

## BOOK REVIEWS

*Structural Activity Relationship Analysis of Anticancer Chinese Drugs and Related Plants*. ERIC J. LIEN and WEN Y. LI. Oriental Healing Arts Institute, Long Beach, CA 90815, 1985. 150 pp., 15×22.5 cm., \$10.95 (paperback).

This monograph comprises 150 pages and cites 236 references in the bibliography. There are nine chapters and a summary chapter. Chapter 1 presents a brief introduction of screening methodology and structure-activity relationship analyses. Chapter 2 considers five skeletal types of sesquiterpenes. Chapter 3 considers diterpenes, such as the quassinoids, triptolide derivatives, *Isodon* derived compounds, and the daphnane derivatives. Chapter 4 covers triterpenes, e.g. cardenolides and cucurbitacins. Chapters 5, 6, and 7 cover quinones, podophyllotoxins, and pyrrolizidine types. Miscellaneous Chapter 9 covers the maytansinoids and indirubin.

Typical coverage in each chapter consists of the names of compounds having cytotoxic and/or antitumor activity, the botanical source(s) often with the name in Chinese characters, a table listing the relevant active members of the group under discussion with the type of biological activity, a brief statement or two on the important structural features required for biological activity, brief comments on synthetic methods for modifying the molecules, and, in some instances, a statement or two on the mechanism of action.

Several points should be relative to this booklet. First, the title is misleading, or at best, uninformative. One would expect that information on plants from China (both the Republic of China and the People's Republic of China) would be the main theme of the book, and that data from Chinese authors would predominate. This is not the case. Few of the 236 publications cited represent the work of Chinese authors, and this was disappointing in view of the fact that a voluminous bibliography by Chinese authors exists. In fact, some of the plants and their derived constituents discussed in the book do not exist in China, e.g. *Jacaranda caucana* Pittier (jacaranone) is not a Chinese plant.

The organization of the main chapters of the book seems illogical. For example, the quassinoids are degraded triterpenes, and they are discussed in the chapter on diterpenoids. Taxol is considered in a separate chapter, yet it is a diterpene. Cardenolides are steroids and are included in the chapter on triterpenes. A large number of diterpene quinones (taxodione, taxodone, barbatusin, etc.) are discussed in the chapter on quinones, but they probably would better be discussed in the chapter on diterpenes. This detracts from an understanding of structure-activity relationships.

Many of the Latin names of plants are erroneously spelled, which often can lead to confusion. A rather large table is presented in which the title "Chinese Drugs and Related Plants Used to Treat Cancer" is misleading, at best. Few of the plants and/or substances found in the table are "used to treat cancer."

Table 1 in the monograph summarizes data from the National Cancer Institute (NCI) (USA) as to the number of species of plants and animals that have been screened for antitumor/cytotoxicity through 1980. They cite 3,394 species of plants, which is much lower than recent review articles from NCI claim.

This monograph can only be recommended for the scientist who may desire a brief overview of antitumor plant principles. It is surely incomplete as the subject pertains to Chinese plants.

NORMAN R. FARNSWORTH, *University of Illinois at Chicago*

*Economic and Medicinal Plant Research, Volume 1*. H. WAGNER, HIROSHI HIKINO, and NORMAN R. FARNSWORTH. Academic Press, Inc., Orlando, Florida 32887, 1985, xi+295 pp., 22.5×15 cm., \$69.50 (cloth), \$39.95 (paper).

This book represents volume 1 of a projected series of volumes with the aim of identifying areas of research in natural plant products that are of immediate or projected importance from a practical viewpoint. Volume 1 consists of six chapters written by three different groups of scientists from the Institute für Pharmazeutische Biologie der Universität of München; Pharmaceutical Institute, Tohoku University; and the Program of Collaborative Research in the Pharmaceutical Sciences, University of Illinois at Chicago. The six chapters include a discussion of the current status of stevioside; recent research on oriental medicinal plants; gossypol: its pharmacology and current status as a male contraceptive; immunostimulatory drugs of fungi and higher plants; Siberian ginseng: its chemistry and current status as an adaptogen; pharmacology of *Panax*. Each chapter includes an outline of the subject material, a discussion of the subject, conclusions and summary, and a complete bibliography.

In general, the book is well written, is relatively free of errors, and has a good subject index. The chapters on stevioside, gossypol, and Siberian ginseng are particularly well-written and very comprehensive, combining all aspects of chemistry and biological activity. The chapters on immunostimulatory drugs and *Panax* also provide valuable information. The chapter on recent research on oriental medicinal plants was the least informative. The success of any volume of this type always depends upon the individual contributors. In general, this volume succeeds in identifying and reviewing some important areas of natural product research that should be of wide general interest.

I would recommend this book be purchased as a reference book by all natural product chemists although both the cloth and paperback forms of the book seem somewhat overpriced.

CHARLES D. HUFFORD, *University of Mississippi*

*Herbs, Spices, and Medicinal Plants: Recent Advances in Botany, Horticulture, and Pharmacology, Volume 1.* Edited by LYLE E. CRAKER and JAMES E. SIMON. Oryx Press, 2214 North Central at Encanto, Phoenix, AZ 85004, 1986, v+359 pp., 23×15 cm., \$55.

This is the inaugural effort of what is intended to be a new annual review series devoted to recent advances in the botany, horticulture, and pharmacology of herbs, spices, and medicinal plants. The concept is laudable. Such a series could be a useful complement to more readily available phytochemical information. However, one must remember that one volume does not a series make. The editors are undertaking an appreciable challenge and are to be encouraged.

The initial volume consists of nine articles entitled: "An Introduction to the Scientific Literature on Herbs, Spices, and Medicinal Plants," "Chemotaxonomic Aspects of Essential Oils," "Botanical Nomenclature of Culinary Herbs and Potherbs," "Biochemistry of Monoterpenes and Sesquiterpenes of the Essential Oils," "The Biochemical Pharmacology of Plant Alkaloids," "Polyphenolic Compounds with Biological and Pharmacological Activity," "Production Ecology of Secondary Plant Products," "The Chemistry, Pharmacology, and Commercial Formulations of Chamomile," and "Medicinal Plants of Israel: An Ethnobotanical Survey." The articles range from "overview" themes to a specific focus on chamomile. They have unequal substantive merit, a situation that is encountered with some frequency in emerging publications of this type; one challenge facing the editors is to refine the topic-selection process and to work with the authors to insure articles with more uniform depth.

Most readers will probably find the articles on the biochemistry of mono- and sesquiterpenes, the biochemical pharmacology of alkaloids, and the current status of chamomile to be of greatest interest. The discussions of terpene biochemistry and alkaloid pharmacology provide useful overviews and perspectives; the former has significant potential in chemotaxonomy and perhaps eventually utility in commercial production of volatile oils, and the latter is fundamental to an understanding of the effective utilization of many medicinal plants.

Two additional articles deserve specific mention for purposes of this review. The report of the ethnobotanical survey is outside the perceived scope of this new series, and the article on the production ecology of secondary plant products is both a valuable educational resource and an inherent frustration. It provides a concise orientation to the many variables that may influence the accumulation of secondary plant products, but the inability (given the descriptive, empirical knowledge currently available) to identify and apply general approaches for production purposes is a universal frustration.

If this initial volume grows into a mature series, it will be a welcome addition to library holdings dealing with natural products.

LYNN R. BRADY, *University of Washington*

*Mémoires du Muséum National d'Histoire Naturelle. Nouvelle Série. Des Apocynacées-Tabernaemontanoïdées Américaines.* LUCILLE ALLORGE. Editions du Muséum, 38, rue Geoffroy-Saint-Hilaire, Ve, Paris, 1985, 216 pp., 22×27.5 cm., 280 F.

Members of the subfamily Tabernaemontanoïdées of the Apocynaceae are well known to plant natural product chemists because of the large number of indole alkaloids that they contain. The various tribes, subtribes, and genera of this subfamily pose interesting taxonomic problems and have not been recently and adequately studied. This monograph is a valuable and highly significant contribution to our understanding of the American species of this group. The taxonomic treatment appears sound. The accompanying drawings (including virtually all of the commonly encountered taxa) will be of great assistance to those who wish to study this group of apocynaceous plants.

The chemotaxonomic aspects of the work, however, are not as strong. Several recent, important references are omitted (such as that of Kisakürek, Leeuwenberg, and Hesse, in "Alkaloids: Chemical and Biological Perspectives", Vol. 1, 1983). Further, the author fails to integrate the chemical data into the taxonomic treatment, and it remains as a veneer on an otherwise excellent work.

This volume will be of value to any who study the chemistry and biology of the Apocynaceae. It should greatly facilitate identification of plants of this group as well as provide a greater understanding of relationships among the members of the subfamily. Although the text is in French, it is clearly written, well organized, and relatively easy to read.

DAVID SEIGLER, *University of Illinois*

*Plant Drug Analysis*. H. WAGNER, S. BLADT, and E.M. ZGAINSKI. Springer-Verlag New York, Inc., 175 5th Ave., New York, NY 10010, 1984, xiii+320 pp., 25×17 cm., \$58.

This book is a translation by A. Scott of the original German edition "Drogenanalyse," which was published in 1983. The authors compiled the book in an effort to permanently record thin-layer chromatographic results, which are utilized to a great extent in natural product research.

The book begins with an introduction to the use of thin-layer chromatography in analysis of drugs and drug preparations from plant sources. The greatest portion of the book is divided into various natural product classifications: Essential Oils, Gums, and Resins; Alkaloids; Drugs Containing Anthracene Derivatives; Arbutin Drugs; Bitter Principles; Coumarins; Flavonoids; Cardiac Glycosides; Saponins; Drugs Containing Pungent Principles; Mustard Oil Drugs and Allium; Narcotic Drugs; Drugs Containing Valpotriates; Drugs Containing Pigments; and Drugs with Miscellaneous Constituents. Each section contains a discussion of the compounds in that category, the preparation of the plant extract for thin-layer chromatography, the preparation of reference solutions, and the adsorbents and solvents which should be utilized in the chromatographic process. Detection methods are described for each class of compounds, followed by a listing of plant sources for each category and the various concentrations of the major constituents. Molecular formulae are also indicated for several compounds in each natural product class. The permanent recording of thin-layer chromatographic results is accomplished via color photographs of actual thin-layer plates which are good references for the chromatographer. Each photograph is accompanied by a full explanation of the plant source, active constituents, conditions, and detection methods, as well as any alternate conditions or detection methods which may be utilized.

The authors also discuss the procedure involved in the thin-layer chromatographic screening of an unknown commercial drug and thin-layer analysis of herbal drug mixtures. The same procedures are followed in this section of the book as in the previous section. The book contains an appendix which supplies the formulae for the spray reagents referred to throughout the book, a section of abbreviations and definitions, and a reference list containing sixteen reference books.

While not highly theoretical, this book is an excellent source of practical information for all scientists dealing in the thin-layer chromatography of natural products. The photographs are excellent, and the methods, reagents, and conditions are described in a clear manner. It contains an extensive index of natural medicinal agents as well as the plant sources for those substances. It is reasonably priced and would be a welcome addition to the library of individuals involved in the thin-layer chromatographic analysis of medicinal agents from plant sources and their metabolites.

JOY B. REIGHARD, *Temple University*

*Introduction to Drug Metabolism*. G. GORDON GIBSON and PAUL SKETT. Chapman and Hall, 29 West 35th Street, New York, NY 10001, 1985, v+293 pp., 23×15 cm., \$60 cloth, \$25 paper.

This book provides a current introductory text on drug metabolism for undergraduate and graduate students pursuing studies in the life sciences. Although drug metabolism may be considered to include absorption, distribution, biotransformation, and excretion of compounds, this book concentrates primarily on the area of biotransformation. The authors have written an extremely useful introductory text describing the biochemical and biological principles involved in drug metabolism. Throughout the text there are excellent discussions on how drug metabolism may interact or interfere with normal metabolic processes. The examples used to explain basic principles are representative and well documented. By necessity the book can provide only a superficial discussion of many of the biological principles involved in drug bio-

transformation, but to compensate for this a list of books, symposia, reviews, and original articles are included at the end of each chapter. Unfortunately, these sources are not referenced in the text.

The chapters discussing the biological principles are excellent; however, those chapters dealing with the chemical aspect of drug metabolism are very incomplete. There is provided very little chemical rationale whereby a student could understand or predict the metabolism of a compound not specifically discussed. From my view as a medicinal chemist, the beginning student in the life sciences needs to realize that very basic organic chemistry is crucial in understanding and predicting how a compound will be metabolized. This book does not provide this link. Structures are used infrequently throughout the text and, when used, are often not very informative. For example, although there are numerous references to glucuronides, a complete structure of a glucuronide conjugate is not included. Based on prior experience with both undergraduate and graduate students in disciplines outside of organic chemistry, I would be hesitant to assume that they could correctly draw the right structure. Indeed, a major journal in the area of drug metabolism devoted three pages just to describing the correct way to draw a glucuronide conjugate [K.H. Dudley, *Drug Metab. Disp.* **13**, 524 (1985)].

Overall, for an individual looking for an introductory text on drug metabolism with primary emphasis on biological and biochemical mechanisms this would be an excellent text, especially for the price.

WILLIAM H. SOINE, *Virginia Commonwealth University*

*Medicinal Chemistry Research in India.* HARIKISHAN SINGH, A.S. CHAWLA, and V.K. KAPOOR. National Information Center for Drugs and Pharmaceuticals, Central Drug Research Institute, Lucknow 226001, India, 1985, 184 pp., 24×16 cm., \$35.

This monograph offers a comprehensive review of medicinal chemistry research in India since its independence, 1947 to 1985. Organized efforts to develop innovative drug research in India appear to be limited to three government laboratories located in Hyderabad, Jammu, and Lucknow, two private sector research centers (Hindustan Ciba-Geigy and Hoechst Pharmaceutical Limited, both in Bombay), one public sector center (Indian Drugs & Pharmaceutical Limited, Hyderabad), and a handful of universities and medical schools. It is estimated that India currently spends about 13 million dollars per year on research and development of new drugs. In spite of this limited amount of funds channeled to drug research, Indian scientists have discovered six new drugs currently in clinical use (e.g., hypnotic, methaqualone; antidepressant, nitroxazepine; antiinflammatory, enfeamic acid; and antithyroid, dentimizon), three are awaiting registration (local anesthetic, centbucridine; nasal decongestant, tinazoline; and anthelmintic, amoscanate), and at least a dozen more are at different stages of clinical testing (e.g., neuroleptics, nonaperone maleate and centbutidole; antidepressant, centpropazine; antihypertensives, centaquin and trequisin; post-coital contraceptive, centchroman; and neuromuscular blocker, chandonium).

The authors have followed the familiar Annual Reviews-type format consisting of an introductory chapter and 19 chapters devoted to chemotherapeutic agents (anthelmintic, antiprotozoals, antifungals, antibacterials, antivirals, and antineoplastics), chemodynamic agents (psychotropic, other CNS acting, antiinflammatory, local anesthetic, neuromuscular and ganglion blocking, antihistaminics, cardiovascular, diuretic, hypoglycemic, antifertility, and miscellaneous agents like bronchodilators, antiasthmatics, adrenoceptor agonists, anticholinesterases, antispasmodics, and antithyroids), prostaglandins, peptides, and quantitative structure-activity relationship studies. The usefulness of the compilation is greatly enhanced by the accompanying comprehensive subject and author indices.

This book should be of particular interest to natural product researchers since there is a major emphasis in all chapters on following new leads from natural product-derived, biologically active compounds. In this regard, a more appropriate title for the monograph would have been "Natural Product and Medicinal Chemistry Research in India." Among the natural products that are currently undergoing clinical research include the antifungal antibiotic hamycin, the cardiotoxic glycoside peruvoside, the oxytocic alkaloid vasicine, the antiinflammatory curcumin, the antihypertensive colenol (forskolin), and the hypolipidemic gugglipid. Indeed, it is gratifying to note such documented success in the development of new drugs based on natural product research.

The fact that the majority of literature reviewed in the book comes from Indian research journals which may not be readily available in most Western libraries makes this book a must for all those interested in natural product and medicinal chemistry research and teaching.

GOVIND J. KAPADIA, *Howard University*  
G. SUBBA RAO, *Loyola University*

*Allenes in Organic Synthesis*. HERBERT F. SCHUSTER and GARY M. COPPOLA. John Wiley and Sons, 605 Third Avenue, New York, NY 10158, 1984, xvi + 358 pp., 17 × 24 cm., \$47.50.

Although the allene (1,2-diene) organic functional group has been recognized for over a century, it was regarded largely as a structural curiosity until recently. In this book, H. F. Schuster and G. M. Coppola set out to illustrate the recent advances in the synthesis and reactions of allenes for application to organic synthesis. In ten chapters, citing 1,200 references through early 1983, the authors' statement that "the strange and curious have become the familiar and useful" is justified in a clear and comprehensive manner.

The ten chapter headings and lengths are: (1) Allenes: An Introduction, 8 pp; (2) Alkyl, Aryl, and Cyclic Allenes, 48 pp; (3) Additions to Allene Hydrocarbons, 32 pp; (4) Allenes Containing Unsaturated Substituents, 43 pp; (5) Hydroxy and Oxo-Substituted Allenes, 47 pp; (6) Allenic Acids and Their Derivatives, 33 pp; (7) Hetero-Substituted Allenes, 56 pp; (8) Haloallenes, 18 pp; (9) Cycloaddition Reactions of Allenes, 45 pp; (10) Miscellaneous Reactions of Allenes, 14 pp. Additional useful features are a glossary of abbreviations, a subject index, and a listing of appropriate review articles at the end of each chapter. There is no author index.

Following a very brief discussion of the history, structure and spectra, optical properties, and chirality of allenes in the first chapter, the authors focus thereafter on the preparation and chemistry of functionalized allenes. A diverse and stimulating array of reactions is presented, including numerous applications to natural product synthesis. Conditions, yields, and stereoselectivities are generally included in the appropriately numerous equations and schemes. Electrophilic additions, pericyclic reorganizations, and chirality transfer processes are recurring important themes.

Overall, the print quality of the text is excellent and the graphics work is adequate. The breadth of coverage is impressive, and the depth of coverage is appropriate. This book should be included in most institutional library collections and many personal research libraries of organic synthetic chemists.

STEVEN D. BURKE, *University of South Carolina*

*The Alkaloids, Volume XXV*. Edited by A. BROSI. Academic Press, Inc., Orlando, FL 32887, 1985, v + 369 pp., 15.5 × 23.5 cm., \$72.50.

This volume has grown out of a single chapter which was prepared for inclusion in the series by Drs. Matthew Suffness and Geoffrey A. Cordell. The chapter, and hence the subtitle for the volume, is "Antitumor Alkaloids." I believe the title should have read "Antitumor Alkaloids except for *Catharanthus* Bisindoles," since it is vinblastine, vincristine, and their analogs that come to the minds of most readers when antitumor alkaloids are mentioned. The matter of title, however, is very small compared with the merit and interest of this volume. Anyone interested in the current state of naturally occurring and naturally related antitumor compounds should read this book. The major non-*Catharanthus* alkaloid areas, that is the *Taxus* alkaloids, pyrrolizidine alkaloids, colchicine, camptothecine, ellipticine, maytansinoids, and the bisisoquinoline alkaloids are all covered extensively, with other antitumor alkaloid groups and individual compounds not being neglected. The coverage represents a nice blend of isolation work, structure determination, important spectroscopic data, total and partial synthesis, analog preparation, and biological and medicinal evaluation. The writing is concise and clear, permitting the inclusion of a great amount of information in 350 pages.

This book was published in 1985. The main section of 280 pages includes literature citations up to 1983. An addendum of 75 pages reviews (with 290 references) work between 1983 and early 1985. This degree of timeliness in a hard-cover book which has been attractively type set and well produced is extremely creditable considering the lesser standards displayed by many monographs. All workers in the alkaloid field and all natural product chemists will wish to have access to this excellent book which is a worthy companion to its 24 predecessors in the "Manske" series.

P. W. LEQUESNE, *Northeastern University*