

# Phytochemistry

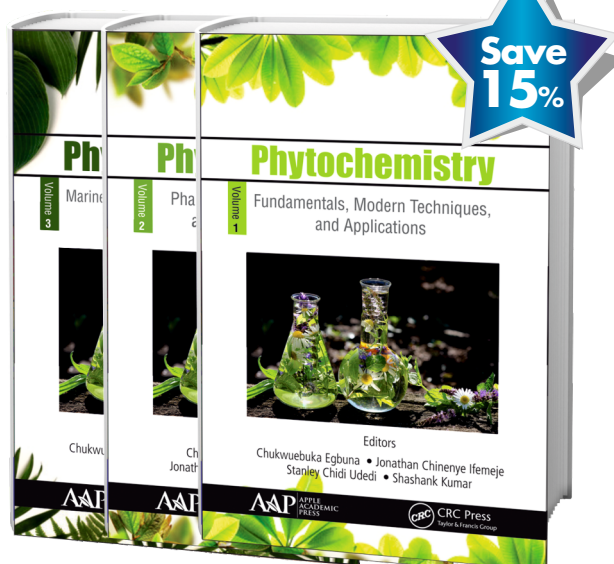
3-Volume Set

Volume 1: Fundamentals, Modern Techniques, and Applications

Volume 2: Pharmacognosy, Nanomedicine, and Contemporary Issues

Volume 3: Marine Sources, Industrial Applications, and Recent Advances

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Available  
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## Editors: Chukwuebuka Egbuna

Research Biochemist, Department of Biochemistry, Faculty of Natural Sciences, Chukwuemeka Odumegwu Ojukwu University, Nigeria

## Jonathan Chinenye Ifemeje, PhD

Senior Lecturer, Department of Biochemistry, Faculty of Natural Sciences, Chukwuemeka Odumegwu Ojukwu University, Nigeria

## Shashank Kumar, PhD

Assistant Professor, Center for Biochemistry and Microbial Sciences, Central University of Punjab, Bathinda, India

## Stanley Chidi Udedi, PhD

Full Professor of Biochemistry, Department of Applied Biochemistry, Nnamdi Azikiwe University, (UNIZIK), Awka, Nigeria

## Jaya Vikas Kurhekar, PhD

Associate Professor, Department of Microbiology, Dr. Patangrao Kadam Mahavidyalaya, Sangli, India

## Nadia Sharif, PhD

Lecturer, Biotechnology Department of Lahore, College for Women, University, Lahore, Pakistan

The 3-volume set, **Phytochemistry**, covers a wide selection of topics in phytochemistry and provides a wealth of information on the fundamentals, new applications, methods and modern analytical techniques, state-of-the-art approaches, and computational techniques. With chapters from professional specialists from around the world, the volumes deliver a comprehensive coverage of phytochemistry.

**Volume 1: Fundamentals, Modern Techniques, and Applications** begins with an introduction to phytochemistry and details the fundamentals. It then goes on to discuss the state-of-the-art modern methods and techniques in phytochemical research. It also provides an informative overview of computational phytochemistry and its applications and presents novel research findings in the discovery of drugs that will be effective in the treatment of diseases.

**Volume 2: Pharmacognosy, Nanomedicine, and Contemporary Issues** reviews a selection of important recent advances in ethnopharmacology, alternative and complementary medicines. It also presents chapters on the medicinal potential of phytochemicals in the treatment and management of various diseases, such as cancer, diabetes, diabetic nephropathy, autoimmune diseases, neurological disorders, male infertility, etc. The book also presents chapters that discuss recent developments in the green biosynthesis of metallic nanoparticles and nanoparticles of carbon dots and the biomedical applications and looks at the toxic effects of phytochemicals as well as the prooxidant and antinutrient features.

**Volume 3: Marine Sources, Industrial Applications, and Recent Advances** discusses the industrial applications of phytochemicals, such as the production of secondary metabolites and

accumulations through *in vitro* cultures. The volume reviews the effects of using natural products as biopesticides and as eco-friendly corrosion inhibitors. The book also discusses the effects of the environment on the distribution of phytochemicals and the roles of phytochelatin and heavy metal tolerance in plants.

Phytochemistry is a multidisciplinary field, so these volumes will appeal to upper-level students, faculty, researchers, and industry professionals in a number of fields, including biological science, biochemistry, pharmacy, food and medicinal chemistry, systematic botany and taxonomy, ethnobotany, conservation biology, plant genetic and metabolomics, evolutionary sciences, and plant pathology.

### Key features:

- Introduces phytochemistry, its modern history, and the relationship it has with other sciences
- Discusses the prospects for phytochemists and the future of phytochemical research
- Explores the biosynthesis of phytochemicals
- Looks at the biological roles of phytochemicals
- Details the role of phytochemistry in plant classification and various phytochemical markers of taxonomic importance
- Describes the various extraction methods and techniques, including those for used for the isolation and characterization of phytochemicals
- Discusses the role of phytochemicals in herbal medicines
- Details the role of phytochemicals in the treatment and management of various diseases
- Explores the green biosynthesis of nanoparticles and its biomedical applications
- Reviews toxic plants and the ability of phytochemicals to act as prooxidants and antinutrients
- Provides an overview of the techniques utilized in phytochemotaxonomy
- Presents phytochemical biopesticides, an eco-friendly measure for pests

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### Phytochemistry, Volume 1: Fundamentals, Modern Techniques, and Applications

Editors: Chukwuebuka Egbuna, Jonathan Chinenye Ifemeje, PhD, Stanley Chidi Udedi, PhD, and Shashank Kumar, PhD

*"Will have a great impact in the field of phytochemistry. It gives a strong background about phytochemicals starting with their different biosynthesis pathways and then discusses to their potential biological activities and using the virtual techniques to find the molecular targets through which the compounds exert their action. This volume is well documented and organized and will be very beneficial to researchers in the phytochemistry field as it also gives a wide overview on the different analytical and chromatographic techniques and their application presented in research."*

—Shahira M. Ezzat, Professor and Head, Faculty of Pharmacy, MSA University, Egypt

#### Preface

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Editors: Editors: Chukwuebuka Egbuna, Shashank Kumar, PhD, Jonathan Chinenye Ifemeje, PhD, and Jaya Vikas Kurhekar, PhD

*"The scope of the book is great and one that has incorporated recent developments in the field. The chapters were written by key specialists in the field from diverse academic backgrounds. The volume covers virtually all areas of phytochemistry and pharmacognosy, namely ethnobotany, complementary and alternative systems of medicine, ethnobotanical study of indigenous medicinal plants, and so forth. . . . The book will receive appreciation from the scientific community. I am also convinced that the book will attract great interest to the industry, especially the pharmaceutical industry."*

—From the Foreword by Reginald Agu, PhD, FIBD, Visiting Professor, Department of Microbiology, University of Nigeria, Nsukka

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*Editors: Chukwuebuka Egbuna, Jonathan Chinenye Ifemeje, PhD, Shashank Kumar, PhD, and Nadia Sharif, PhD*

*"The scope of the volume is multifaceted with deep scientific content. The volume covers trending topics from emerging areas of phytochemistry, including marine phytochemistry, production of phytochemicals through in vitro culture, phytochemical biopesticides, and recent advances. . . The organization of this book particularly makes it exceptional."*

—From the Foreword by C. C. Anene, PhD, Ag. Vice Chancellor & Dean Faculty of Natural Sciences, Chukwuemeka Odumegwu Ojukwu University, Nigeria

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## ABOUT THE EDITORS

**Chukwuebuka Egbuna** is a chartered chemist, a chemical analyst, and an academic researcher. He is a member of the Institute of Chartered Chemists of Nigeria, the Nigerian Society of Biochemistry and Molecular Biology, and the Society of Quality Assurance (USA). He has been engaged in a number of roles at New Divine Favor Pharmaceutical Industry Limited, Akuzor Nkpor, Anambra State, Nigeria, and Chukwuemeka Odumegwu Ojukwu University, Nigeria. He has collaboratively worked and published quite a number of research articles in the area of phytochemistry and its applications. He is a reviewer and editorial board member of various journals, with his most recent role as a website administrator for the *Tropical Journal of Applied Natural Sciences* (TJANS), a journal of the faculty of natural sciences at Chukwuemeka Odumegwu Ojukwu University.

**Jonathan Chinenye Ifemeje, PhD**, is a Senior Lecturer in the Department of Biochemistry, Faculty of Natural Sciences, Chukwuemeka Odumegwu Ojukwu University, Nigeria. He has to his credits over 40 publications and has served as an external examiner for various institutions. He is the Managing Editor of the *Tropical Journal of Applied Natural Sciences* and is currently serving as a reviewer and an editorial board member for various journals. He has worked extensively in the area of phytochemistry, nutrition, and toxicology. He is a member of various institutes, including the Institute of Chartered Chemists of Nigeria (ICCON), the Nigerian Society of Biochemistry and Molecular Biology (NSBMB), and Society of Quality Assurance (SQA).

**Shashank Kumar, PhD**, is working as Assistant Professor at the Center for Biochemistry and Microbial Sciences, Central University of Punjab, Bathinda, India. Dr. Kumar has about 60 published scientific papers, reviews, editorial articles, and book chapters in various national and international peer-reviewed journals and has been cited more than 1,200 times. He has edited several books including *Concepts in Cell Signaling and Carbohydrate Metabolism: Theory and Practical Approach*, among others. He has expertise in the areas of free radical biology, cancer biology, characterization of plant products, xenobiotic metabolism, and microbiology. He is familiar with many biochemical techniques such as spectrophotometry, ELISA, electrophoresis, PCR, RT-PCR, flow cytometry, TLC, HPLC, LC-MS, cell culture, and *microbiological techniques*. He has presented his research findings at more than 25 national and international conferences and has attended about 30 workshops at many major universities and medical colleges throughout the India.

**Stanley Chidi Udedi, PhD**, is a Full Professor of Biochemistry at the Department of Applied Biochemistry, Nnamdi Azikiwe University, (UNIZIK), Awka, Nigeria. He has taught in various institutions, including Madonna University Okija, Nigeria, and Anambra State University, which is now Chukwuemeka Odumegwu Ojukwu University, Nigeria. He is currently the Dean of Student Affairs at UNIZIK. He has worked extensively in the field of phytochemistry and food and medicinal chemistry and has supervised many MSc and PhD students. He is well published with over 50 publications, which has attracted over 170 citations. He is well traveled and has attended a series of workshops and conferences locally and internationally.

**Jaya Vikas Kurhekar, PhD** (microbiology), MBA (human resources), is presently the Head and Associate Professor in Microbiology, teaching undergraduate and postgraduate students, in the Department of Microbiology at the college Dr. Patangrao Kadam Mahavidyalaya, Sangli, India. She has published over 40 scientific papers in various international and national journals. She has also been a reviewer for many international and national journals and has worked as an editor for special journal issues in microbiology. She has been the editor and contributor to the textbooks on microbiology and has three of her books translated. She has presented many scientific papers at international and national conferences and has been invited as a speaker and chairperson at conferences.

**Nadia Sharif, PhD**, is currently working as a Visiting Lecturer at the Biotechnology Department of Lahore College for Women, University, Lahore, Pakistan. She has published over 20 scientific papers, reviews, and book chapters in various books and national and international peer-reviewed journals. Dr. Sharif is serving as a reviewer for several journals, and she has presented her research findings at national conferences. She has expertise in areas of phycology, industrial biotechnology, microbiology, molecular biology biostatistics, and biochemistry. She is familiar with many biochemical techniques such as spectrophotometry, electrophoresis, PCR, ASE, TLC, HPLC, GC-MS, cell culture, and microbiological techniques. She has a great interest in working for the sustainable use of natural resources.

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