

Advancements in Environmental Biotechnology



Dr. Roohi
Dr. Alvina Farooqui
Dr. Aisha Kamal

Advancements in Environmental Biotechnology

Editors

Dr. Roohi

Dr. Alvina Farooqui

Dr. Aisha Kamal

Department of Environmental Science
Integral University, Lucknow (U.P) INDIA



AARGON PRESS

New Delhi

Advancements in Environmental Biotechnology

Dr. Roohi, Dr. Alvina Farooqui and Dr. Aisha Kamal

© Edition, 2021

Published by

Aargon Press

EG-130, Inderpuri,

New Delhi-110012, India

Tel.: +91-11-9958121300

Email: info.aargonpress@gmail.com

Website: www.aargonpress.com

Disclaimer:

All rights reserved. No part of this book may be reproduced, in any form or by any means, without permission in writing from the Integral University.

The author and publisher of this book have used their best efforts in preparing this book. These efforts include the development, research, and testing of theories and programs to determine their effectiveness. However, we make no warranty of any kind, expressed or implied, with regards to these programs or the documentation contained in this book. The author and publisher shall not be liable in any event for incidental or consequential damages in connection with, or arising out of, the furnishing, performance, or use of these programs. Please do consult a professional where appropriate.

ISBN: 978-93-94070-17-2

Printed at: Aargon Press, New Delhi

TABLE OF CONTENTS

S.No.	Chapter Title and Authors Name	Page No.
Chapter 1	Salicylic Acid Combating Mancozeb Toxicity in Plants ShadmaAndleeb Khan, Nida Sultan, Laxmi And Aisha Kamal*	1-21
Chapter 2	Current Trends and Future Prospects of Bioplastics RabiyaAkram, Shareen Fatima Rizvi and Roohi*	22-37
Chapter 3	Biochemical Response of Nitrogen Fixing Cyanobacterium <i>Nostocmuscorum</i> to Metallic Nanoparticles Towards Environmental Sustainability Sadaf Jahan and Alvina Farooqui*	38-67
Chapter 4	Effect of Brassinolide and Salicylic Acid on Growth, Quality and Quantity of Essential Oil Components in Palmarosa (<i>Cymbopogonmartinii</i>) Imran Ansari, AhamadFaiz Khan*, Farina Mujeeb, Bushra AhmadSuhail Ahmad, Gyanendra Tripathi	68-92
Chapter 5	Selection of Natural Bioactive Compounds for The Management of Type 2 diabetes using <i>In-silico</i> Approach Suhail Ahmad and AlvinaFarooqui*	93-122
Chapter 6	Effect of Plant Growth Regulator GA₃ (Gibberellic acid) on Essential Oil Yield in Lemongrass	123-157

	(<i>Cymbopogon flexuosus</i>) Mehtab Khan, Ahamad Faiz Khan*, Farina Mujeeb, Bushra Ahmad Suhail Ahmad, Gyanendra Tripathi	
Chapter 7	A Potent Source of Bioactive Compound c-phyococyanin from Cyanobacterial Strain <i>Plectonema Boryanumas</i> Bhoomika Varshney, Gauresh Sharma, Priya Kumari And Archana Vimal*	158-173
Chapter 8	Microbial Biodegradation of Polymers Ramsha Ahrar, Reena Vishvakarma*	174-193
Chapter 9	Combating Bulk and Nano Metal Toxicity Using Cyanobacteria Zairish Imran, Reena Vishva karma*	194-216
Chapter 10	Production of C-Phycocyanin from Cyanobacteria for Nitrogen Source of Plants Safia Baig, Gauresh Sharama, Eram Shakeel and Archana Vimal*	217-235

CHAPTER 2

CURRENT TRENDS AND FUTURE PERSPECTIVES OF BIOPLASTICS

Shareen Fatima Rizvi, Rabiya Akram and Roohi*

**Protein Research Laboratory, Department of Bioengineering, Integral University,
Lucknow, India-226026**

***Corresponding author: roohi@iul.ac.in**

Abstract

Bioplastics are plastics in which all carbon is derived from renewable feedstock's. Bioplastics plays a vital role in our lives because of its uniqueness in properties and extended application in industries, packaging, sports, medicine, perfumes and preservatives, plastics, fuels, toys etc. PHB (Polyhydroxybutyrate) is a polymer belongs to polyesters group of Polyhydroxyalkanoate (PHA), which are used as bio-derived and biodegradable plastics. The use of PHB derived bioplastics are completely safe and do not have any chemicals or toxins. These plastics harmlessly breaks down by microbial consortia using depolymerase enzymes and gets absorbed into the earth. Such advantages of bioplastics are of extreme importance that could markedly increase as more durable versions are developed, and the cost to manufacture these bio-plastics continues to go fall. Moreover, it reduces the growing toxic plastic load on the earth that will be in favour of future generations. The biodegradable plastics market's immense growth will help drive the further evolution of a bio-economy in world.

Keywords: Biodegradable plastic; PHA; PHB; PHB depolymerase enzymes;