

Textbook of PHARMACOTHERAPEUTICS

Course Code ER20-24T for Second Year Diploma in Pharmacy

is a comprehensive text for all the aspiring students of second year Diploma in Pharmacy and other diploma | undergraduate courses in allied health sciences. Written according to the latest syllabus of Pharmacy Council of India, Course code ER20-24T, it presents a comprehensive compilation of the fundamental concepts of the subject aiming at safe and effective use of drugs in the treatment of disease.

The organization of the book is simple and the text, divided into 14 chapters, is presented in a lucid language. Each chapter begins with an introduction and concludes with key points. The book covers etiology, pathophysiology | pathogenesis, and non-pharmacological as well as pharmacological management of various diseases.

Salient features

- The entire subject matter has been organised in a systematic manner in each chapter.
- The text matter of the book is lucid and precise and is written in a simple, understandable language.
- The description is compact and concise which will be beneficial to the students as well as the faculty.
- Easily reproducible diagrams and well comprehensible content of the topics make this an ideal textbook for DPharm students at all the pharmacy institutions in India.

Priya Shaju MPharm (Pharmaceutics) is Lecturer, Department of Pharmacy, NCRD's Institute of Pharmacy, Navi Mumbai, and has 24 years of experience in teaching various subjects of pharmacy. She has worked in Bharati Vidyapeeth Institute of Pharmacy, Belapur, for 6 years. She has been the coordinator of MSBTE sponsored State Level Technical Paper Presentation Competition and Patient Counseling Course for working pharmacists. Apart from being the chairman of External Academic Monitoring Committee appointed by Maharashtra State Board of Technical Education, she has been actively involved in various examination-related activities such as papersetting and moderation and preparation of model answers for MSBTE. She has to her credit a couple of publications in scientific journals.

Anshupa Patel Gupta MPharm (QA) is Lecturer, Department of Pharmacy, NCRD's Institute of Pharmacy, Navi Mumbai, with a teaching experience of over 21 years. She has been Lecturer at Premilla Viithaldas Polytechnic (SNDT University), NSS College of Pharmacy and Bharati Vidyapeeth Institute of Pharmacy. She has a couple of publications in scientific journals to her credit. She was the core member for organising the first MSBTE (Maharashtra State Board of Technical Education) state level paper presentation competition for diploma pharmacy students. She has been a papersetter and resource person for preparing model answers for various subjects for MSBTE examinations over the years.

Himani Tambde MPharm PGDHM is Lecturer, Department of Pharmacy, NCRD's Institute of Pharmacy, Navi Mumbai, with more than 13 years of experience in academics and 2 years of industry experience. She had the opportunity to interact with doctors from different fields while completing an internship in MGM Hospital, Belapur. She has worked in the regulatory affairs and quality assurance department in renowned industries such as Cipla Ltd., Elder Projects and MJ Biopharm Ltd. She has published a couple of publications in scientific international journals. She has worked as subject expert for different activities conducted by MSBTE.



CBS Publishers & Distributors Pvt Ltd
4819/XI, Prahlad Street, 24 Ansari Road, Daryaganj, New Delhi 110 002, India
E-mail: delhi@cbspd.com, customercare@cbspd.com; Website: www.cbspd.com
New Delhi | Bengaluru | Chennai | Kochi | Kolkata | Lucknow | Mumbai
Hyderabad | Jharkhand | Nagpur | Patna | Pune | Uttarakhand



Textbook of PHARMACOTHERAPEUTICS Shaju | Gupta | Tambde

Textbook of PHARMACOTHERAPEUTICS

Course Code ER20-24T

for Second Year Diploma in Pharmacy

As per the latest syllabus prescribed by Pharmacy Council of India



Priya Shaju
Anshupa Patel Gupta
Himani Tambde



CBSPD Dedicated to Education
CBS Publishers & Distributors Pvt Ltd



Textbook of Pharmacotherapeutics

Course Code ER20–24T

for **Second Year Diploma in Pharmacy**

As per the latest syllabus prescribed by Pharmacy Council of India

Textbook of Pharmacotherapeutics

Course Code ER20–24T

for **Second Year Diploma in Pharmacy**

As per the latest syllabus prescribed by Pharmacy Council of India

Priya Shaju MPharm (Pharmaceutics)

Lecturer

Department of Pharmacy
NCRD's Institute of Pharmacy
Nerul, Navi Mumbai

Anshupa Patel Gupta MPharm (Quality Assurance)

Lecturer

Department of Pharmacy
NCRD's Institute of Pharmacy
Nerul, Navi Mumbai

Himani Tambde BPharm PGDHM

Lecturer

Department of Pharmacy
NCRD's Institute of Pharmacy
Nerul, Navi Mumbai

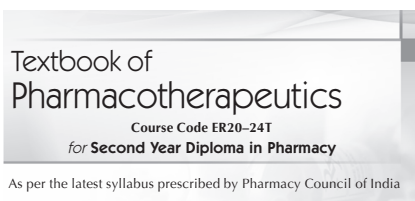


CBS Publishers & Distributors Pvt Ltd

New Delhi • Bengaluru • Chennai • Kochi • Kolkata • Lucknow • Mumbai
Hyderabad • Jharkhand • Nagpur • Patna • Pune • Uttarakhand

Disclaimer

Science and technology are constantly changing fields. New research and experience broaden the scope of information and knowledge. The authors have tried their best in giving information available to them while preparing the material for this book. Although, all efforts have been made to ensure optimum accuracy of the material, yet it is quite possible some errors might have been left uncorrected. The publisher, the printer and the authors will not be held responsible for any inadvertent errors, omissions or inaccuracies.



ISBN: 978-93-5466-276-8

Copyright © Authors and Publisher

First Edition: 2023

All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system without permission, in writing, from the authors and the publisher.

Published by Satish Kumar Jain and produced by Varun Jain for

CBS Publishers & Distributors Pvt Ltd

4819/XI Prahlad Street, 24 Ansari Road, Daryaganj, New Delhi 110 002, India

Ph: 011-23289259, 23266861, 23266867

Website: www.cbspd.com

Fax: 011-23243014

e-mail: delhi@cbspd.com

Corporate Office: 204 FIE, Industrial Area, Patparganj, Delhi 110 092

Ph: 011-4934 4934

Fax: 011-4934 4935

e-mail: publishing@cbspd.com; publicity@cbspd.com

Branches

- **Bengaluru:** Seema House 2975, 17th Cross, K.R. Road, Banasankari 2nd Stage, Bengaluru 560 070, Karnataka, India
Ph: +91-80-26771678/79 Fax: +91-80-26771680 e-mail: bangalore@cbspd.com
- **Chennai:** 7, Subbaraya Street, Shenoy Nagar, Chennai 600 030, Tamil Nadu, India
Ph: +91-44-26680620, 26681266 Fax: +91-44-42032115 e-mail: chennai@cbspd.com
- **Kochi:** 42/1325, 1326, Power House Road, Opp KSEB, Power House, Ernakulam 682 018, Kerala, India
Ph: +91-484-4059061-65 Fax: +91-484-4059065 e-mail: kochi@cbspd.com
- **Kolkata:** 147, Hind Ceramics Compound, 1st Floor, Nilgunj Road, Belghoria, Kolkata-700056, West Bengal, India
Ph: 033-25633055, 033-25633056 e-mail: kolkata@cbspd.com
- **Lucknow:** Basement, Khushnuma Complex, 7-Meerabai Marg (Behind Jawahar Bhawan) Lucknow 226001, India
Ph: 0522-4000032 e-mail: tiwari.lucknow@cbspd.com
- **Mumbai:** PWD Shed, Gala no. 25/26, Ramchandra Bhatt Marg, Next to JJ Hospital Gate no. 2, Opp. Union Bank of India, Noorbaug Mumbai-400009, Maharashtra, India
Ph: 022-66661880/89 e-mail: mumbai@cbspd.com

Representatives

- | | | |
|---------------------------------|---------------------------------|-----------------------------------|
| • Hyderabad 0-9885175004 | • Jharkhand 0-9811541605 | • Nagpur 0-9421945513 |
| • Patna 0-9334159340 | • Pune 0-9623451994 | • Uttarakhand 0-9716462459 |

Printed at Glorious Printers, Delhi, India

to

*profound humility and
respect to our colleague*

Mr S M Nichal

who left us for heavenly abode on 1st June 2021.

*For many of us, we have lost a great friend,
mentor, and a great human being, and
his untimely sad demise has left us heartbroken.*

*He will always remain within our
hearts with his ever-smiling face.*

न चोरहार्यं न च राजहार्यं

न भ्रातृभाज्यं न च भारकारि।

व्यये कृते वर्धते एव नित्यं

विद्याधनं सर्वधनप्रधानम्॥

Na chor haryam na cha raja haryam

Na bhraatrubhaajyam na cha bhaarakari.

Vyaye krute vardhate eva nityam

Vidyaa dhanam sarva dhan pradhaanam.

Not stolen by thieves, not seized by kings,

Not divided amongst brothers, not heavy to carry

The more you offer to others, the more it grows always,

Thus, knowledge is the greatest wealth.

Preface

Textbook of Pharmacotherapeutics is the result of our efforts to assimilate a huge knowledge of many diseases and their treatments, which has been a requirement of various courses around the world.

Pharmacotherapeutics is the application of knowledge of drugs and diseases to diagnose prevent and treat the disease, as well as alter normal functions.

Taking into account the subject's extensive material, this textbook is a sincere attempt to make a significant contribution to individuals who are directly or indirectly involved in healthcare. The book is tailor-made according to the new syllabus (Course Code ER20-24T) framed by Pharmacy Council of India (PCI) as per Education Regulations 2020. This book will be helpful for second year DPharm students and faculty readers.

This book consists of 14 chapters, each divided into various subtopics. Each chapter is created with the intention of providing teachers and students knowledge about the subject at hand.

Our objective is achieved by systematic amalgamation of various topics in chapters with neat and labelled diagrams.

We honestly extend our gratitude to Principal and the management of NCRD for their support and encouragement. We also express our thanks to our parents, spouses and children for inspiring us to write this book for pharmacy students and academicians.

Undoubtedly, we owe a debt of gratitude to everyone who has helped us mould the book into what it is now.

Last but not least, we are grateful to Mr Satish Kumar Jain CMD, Mr Varun Jain Director and Mr YN Arjuna Senior Vice President—Publishing of CBS Publishers & Distributors, for their support, guidance and cooperation in bringing out this publication.

Although every precaution has been taken in preparation, there may have been a few oversights. To address this, we invite the students and faculty to send us feedback, criticism, and recommendations in order to improve the quality of the work in subsequent printings and editions of the book.

Priya Shaju
Anshupa Patel Gupta
Himani Tambde

Contents

<i>Preface</i>	<i>vii</i>
<i>Syllabus</i>	<i>xi</i>
1. Pharmacotherapeutics	1
Introduction 1; Scope and objectives 2; Rational use of medicines 3; Evidence-based medicines 4; Essential medicines 9; WHO model list of essential medicines 10; Standard treatment guidelines (STGs) 17	
2. Disorders of Cardiovascular System	23
2.1 Hypertension 23 2.2 Angina and Myocardial infarction 26 2.3 Hyperlipidaemia 33 2.4 Congestive Heart Failure 40	
3. Disorders of Respiratory System	45
3.1 Asthma 45 3.2 COPD 48	
4. Disorders of Endocrine System	53
4.1 Diabetes 53 4.2 Thyroid disorders—Hypo- and hyperthyroidism 57	
5. Disorders of Central Nervous System	62
5.1 Epilepsy 62 5.2 Parkinson's disease 66 5.3 Alzheimer's disease 69 5.4 Stroke 70 5.5. Migraine 71	
6. Gastrointestinal Disorders	73
6.1 Gastro-esophageal reflux disease 73 6.2 Peptic ulcer disease 76 6.3 Alcoholic liver disease 80 6.4 Inflammatory bowel disease (Crohn's disease and ulcerative colitis) 81	
7. Hematological Disorders	86
7.1 Iron deficiency anaemia 87 7.2 Megaloblastic anaemia 89	
8. Infectious Disorders	93
8.1 Tuberculosis 93 8.2 Pneumonia 98	

- 8.3 Urinary tract infections 101
- 8.4 Hepatitis 104
- 8.5 Gonorrhoea and Syphilis 107
- 8.6 Malaria 111
- 8.7 HIV and Opportunistic infections 115
- 8.8 Viral infections (SARS-CoV-2) 120

9. Musculoskeletal Disorders 127

- 9.1 Rheumatoid arthritis 127
- 9.2 Osteoarthritis 129

10. Dermatology 132

- 10.1 Psoriasis 132
- 10.2 Scabies 134
- 10.3 Eczema 135

11. Psychiatric Disorders 138

- 11.1 Depression 138
- 11.2 Anxiety 140
- 11.3 Psychosis 142

12. Ophthalmology 145

- 12.1 Conjunctivitis (bacterial and viral) 145
- 12.2 Glaucoma 146

13. Anti-microbial Resistance 150

14. Women's Health 154

- 14.1 Polycystic ovary syndrome 154
- 14.2 Dysmenorrhoea 155
- 14.3 Premenstrual syndrome 156

Bibliography 159

Index 161

Syllabus

Pharmacotherapeutics—Theory

Course Code: ER20–24T

Scope: This course is designed to impart basic knowledge on etiopathogenesis of common diseases and their management along with quality use of medicines.

Course Objectives: This course will discuss about

1. Etiopathogenesis of selected common diseases and evidence-based medicine therapy
2. Importance of individualized therapeutic plans based on diagnosis
3. Basic methods for assessing the clinical outcomes of drug therapy

Course Outcomes: Upon successful completion of this course, the students will be able to

1. Help assessing the subjective and objective parameters of patients in common disease conditions
2. Assist other healthcare providers to analyse drug related problems and provide therapeutic interventions
3. Participate in planning the rational medicine therapy for common diseases
4. Design and deliver discharge counselling for patients

Chapter	Topic	Hours
1	Pharmacotherapeutics—Introduction, Scope, and objectives. Rational use of medicines, Evidence based medicine, Essential medicines list, Standard treatment guidelines (STGs)	8
2	Definition, etiopathogenesis, clinical manifestations, nonpharmacological and pharmacological management of the diseases associated with (a) Cardiovascular System <ul style="list-style-type: none">• Hypertension• Angina and myocardial infarction• Hyperlipidaemia• Congestive heart failure	8
	(b) Respiratory System <ul style="list-style-type: none">• Asthma• COPD	4
	(c) Endocrine System <ul style="list-style-type: none">• Diabetes• Thyroid disorders—hypo- and hyperthyroidism	5

Chapter	Topic	Hours
	(d) Central Nervous System <ul style="list-style-type: none"> • Epilepsy • Parkinson's disease • Alzheimer's disease • Stroke • Migraine 	8
	(e) Gastrointestinal Disorders <ul style="list-style-type: none"> • Gastro-oesophageal reflux disease • Peptic ulcer disease • Alcoholic liver disease • Inflammatory bowel diseases (Crohn's disease and ulcerative colitis) 	8
	(f) Haematological Disorders <ul style="list-style-type: none"> • Iron deficiency anaemia • Megaloblastic anaemia 	4
	(g) Infectious Diseases <ul style="list-style-type: none"> • Tuberculosis • Pneumonia • Urinary tract infections • Hepatitis • Gonorrhea and syphilis • Malaria • HIV and opportunistic infections • Viral infections (SARS, CoV-2) 	12
	(h) Musculoskeletal Disorders <ul style="list-style-type: none"> • Rheumatoid arthritis • Osteoarthritis 	3
	(i) Dermatology <ul style="list-style-type: none"> • Psoriasis • Scabies • Eczema 	3
	(j) Psychiatric Disorders <ul style="list-style-type: none"> • Depression • Anxiety • Psychosis 	4
	(k) Ophthalmology <ul style="list-style-type: none"> • Conjunctivitis (bacterial and viral) • Glaucoma 	2
	(l) Anti-microbial Resistance	2
	(m) Women's Health	4
	<ul style="list-style-type: none"> • Polycystic ovary syndrome • Dysmenorrhea • Premenstrual syndrome 	