

PRACTICAL BOOK OF PHYSICAL PHARMACEUTICS – I & II

**(Strictly As per New PCI Regulations, New Delhi)
Second year B. Pharmacy Semester-III & IV**



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Kripa Drishti Publications, Pune.

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PREFACE

It is indeed a matter of great pride that, the Pharmacy Council of India (PCI), New Delhi has done a commendable job by bringing about a model syllabus for B-Pharm Course.

We feel immense pleasure to introducing **‘Practical Book of Physical Pharmaceutics-I & II’** to the students of pharmaceutical sciences.

Physical Pharmacy is an area of pharmacy that deals with quantitative and theoretic principles of science as they apply to the practice of pharmacy. It is a great pleasure to present this book in hands of readers. Physical Pharmacy subject is included at third and fourth semesters to understand the principle and their applications in pharmacy.

It is hoped that the book will be received favourably as an effective practical book by both students and faculty of pharmacy. We have made an attempt to make this subject and concepts of experiment simpler and more understandable to the budding pharmacy student readers.

It gives immense pleasure to place before a large community of pharmacy students, my humble work on *Physical Pharmaceutics*, written in accordance with the recent syllabus prescribed for the B.Pharmacy students. My aim in writing this book is to present the fundamental principles of *Physical Pharmaceutics* for the pharmacy students on modern lines. Keeping in view the requirement of the students and the teachers, this book has been written to cover all the topics with the desired limits of the prescribed syllabus. I hope the book will be useful and meets the requirements of students and academicians.

We sincerely hope that the contents of this book will help the students of B-Pharm, M-Pharm and diploma and degree courses.

We are grateful to our colleagues at Anurag University and CMR College of Pharmacy for their support and encouragement.

We thank our parents from bottom of heart for their support and encouragement throughout the work.

Authors

Acknowledgement

Preparing this book was a collective adventure and most grateful to all authors for their cooperation and for the time and the effort they spent to write their respective contributions.

We would like to convey our sincere thanks and warm gratitude to my parents, teachers and colleagues, students for helping the authors for supporting directly and indirectly to bring this book in time.

We would like to thank all our colleagues for their valuable suggestion to write this book in a simplest way for pharmacy students in a respective prescribed syllabus.

We will be grateful to all the teachers and students who will be kind enough to point out our mistakes that have escaped our attention. Suggestions for future improvement are always welcome.

Last but not least, we would also express a special thanks to Kripa-Drishti Publications for their encouragement and publishing the book.

“Develop a passion for learning. If you do, you will never cease to grow”.

Authors

Introduction

Physical Pharmacy is the branch of pharmacy that concentrates on the application of physics and chemistry to the study of pharmacy. In other words, it is the study of the effects dosage forms have on their environment by addressing issues at the molecular level. It emphasizes on the physical characteristics and actions of the drug delivery system before the same is given to the patient. It forms the basis for design, manufacture, and distribution of drug products and serves as the foundation for the stable and proper use of medical drugs. It covers areas such as solubility, pharmacokinetics and drug delivery.

Physical pharmacy is an interdisciplinary field with characteristics of both physics and chemistry such as thermodynamics, colloidal, emulsion and rheological properties, chemical equilibrium and adsorption properties combined together for development in the field of pharmaceuticals. The use of this in the synthesis of nanomedicine promises precise developments in the field of pharmaceuticals.

It also serves as a basis for the understanding of drug absorptions, distributions, metabolism, and eliminations that happen during the course of drug treatment. Physical pharmacy serves as principles that guide the pharmaceutical developments. These principles allow pharmaceutical scientists to better predict quantitatively the solubility, stability, compatibility, manufacturability of drugs, and dissolution, absorption, distribution, metabolism, and elimination of drug products. When the physical chemical and biological properties of drug molecules (i.e., Preformulation) are understood, it is possible to design dosage forms for designated routes of administration in humans or animals (i.e., formulation). Collectively, the scientific principles applied in the Preformulation and formulation processes is termed “physical pharmacy”, and the application of this is termed “pharmaceutics”.

Physical pharmacy deals with the science that works on the following aspects which are related to the development of a drug product.

- Uniformity and precision in dosage for each dosage form.
- Results of therapeutic effects during the course of the treatment.
- Physical stability and appeal of the drug.
- Labeling of storage conditions and expiration dates.

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Dr. Vasudha Bakshi is a highly respected academician and researcher, have over 19 years of experience in teaching. She is working as a Professor and Dean of School of Pharmacy, Anurag University, Venkatapur, Ghatkesar, Hyderabad, Telangana. She published 170 research papers in various reputed national and international journals. During her teaching, she has guided more than 50 PG students. She has authored 6 books and has 3 patents. She is a life member of Association of Pharmaceutical Teachers of India (APTI), IPA.



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