Natural Products Chemistry

Biomedical and Pharmaceutical Phytochemistry



Tatiana G. Volova | Debarshi Kar Mahapatra Sonia Khanna | A. K. Haghi Editors



Contents

Con	ntributorsxi
Abb	reviationsxv
Prej	facexix
1.	Bacterial Nanocellulose: Synthesis, Properties, Hybrids with Nano-Silver for Tissue Engineering
2.	Applications of Nanotechnology in Diverse Fields of Supramolecules, Green Chemistry, and Biomedical Chemistry: A Very Comprehensive Review
3.	Biosynthesis and Therapeutic Potential of Silver Nanoparticles79 Lavnaya Tandon and Poonam Khullar
4.	Pomegranate Bacterial Blight: Abutilon indicum, Prosopis juliflora, and Acacia arabica as Antibacterial Agents for Xanthomonas axonopodis pv. punicae
5.	Biocontaminants in Occupational Perspectives: Basic Concepts and Methods
6.	General and Chemical Perspectives and Studies on Tannins as Natural Phenolic Compounds for Some Ecoefficient Applications 115 Hussein Ali Shnawa, Moayad Naeem Khalaf, Abed Alamer Hussein Taobi, Bindu Panampilly, and Sabu Thomas
7.	Bryophytes: Natural Biomonitors
8.	Applied Techniques for Extraction, Purification, and Characterization of Medicinal Plants Active Compounds

9.	Panoramic View of Biological Barricades and Their
	Influence on Polysaccharide Nanoparticle Transport:
	An Updated Status in Cancer
	Maya Sreeranganathan, Babukuttan Sheela Unnikrishnan, Preethi Gopalakrishnan Usha, and Therakathinal Thankappan Sreelekha
10.	Selective Targeting of Human Colon Cancer HCT116 Cells by
	Phytomediated Silver Nanoparticles
	V. S. Shaniba, Ahlam Abdul Aziz, Jobish Joseph, P. R. Jayasree, and P. R. Manish Kumar
11.	Promising Anticancer Potentials of Natural Chalcones as
	Inhibitors of Angiogenesis253
	Debarshi Kar Mahapatra, Vivek Asati, and Sanjay Kumar Bharti
12.	Direct Electrochemical Oxidation of Blood269
	V. A. Rudenok
I. d	291

Natural Products Chemistry

Biomedical and Pharmaceutical Phytochemistry

This volume focuses on the development of biochemical and biomedical products and their applications. It highlights the importance of accomplishing an integration of engineering with biology and medicine to understand and manage the scientific, industrial, and clinical aspects. It also explains both the basic science and the applications of biotechnology-derived pharmaceuticals, with special emphasis on their clinical use. The biological background provided enables readers to comprehend the major problems in biochemical engineering and formulate effective solutions. This title also expands upon current concepts with the latest research and applications, providing both the breadth and depth researchers need. The book also introduces the topic of natural products chemistry with an overview of key concepts.

ABOUT THE EDITORS

Tatiana G. Volova, DSc, is Professor and Head, Department of Biotechnology at Siberian Federal University, Russia. She is the creator and head of the Laboratory of Chemoautotrophic Biosynthesis at the Institute of Biophysics, Siberian Branch of the Russian Academy of Sciences. A prolific author and a well-known expert in the field of microbial physiology and biotechnology, Professor Volova has published more than 300 scientific works, including 13 monographs, 16 inventions, and a series of textbooks for universities. Dr. Volova has established a new branch in chemoautotrophic biosynthesis, and under her guidance, a pilot production facility of single cell protein, utilizing hydrogen, was created and put into operation.

Debarshi Kar Mahapatra, PhD, is an Assistant Professor at the Department of Pharmaceutical Chemistry, Dadasaheb Balpande College of Pharmacy, Rashrasant Tukadoji Maharaj Nagpur University, India. He has published more than 50 research papers and more than 25 review articles in international journals and has contributed to edited books, textbooks, and laboratory manuals. He has presented his work at more than 35 international and national platforms, for which he received more than 15 awards.

Sonia Khanna, PhD, is an Assistant Professor at Sharda University, Greater Noida, Delhi NCR, India. She has published research articles in international journals, including *Coordination Chemistry Reviews, Dalton Transactions*, and publications of the American Chemical Society. She has also authored several book chapters. She is presently associated with many research projects and is a member of the review board for a national journal.

A. K. Haghi, PhD, is the author and editor of over 180 books, as well as over 1000 published papers in various journals and conference proceedings. Dr. Haghi has received several grants, consulted for a number of major corporations, and is a frequent speaker to national and international audiences. Since 1983, he served as professor at several universities. He is the former Editor-in-Chief of the *International Journal of Chemoinformatics and Chemical Engineering* and *Polymers Research Journal*. He is also a member of the Canadian Research and Development Center of Sciences and Cultures.



