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Book Reviews

Chinese Materia Medica — Chemistry, Pharmacology and Application

You-Ping Zhu, Harwood Academic, The Netherlands, 1999, \$95, 706pp., ISBN 90-5702-285-0.

Chinese medicinal drugs have gained world-wide interest of scientists and physicians. These drugs may contain new effective principles or groups of compounds against diseases and illnesses which are still difficult to treat. One prominent example is artemisinin and its derivatives from *Artemisia annua*; artemisinin is an efficient compound against *Plasmodium falciparum*, the causative agent of the most dangerous form of malaria.

This volume provides both traditional and modern scientific information on the theory and applications of Chinese Materia Medica. It also features the theories and concepts from the Western medical perspectives and the sources, production and quality control of Chinese Materia Medica. The book starts with a few general chapters on characteristics of Chinese Materia Medica: processing of Chinese Materia Medica, guidelines for application of Chinese Materia Medica, sources and production of Chinese Materia Medica. The subsequent particular chapters on herbs, grouped according to their usage in Traditional Chinese Medicine (TCM), cover the vast majority of the book.

These are, for example, heat-clearing herbs, herbs expelling wind-dampness, aromatic and damp-resolving herbs, herbs inducing diuresis and excreting dampness, interior-warming herbs, Qi-regulating herbs, herbs promoting blood circulation and dissolving blood stasis, herbs which resolve phlegm and stop coughing and wheezing, herbs calming the spirit, herbs calming liver-wind and stopping tremors, herbs inducing resuscitation. This incomplete list shows that the basis of disease diagnosis is different in TCM. It is one of the advantages of the book that the author introduces each chapter briefly explaining the symptoms of the illness to be treated as they are classified and described in TCM. These explanations are, however, quite short and not sufficient to introduce the unaware Western scientist or medical doctor into the thinking and principles of TCM. But probably the introduction

into the basis and ideas of TCM is a major task and cannot be fulfilled by a book that concentrates on the drugs that have gained their role and importance in TCM by hundreds of years of experience.

Each chapter of the book is composed by several monographs on single drugs. A drug usually is a part of one plant, e.g. Ginseng root or Plantain seed. A drug may also be of animal or mineral origin, such as moschus or alumen. In addition there are a few drugs composed from several plant ingredients like “*massa fermentata medicinalis*” containing five different seeds and leaves. Each monograph is treated systematically addressing the origin and preparation of the drug, i.e. part of the plant, time of harvest, processing, and places of production within China. A detailed listing of the compounds found and described for each individual drug follows. These paragraphs are highly indexed and supported by ample literature citations given at the end of each monograph. This comprehensive compilation of phytochemicals identified for each drug is doubtless one of the strengths of the book. No chemical formula are given here, but in most cases the compounds are classified as saponins, flavonoids or essential oil, etc. For detailed structures the readers must refer to an encyclopaedia of natural compounds or to the literature cited. Another evenly valuable part in each monograph are the paragraphs titled “pharmacology”. A detailed report on both, experimental pharmacology and clinical studies is offered. Further, the traditional description is named. The readers find numerous references to literature here again. Each monograph ends with the usual dosage of the drug and — very important for practical application — the toxicity and side effects to be expected, this again covered by references. The citations usually refer to text books or monographs and journals written in English and widely available, like *Phytochemistry*, *Biochimica Biophysica Acta* or *Phytotherapy Research*. The references mainly date from the 1980s and beginning of 1990s, the most recent ones being from 1996.

As mentioned in the beginning several drugs of the Chinese Materia Medica became important world-wide due to their constituents with novel chemical and therapeutic properties. Not all of these drugs, however, are to be found in the book. The referee looked for

Camptotheca acuminata yielding the topoisomerase inhibiting camptothecin without success. This cannot be a general criticism of the book, but it serves to illustrate the wealth of drugs and compounds that waits to be evaluated deeper by scientific means. Criticism, however, starts at the point where readers cannot be sure whether they really can find what they are looking for. The book is furnished with four indexes, the index of Latin plant names probably being the most useful for Western readers. The English plant names with their inevitable ambiguity are less useful like the list of pharmacological actions which contains only Chinese plant names for each effect without translation into Latin names. A list of Chinese names with their Latin equivalents would be useful. An index of chemical compounds or groups of compounds is not given, but would be very helpful as well.

Despite of these criticisms I consider the book as a valuable compilation of Chinese drugs with the detailed listing of their evaluation by means of chemical and pharmacological studies. For those interested in phytochemicals and their effects from a scientific point I recommend this book without restriction. Individuals who received a thorough introduction into Chinese medicinal principles in addition to scientific education will find the evaluation of chemical constituents and pharmacological effects most interesting.

Birgit Dräger

Institut für Pharmazeutische Biologie, Martin-Luther-Universität Halle-Wittenberg, Hoher Weg 8, D-06120, Halle, Germany

E-mail address: Draeger@pharmazie.uni-halle.de

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Phytochemistry of Methods in Biotechnology, Vol. 10: Carbohydrate Biotechnology Protocols

C. Bucke; Humana Press, Ottawa, NJ, 1999, 337pp., ISBN: 0-896-03563-8, \$79.50.

Carbohydrate Biotechnology Protocols, edited by Chris Bucke is the tenth in a series of books published under the heading, *Methods in Biotechnology*, edited by John Walker. The collection spans the subject areas of: recombinant plant proteins, downstream processing methods, natural products, biopesticides, monitoring of bacteria, biosensors, animal cell biotechnology, and aqueous two-phase systems. The present volume on carbohydrate biotechnology clearly fills the gap left vacant, at least in part, since the publication of Stephen Fry's *The Growing Plant Cell Wall: Chemical and Metabolic Analysis* in 1988 by Longman; and Dey and Harborne's volume 2, 1990, of the 10-volume series, *Methods in Plant Biochemistry*. It also complements Whistler and BeMiller's *Industrial Gums: Polysaccharides and their Derivatives* (3rd ed., ISBN 0-12-746253-8) which gives a detailed account of commercially important polysaccharides.

Carbohydrate Biotechnology Protocols compiles the practical methods that have been used for the production, modification and study of structural aspects of key commercially important carbohydrates whether they are polysaccharides or oligosaccharides of plant or microbial in origin. The contents of the book are divided into 26 chapters. The general format of each chapter being an introductory description, relevant

methods used, including the reagents and equipment required, simplified protocols, and finally a set of notes that give appraisal of the experimental approaches with caution about the problems that may arise.

The introductory chapter by C. Bucke, the editor of this volume, gives a general overview of the significance of carbohydrates in biotechnology. Chapters 2–7 are on industrial polysaccharides and their derivatives. These include Xanthan gum, alginate, schizophyllan, cellulose, enzymically modified alginate and guar gum. Many of these have a high commercial value as thickening and gel-promoting agents. The method on mannuronan C-5 epimerase-catalysed modification of alginate is applied only on analytical scale. However, this chapter should provoke thoughts for future production of recombinant enzyme. Similarly, UDP-glucose-based enzymic synthesis of cellulose is also described on laboratory scale. The modification of guar gum as described, uses the enzymes galactose oxidase and catalase in contrast to α -galactosidase that has been successfully used on a commercial scale. Chapters 8–14 give an account of low molecular weight carbohydrates, such as, cyclic oligosaccharides, cyclodextrins and glycolipids that have either direct or potential commercial importance. These include, enzymic production of cyclodextrins from liquified starch, microbial glycolipids, laboratory-scale starch hydrolysis to yield maltodextrins, enzymic formation of biologically active glucooligosaccharides, sucrose-derived fructooligosaccharides, inulinoligosaccharides from inulin, and physiologically active sialylated glyco-