



Targeted Therapies and Drug Delivery Systems

A Multidisciplinary Perspective

Atul R. Bendale
Vasimkhan T. Pathan
Nilesh Ashok Karande
Editors

● DeepScience
;

Targeted Therapies and Drug Delivery Systems: A Multidisciplinary Perspective

Atul R. Bendale

Mahavir Institute of Pharmacy, Nashik, Maharashtra, India

Vasimkhan T. Pathan

Mahavir Institute of Pharmacy, Nashik, Maharashtra, India

Nilesh Ashok Karande

Institute of Pharmaceutical Education and Research, Wardha,
Maharashtra, India



DeepScience

Published, marketed, and distributed by:

Deep Science Publishing, 2025
USA | UK | India | Turkey
Reg. No. MH-33-0523625
www.deepscienceresearch.com
editor@deepscienceresearch.com
WhatsApp: +91 7977171947

ISBN: 978-93-7185-216-6

E-ISBN: 978-93-7185-674-4

<https://doi.org/10.70593/978-93-7185-674-4>

Copyright © Atul R. Bendale, Vasimkhan T. Pathan, Nilesh Ashok Karande, 2025.

Citation: Bendale, A. R., Pathan, V. T., & Karande, N. A. (Eds.). (2025). *Targeted Therapies and Drug Delivery Systems: A Multidisciplinary Perspective*. Deep Science Publishing.
<https://doi.org/10.70593/978-93-7185-674-4>

This book is published online under a fully open access program and is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC 4.0). This open access license allows third parties to copy and redistribute the material in any medium or format, provided that proper attribution is given to the author(s) and the published source. The publishers, authors, and editors are not responsible for errors or omissions, or for any consequences arising from the application of the information presented in this book, and make no warranty, express or implied, regarding the content of this publication. Although the publisher, authors, and editors have made every effort to ensure that the content is not misleading or false, they do not represent or warrant that the information-particularly regarding verification by third parties-has been verified. The publisher is neutral with regard to jurisdictional claims in published maps and institutional affiliations. The authors and publishers have made every effort to contact all copyright holders of the material reproduced in this publication and apologize to anyone we may have been unable to reach. If any copyright material has not been acknowledged, please write to us so we can correct it in a future reprint.

Preface

We are pleased to present the edited volume titled "Targeted Therapies and Drug Delivery Systems: A Multidisciplinary Perspective." This book brings together recent advancements in drug delivery, formulation science, and therapeutic innovations from across multiple disciplines.

The chapters explore a wide range of topics, including liposomal formulations, stimuli-responsive polymers, ligand-based targeting, and the growing role of nanotechnology in improving drug delivery and efficacy. The integration of natural products with modern medicine and the importance of clinical pharmacy and pharmacovigilance are also highlighted, reflecting a balanced approach between traditional wisdom and cutting-edge science.

This volume aims to serve as a valuable resource for students, researchers, and professionals in the pharmaceutical and biomedical fields. We thank all contributors for their expertise and hope this book inspires further innovation in patient-centered drug delivery systems.

Dr. Atul R. Bendale,

Dr. Vasimkhan T. Pathan,

Dr. Nilesh Ashok Karande

Table of Contents

Chapter 1: Advances in liposomal drug delivery: Formulation and optimization..1

Gitanjali S. Bhatjire^{1,3}, Priyanka P. Thore¹, Vandana V. Shirsath^{1,3}, Vaishali Naphade², Anil G. Jadhav¹

Chapter 2: Stimuli responsive polymers used in drug delivery systems13

Mukul P. Madane^{*1}, Prajwal R. Aher^{1,3}, Manoj Somvanshi¹, Vasimkan T. Pathan¹, Atul R. Bendale¹, Vaishali Naphade², Amol R. Chavan¹, Anil G. Jadhav¹

Chapter 3: Advancements in nanotechnology for drug delivery27

Nikita S. Rathod^{*1,3}, Atul Bendale¹, Prajwal R. Aher^{1,3}, Sakshi S. Waikar^{1,3}, Vaishali Naphade², Vasim Pathan¹, Anil Jadhav¹

Chapter 4: Natural products and traditional medicines: integration with modern therapeutics36

Manisha Raut^{*1}, Tejashri Dugaje^{1,3}, Prajwal R. Aher^{1,3}, Gauri R. Salave^{1,3}, Atul Bendale¹, Vaishali Naphade², Anil Jadhav¹

Chapter 5: Clinical pharmacy and pharmacovigilance: Integrating patient-centred care with drug safety monitoring52

Sakshi S. Waikar^{*1,3}, Nikita S. Rathod^{1,3}, Gauri Salave^{1,3}, Prajwal R. Aher^{1,3}, Atul Bendale¹, Vaishali Naphade², Vasim Pathan¹, Anil Jadhav¹

Chapter 6: Nanotechnology applications in drug delivery and therapeutics64

Anagha Amit Sarvadnya^{*1}, Priyanka Banchhod¹, Anil Jadhav¹

Chapter 7: Innovations in pharmaceutical formulation and delivery system72

Priyanka P. Thore^{*1}, Gitanjali Bhatjire^{1,2}, Vandana V. Shirsath^{1,2}, Anil G. Jadhav¹

Chapter 8: Targeted drug delivery strategies: Ligand-based approaches81

Vandana V. Shirsath^{*1,2}, Gitanjali S. Bhatjire^{*1,2}, Priyanka P. Thore¹, Vaishali Naphade, Anil G. Jadhav¹