



Dr. Swati Sharma

Dr. Swati Sharma is an Assistant Professor in the Department of Biosciences at Integral University, Lucknow, with over a decade of research experience in biological sciences. Her expertise focuses on plant-microbe interactions and postharvest management. She completed her doctoral research at CSIR-National Botanical Research Institute and the Department of Botany, University of Lucknow. Dr. Sharma has a strong publication record, including 24 research papers in international journals, one edited book, 12 book chapters, and two patents. She has successfully supervised nine Ph.D. scholars in microbiology and biotechnology, making significant contributions to research and academic mentorship.

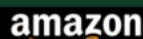
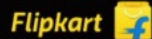


Dr. Amita Dubey

Dr. Amita Dubey is an Assistant Professor in the Department of Biosciences at Integral University, Lucknow. She earned her Ph.D. from CSIR-Central Institute of Medicinal and Aromatic Plants and served as a Women Scientist at CSIR-National Botanical Research Institute. With over a decade of experience in research and teaching, her work focuses on cytochrome P450 monooxygenases and their role in the biosynthesis of therapeutically important secondary metabolites. Her research has advanced the understanding of metabolite pathways in medicinal plants and their application in pathway engineering. She has also contributed to studies on histone acetylation in improving cotton fiber yield and quality. Dr. Dubey has led two projects funded by the


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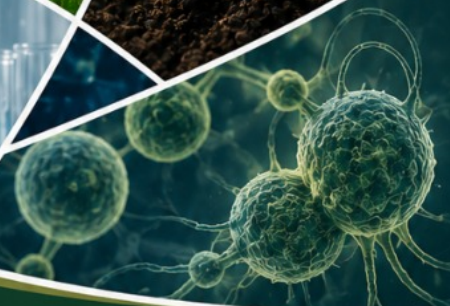


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FRONTIERS IN BIOLOGICAL SCIENCES: RECENT ADVANCES AND INNOVATIONS-VOL I

Frontiers in Biological Sciences: Recent Advances and Innovations

— Vol I —



Dr. Swati Sharma
Dr. Amita Dubey

Frontiers in Biological Sciences: Recent Advances and Innovations-Vol I

Editors

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Published by: - Book Rivers

Website: - <https://www.bookrivers.com>

Email: publish@bookrivers.com

First Print Edition - 2026

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Title: Frontiers in Biological Sciences: Recent Advances and Innovations-Vol I

Editors: Dr. Swati Sharma, Dr. Amita Dubey

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ISBN: 978-93-6884-974-2

MRP: 450 /-INR

(Printed in India)

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Green Synthesis of Silver Nanoparticles and Their Potential for Anti-bacterial Applications

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Abstract:

The eco-friendly production of silver nanoparticles (AgNPs) has become increasingly popular due to its sustainable, cost-efficient, and environmentally conscious approach in comparison to traditional chemical techniques. This method, which utilizes natural resources such as plant extracts, microorganisms, and enzymes, minimizes harmful chemicals, providing a safer alternative for AgNP synthesis. The process involves converting silver ions (Ag^+) into nanoparticles, with biomolecules from plants or microbes serving as both reducing and stabilizing agents. This green synthesis reduces environmental risks and allows for the creation of AgNPs with specific sizes, shapes, and improved characteristics. Silver nanoparticles are well-known for their antimicrobial properties, which have been extensively researched for use in medicine, food packaging, and environmental management. Their minute size and expansive surface area enhance their interaction with microbial cell membranes, disrupting essential cellular functions. The distinct physicochemical properties of green-synthesized AgNPs, including their surface charge and stability, often result in superior antimicrobial effectiveness compared to their chemically synthesized counterparts. Furthermore, green synthesis introduces bioactive compounds that may enhance the antimicrobial effects of