Book Reviews

Oral Drug Absorption Prediction and Assessment. Edited by Jennifer B. Dressman and Hans Lennermäs. Marcel Dekker, Inc., New York. 2000. x + 330 pp. 16 × 23.5 cm. ISBN 0-8247-0272-7. $165.00.

This book is divided into four major sections comprising sixteen chapters discussing oral drug absorption, gastrointestinal variables, membrane permeability, solubility and drug dissolution, and in vivo−in vitro correlations. The individual chapters were written by internationally known authorities in these four fields, from both academia and the pharmaceutical industry. None were authored by a member of a regulatory body.

The first section discusses the effects of both anatomy and physiology of the human gastrointestinal tract on drug absorption and the effects of a wide variety of gastrointestinal diseases on such absorption.

The second section contains a chapter dealing with the prediction of absorption based on calculated and experimentally determined molecular properties of drugs (lipophilicity, molecular size, charge, hydrogen bonding, and solubility) with particular reference to the "Rule of 5". This section also has chapters covering in vitro methods of permeability assessment, measurements of absorption using animal or human perfusion studies, and the role of such studies in the preclinical evaluation of new drug candidates.

The third section begins with a discussion of drug solubility as a limiting factor in drug absorption. Chapters on dissolution of both immediate-release and extended-release products also discuss the application of these to the prediction of in vivo performance. A chapter addresses a general discussion of dissolution testing and extrapolation of these results to in vivo studies. Another chapter discusses the analysis of data from dissolution experiments.

The final section covers convolution and deconvolution methods used for analysis and prediction of kinetic profiles of drugs, the various types of in vivo−in vitro correlations possible, case studies of several examples, and a laboratory perspective of methods used in such correlations.

Each chapter includes an extensive bibliography, and the index is quite complete. The book should prove quite useful to anyone involved with the measurement and/or prediction of drug absorption, such as physicians, clinical pharmacokinetics scientists, and others in both academia and the pharmaceutical industry.

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Seafood and Freshwater Toxins: Pharmacology, Physiology, and Detection. Edited by L. M. Botana. Marcel Dekker, New York. 2000. xii + 798 pp. 18.5 × 26 cm. ISBN 0-8247-8956-3. $225.00.

This volume presents an impressive compilation of facts regarding a diverse group of toxins, generally of bacterial or algal origin, which have concentrated in fish, shellfish, or other marine organisms. These toxins can produce severe and widespread poisoning of individuals consuming affected seafood and can have a major impact on the seafood industry.

Introductory sections describe the history and epidemiology of seafood poisoning, and this is followed by an interesting chapter on the use of conotoxins (peptide neurotoxins produced by fish-hunting snails) as tools for studies on the physiological role of calcium channels. This is complemented by the final chapter in the book which describes the application of the often highly specific pharmacologic action of marine toxins to drug discovery. The remainder of the book is divided into sections, each devoted to one of the classes of seafood toxins. These sections each comprise several chapters, devoted to origin and biosynthesis, pharmacology and mechanism of action, symptoms and treatment of poisoning, and methods for toxin determination in seafood. In some cases, structure−activity relationships of natural and synthetic analogues are presented. There is often significant duplication, since the same background material is usually presented in each chapter.

The toxins discussed in detail include relatively simple molecules such as domoic acid, a cyclic analogue of glutamic acid, which acts via stimulation of one of the classes of NMDA receptors; alkaloids such as saxitoxin and tetrodotoxin, which block sodium channels; polyether acids such as okadaic acid and related cyclic esters (pectenotoxins, which act on several molecular targets to modulate cellular metabolism); the very large and complex polyethers (yessotoxins, ciguatoxin, maitotoxin, brevetoxin, which can facilitate transport of sodium and other cations across the cell membrane); palytoxin (with multiple cyclic ethers linked by a partially unsaturated aliphatic chain), which acts on the Na^+,K^+-ATPase to increase membrane permeability; and cyclic polypeptides (microcystin, nodularin), which induce hepatotoxicity by inhibition of protein phosphatases. Other interesting toxins for which less information is known are also included, as well as some toxins for which the chemical structure has not been determined. Major incidents of poisoning are documented, including determination of the source of the toxin in the food chain, distribution of the affected seafood, and the clinical course of the intoxication. Cyclical outbreaks are described, resulting from periodic blooms of toxin-containing algae. Hypotheses for concentration of specific toxins in a particular vertebrate or mollusk are presented.

Chapters on analytical methods, used both to evaluate the correlation between molecular structure and toxicity and to check safety of suspected seafood, describe both classical bioassays as well as physical methods such as radioligand binding assays, radioimmune assays, and mass spectroscopy.

Most of the chapters are clearly written, are well-referenced, and contain an appropriate level of detail. This volume will be useful both as a source of specific information on a particular toxin and for general knowledge of the chemistry and biology of these structurally unique compounds.

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