

## Book Reviews

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## BOOK REVIEWS

*Physiology and Biochemistry of Sterols*. Ed. by GLENN W. PATTERSON and W. DAVID NES. American Oil Chemists' Society, Champaign, IL 61826-3489. 1992. xi + 395 pp. 15 × 22.5 cm. \$80.00. (\$60.00 for AOCS members). ISBN 0-935315-38-1.

This reference book is a compilation of 14 chapters by international authors. Each review chapter is quite complete and well documented with literature references. The tables and figures are of top quality and support the subject matter in each chapter.

The Preface gives a good background history of the sterol symposia that led up to the publication of this reference book, which is dedicated to the late Wolfgang Sucrow.

The 14 appropriately arranged chapters consist of: (1) the participation of sterol carrier protein-2 (SCP-2) in cholesterol metabolism; (2) properties and molecular cloning of plant HMG-CoA reductase; (3) 2,3-oxidosqualene cyclase and squalene epoxidase: enzymology, mechanism and inhibitors; (4) S-adenosyl-L-methionine,  $\Delta^{24}$ -sterol methyl transferase, mechanism, enzymology, inhibitors and physiological importance; (5) sterols of algae; (6) fungal sterols; (7) naturally occurring sterols and related compounds from plants; (8) sterols of crustaceans, molluscs, and fish; (9) nematode sterol biochemistry; (10) recent advances in insect steroid biochemistry; (11) the biosynthesis of oxysterols in plants and microorganisms; (12) oxysterols: synthesis and biological properties of new side chain modified sterols; (13) brassinosteroids; and (14) biochemistry of phytosterol conjugates.

This work will serve as an excellent reference for the physiology and biochemistry of sterols. However, the editors have failed to unify the chapters into one work by omitting very important subject and author indexes at the end of the book for cross referencing.

J. DAVID WARTHEN JR., *United States Department of Agriculture*

*Bioactive Compounds from Plants*. (*Ciba Foundation Symposium 154*). Edited by D.J. CHADWICK and J. MARSH. John Wiley and Sons, 605 Third Avenue, New York, NY 10158. xix + 242 pp. 15 × 22.5 cm. \$63.50. ISBN 0471-92691-4.

This book is a series of papers contributed in a Symposium on Bioactive Compounds from Plants, held in collaboration with the Chulalabhorn Research Institute at the Royal Orchid Sheraton Hotel, Bangkok, Thailand, 20–22 February 1990. The papers are presented by a series of distinguished researchers in the area of botany, pharmacognosy, and natural product chemistry. Discussion questions and answers are recorded after each paper, and general discussion sections are dispersed through the volume. This book offers some interesting reading, especially in the discussion sections, and the specific topics reviewed by the authors bring their topics up to date, e.g., N.R. Farnsworth on ethnopharmacology and drug development, M.J. Balik on the rainforests, W. Steglich on fungal metabolites, C. Mahidol on cyclohexane epoxides, J.B. Harborne on chemical defenses, J. Kui on disease resistance, etc. As summarized by A.R. Battersby, the papers represent several themes which are becoming more and more evident: the role of human folklore is a great help; organic synthesis of botanical leads is a logical step; when possible, tissue cultures offer a viable future alternative; the complexity and high chirality of bioactive secondary metabolites is a challenge; and molecular biology with gene transfer into plants offers new horizons. I recommend this book for all libraries and for all phytochemists and natural product chemists. It is a good starting point for their attention to bioactive compounds.

JERRY L. McLAUGHLIN, *Purdue University*

*Dictionary of Terpenoids, Volumes 1–3*. Edited by J.D. CONNOLLY and R.A. HILL. Chapman and Hall, 29 West 35th Street, New York, NY 10001. 1992. 2156 pp. 21 × 28 cm. \$18.00. ISBN 0-412-25770-X.

The helpful policy of preparing special editions of the established *Dictionary of Organic Compounds* continues with the publication of the *Dictionary of Terpenoids*. Only a short sample booklet was provided for re-

view, so it is difficult to judge the accuracy and completeness of the work. However, the dictionary does contain data on over 20,000 compounds, 5000 of which were not included in the parent *Dictionary of Organic Compounds*. A helpful feature is that compounds are grouped by class rather than by molecular formula or name. Thus all phyllocladanes appear in one group, all germacranolides at another, and so on. A typical entry includes the chemical structure (shown in the correct absolute stereochemistry where this is known), composition, molecular weight, and melting-point data on the parent compound and derivatives, and a bibliography. Although titles of references are not given, the major subject of the reference is summarized in one word. The work concludes with an extensive index volume, containing name, molecular formula, CAS registry number, and species indexes.

This dictionary will be an essential purchase for libraries serving natural product researchers and synthetic chemists.

DAVID G.I. KINGSTON, *Virginia Polytechnic Institute and State University*

*Medicinal Plants of India, Volumes 1 and 3*. S.K. JAIN and ROBERT A. DEFILIPPS. Reference Publications, 218 St. Clair River Drive, Box 344, Algonac, MI 48001. 1991. xi + 849 pp. 15.5 × 23 cm. \$94.95. ISBN 0-917256-39-5.

Pharmacognosists who want to use ethnobotany as a guide for selecting plants to use in phytochemical research will find this book to be very useful. S.K. Jain and Robert A. DeFilipps bring a wealth of botanical and ethnobotanical experience and expertise to the book. The 849-page two-volume set gives the Hindi, Sanskrit, and English common names, Latin names, plant family, and medicinal uses for over 1800 plant species. If a scientist needs to delve into the primary and secondary sources behind the uses reported, the references are easily identified for each plant species.

The book would be even more useful if chemical constituents, biological activities, and the preparation of the medicines were included. This additional information would both guide pharmacognosists in their research and be of value to other readers who are interested in the safety and efficacy of these herbal remedies. Because most ancient traditional medicine systems are complex health care systems, an introductory overview of the Ayurvedic and Unani approaches to disease and its treatment would help Western readers more fully understand the remedies within the context of their traditional health care systems.

Reference Publications is providing a good service with the publication of this fifth book in the "Medicinal Plants of the World" series. The medicinal and Latin name indices are extremely useful for researching specific plants or traditional medicinal uses. The common names will be useful to ethnobotanists who desire to conduct field studies in India. Considering there are approximately 15,000 species of vascular plants in India, the medicinal uses for more than one of every ten species in two compact volumes makes this book a good addition to an ethnobotanist's or pharmacognosist's library.

EDWARD M. CROOM, *The University of Mississippi*

*Toxicology of Plant and Fungal Compounds*. Ed. by R.F. KEELER and A.T. TU. Marcel Dekker, 270 Madison Ave., New York, NY 10016. 1991. xxii + 665 pp. 17.5 × 25 cm. \$165.00. ISBN 0-8247-8375-1.

This is the sixth volume in the series "Handbook of Natural Toxins," in which the closely related volume, *Plant and Fungal Toxins*, was the first member of the series back in 1983. Although this later volume has "toxicology" in its name, there does not appear to be a significantly greater emphasis on toxicology in this volume than there was in Volume I. These two volumes are related in subject matter, but there is little direct overlap of material in them.

Part I (17 chapters) deals with the nature and toxicity of plant toxins, Part II (7 chapters) with the nature and toxicity of fungal toxins, and Part III (5 chapters) with epidemiology of these naturally induced toxicoses. In Part I, an overview is presented of the metabolism of pyrrolizidine alkaloids, followed by three chapters dealing with the lupine alkaloids, four chapters on the steroidal alkaloids found in *Solanum*, and two chapters on the indolizidine alkaloid swainsonine. This alkaloid is revisited in two chapters in Part III where the antineoplastic activity and its role in "high mountain disease" in cattle are discussed. The rest of Part I is taken up by a variety of subjects including the isolation and identification of phorbol esters (an excellent account by A.D. Kinghorn of the power of modern isolation and nmr techniques), ricin toxicology, general discussions of the use of plant terpenoids as pesticides and the roles of phenol glycosides (with not a

single structure presented!) in plant-herbivore interactions, animal toxicoses caused by *Cassia* and *Lantana* plants, and finally a chapter dealing with cytochrome-P450-mediated oxidations of a furanyl ketone. The latter is an attempt by the authors to report their latest data on an arcane toxicosis in which they suggest a most unlikely process involving nucleophilic attack on both a furan (perilla ketone) and on 3-methylindole during the metabolism. There is interesting chemistry and pharmacology reviewed in Part I, but it would have been greatly improved (and shortened) with a single chapter on the lupines, a single chapter on the steroidal glycoalkaloids of *Solanum*, and a single chapter on swainsonine and related compounds.

Part II starts with a fascinating account by J. A. Edgar on the isolation and proof of structure of the phomopsins, which are antimicrotubule macrocyclic peptides derived from a fungal pathogen of *Lupinus*. The next two chapters deal with phytotoxins of general microbial origin as well as those isolated from cultures of fungal pathogens that attack weedy plants. The next chapter takes on the complex subject of fungal elicitors of plant phytoalexins, and the last three chapters in this section review cyclic hepatotoxins from cyanobacteria, human poisoning by *Cortinarius* mushrooms, and the trichothecene mycotoxins. These last three chapters have a strong emphasis on toxicology, and little if any typical natural product chemistry is presented.

In Part III, in addition to the aforementioned chapters on the chemotherapeutic prospects of swainsonine and its role in feed-caused congestive heart failure in cattle, there are two general chapters on the epidemiology of plant poisoning in humans and cutaneous responses to plant toxins. Finally, there is a curious chapter on the "ultrasonographic studies on the fetotoxic effects of poisonous plants on livestock."

Overall, this is an eclectic collection of writings that range from excellent reviews of interesting mixes of natural product chemistry, pharmacology, and toxicology to some rather obscure reports of ongoing research. The book is quite free of typographical errors, but there are few references past 1988, which I suspect is a reflection of the inability of the editors to get all the authors to submit their manuscripts in a timely fashion. As is the usual case these days, the exorbitant price of the book is likely to discourage individuals from purchasing the book, but it most certainly does belong in modern chemistry and pharmacology libraries.

BRUCE B. JARVIS, *University of Maryland*

*The Alkaloids Volume 41*. Edited by A. BROSSI and G. A. CORDELL. Academic Press, 1250 Sixth Avenue, San Diego, CA 92101. 1992. ix + 252 pp. 15.5 × 23 cm. \$85.00. ISBN 0-12-469541-8.

The latest volume in this series, which began in 1950, has a new co-editor, the well-known Geoffrey A. Cordell. The present volume contains four chapters. Two of these, dealing with *Colchicum* and *Veratrum* alkaloids, follow the traditional pattern: they discuss recent developments of a group of structurally and/or phylogenetically related alkaloids. The *Colchicum* chapter, by the senior editor of the series co-authored by a coworker, O. Boyé, succeeds admirably in a critical up-dating of the pertinent literature, chemical and pharmacological. It is an excellent model, which future contributors might well adopt.

The second traditional chapter, by J. V. Greenhill and P. Grayshan, discusses the cevane group of *Veratrum* alkaloids. The bulk of the chapter consists of comprehensive sets of tables for each subgroup of compounds. Melting points and optical rotations are listed. The rest of the chapter, preceding the tables, presents some chemical transformations useful for structure elucidation, which are, however, no longer widely practiced. This group of alkaloids was last reviewed in 1973, and only one representative compound, verticine, has been synthesized in the laboratory (in 1977), no doubt an indication of the current level of interest in this class of alkaloids. Many of the references cite Russian and Chinese literature sources, which should be valuable for those who work in this field.

Chapter 1 of the volume is co-authored by two Thai scientists, B. Tantisewie and S. Ruchirawat. It consists of a listing of alkaloids that have been isolated from the Thai flora. Structural formulas and pertinent uses as traditional Thai foods or medicines are provided, except for the isoquinoline and indole alkaloids. One wonders why these are omitted. Biogeographical treatments like this are useful to the scientist who looks for possible sources of a particular alkaloid from another part of the world.

The largest chapter (84 pp.), by Kobayashi and his coworker Ishibashi on marine alkaloids, is a welcome up-dating of this active area of research, the first since Christophersen's initial review of this topic in Vol. 24. Faulkner's regular compilations of the literature in *Nat. Prod. Rep.* are organized phylogenetically and are thus of greatest value to scientists who work in marine natural products. This treatment, which is organized chemically by alkaloid type, is of great value to the organic chemical community at large. The chapter might have been enhanced if it had not been merely a condensation of the literature à la *Nat. Prod. Rep.* Citing the isolation of isodomoic acids (pp. 61–62), for instance, would be far more interesting if the

authors had mentioned the recent domoic-acid-caused fatalities and the fascinating use of the closely related kainic acid as a tool in neurophysiology. It is a pity that in a book published in 1992 the 1990 literature was barely touched (only 34 of 408 citations).

By and large, the book is well produced. I noticed relatively few typos. A greater effort by the publisher to print structural formulas and pertinent text on the same or opposite pages, rather than overleaf, would be appreciated by the reader.

Alkaloids continue to be a fascinating segment of organic chemistry, and its devotees no doubt have awaited eagerly this, the 41st volume of *The Alkaloids*.

PAUL J. SCHEUER, *University of Hawaii*

## ERRATUM

For the paper by Reichardt *et al.* entitled "Phenolic Glycosides from *Salix lasiandra*," *J. Nat. Prod.*, **55**, 970 (1992), the printer left out a portion of the text on page 972 after line 42, first column as follows:

three orders of magnitude below those reported here for **1**–**3**, although her survey included a few cases in which phenolic glycoside concentrations approximated those of *S. lasiandra*. Third, the  $^{13}\text{C}$ -nmr analyses require modification of a proposal made by Domisse *et al.* (7) about interpretation of  $^{13}\text{C}$ -nmr spectra of acylated glucosides. Based upon data from a variety of phenolic glucosides, they proposed that esterification of the C-2' hydroxyl of a glucoside results in a downfield shift of the signal for C-2' by

about 3 ppm (to roughly 78 ppm). Our analyses of the  $^{13}\text{C}$ -nmr spectra of **2** and **4** unambiguously show that the signal at about 78 ppm results from C-5'. Either the assignments of Domisse *et al.* (7) were incorrect or the magnitude of shift increments is dependent upon the structure of the esterifying carboxylic acid. In any case, the small shifts experienced by all glucopyranosyl carbons upon acylation of the 2'-hydroxyl are probably not generally useful for structure elucidation.