Journal of Natural Products
Vol. 58, No. 7, pp. 1147-1150, July 1995

BOOK REVIEWS*

Cultivation and Processing of Medicinal Plants. Edited by L. HORNOK. John Wiley and Sons, Ltd., Baffins Lane, Chichester, West Sussex PO19 1UD, UK. 1992. xi+338 pp. 16.3×23.7 cm. $106.95. ISBN 0-471-92383-4.

This is a revised version of the Hungarian edition translated by K. Raffalszky and published as a co-edition with the Akadémiai Kiadó, Budapest. No date for the original publication is given.

There are eleven Hungarian authors, all of whom were students or colleagues of Dr. József Kerekes. Dr. Kerekes is considered one of the outstanding authorities on medicinal plant cultivation and research in Hungary, and the intent of the authors "was to publish the most recent advances in the cultivation and processing of medicinal plants on the basis founded by Dr. József Kerekes." This they have accomplished, with careful and even editing by Dr. Hornok, but it should be noted that the intent was to consider largely those medicinal plants grown in Hungary. This is an important consideration, for it clearly places limits on the contents—it is not a worldwide compendium of the cultivation and processing of medicinal plants as the title implies by omission.

The contents are divided into three parts: the first is a general overview, of which the sections entitled "Active Substances of Medicinal Plants" and "Primary Processing of Medicinal Plants" are particularly good summaries, the second and largest part includes the cultivation of medicinal plants (in Hungary), and the third provides some information on the procurement of medicinal plants not cultivated in Hungary. The latter part is the smallest and is incomplete. Nevertheless, what is provided about plants in the various parts of the book is both valuable and comprehensive. For example, six pages (about average) are devoted to dill (*Anethum graveolens*), from which the reader will learn of the historical use of dill, current areas of cultivation, characteristics (with a plant illustration), and cultivation with tables detailing yields and essential oil content, and text describing nutrition supply, soil preparation, sowing, care, and harvesting. Representing years of practical work and research experience, such data are difficult to find in a single publication for the fifty-nine crop species detailed.

For those interested in growing particular medicinal (and culinary) plants as crops, this is an important publication from knowledgeable horticulturists and botanists of central Europe.

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Quimica de la Flora de Chile. ORLANDO MUNOZ. Departamento Tecnico de Investigacion, Universidad de Chile, Diagonal Paraguay 265, Santiago, Chile. 1992. 351 pp. 15.5×21.5 cm. $40.00. ISBN 956-19-0174-9.

This book contains a collection of seventeen chapters on the chemistry of vascular plant families of Chile written by leading natural product chemists of the country, plus one concluding chapter, assessing the state of the art and offering thoughts for the direction of future research. Although all chapters are in Spanish, an English abstract is provided at the beginning of each one, save the last. The book does not have an index or indices listing chemical compounds or scientific names of the plants covered.

The names of the contributors are listed at the start of the book, followed, in their order, by acknowledgments, a list of abbreviations, a "General Index" (actually a Table of Contents), a Preface, the eighteen chapters (comprising the bulk of the text), a "Plant Index" (actually an alphabetical list of families by taxonomic groups, without fully alphabetized genera and species within each family, and without page numbers), and an Erratum. Each chapter usually starts with an introduction and ends with a bibliography. Many pages are dedicated to the families Compositae (Asteraceae), Solanaceae, and Scrophulariaceae, whereas only *Berberis* and *Maytenus* of the Berberidaceae and Celastraceae, respectively, are dealt with. As stated in the Preface, the emphasis is on endemic flora. One family each of the gymnosperms (Podocarpaceae) and of the pteridophytes (Lycopodiaceae) is included. Chapter 15 is of special interest; here, 519 extracts of the Compositae are reported to have been evaluated for their anticancer activity, and 276 for their antibacterial activity.

Although the intent of the book, namely, to summarize the research results in plant natural product chemistry in Chile over the past 50 years, is commendable, the book is marred by poor editing, and perhaps, by lack of peer review. The book is replete with errors, of a technical, stylistic, and typographical nature.

*Unsigned book reviews are by the Book Review Editor.

For example, there are numerous errors in plant names used in the book (from family down to species); no attempt was made to standardize family spelling between Latin and Spanish names or to consistently italicize Latin binomials; nor was any attempt made by the authors to provide the author citation for each Latin binomial. There are also errors in drawings of chemical structures and the careless omission of the identifying numbers of chemical structures; such omissions leave a reader lost in attempting to digest the papers; there are also omissions of tables (Chapters 3, 7, among others) and references (for example, references 31 and 28 are missing in Chapter 7), as well as figure labels. Although the book has a one-page erratum (mostly of chemical structures and names), many more errors exist in the text than mentioned in this erratum. As a result, the book is not a good source for information on structures. Finally, the lack of a true index for plant scientific names and for compound names is a serious omission. The authors should consider correcting these problems in a future edition.

It is difficult to recommend purchase of a book with so many deficiencies. Perhaps, as a source book, carefully utilized, it would make useful addition to a libraries housing texts in product chemistry, agronomy, botany, or biochemistry.

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Food Phytochemicals for Cancer Prevention I. Fruits and Vegetables. Edited by M.-T. HUANG, T. OSAWA, C.-T. HO, and R.T. ROSEN (ACS Symposium Series 546). *Food Phytochemicals for Cancer Prevention II. Teas, Spices, and Herbs.* Edited by C.-T. HO, T. OSAWA, M.-T. HUANG, and R.T. ROSEN (ACS Symposium Series 547). American Chemical Society, 1155 Sixteenth Street, NW, Washington, DC 20036. 1994. xii+427 pp. (Vol. I) xii+370 pp. (Vol. II) 15×22.5 cm. $99.95 (Vol. I) $89.95 (Vol. II). ISBN 0-8412-2768-3 (Vol. I) 0-8412-2769-1 (Vol. II).

These two volumes were developed from a symposium sponsored by the ACS Division of Agricultural and Food Chemistry in August 1992. They include a number of papers that will be of interest to natural products researchers, and serve to indicate the wide variety of secondary metabolites that have been implicated in cancer chemoprevention. Examples of natural products that act or appear to act as chemopreventive agents include simple allylic sulfides, isothiocyanates, simple indoles such as indole-3-acetonitrile, simple monoterpenoids such as D-carvone, various limonoids and flavonoids, and glucosinolates.

Medicinal Plants—Metabolite Production in vitro, 1973–1993. Edited by D.J. COUSINS. CAB International, Wallingford, Oxon, England (distributed in the USA by The University of Arizona Press, 1230 N. Park Avenue, Suite 102, Tucson, AZ 85719). 1994. 190 pp. 21×29.5 cm. $72.00 (paper). ISBN 0-85198-955-1.

This volume, like those of the subsequent review, consists of a selection of abstracts from the Centre for Agriculture and Biosciences International database. These abstracts cover the use of plant tissue culture to produce secondary metabolites, a field of increasing significance to natural products researchers. The abstracts are classified into sections: General Aspects of Metabolite Production, Manipulation of the Culture Medium, Response of Cultures to Environmental Factors, Effects of Culture Storage, Source Plant Material, Growth Studies, Biochemistry, Precursor Feeding and Biotransformation, Selection of Cell Lines and Genetic Stability, Genetic Transformation, Cell or Enzyme Immobilization, Large Scale Production, Uptake, Transport, and Compartmentation, Product Analysis, and Use of Adsorbents, Product Release and Extraction. Two indices are provided, an Author Index and a Plant Species Index. No index of metabolites is provided.

The database is available both in printed form, as indicated above, and in a floppy disk format (not reviewed).

Medicinal, Essential Oil, Culinary Herb and Pesticidal Plants of the Labiatae, Parts 1 and 2. Edited by D.J. COUSINS. CAB International, Wallingford, Oxon, England (distributed in the USA by The University of Arizona Press, 1230 N. Park Avenue, Suite 102, Tucson, AZ 85719). 1994. 354 pp. 21×29.5 cm. $136.00 (paper). ISBN 0-85198-954-3.

These two volumes are first in a series of volumes of abstracts prepared by the Centre for Agriculture and Biosciences International from their database of literature on medicinal and aromatic plant research. As the title implies, these volumes cover the Labiatae family from 1973–1993. The abstracts are listed by genus, and abstracts for genera with extensive records are further classified into sections such as Economics, Taxonomy, Morphology and Anatomy, Physiology and Biochemistry, Cultivars, Propagation, Ecology and Environmental Effects, Essential Oils, Antimicrobial Properties, Medicinal Properties, and Toxicology. Other than the indexing inherent in this arrangement, the only index is an Author Index. The abstracts vary

in length, but are comparable in length and coverage to those found in *Chemical Abstracts* except that no structures are given.

The database is available both in printed form, as indicated above, and in a floppy disk format (not reviewed).

Supramolecular Chemistry: an Introduction. F. VÖGTLE. John Wiley and Sons, Inc., 605 Third Avenue, New York, NY 10158. 1991. viii+337 pp. 15×22.5 cm. $150.00. ISBN 0-471-92802-X.

This volume provides an overview of supramolecular chemistry, and is based on a series of lectures the author gave a Bonn University in Germany. Although much of the work discussed is beyond the normal interests of the readers of this journal, the siderophores (discussed in Chapter 2) are natural products, and the whole field of supramolecular chemistry owes its origin in part to the existence of natural supramolecular aggregates such as membranes and micelles.

The chapter titles are as follows: 1, Supramolecular, Bioorganic and Bioinorganic Chemistry; 2, Host-Guest Chemistry with Cations and Anions; 3, Bioinorganic Model Compounds; 4, Bioorganic Model Compounds; 5, Clathrate Inclusion Compounds; 6, Directed Crystal Formation with Tailored Additives; 7, Photoresponsive Host-guest Systems: Organic Switches Based on Azobenzene; 8, Liquid Crystals; 9, Surfactants, Micelles, Vesicles: Preorganization of Interface-active Compounds; 10, Organic Semiconductors, Conductors and Superconductors; 11, Molecular Wires, Molecular Rectifiers and Molecular Transitors; 12, Light-induced Cleavage of Water; 13, Final Remarks.

Herbal Drugs and Phytopharmaceuticals. A Handbook for Practice on a Scientific Basis. Edited by MAX WICHTL, English edition translated and edited by NORMAN GRANGER BISSET. CRC Press, Inc., 2000 Corporate Boulevard N.W., Boca Raton, FL 33431. 1994. xvi+568 pp. 24.5×27.5 cm. $179.95. ISBN 0-8493-7192-9.

The bulk of this very impressive volume (pp. 43–539) provides monographs on 181 plant drugs which are currently used in Germany as phytomedicinals, and, as such, may be prescribed there in the form of medicinal teas by physicians as part of accepted drug therapy. This book, known in Germany as *Teedrogen*, aims to give pharmacists and physicians a better understanding of the sources, constituents, and quality control of selected herbal drugs, and provides for each drug information on the preparation of a medicinal tea, and summarizes the efficacy, side effects, and regulatory status. *Teedrogen* first appeared in 1984, and this second edition from 1988, edited by Max Wichtl with seven collaborators (Franz-Christian Czygan, Dietrich Frohne, Christoph Höltzel, Astrid Nagell, Hans J. Pfänder, Günter Willuhn, and Wolfram Buff), was translated into English and further edited by the late Norman Bisset, a well-known British pharmacognosist from King's College, University of London. In light of the untimely death of Professor Bisset, there is also a short Foreword by David Phillipson. Prior to the actual monographs (pp. 11–33), there is a general introduction subtitled "Fundamentals of Herbal Drugs and Herbal Teas," which informs the reader of, among other things, the rationale for preparing herbal teas for medicinal purposes, some clinical indications for this type of therapy, directions for making such teas, and information on storage, importing, licensing, and herbal tea contamination problems. On pp. 40–41 there is a brief section of the role of the German Commission E for Human Medicine, Section on Phytotherapy, in structuring official monographs on phytopharmaceuticals, although this could well have been expanded in scope for the benefit of the intended readership of this edition who do not reside in Germany. The actual monographs are arranged alphabetically, and there is comprehensive Subject Index which cross-lists the plant names used and includes the plant constituents mentioned in the book.

A typical monograph in the volume provides a morphological description of the drug, and details of the plant of origin and its geographical source and botanical synonym(s), the chemical constituents, indications for the use of the herbal preparation, specific details on making a tea from the drug, and information on authentification (primarily using microscopy and thin-layer chromatography), and on pharmacopoeial standards (where available), and on possible adulteration. Most of the monographs are also provided with extracts from the relevant German Commission E monograph as well as the actual package insert wording from the German Standard License, and all have an updated bibliographic section. Each monograph is liberally illustrated, with photographs of the crude drug, the cultivated plant of origin, and diagnostic microscopic features and frequently tlc plate developments, along with structural drawings of selected constituents, which seem to be accurate and also show details of stereochemistry. So far as the choice of plant drugs included in this volume is concerned, it is perhaps surprising that there is no monograph on either garlic or ginkgo, since these are two of the more prominent phytopharmaceuticals used in Germany and other European countries. In contrast, it is a little disconcerting to see monographs included in the book describing the preparation of pyrrolizidine alkaloid-containing herbal teas from "Senecionis herba" (*Senecio*

nemorensis ssp. *fuchsii*) (pp. 460–462) and "Symphyti radix" (*Symphytum officinale*) (pp. 483–485), even though rather pointed warnings to possible toxicity are given in both of these monographs.

Herbal Drugs and Phytopharmaceuticals. A Handbook for Practice on a Scientific Basis is meticulously produced, topical, and is no doubt destined to become an extremely valuable reference text in English-speaking countries. Since some of the plant drugs described this volume are sold in health food stores in the United States (but for which no drug claims can be made), and also a very few are included in the most recent United States Pharmacopoeia, then a wide readership may be expected among both health care professionals and even the informed lay public. Certainly the book should serve to increase scientific interest in European phytopharmaceuticals in North America, and may suggest research possibilities to those readers of the *Journal of Natural Products* who are intrigued by this European therapeutic initiative.

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Structure Elucidation by NMR in Organic Chemistry. A Practical Guide. EBERHARD BREITMAIER. John Wiley and Sons, Ltd., Baffins Lane, Chichester, West Sussex PO19 1UD, UK. 1993. xii+265 pp. 18.5×24.5 cm. $38.95. ISBN 0-471-93381-3 (paperback).

This practical guide, which is the English translation of the German version first published in 1989, illustrates the application of contemporary nmr methods in the structure elucidation of organic compounds. The book starts with a short introduction to the basic principles and methods of nmr spectroscopy. This is followed by an excellent chapter on "Recognition of Structural Fragments by Nmr" covering an introduction to the tactics and strategies of structure elucidation by one- and two-dimensional nmr spectroscopy. The topics covered in this chapter include functional group identification, recognition of skeletal structure (or atomic connectivities) with the aid of coupling constants, H-H COSY, C-C INADEQUATE, C-H COSY, and C-H COLOC methods, determination of relative configuration and conformation by the use of H-H, C-H, and N-H coupling constants, ^{13}C-nmr chemical shifts, nOe difference spectra and H-H NOESY, and the determination of absolute configuration (*ee* determination) by chiral shift reagents. Two subsections on intra- and intermolecular interactions and molecular dynamics are also included in this chapter. The third chapter contains fifty problems which are arranged in order of increasing complexity. I was delighted to see eleven problems on structure elucidation of natural products by one- and two-dimensional ^{1}H- and ^{13}C-nmr spectroscopy. The majority of the natural products problems are accompanied by references that may be investigated further in the primary literature, if one desires, as examples of real-life challenges in structure elucidation. The solutions to all the problems are provided in Chapter 4. I found this to be the most educational part of the book, as the approach taken to solving problems appears to be logical and concise.

The technical quality of the book is as good as its content. Structures are clearly drawn and the spectra are reproduced with high quality. This volume will be of great value to those engaged in the interpretation of nmr spectra, be they professor or student, and its reasonable price ensures that many will be able to own a personal copy.

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