

Book Reviews

Toxicology of Plant and Fungal Compounds. Handbook of Natural Toxins, Vol. 6. Edited by Richard F. Keeler and Anthony T. Tu. Marcel Dekker, New York and Basel, 1991, xxiii + 665 pp., ISBN 0-8247-8375-1, \$165.

This book is the sixth in the planned seven-volume *Handbook of Natural Toxins* series being edited by Dr. A. T. Tu and others. Like the other volumes in the series, it is a compendium of progress reports describing current research on selected toxins produced by one or two classes of organisms, rather than attempting the type of comprehensive coverage usually expected of a handbook. This volume is the first in the series to repeat a toxin type (Volume I bore the title *Plant and Fungal Toxins*), and the editors have probably done the scientific community a definite service by choosing to use the additional pages to highlight research that has appeared in the area since 1983, rather than focusing on more obscure toxins missing from the first volume. The book emphasizes toxins important to agriculture rather than to human medicine, but it contains enough information about plant toxins at a molecular level to make it a useful reference work for poison centers. Children eating toxic ornamental plants is a common problem, but few of the available books on toxic plants provide enough molecular detail about the toxins to allow clinical judgments. Unfortunately, the excellent coverage of plant toxins is achieved at the expense of fungal toxins. For a comprehensive update on recent developments in mycotoxin research, one will have to wait for a future volume.

The book is divided into 29 chapters in three areas: plant toxins, fungal toxins, and some additional plant toxin topics of predominantly epidemiological interest. Recent research on several plant toxins of interest to human medicine is covered, including chapters on the carcinogenic pyrrolizidine alkaloids that are found in certain herbal remedies and on the teratogenic *Solanum* alkaloids. Swainsonine and related toxins, which are glycosidase inhibitors of considerable interest to medicinal chemists as antiviral agents and inhibitors of tumor metastasis, are the subjects of several chapters. There are also chapters on the isolation and identification of phorbol esters, on ricin and related plant protein toxins and their uses as tools to study the nervous system, and on several other toxins of more interest to agriculture. The rather short section on mycotoxins contains chapters that will bring the reader up to date on trichothecene toxins, cyclic peptide hepatotoxins from cyanobacteria, and some novel toxins from poisonous mushrooms. However, several important mycotoxins that have been subjects of intense research recently, including aflatoxins, ochratoxins, and fumonisins, are not covered. The last section of the book is devoted to an assortment of topics on plant toxins, including chapters on the epidemiology of plant toxicity in humans and on cutaneous irritation caused by plant toxins.

In summary, the book provides a very useful addition to the secondary literature on toxins, and it should be included in every research library collection trying to maintain a good coverage of natural toxins.

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Advanced Methods of Pharmacokinetic and Pharmacodynamic Systems Analysis. Edited by David Z. D'Argenio. Plenum Press, New York, 1991, viii + 211 pp, ISBN 0-306-44028-8, \$69.50.

As the title suggests this book is a compilation of advanced modeling techniques for pharmacokinetic and pharmacodynamic analysis. This book is the outcome of the Workshop on Advanced Methods in Pharmacokinetic and Pharmacodynamic Systems Analysis organized by the Biomedical Simulations Resource in May 1990.

The book is divided into four sections dealing with issues in pharmacokinetics, pharmacodynamics, pharmacometrics, and pharmacotherapeutics. The first section titled "Pharmacokinetics: Physiological and Biochemical Basis," deals with topics such as the prediction of oral absorption in humans, pharmacokinetics of reversible metabolic systems, pharmacokinetics of anticancer and antiviral drugs administered by novel delivery systems, and significance of blood sampling sites in pharmacokinetic and pharmacodynamic studies. The second section, which deals with pharmacodynamic modeling issues, is titled "Pharmacodynamics: Measurements and Models"; four topics are discussed, namely, physiological alternatives to the effect compartment model, the pharmacokinetics and dynamics of corticosteroids, variability in human cardiovascular pharmacodynamics, and pharmacodynamic modeling of thiopental anesthesia. The third section, titled "Pharmacometrics: Modeling, Estimation and Control," includes behavioral and structural models for residence time distribution in pharmacokinetics, pharmacokinetic parameter estimation with stochastic dynamic models, the relationship between intra- or interindividual variability and biological covariates applied to Zidovudine pharmacokinetics, on the single-point, single-dose problem, and the design of an optimal dosage regimen by application of stochastic control theory. The fourth section, titled "Pharmacotherapeutics: Measurement, Control and Delivery," includes topics related to clinical therapeutics such as the development of a fiber-optic sensor for detection of general anesthetics and other small organic molecules, a Bayesian kinetic control for cyclosporin in renal transplantation, targeted systemic exposure for pediatric cancer therapy, and targeting the effect site with a computer-controlled infusion pump.

As can be seen from the topics listed, this book focuses mainly on mathematical approaches to solve some of the prevalent pharmacokinetic and pharmacodynamic problems, with the last section devoted to the application of some of these approaches in therapeutics. A first look at the title/book could be quite intimidating to the mathematically shy; however, it is a good didactic book because it covers a number of topics and has adequate references throughout the chapters, which could be used to gain a better understanding of these modeling approaches and their usefulness in therapeutics. Further, it is a good reference book for advanced pharmacokinetic and/or pharmacodynamic analysis.

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