Practical Manual of Experimental and Clinical Pharmacology, 2ⁿᵈ ed., Bikash Medhi, Ajay Prakash (Jaypee Brothers Medical Publishers, New Delhi) 2017. 428 pages. Price: Rs.595.ISBN 978-93-86150-72-1.

This book covers the practical aspects of experimental and clinical pharmacology and is meant for a wide range of readers. It will be of special importance and interest to post graduates and research workers in the field of Pharmacology as well as Clinical Pharmacology. The topics of the book have been chosen to suit the present post graduate pharmacology and Clinical Pharmacology curricula. It not only helps in learning to apply these principles which would be useful to score well in the practical exams but also facilitates gaining knowledge for future endeavors in the discipline. This book is also useful for faculty of Pharmacology and Clinical Pharmacology to abreast their knowledge in recent advances of practical pharmacology since the book is up to date with inclusion of newer topics in the second edition. This book will also be of use for students in allied health disciplines and researchers working in the drug discovery field.

This new updated edition is well organized and structured so as to facilitate the flow of the reading and additional effort has been taken to make the concepts easy for better understanding of the readers. The book consists of 428 pages and has 46 chapters classified into 4 main sections. Keeping in view the rapid advancements in the field of pharmacology, the authors have included various newer chapters in this edition.

The first section is on "General considerations in Experimental Pharmacology" which provides an overview to experimental pharmacology. It covers various topics like experimental animals, drug administration, blood collection, zoonotic diseases, anesthesia, euthanasia, bioassay, lab instruments, pyrogen test, cell culture, preclinical to clinical dose calculation, toxicology studies and biostatistics. The best part of this section is the description of all the techniques with suitable diagrams. It also has a chapter on protocol and thesis writing which is of tremendous benefit to postgraduate students in planning, implementing and reporting their research study. This section also has many new chapters namely transgenic animals in experimental research, alternative to animal experimentation, validation of animal models, introduction to biosafety levels I to IV and blinding and randomization in animal experimentation.

The subsequent section on "*In vitro* experimental studies" discusses about the principles and methodologies involved in isolated tissue experiments. A new chapter on GLP (Good Laboratory Practice) has been added in this section.

The next section on "*In vivo* experimental studies" elucidates in detail the principles and methodologies involved in conducting animal experiments on various systems like the central nervous system, cardiovascular system, gastrointestinal system, respiratory system and eye. This section also describes different animal experiments to test various properties of drugs like anti-inflammatory and local anaesthetic action. Further, it discusses about experimental pharmacokinetics of antiepileptic drugs like phenytoin. Also, a new chapter on estrus cycle has been added in this section. For the benefit of the students and research scholars many simple and recent experimental models have been incorporated in this section.

The last section of the text book is devoted to "clinical experiments" which explains about clinical experiments on various organ systems like the cardiovascular system, respiratory system, central nervous system, kidneys and eye. This section also includes chapters on miscellaneous practicals (evaluation of analgesic activity, anti-cholinergic activity and estimation of plasma drug levels), various laboratory assays, impact factor, computational pharmacology, promotional product literature and analytical toxicology. In this new edition, the authors have included chapters on introduction to clinical pharmacology, clinical pharmacokinetics, physiologically based pharmacokinetic (PBPK) modeling and e-learning in pharmacology. The chapter on introduction to clinical pharmacology lays special emphasis on the development of the field of clinical pharmacology, Drugs and Cosmetics Act 1940 and Rules 1945, clinical pharmacology unit and, various national and international governing bodies. The chapter on clinical pharmacokinetics provides a bird's eye view of HPLC (High performance liquid chromatography) technique to study the pharmacokinetics of drugs like aceclofenac. The chapter on e-learning in pharmacology describes briefly the various *in vitro* and *in vivo* simulation software programs in pharmacology experiments and statistical software for data analysis.

Each chapter begins with the basic principles and then moves on to the various techniques involved in experimental and clinical pharmacology. The most interesting feature of this book is the mention of the list of salient points to be remembered after reading each chapter. It helps readers in easy memorization and facilitates last minute revision. Just before the exams, students can quickly glance through the salient points to refresh their memory about the particular topic of their interest. Another important feature of this book is that it has lots of flowcharts, illustrations, tables, figures and appropriate worked out examples to improve comprehension and build concepts. For readers who still want more information on a particular topic, the authors have given an exhaustive list of suggested readings at the end of each chapter.

At the end of the book, the authors have provided appendices on abbreviations, drug and solubility, list of drugs and equipments in clinical pharmacology practical, analytical and molecular mass, log conversion table, SI unit conversion and practical exam model question papers.

Overall this book will be valuable and is a must read book especially for the postgraduate students of pharmacology and clinical pharmacology to gain an in depth understanding of the various principles and methodologies of the practical being conducted for pharmacology as well as clinical pharmacology exams.

Dr. Sandhiya Selvarajan,

Department of Clinical Pharmacology,
JIPMER,
Puducherry-605006.
Email: sandhiyaselvarajan@gmail.com

Dr. Nishanthi Anandabaskar,

Department of Pharmacology,
Sri Manakula Vinayagar Medical College and Hospital,
Puducherry-605107.
Email: nishanthi11189@gmail.com

New Imaging Technique identifies breast cancer patients who will benefit most from chemotherapy

Currently, less than half of women treated with neoadjuvant chemotherapy for invasive breast cancer — administered five to six weeks before surgery to eliminate active cancer cells — achieve a complete response. Patients who achieve a complete response have a lower risk of cancer reoccurring.

To determine whether the treatment is effective as quickly as possible, researchers at Columbia University in New York have developed a new imaging technique using red and near-infrared light to identify which breast cancer patients will respond to chemotherapy. They tested the technique on 34 patients with invasive breast cancer between June 2011 and March 2016. Images were obtained before and two weeks after starting chemotherapy.

Patients were asked to hold their breath for at least 15 seconds to help the scientists visualise blood flow in the breasts while capturing the images. The researchers then compared the images with the patients' outcomes after five months of chemotherapy.

While blood flows freely through healthy breast tissue, it gets soaked up by tumours, inhibiting blood flow in breasts with tumours, the researchers explain.

This new technology involves observing the vasculature system in breasts, assessing blood flow to identify healthy tissue and cancerous tissue via 3D images.

The images are taken in 10 minutes, compared to 30-90 minutes for magnetic resonance imaging (MRI). Plus, the images let the scientists see how a tumour is responding to chemotherapy earlier than other imaging techniques.

Other imaging technologies, such as MRI, X-ray and ultrasound, are also being studied for monitoring and treating breast cancer. However, these do not appear to be as promising as the new technique, according to the study authors.

The authors conclude that the new findings could help medical professionals make timely changes to more effective treatments and customise breast cancer treatment to individual patients while also avoiding side effects.

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