
Bioresources and Bioprocess in Biotechnology

Shiburaj Sugathan • N.S. Pradeep
Sabu Abdulhameed
Editors

Bioresources and Bioprocess in Biotechnology

Volume 2: Exploring Potential
Biomolecules

 Springer

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ISBN 978-981-10-4282-9

ISBN 978-981-10-4284-3 (eBook)

DOI 10.1007/978-981-10-4284-3

Library of Congress Control Number: 2016961510

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Printed on acid-free paper

This Springer imprint is published by Springer Nature

The registered company is Springer Nature Singapore Pte Ltd.

The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

*Dedicated to the memory of
Dr. Christopher Augur (Chris) whose life
and scientific contributions in the area of
bioresources peaked great on a narrow base.*



Dr. Christopher Augur
(1960–2009)

Foreword



I am delighted to introduce Vol. II of “Bioresources and Bioprocess in Biotechnology: *Exploring potential biomolecules*”, edited by Dr. Shiburaj Sugathan, Dr. N S Pradeep and Dr. Sabu Abdulhameed. In this regard, I would like to highlight its specific features in the most possible brief form so that the peers may quickly lay their hands on the collection of erudite essays with guiding commentaries and reviews. To be exact, I am happy to say that the editors have done a commendable job in an area of several bio-applications. Technically speaking, there may be other similar edited volumes very coarsely comparable to the present one produced

in the past. However, the present compilation makes a better composition, considering its scope and the extent of recent and emerging areas in bioresources and bioprocess technology. The salient features of the outstanding collection of reviews are the much-needed single volume for students, researchers and industrialists in the field of biotechnology, particularly hitherto apparently neglected areas of knowledge with transformational potential. The present volume will be of use to researchers in the fields of antimicrobials particularly toward mycobacterium, plant-based alternative medicines, enzymes, anticancer and anti-inflammatory molecules, medicinal significance of polyphenol-containing fermented products, etc.

The editors must be congratulated for bringing out such an extensive volume beautifully written for universal appeal. The following areas are dealt with utmost care and scholarship. They are chemical alterations of compounds (e.g., a drug) occurring within the body, as by enzymatic activity; plant biosynthetic pathway assemblies for engineering microbial systems to produce targeted chemical compounds; biodiversity of plants ensuring resources for new food crops and medicines; ever nascent ethnopharmacology; etc. No doubt, this volume will be of great use to one and all in the fields of biological resources and biotechnology and

materials research for solving the maladies presently limiting sustainable and comfortable life to humans in a conserved environment with equal rights to all life forms.

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Madathilkovilakath Haridas

Preface

In an era of growing awareness about the threats of biodiversity loss, the society is witnessing an unprecedented interest in novel bioresources, which are increasingly prized for their potential use in many applications. The loss of bioresources is occurring at an alarming rate, a consequence of increasing population pressure, agricultural land degradation, urbanization and above all neglect. Deforestation and forest degradation are large-scale problems in developing countries.

To meet the demands of the society in industrial, healthcare, food and other sectors, the utilization of bioresources is an absolute requirement. At the same time, we need to make sure that the overexploitation should never result in biodiversity loss. To manage this situation, we need to have more knowledge on rarely used or unused resources which are available in bulk and are easy to propagate rapidly. Modern biotechnology is armed with techniques for sustainable utilization of bioresources to meet the increasing demand.

The concept of sustainable development indicates that economic and environmental protection are inseparably linked and that the quality of present and future life fails in meeting basic human needs without destroying the environment on which the life depends. There is a growing recognition worldwide that conservation and sustainable management of bioresources are the need of the hour. The use of biotechnological tools and bioprospecting will open new vistas in many fields viz. agriculture, medicine, horticulture, environment, etc. Since we cannot do without exploiting the available bioresources to our advantage, there has to be a balance between uses of resources and their conservation.

There is an increasing realization that bioresources especially medicinal plants and microbes can provide cheaper means of disease management by analyzing further their functional potential. This interest has led to a better understanding of the role of plant and microbial bioactives in health promotion and disease prevention. Generation of high-throughput data and the study of molecular mechanisms of diseases have all contributed to this effort.

Kerala, India

Shiburaj Sugathan
N.S. Pradeep
Sabu Abdulhameed

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