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Book reviews

Flavonoids in Cell Function

Editors: B.S. Buslig and J.A. Manthey, 2002 Kluwer Academic/Plenum Publishers, New York, ISBN 0-306-47254-6, $115.00/£81.50

A volume entitled *Flavonoids in Cell Function* is inevitably going to have all those interested in the field of flavonoids and phenolic compounds jumping for scientific joy. Flavonoid chemistry, biochemistry, pharmaceutical and biological researchers have been awaiting a review from the cellular side; cell biologists and physiologists anticipated pointers through the complexities of the flavonoid families. Thus this volume is welcome.

However, reviewing in January 2003 the proceedings of a meeting held in March 2000 was initially a little disappointing, although many contributors have updated their presentations prior to publication in 2002 such that, out of a total of approximately 600 references, approximately 40 are dated as recently as 2000 and 2001. Most importantly, the editors preface that *the book is not intended to be a comprehensive treatise on flavonoid research, only a sampling of recent results*: with chapters ranging from plant-microbe communication, to the effects of these components in animal cells and systems, and the medicinal and therapeutic implications.

At the disease end of the spectrum, the potential for flavonoids as useful dietary chemopreventive agents is given strong support by Dashwood et al.'s chapter on the *Inhibition of aberrant crypt formation by the dietary flavonoids (+)-catechin and hesperidin*. In addition Folts'exposition of the potential cadioprotective benefits of purple grape flavonoids in inhibiting atherosclerosis through a variety of potential mechanisms, including improvement of endothelial function, inhibition of platelet aggregation and reducing properties, includes an elegant background to the mechanism by which cells in the vessel wall contribute to the disease process, as well as very convincing results involving 15 patients.

The final chapter of the book is perhaps the major feature that is implied by the title, namely, *Flavonoids and gene expression in mammalian cells* by Kuo. Although brief, this is a very nice and very well-referenced survey of the way flavonoids appear to regulate gene expression through interactions with potein transcription factors.

Two impressive methodological chapters, from the laboratories of Barnes et al. and Berhow, focus on isoflavones applying the state-of-the art analytical tools of LC-mass spectrometry. Other chapters add to the breadth of the field presented, but unfortunately a 2 year delay from conference to publication in this fast moving field can lead to a shortfall in the value of some of the submissions. For example, the application of oligomeric substances to cell models provide some valuable insights, but are of limited value without taking into account the reality of the structural modifications and resulting changes in biological properties which these flavonoid molecules would undergo in vivo (post-gastrointestinal tract) prior to encountering the cells under discussion.

Bearing in mind the above-mentioned limitations, this is a useful little monograph especially for those entering the field or those within the field who are interested in translating their research to cellular studies.

Catherine Rice-Evans
Wolfson Centre for Age-Related Disease
Guy's King's and St Thomas's School of
Biomedical Sciences, King's College
University of London, London SE1 9RT, UK
E-mail address: catherine.rice-evans@kcl.ac.uk

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Poisonous Plants of South Africa

B. van Wyk, F. van Heerden and B. van Oudtshoorn. Briza, Pretoria, South Africa, 2002. 288 pp. ISBN 1-875093-30-3. US $ 45.00.

The introduction to this book describes plant poisons in general, both human and animal, gives advice on first aid, and gives an account of the chemical isolation of toxins, and of the several classes of poisonous plant products and their effect on the living system. This is followed by descriptions of 94 native or naturalised plants, and of 41 exotics, likely to be found in cultivation.

The selection is pretty comprehensive, ranging from *Quercus robur,* which cannot be very dangerous in

South Africa, to *Hyaenanthus globosa,* which is toxic enough, but of such limited distribution that few people have ever seen it, and even the authors of this well illustrated book apparently could not get a photo of the attractive male flowers.

Each native plant has two pages, one with a description, account of the pharmacology and distribution, and the chemical formula of the main toxic constituent, where known, together with leading references. Occasionally, two or more related species are dealt with on the same page. On the facing page are photographs of the plant or plants. The exotics are dealt with more briefly, having one page each with similar information in a more condensed form. The language is English, but Afrikaans names of plants, and of specific illnesses caused by them are also given.

The book is attractively presented, with very good photographs. It is likely to be indispensable for South African poison units, and of interest to South African naturalists and stock farmers, as well as all doctors and veterinarians who have an interest in poisoning by plants.

For readers of *Phytochemistry*, its main interest may be as a very pretty addition to the bookshelf, for most of the entries are of plants which have been extensively investigated, though there are a few whose content is still unknown, such as *Melica decumbens,* (*Poaceae*), which it is suggested on pharmacological grounds may contain a neurotoxin.

There is an extensive index, and lists of plants according to type of toxin, and probable symptoms if ingested. In spite of the care which has been taken in production, there are a few misprints, such as Thevesia on p. 268 and melinoon on p. 144, but these are obvious enough to see.

David A.H. Taylor
Department of Chemistry
University of Natal, Durban, South Africa
E-mail address: daht@tesco.net

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Taxus: The Genus Taxus
Hideji Itokawa, Kuo-Hsiung Lee (Eds.); Taylor & Francis, London and New York, 2003, 474 pages with extensive illustrations and tables, ISBN 0-415-29837-7, £90.00 (US$ 145.00)

This volume, number 32 of the series "*Medicinal and Aromatic Plants—Industrial Profiles*", is intended to update the 1995 compendia "*Taxol Science and Application*" edited by the late Matt Suffness. This goal is largely achieved in most topic areas, with reliable coverage of the literature through 2000. Few of the contributors to this volume are very well known in the Taxol field. This can be a good approach, if fresh insights and interpretations, or new perspectives, are provided. While there are notable exceptions, and the coverage is quite thorough, most chapter authors simply paraphrase earlier reviews. Chapter 1, by Editor Itokawa, provides the standard historical overview with emphasis on taxoid isolation and analytics, and a discussion of the nomenclature problem. Chapter 2 on the biosynthesis of taxoids is a bit disappointing; much recent work is not covered and the approach, while detailed, is not very integrative. Chapter 3, again by Itokawa, covers the naturally occurring taxoids well, and is quite similar in scope to Kingston's 1999 review in the *Journal of Natural Products*. Chapter 4 describes physical methods for taxoid identification, and the compilation of NMR spectra provided here is a useful resource. Chapter 5 by Takeya provides a compact overview of *Taxus* tissue culture methods and approaches in readily accessible tabular form. Chapter 6 describes commercial cultivation of *Taxus*, a topic rarely reviewed, and Chapter 7 covers analytical aspects, including large-scale processing, with very thorough treatment. Chapter 8 reviews the chemistry of the taxoids. The organization and emphases differ from Kingston's 2000 review in *Progress in the Chemistry of Organic Natural Products*. This chapter is useful but, for coverage of the topic, the latter is recommended as the more integrative and accessible. Chapter 9, by Xiao, Itokawa and Editor Lee, provides a comprehensive, retrospective overview of Taxol total syntheses; this is an excellent contribution to the volume. Chapter 10 on structure–activity relationships is also notable. The coverage of this important topic is exceptionally thorough, and the summaries are useful. Chapter 11, by D.T. Brown, on preclinical and clinical studies is also outstanding. This chapter provides a nice historical introduction, an excellent update on all aspects of taxoid chemotherapy, good summaries, and a meaningful view to the future. The book concludes with a brief summary of the Taxol content of Irish yews.