Book Reviews

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BOOK REVIEWS

Natural Products: A Laboratory Guide. Second Edition. RAPHAEL IKAN. Academic Press, 6277 Sea Harbor Drive, Orlando, FL 32887. 1991. xiv+360 pp. 15×23 cm. $54.95. ISBN 0-12-370551-7.

This is a masterly and insightful text on modern laboratory techniques that impact on natural product research. It is intended to provide senior undergraduate and beginning graduate students with information on techniques used in natural product isolation, characterization, and synthesis that pertain not only to organic chemistry, but also to geochemistry, materials science, food science, and other life sciences. This second edition has appeared about 25 years after the highly respected first edition, and, as such, has been expanded and updated to include many modern laboratory techniques.

The natural products included in the four chapters of this book are arranged in a biogenetic manner. Thus, the first chapter, on "Acetogenins" (pp. 1–69), deals in turn with flavonoids, lipids, lignans, and quinones, while the next chapter, entitled "Carbohydrates" (pp. 70–104), is classified into mono- and oligosaccharides and polysaccharides. The third chapter, "Isoprenoids" (pp. 105–225) has individual sections on carotenoids, steroids, and terpenoids (primarily mono- and triterpenoids). The final chapter, "Nitrogenous Compounds" (pp. 226–347) is subdivided into sections on alkaloids, amino acids, nucleic acids, porphyrins, proteins, pteridines, and pyrazines. The subject material is presented in a very balanced manner, and a wide variety of source material (e.g., baker's yeast, beer, crude petroleum, crustacean shells, human blood, insects, and plants) is utilized in the various laboratory experiments described. In fact, the author deserves a great deal of credit for the ingenious and resourceful way in which the scientific experiments are based on easy-to-obtain items. This may be further exemplified by the use of the juice, peel, and volatile oil of oranges for experiments on hesperidin, carotenoid pigments, and limonene, respectively. Standard spectroscopic data is provided throughout the book for the natural product isolates and synthetic derivatives mentioned. All of the common chromatographic methods (e.g., flash, gas-liquid, high-performance liquid, ion-exchange, thin-layer) are included at least once in the book, and other experimental techniques encountered are the preparation of urea inclusion complexes of fatty acids, the determination of monoterpene enantiomeric composition by nmr using chiral lanthanide shift reagents, and a method of monoterpenoid photoprotonation with a photochemical reactor. In addition to Subject and Chemical Compound Indexes, the book has a Bibliography section, with lists of recommended books on common chromatographic and spectroscopic techniques, although some of these are of rather ancient vintage and might now be difficult to obtain.

Each experiment contained in this new edition of *Natural Products: A Laboratory Guide* is organized into the following sections: Introduction; Principle; Apparatus; Materials; Time (for the completion of the work described); Procedure; References; Reviews. In this manner, the book is ideal for teachers of natural product chemistry and related disciplines who wish to plan student laboratory experiments. The volume is illustrated with hundreds of chemical structures intended to assist in the understanding of the principles involved in each laboratory topic. This reviewer was impressed with Professor Ikan's explanations of the origin of trivial names of plant secondary metabolites, and was also pleased to note the inclusion of references documenting original compound isolation dates, thereby providing the student with some historical perspective.

This book reflects a lifetime of experience in natural products teaching and research by the author. Although not all parts of the book will be equal of interest to all readers, because of its broad coverage, this volume will appeal to the student and professor alike as a foundation textbook on natural product laboratory methods. There is a sufficient amount of theory to act as supplementary material to lecture notes, and the price is reasonable. Accordingly, this second edition of *Natural Products: A Laboratory Guide* is one of the few books these days that can be confidently recommended for individual purchase to a wide range of prospective readers.

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Major Medicinal Plants of India. R.S. THAKUR, H.S. PURI, and AKHTAR HUSAIN. Central Institute of Medicinal and Aromatic Plants, P.O. Bag No. 1, RSM Nagar, Lucknow 226016, India. 1989. x+585 pp. 15.5×23 cm. $150.00

Major Medicinal Plants of India is an important, highly useful, and recommended compendium of data on the chemical constituents, biological activity, and folk and traditional medicinal uses of approximately 145 species. The plants are arranged alphabetically by genus and species (not by family), and each plant is accompanied by a list of literature references (preponderantly on chemical composition), as well as a good line drawing and often an additional color photograph.

While I concur that "one of the significant points of the present volume is a listing of uses of plants in the two main traditional systems, viz., Ayurveda and Unani, which is not found in other books" (authors' Preface), this point is really only technically met and is demonstrated only by the indication of local names of such folk preparations in which the plant is an ingredient. Surprisingly, perhaps, there is no discussion whatsoever of the characteristics which make the Ayurveda and Unani systems of medicine unique, or even relevant to India. The Ayurveda (early traditional Indian) and Unani (of Greek origin) systems are by no means common knowledge outside of India. However, we realize of course that compounds and formulations in both Ayurveda and Unani continue to be under serious scrutiny, and attempts at standardization are made due to the continued wide popularity of the two systems. The book ends with an "Index of Chemical Constituents," but lacks an index to species names; the latter would have been useful if for no other reason than to find synonyms, which are indeed supplied where appropriate in the text.

Among the interesting plants discussed in *Major Medicinal Plants of India* are the cholesterol reducer (hypolipidemic) *Commiphora wightii* (Burseraceae) whose properties are referenced in 19 articles; *Sophora japonica* Fabaceae) with rutin as an antihemorrhagic agent (12 articles); 46 references to the chemistry of vetiver grass (*Vetiveria zizanioides*, Poaceae); the South American quinine plant (*Cinchona* spp., Rubiaceae); *Centella asiatica* (Apiaceae) providing a drug to improve the mental activity of mentally retarded children, with 28 references to the plant's chemistry; and even the common but very useful celery (*Apium graveolens*, Apiaceae), which is accorded 20 pertinent chemical references.

One may thank the authors for bringing *Berberis insignis* to our attention. This member of the barberry family (Berberidaceae) has been omitted throughout the lineage of the previous major compendia, presumably because it is not actually or literally employed by the people in folk medicine. Its constituent umbellatine is more effective than berberine against *Leishmania tropica*. The specific inhibiting action of umbellatine, being more intensive than berberine (though of similar action) has been known since 1944 and successfully treats the form of leishmaniasis known as "Oriental sore." Thus we may be pleased that this Eastern Himalayan endemic is treated by the authors of *Major Medicinal Plants of India*, for tropical deforestation has been causing the migration of forest-inhabiting sandfly vectors of leishmaniasis into areas of human habitation in the neotropics and perhaps elsewhere, and this plant may be a new source of hope warranting detailed investigation.

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ERRATUM

For the paper by Martinez-Vazquez *et al.* entitled "Methylated Flavones from *Conoclidium greggii*," *J. Nat. Prod.*, **56**, 1410 (1993), the title plant should be *Conoclinium greggii*.