

Atta-ur-Rahman and Choudhary describe toxic nitrogenous natural products derived from marine plants and microorganisms that are not restricted to alkaloids in a chapter that is complementary to the review of toxic alkaloids from marine invertebrates in the companion volume (see above). Their review provides toxicological information on guanidine alkaloids, indole alkaloids, pyrrole alkaloids, and numerous miscellaneous alkaloids including cyanocycline A, PB-1, majusculamide C, malyngamide F, prorocentrolide, heptatotoxin, fellutamide A, homothamnin A, and cylindrospemopsin.

Evolutionary developments have propelled arthropods into a position of ascendancy with 80% of all animals being members of the phylum. Terrestrial arthropods are dominated by insects but also include invertebrates such as harvestmen, centipedes, millipedes, and spiders. The defensive secretions of arthropods generally are fortified with alkaloids. Blum describes compound classes such as pyrrolidines, pyrrolines, and pyrroles; piperidines, piperideines, and pyridines; indolizidines; pyrrolizidines; coccinellines; exochomines; adaline; quinazolinones; pyrazines; tetraoponerines; indoles; quinolines; and pederin. Fourteen different classes of alkaloids have been identified as arthropod natural products, many of them possessing very unique structures.

Antkowiak provides a comprehensive survey of alkaloidal mushroom toxins that is illustrated by nearly 400 literature citations. The most toxic mushrooms, Death Cap (*Amanita phalloides*) and Destroying Angel (*Amanita virosa*), cause tragic poisonings yearly in the western United States. Mushroom toxicity may be derived from toxins other than the constituents of the organism itself; e.g., following the Chernobyl nuclear accident in 1986, increased levels of ^{137}Cs and ^{134}Cs contents were observed in mushrooms from the vicinity. Under the heading of hepato- and nephrotoxins are discussed phalloides syndrome (acute liver failure), orellanus syndrome (acute renal failure), and *Gyromitra* syndrome. Intoxications caused by mushroom neurotoxins include muscarine syndrome and pantherine syndrome. Intoxications evoking inebriations or hallucinations are psilocybin syndrome, bufotenine and its congeners, psychoactive effects of *Gymnopilus spectabilis*, and acromelalga syndrome. Intoxications affecting the hematologic system are *Coprinus* syndrome and mushroom toxins causing hemolysis such as phallolysin and constituents of *Paxillus involutus*. Intoxications evoking gastrointestinal syndrome are also documented.

Jacyno's chapter on diterpenoid alkaloids, of which more than 400 are known, points out that a major reason for current interest in their pharmacology and toxicology is derived from their potential use as novel pharmacological agents and molecular pharmacological probes. This chapter provides an update of a 1983 review by Benn and the author. A summary of pharmacological data is provided for 40 compounds from *Delphinium* and *Aconitum*. Human poisoning, cardiovascular toxicity, and ocular toxicity are discussed.

Higa and Tanaka's chapter details the toxicological properties of cytotoxic nitrogen-containing compounds from marine organisms inhabiting the 50 islands comprising Okinawa. Forty-eight algal species have been screened; the bioactive compounds isolated from these

organisms include indoles, manzamines (carbolines), oxazoles and thiazoles, polyketide amides, and pyridine alkaloids.

The claim by the Editor that "this volume illuminates a wide diversity of alkaloids as remarkable natural products from both a structural and pharmacological standpoint" is borne out in each of the six chapters. The book is highlighted by the extensive and comprehensive chapters on *Toxic Alkaloids Pertinent to Cancer Chemotherapy* and *The Chemistry and Toxicology of Mushroom Alkaloids*, each of which serves as a major reference source in their subject area. Furthermore, the other four chapters are solid contributions on more specialized topics. Although the lack of either a subject or an organism index is a serious deficiency, *The Chemistry and Toxicology of Diverse Classes of Alkaloids* and its companion volume *The Toxic Action of Marine and Terrestrial Alkaloids* both may be recommended for purchase by chemists, toxicologists, pharmacologists, and neurophysiologists and by organizations whose clients are interested in the chemical and pharmacological properties of alkaloids.

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African Ethnobotany: Poisons and Drugs: Chemistry, Pharmacology, Toxicology. By H. D. Neuwinger (St. Leon-Rot, Germany). Chapman & Hall, Weinheim, Germany. 1996. xviii + 941 pp. 19 × 27 cm. \$248.00. ISBN 0-532-42154-5.

The use of plants in the preparation of arrow poisons remains one of the least understood aspects of indigenous plant use in Africa. The author correctly remarked in the opening paragraph of this important book that: "seldom has there been as much fantasy, speculation and even nonsense written about a single subject as African arrow poisons." The author laments the fact that only very little factual information exists on the subject. This book is therefore an important and welcome contribution to the ethnobotany of African plants used in the preparation of arrow poisons.

It is an immensely valuable book, which adds much to understanding the chemistry, pharmacology, and toxicology of more than 240 poisonous plants. It gives a detailed account of the use of subject plants in various parts of the continent. The plants are arranged alphabetically according to families, and within each family the genera and the species are also arranged alphabetically. The names of the species have been carefully checked to avoid listing synonyms as separate species. The vernacular names are included for each species, with the languages grouped according to the countries where they are used. Chemical structures are provided for the major constituents listed. The bibliography is quite extensive and would be valuable to graduate students and scientists looking for a good overview of the subject. The book has a few obvious flaws; for example, many plants included in the collection are not in fact hunting poisons but fillers, carriers, and masking

agents. Although most of the plants used as hunting poisons are also used in African ethnomedicine, however, most traditional African remedies are in fact food plants and not poisonous. The map of Africa included with each entry does not depict distribution of the plant species but to the countries where the plants are used for hunting. This could be misleading since it is conventional to associate such maps with distribution.

This book is well researched and will be an excellent reference book for pharmacists, chemists, toxicologists, ethnopharmacologists, and anybody interested in the constituents and activity of medicinal plants. For those working specifically on the ethnobotany, phytochemistry, or pharmacology of African medicinal plants, this is undoubtedly one of the most important volumes to have on their shelf.

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Comparative Ethnobotanical Studies of the Amerindian Groups in Coastal Ecuador. Edited by Anders S. Barfod (Aarhus University, Denmark) and Lars Peter Kvist (Royal Veterinary and Agricultural Highschool, Denmark). The Royal Danish Academy of Sciences and Letters, Copenhagen, Denmark. 1996. 166 pp. 21 × 25.5 cm. DKK 300.00. ISBN 87-7304-278-1.

This book represents a very comprehensive contribution to the knowledge of the ethnobotanical use of plants by three groups of indigenous people in Coastal Ecuador. The botanical rigor of this publication is excellent. All collections are documented with voucher herbarium specimen numbers so that any specialist in the future may consult the data and verify the determinations as listed. The illustrations are well produced and give the reader a sense of the peoples with whom the authors worked. There is an index to scientific names and to vernacular names. These indexes make this book a highly useful tool for future researchers who are seeking to work with the flora and knowledge of these cultures as it relates to plants for various uses, whether they be agricultural, ornamental, medicinal, or otherwise.

The results section describes the contents of 80 tables listing plant uses. Categories include timber, construction materials, social products, food, and notably nearly 40 different tables on medicinal uses. The different medicinal use tables are divided into a variety of subcategories. There is an interesting discussion of the curing ceremonies and the cultural context of healing by shamans. In the extensive section on medicinal uses of plants, the authors have replicated what can be referred to as "old style ethnobotanical research." The medicinal plant section lacks any real medical analysis. It also reflects a fairly significant cultural bias on the part of the authors regarding the potential origin and use of medicinal plants and their potential to yield biodynamic constituents. The specific cultural bias to which the authors have succumbed is an overinterpretation of the "doctrine of signatures." The cultural bias

is matched by a lack of medical scientific rigor regarding the signs and symptoms of the diseases or illnesses being treated. An ethnobotanist and physician research team would have dramatically enhanced the accuracy and utility of their medicinal plant data. In some sections there is reference to a common fungal infection that, if photographs were taken of that fungal infection and showed to a tropical physician, could easily be identified to species and help further understand what exactly is being treated by these people. This lack of medical assessment or analysis is fairly consistent throughout the entire sections on medicinal plants. There is virtually no discussion of potential efficacy of any of the treatments as observed by the scientist or reported by the healers, so no qualitative differentiation of any sort is made.

Indigenous disease medical systems and disease descriptions are often distinct from the western paradigm, but there are often underlying physiological conditions that can be recognized as cross-culturally relevant by western trained physicians working with healers and shamans. It is in part a disservice to the medical systems of these cultures to not employ a specialist to work with their specialist when looking at medicinal plants.

One other feature of this publication that requires more attention is the intellectual property rights of indigenous peoples and the Convention on Biological Diversity. The authors do make a statement that "all intellectual rights to the information presented in this paper remain with the indigenous communities in Ecuador". This is critical. Considering the intense debate and discussion on this topic, it would be appropriate to refer to the specific statements of indigenous organizations such as COICA about their views on intellectual property rights. There is no indication that there was a prior form of consent or discussion among the various groups about ultimate publication of this document including the medicinal plant information that is contained therein. Clearly this will be a critical feature of subsequent future publications that involve indigenous knowledge.

The authors are clearly highly skilled botanists and general field researchers. The shortcomings mentioned should not overshadow the significance of this well-documented publication. It does highlight the need for interdisciplinary research, particularly when it comes to looking at the highly complex issue of culture, medical systems, and medicinal plant utilization.

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Ethnobotany—Principles and Applications. By C. M. Cotton. Roehampton Institute, London. John Wiley & Sons, Inc., New York, NY. 1996. ix + 424 pp. 15 × 22.5 cm. \$49.95. ISBN 0-471-95537-X.

Designed for the undergraduate student in ethnobotany, this book will prove useful to anthropologists