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## Book reviews

### Natural Products in the New Millennium: Prospects and Industrial Application

Proceedings of the Phytochemical Society of Europe, Vol. 47. Edited by A.P. Rauter, F.B. Palma, J. Justino, M.E. Araújo and S.P. dos Santos. Kluwer Academic Publishers, Dordrecht, 2002, 505 pp., ISBN 1-402-01047-8, € 150.

This book brings together 50 paper contributions and is part of the successful proceedings of the Phytochemical Society of Europe being volume 47 in that series. The text is broken down into 6 very broad chapters ranging from the characterisation of terrestrial natural products, bioactive metabolites, industrial applications, plant cell biotechnology, synthesis of natural products and finally a section on marine metabolites. This wideness of scope is attractive from the perspective of a general introduction and review of natural product science.

The text commences with an overview of the chemistry, occurrence and significance of pyrrolizidine alkaloids by Mroczek and Glowinski and there is some nice phytochemical analysis employing HPLC-mass spectrometry and gas-chromatography technology in the papers by Czinner et al. and Santos et al. on phenolic compounds from *Helichrysum flos* and essential oil analysis of *Crithmum maritimum* populations, respectively.

In the chapter on bioactive natural products, there is a bias to antimicrobial activity with simple aldehyde alkenes, phenylpropanoids, triterpene saponins, monoterpenes and diterpenes being described and these really highlight the potential of plants as a relatively untapped source of antibiotic drug-leads. There is also a paper dealing with the inhibitory effects of bacteria on the growth of filamentous fungi and yeasts, in particular, *Bacillus subtilis* and *Candida albicans*. These effects are reported as not being solely due to antibiotic production by the bacteria. Two further papers in this section detail research on molluscicidal and trypanocidal activity which is a pharmaceutically underexploited area.

The industrial applications section covers the potential of anticancer, immunomodulatory and antioxidant

metabolites. Notably, work on the modification of flavonolignans from *Silybum marianum*, to enhance their activity as modulators of multidrug-resistance (MDR), is described by Maitrejean et al.

There are only three papers in the plant cell biotechnology section one of which addresses new strategies to produce high-value metabolites from shoot cultures.

The chapter on synthesis starts with an excellent approach by Cavaleiro et al., by starting with a natural product and transforming it to increase access to chemical diversity. This is highlighted with some good examples of dehydroabietic acid and monoterpene derivatisation, and this approach would be applicable to many natural product classes. There is also an interesting short paper by Rodilla et al., covering the use of lipase enzyme to selectively de-esterify a labdane diterpene. This approach is gentle and preferable to more severe conditions which may cause rearrangement of the starting product and may employ ecologically 'unfriendly' reagents.

The final section on marine products, begins with a review on the potential of Mediterranean organisms as a source of new drugs with examples drawn from the antimalarial, antibiotic, cytotoxic and anti-inflammatory areas. The structure elucidation of some brominated diterpenes from a red alga (*Laurencia obtusa*) is very thoroughly detailed by Mihopoulos et al., with some excellent NMR data on these compounds.

I am sure that this text will appeal to groups engaged in phytochemical and pharmacognosy research, although the price is high for the main audience, which I believe will be research students and postdoctoral fellows looking for a broad introduction to the natural product literature. I recommend that this very good compilation be an institutional library purchase.

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### Plant Resources of South-East Asia 12(3) Medicinal and Poisonous Plants 3

R.H.M.J. Lemmens, N. Bunyapraphatsara (Eds.); Backhuys Publishers, Leiden, 2003, 664 pages, ISBN 90-5782-125-7, €150

This is the third issue and final installment of the series of handbooks covering medicinal and poisonous plants from the South-East Asia countries. Volumes 12(1–3) are the result of a cooperative international program of the Prosea Foundation to document infor-

mation on the plant resources of the region. The complete Prosea handbook series includes 20 volumes divided by commodity groups such as Edible Fruits and Nuts (No. 2), Vegetables (No. 8), Cereals (No. 10), the Medicinal and Poisonous Plants [No. 12(1–3)] etc. Plants covered in the most recent volume 12(3) are considered to be the least important in the sense that less is known or reported about the plants, their medicinal properties and their phytochemistry. However, it may be from these plants that new biological activities or phytochemical agents are to be identified. Over 500 different species are discussed, bringing the total to 1290 species in the complete three-volume set.

A brief six-page introduction outlines conservation aspects of medicinal plants and discusses the need for conservation, germplasm collections, cultivation and breeding and the wise use of medicinal plants. The main body of the text follows the previous two volumes and is a compilation of the selected plant genera/species in alphabetical order. For each genera there is the listing of the origin and geographic distribution, uses, properties, botany, ecology, management, genetic resources, prospects and literature; followed by the selected species providing scientific names, known vernacular names, plant distribution, general observations and literature references. Each entry is an attempt to compile both local knowledge and published scientific research in an encyclopedic format. Generally, much less is known about the plants discussed in this volume and the entries are brief compared to those of volumes 12(1–2). The last

section of the book includes a listing of other medicinal and poisonous plants from the region that have not been included in volumes 12(1–3), but may be found in one of the other Prosea series under their primary commodity group and a complete listing of the literature, glossary of terms, sources of illustrations, indices of compounds, pharmaceutical terms, scientific names and vernacular names and general cross index of species, genera and families for all three issues of volume 12 is included at the back of the book.

As with the previous two issues, the book will find its usefulness has a handbook, providing information for researchers, educators, health professionals, extension and commercial users. I congratulate the Prosea Foundation for the completion of the work. The three-book set should be highly valuable and I would liken it to my copy of Kingsbury's "*Poisonous Plants of the United States and Canada*" for those in the South-East Asia region.

Backhuys Publishing distributes the blue cover hard-bound book and paperback versions will become available in two years from the publishers or for those in developing countries it can be obtained at a reduced price directly from the Prosea Foundation (PROSEA Network Office, PO Box 3322, Bogor 16122, Indonesia).

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## Nutraceuticals

Lisa Rapport, Brian Lockwood; Pharmaceutical Press, London, 2002, 184 pages, ISBN 0 85369 503 2, £29.95 (\$49.95)

This relatively short book (163 pages) aims to evaluate the literature on a selected number of nutraceuticals. The authors have directed it primarily to pharmacists and medical practitioners, with the hope that the general public will also find it of interest. Many of the chapters originated in the *Pharmaceutical Journal*, and so may be already familiar to the reader.

There are 10 chapters in the book, with eight covering a range of nutraceuticals. Chapter 1 is a very readable and interesting general introduction that sets the scene of nutraceuticals (also called phytochemicals), including a discussion on whether such compounds are foods or medicines and the regulatory implications of any health claims made by manufacturers. It also discusses the need for trials to verify claims that such compounds can prevent or treat diseases. The following eight chapters describe individual nutraceuticals, with frequent refer-

ence to the literature, typically up to 2001. The eight nutraceuticals reviewed are glucosamine, octacosanol, proanthocyanidins and grape products, lycopene, carnitine, flaxseed and flaxseed oil, melatonin, and finally ornithine alphaketoglutarate. The authors have deliberately avoided vitamins, minerals or amino acids as they believe these to have been well documented elsewhere.

Typically, each of these eight chapters included the chemical structure of the nutraceutical, a brief description of its chemical properties, possible mode of action and bioavailability. These chapters are written in a style that does make easy reading. Inevitably, the authors have to conclude that many of the health claims made for these compounds are not fully founded in scientific terms, and frequently conclude that more trials are essential. I looked with particular interest at the chapter on lycopene. It does, in fact, include comments on  $\beta$ -carotene and other carotenoids and the possible benefits to the treatment of CVD and macular degeneration. The title of the chapter should have reflected this point. However, the text (with 36 references) covers most of the issues.