: Energy, Healthcare and Quantum Materials (INST-TENS 2023)**" organized by Institute of Nano Science and Technology, Mohali on 5th – 8th November 2023.

4. **Best poster award (2nd prize)** in the International Conference on '***Current Trends and Future Prospects of Plant Biology***' February 23th -25th, 2023' organized by Department of Plant Sciences, School of Life Sciences, University of Hyderabad, Hyderabad, Telangana, India.

5. **Poster presentation** in the International Conference on "**Exploring new horizons in Biotechnology (ENB-2023) & Recent Advances in Biotechnological Innovations (RABI-2023)**" organized by School of Biotechnology, Institute of Science, Banaras Hindu University, Varanasi on 10^{th} – 12^{th} February 2023.

6. **Poster presentation** at "All India Cell Biology Conference & International Symposium on ***Biology of development and Disease***" held at Department of Zoology, Institute of science, Banaras Hindu University on 20^{th} – 22^{nd} January 2023.

Technical expertise

My research work aims to fabricate silver nanoparticles using fungal endophyte derived bioactive compounds and evaluation of anticancer property of mycogenic nanoparticles using suitable *in vitro* and *in vivo* models. In my research work done till now, a fungal endophyte *Penicillium oxalicum* associated with a medicinal plant *Amoora rohituka* has been selected for the green synthesis of silver nanoparticles and *in vitro* cytotoxic effects have been studied. The synthesis of silver nanoparticles was done using fungal aqueous extract and characterization for the synthesis of myco-based nanoparticles (POAgNPs) was done using several techniques including preliminary validation for the synthesis of silver nanoparticles through UV-visible spectroscopy, morphological characterization using Atomic Force Microscope, determination of crystalline nature of silver nanoparticles using X-ray diffraction pattern, size determination using Transmission electron microscopy, surface topology using Scanning electron microscopy and functional groups through Fourier transform infrared spectroscopy. A wide range of biological activities have been observed to be exhibited by green nanoparticles including antimicrobial, antioxidant and anticancer activity. Potential antibacterial and antifungal activity has been shown by POAgNPs against a broad spectrum of pathogenic bacteria and fungi respectively. Antioxidant assays showed potential scavenging of POAgNPs against synthetically generated free radicals. Assessment of *in vitro* anticancer activity of synthesized silver nanoparticles against human breast cancer cells, MDA-MB-231 and MCF-7 showed reduction in cell viability under effect of POAgNPs. The anticancer study showed POAgNPs induced apoptosis-specific nuclear modulations, inhibition of cell migration and differential expression of apoptosis-related genes and proteins in human breast cancer cells after treatment with POAgNPs. Moreover, *in vivo* anticancer study using suitable animal models are underway and will be performed in my further research work.

M.Sc.: During my Masters in Botany, I have done dissertation work on the topic entitled "Antifungal and antiaflatoxigenic efficacy of nano encapsulated CKP-25 (a hybrid of *Cymbopogon khasianus* and *Cymbopogon pendulus*) and its mode of action".

Scholarships and Awards

Qualified Graduate Aptitude Test for Engineering (GATE)-2021 in Life sciences.
Qualified Graduate Aptitude Test for Engineering (GATE)-2020 in Life sciences.

Personal Details

Father's Name : Late Anang Mohan Gupta
Mother's Name : Mrs. Anju Gupta
Date of Birth : February 24, 1995

Language Known : Hindi and English
Hobbies : Watching movies and travelling

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