

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/368348720>

Pharmaceutics book

Book · November 2022

CITATIONS

0

READS

76,932

2 authors, including:



Tarun Virmani
MVN University

161 PUBLICATIONS 1,089 CITATIONS

SEE PROFILE

A Text Book of Pharmaceutics-I

TARUN VIRMANI

M. Pharm., Ph.D.

YOGESH VAISHNAV

M. Pharm., Ph.D.



Dr. P K Education

About the Authors

Dr. Tarun Virmani

He is working as Professor & Dean in School of Pharmaceutical Sciences, MVN University, Palwal. He has earned his Graduation and Masters in Pharmacy (Pharmaceutics) from the premier Institute, Rajiv Academy for Pharmacy, Mathura, affiliated to Uttar Pradesh Technical University, Lucknow. He has completed his Doctorate from MVN University, Palwal. His Credentials Include more than 45 papers of National and International repute, about 25 presentations of scientific papers, National conferences and seminars with 142 citations and 7 h index & 4 i 10 index as per Google scholar. He is in the Editorial board of many National and International Journals. He has Won first prize in the essay writing competition on the topic "Role of IT in Pharmaceutical Industry" organized by Indian Pharmaceutical Congress in 2001 with a cash prize of Rs. 10000/-. He is the author of 4 text books written as per the new syllabus of PCI. He is Life time member of professional bodies like Indian Pharmacy Graduate Association (IPGA), Association of Pharmaceutical Teachers in India (APTI) and Association of Pharmacy Professionals (APP). He has 16 years of experience in Research, Teaching and administration. He has supervised 4 PhD & 15 M. Pharm projects. His areas of Interest are Physical Pharmacy, Pharmaceutical Technology, Community Pharmacy and Pharmaceutics etc.

Dr. Yogesh Vaishnav

He is Professor in Faculty of Pharmaceutical Sciences, Shri Shankaracharya Technical Campus, Junwani, Bhilai, Chhattisgarh. He has completed his PhD from Chhattisgarh Swami Vivekanand Technical University, Bhilai, C.G. His area of research is drug design and synthesis of novel molecules for different biological activities. He has more than thirteen years of teaching and research experience and more than 35 research and review papers in National and International Journals. Dr Yogesh has seven Indian patent publications with two International patent grants to his credits. He is a member of CPCSEA, Govt. of India, Teachers of India (APTI) and Indian Pharmacy Graduates' Association (IPGA).



Website: www.drpkeducation.com
Email: drpkeducation@gmail.com

Download
Dr. PK Education App



A Textbook of Pharmaceutics-I

(For Theory and MCQ's)

**Bachelor of Pharmacy
(First Semester)**
(As per PCI Regulations)

Dr. Tarun Virmani
(M. Pharm., Ph.D.)

Dr. Yogesh Vaishnav
(M. Pharm. , Ph.D.)

Published by



Dr. PK Education

TPK22103

ISBN: 978-93-94919-16-7

First Edition: November, 2022

Copyright © Authors

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 publisher.

Published by: Dr. P K Education

2516/15, Gudhiyari, Raipur-492008 (India)

drpkeducation@gmail.com

Contact No.: +91-8448934562

www.drpkeducation.com

Distributed by: Dr. P K Education

2516/15, Gudhiyari, Raipur-492008 (India)

drpkeducation@gmail.com

Contact No.: +91-8448934562

GPAT Discussion Center

A-17, Rajaswa Colony, Sarkanda, Bilaspur 495001 (India)

gdcgpat037@gmail.com

Contact No.: +91-8602227444

www.gdclive.com

Printed by: Kanak Product, Raipur

Price: ₹ 220.00

Note: Every possible effort has been made to eliminate errors in this book. In spite this, few errors may have remained. Any type of error or mistake so noted, and shall be brought to our notice, shall be taken care of in the upcoming edition(s). It is notified that neither the publisher, nor the author or book seller shall be responsible for any damage or loss of action to any one of any kind, in any manner, therefrom. The reader must cross check all the facts and contents with original Government notification or publications.

Also Find us on:

www.drpkeducation.com

Google Playstore: Search "Dr. PK Education"

Facebook: <https://www.facebook.com/PKClasses100>

Instagram: <https://www.instagram.com/PKClasses100>

Preface

Pharmaceutics is the study of the quantitative aspects of drug delivery. It involves the design, development and evaluation of drugs in combination with an appropriate dosage form. A pharmaceutical scientist: characterizes physical properties of drugs, develops innovative delivery systems for drugs and quantitatively evaluate drug absorption, distribution, metabolism, excretion, and pharmacological activity in the living organisms. The main objective of this book is to provide guidelines for pharmacy students to improve their theoretical as well as practical knowledge in the area of pharmaceutics. However, many books have been published in the area of pharmaceutics in the past, but we have tried to provide the concepts in a simple manner, which includes MCQs, very short, short, long questions of each and every chapter with coverage of latest syllabus as per new guidelines of PCI. This book has been written by keeping in mind the desired paradigm shift in the latest curriculum for pharmacy students. This textbook is designed not only to qualify the semester exam but also helpful in boosting the knowledge of budding pharmacists. With the deepest gratitude we wish to thank every person who has come into our life and inspired, touched, illuminated me through their presence. We would also like to acknowledge and express our gratitude to Dr. P.K. Education for their magnificent support and contribution to our journey and bringing out quality-based book well in time. We appreciate the efforts of Dr. Puspendra Kumar whose professional follow up right from the book proposal stage and useful inputs from the publisher's perspective helped us immensely to shape the book to its present form. Last but not least, we are greatly indebted to the invisible power of lord supreme, who extend his hand to help to complete this book and will grant success to this creative venture. In the end, I welcome all suggestions from students, teachers and researchers for additional improvements in subsequent editions of the book.

Tarun Virmani

Yogesh Vaishnav

Syllabus

Unit 1:

10 Hours

Historical background and development of profession of pharmacy:

History of profession of Pharmacy in India in relation to pharmacy education, industry and organization, Pharmacy as a career, Pharmacopoeias: Introduction to IP, BP, USP and Extra Pharmacopoeia.

Dosage forms: Introduction to dosage forms, classification and definitions

Prescription: Definition, Parts of prescription, handling of Prescription and Errors in prescription.

Posology: Definition, Factors affecting posology. Pediatric dose calculations based on age, body weight and body surface area.

Unit 2:

10 Hours

Pharmaceutical calculations: Weights and measures – Imperial & Metric system,

Calculations involving percentage solutions, allegation, proof spirit and isotonic solutions based on freezing point and molecular weight.

Powders: Definition, classification, advantages and disadvantages, Simple & compound powders – official preparations, dusting powders, effervescent, efflorescent and hygroscopic powders, eutectic mixtures. Geometric dilutions.

Liquid dosage forms: Advantages and disadvantages of liquid dosage forms. Excipients used in formulation of liquid dosage forms. Solubility enhancement techniques

Unit 3:

08 Hours

Monophasic liquids: Definitions and preparations of Gargles, Mouthwashes, Throat Paint, Eardrops, Nasal drops, Enemas, Syrups, Elixirs, Liniments and Lotions.

Biphasic liquids:

Suspensions: Definition, advantages and disadvantages, classifications, Preparation of suspensions; Flocculated and Deflocculated suspension & stability problems and methods to overcome.

Emulsions: Definition, classification, emulsifying agent, test for the identification of type of Emulsion, Methods of preparation & stability problems and methods to overcome.

Unit 4:

08 Hours

Suppositories & Incompatibilities: Definition, types, advantages and disadvantages, types of bases, methods of preparations. Displacement value & its calculations, evaluation of suppositories, Definition, classification, physical, chemical and therapeutic incompatibilities with examples.

Unit: 5:

07 Hours

Semisolid dosage forms: Definitions, classification, mechanisms and factors influencing dermal penetration of drugs. Preparation of ointments, pastes, creams and gels. Excipients used in semi solid dosage forms. Evaluation of semi solid dosages forms.

Contents

Chapter 1: Historical background, development of pharmacy profession, dosage forms, prescription & posology	(1.1-1.33)
--	-------------------

1.1	History of profession of pharmacy in India in relation to pharmacy education	1.2
1.2	Pharmacy as a career	1.7
1.3	Introduction of Pharmacopoeia	1.9
1.4	Introduction of Dosage Form	1.13
1.5	Introduction of Prescription	1.22
1.6	Introduction of Posology	1.25
	Questions and MCQs	1.30

Chapter 2: Pharmaceutical Calculations, Powders, Liquid Dosage Forms	(2.1-2.25)
---	-------------------

2.1	Weights & Measures	2.2
2.2	Calculation involving percentage solutions	2.3
2.3	Proof spirit calculation	2.5
2.4	Isotonic solution	2.6
2.5	Powders	2.10
2.6	Liquid dosage form	2.16
2.7	Excipients used in the formulation of liquid dosage forms	2.17
2.8	Solubility Enhancement Techniques	2.20
	Questions and MCQs	2.23

Chapter 3: Monophasic and Biphasic Liquids	(3.1-3.21)
---	-------------------

3.1	Monophasic liquids	3.2
3.2	Biphasic liquids	3.11
3.3	Suspension	3.11
3.4	Emulsion	3.14
	Questions and MCQs	3.19-3.21

Chapter 4: Suppositories & Incompatibilities	(4.1-4.13)
---	-------------------

4.1	Introduction to suppositories	4.2
4.2	Types of suppositories	4.2
4.3	New trends in suppositories	4.2
4.4	Suppositories bases	4.2
4.5	Preparation of suppositories	4.4
4.6	Evaluation tests for suppositories	4.6
4.7	Incompatibilities	4.7
4.8	Types of incompatibilities	4.7
	Questions and MCQs	4.12

Chapter 5: Semi solid dosage forms	(5.1-5.9)
---	------------------

5.1	Introduction to semi solid dosage forms	5.2
5.2	Ointments	5.2
5.3	Pastes	5.6
5.4	Jellies	5.6
5.5	Excipients used in semi-solid dosage forms	5.7
5.6	Evaluation of semi-solid dosage forms	5.8
	Questions and MCQs	5.9

Index

CHAPTER-1

HISTORICAL BACKGROUND, DEVELOPMENT OF PHARMACY PROFESSION, DOSAGE FORMS, PRESCRIPTION & POSOLOGY

CONTENTS:

- 1.1 History of profession of pharmacy in India in relation to pharmacy education
- 1.2 Pharmacy as a career
- 1.3 Introduction of Pharmacopoeia
- 1.4 Introduction of Dosage Form
- 1.5 Introduction of Prescription
- 1.6 Introduction of Posology

1.1 HISTORICAL BACKGROUND AND DEVELOPMENT OF PHARMACY PROFESSION

Pharmacy is the profession which connects the essential area like health science, medical science associated with the chemistry of various drugs. This Nobel profession gives knowledge about the production, uses, disposal, mechanism of action and adverse effects of drugs. After Covid 19 pandemic, this profession becomes the most chosen profession worldwide.

The history of pharmacy education in India has been classified into two eras; before and after Independence.

1.1.1 Before Independence

- British traders introduced the allopathic system in India in eighteenth century and the allopathic system became famous in early 19th century.
- The foundation of pharmacy practice in India was initiated in the city of joy "Kolkata" in the year 1811 by opening a chemist shop & the founder of shop was Scotch M Bathgate.
- To manage activities related to pharmaceutical, London Pharmacopoeia was introduced in Hindi version (Devnagri) in the year 1824 in India.
- Later on, in the year 1843, London pharmacopoeia was translated into two languages Hindi and in Bengali. In between 1824 & 1843, Professor W BO Shaugh Neesy in 1841 published Bengal dispensary and Pharmacopoeia Volume-I.
- Bengal Pharmacopoeia was published in the year 1864. In the year 1866, H.W. Honey recognized as the first qualified chemist and druggist in India.
- In the year 1868, during British republic, the first pharmacopoeia of India was published.
- In the year 1874, two-year diploma course for chemist and druggist was introduced in Madras Medical College, Chennai.
- To control over the usage of narcotic products, opium act was introduced in the year 1878.
- Pharmacy education followed the rules and norms of pharmaceutical society of Great Britain.
- In 1893, the diploma course offered by Madras Medical College in chemist & Druggist was equivalent to that of diploma certificate issued by Royal Pharmaceutical Society of Great Britain.
- The publication of Indian Journal of Pharmacy from Calcutta was started on January 1894 and this was functional for a short duration of time.

19th Century:

- Acharya P.C. Ray established the Bengal Chemical and Pharmaceutical Works in the year 1901.
- At Bombay small scale pharmaceutical factory was established in the year 1903 by Professor T.K. Gujjar.
- Another set up named Alembic Chemical Works was again established by Professor T.K. Gujjar in the year 1907 at Baroda. To control and monitor over excise duties, Bengal Excise Act was established in 1909.
- In the year 1912, United Provinces presently Uttar Pradesh Prevention of Adulteration Act pass on to adulteration of foods and drugs.
- To control over the excise duties, Punjab Excise act was passed on 1914.
- Four important acts Poison act, Bengal Food Adulteration Act, Prevention of Adulteration Act (Bihar & Orissa) and Madras Prevention of Adulteration Act was passed on the year 1919.
- In the year 1920, Calcutta Chemist & Druggist Association was made later on the name has been changed into Bengal Chemists & Druggist Association in the year 1926.
- In the year 1923, Chennai Chemists & Druggist formed "Qualified Pharmacist" under the flagship of Pharmaceutical Association later on the name has been changed to Pharmaceutical Society of India in the year 1925 & continued practicing the profession of pharmacy till 1950.
- A committee was formed on 11th August 1930 by Government of India to look after the problems of Pharmacy in India and to solve those problems.
- The chairman of this committee was Late Col. R.N. Chopra.
- After formation of committee, report has been published that there was no recognized specialized profession of pharmacy in India in the year 1931.