

Book Reviews

The Psychopharmacology of Herbal Medicine: Plant Drugs That Alter Mind, Brain and Behavior. By Marcello Spinella (Richard Stockton College of New Jersey). The MIT Press, Cambridge, MA 02142. 2001. 578 pp. \$24.95. ISBN 0-262-69265-1.

People have been using herbs for altering their minds and behavior since ancient times. The study of the chemical constituents and pharmacology of medicinal herbs has made it possible for people who are interested in alternative medicine to prescribe and administer these herbs more knowledgeably. This is the first book to systematically focus on psychoactive medicinal herbs.

Dr. Marcello Spinella briefly introduces the history and current situation of herbal medicines in chapter one and then presents a helpful basic review of neuroscience in chapter two and of pharmacology in chapter three. These reviews are especially useful for the many readers of herbal medicine books who are self-educated in their knowledge of herbal medicine.

Chapters four to ten discuss different categories of psychoactive medicinal herbs. Each plant is presented with information on its history, botanical characteristics, chemical constituents, pharmacology, and toxicology. The information provided is up-to-date. Chapter four focuses on plants that have stimulant effects in the central nervous system, such as coffee, tea, cocoa, guarana, tobacco, areca, ephedra, and coca. Both positive and negative stimulant functions and information on abuse are provided for some popular plants. Chapter five discusses plants that have an effect on cognitive functions, with ginkgo and ginseng being the main plants discussed. Chapter six discusses sedative and anxiolytic plants. Several currently popular plants such as valerian, kava, passionflower, and chamomile are described with detailed treatment of current scientific research, including neuropharmacological, animal, and human studies that have supported the anxiolytic and sedative effects and the historical uses of these plants. Dr. Spinella provides an appropriate warning to readers that withdrawal of current antiseizure medications would put an individual at high risk for recurrence or worsening of seizures. Chapter seven focuses on psychotherapeutic herbs. The discovery of pharmaceutical medications for the treatment of mental illness has revolutionized the treatment and understanding of the brain. Modern research has shown that many medications employed historically for the treatment of mental illness are ineffective, but St. John's wort (*Hypericum perforatum*), ginger (*Zingiber officinale*), and ginkgo have pharmacological research supporting their use. Chapter eight is about analgesic and anesthetic herbs; the opium poppy (*Papaver somniferum*), willow (*Salix* spp.), feverfew (*Tanacetum parthenium*), chili peppers, and other

plants are discussed here. Chapter nine includes hallucinogenic plants, and chapter ten discusses cannabis specifically.

Readers should note that some citations from other books or literature are questionable. Tea is prepared by frying in a hot vessel, kneading with a machine or by hand, and finally baking to dry it. The difference of the process for black tea is that a fermentation process is added before frying, kneading, and baking. It is not "produced by simply drying the leaves" (chapter four). The major constituents in green tea are catechins in amounts up to 20%; caffeine is only 2–5% of the final product. In chapters five and six it is not true that Shen Nung wrote the first Chinese pharmacopeia, or *Shen Nung Pen Ts'ao Ching*, and he was not a Chinese emperor. He was instead a herbalist; the ancient Chinese thought that all medicinal plants had been tried and tasted by Shen Nung.

It is true that ginkgo seeds and leaves have been used in ancient China for a long time (chapter five), but they were not recorded in ancient Chinese pharmacopeia until the Son dynasty (960 AD); experts in Chinese medicinal history agree that ginkgo is not recorded in *Shen Nung Pen Ts'ao Ching*. It was European scientists in the 1960s who first noticed that ginkgo leaves could be used to treat memory loss.

Flavonoid glycosides are compounds composed of a flavonoid aglycone and one or more sugar molecules; flavonoid aglycones such as apigenin, kaempferol, and quercetin do not contain sugars. In chapter five and other chapters in this book when flavonoid glycosides are discussed or the information is recited in tables, the actual structures and the names of chemicals given are actually those of the flavonoid aglycones instead of the glycosides.

In chapter six skullcap (*Scutellaria lateriflora*) is not found in China, so this herb cannot be used for sedative and antiseizure effects in China. Traditional and folk medicine use fresh and dry ginger for different propose (chapter seven), but the author does not cite any pharmacological studies to support this difference, possibly because no research has been done in this area.

Overall the book can be recommended to readers with an interest in the scientific basis of the use of psychoactive herbal medicines.

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Dietary Supplements, Second Edition. By Pamela Mason (Independent Pharmaceutical Consultant, London, UK). Pharmaceutical Press, London, UK, 2001. xxvi + 276 pp. 19 × 24.5 cm. £35.00. ISBN 0-85369-459-1.

This is the second edition of the same book published six years ago, updated to include new research in the field. The first part of the book includes a brief "Preface", extensive "Introduction" and "How to use" sections, and finally 72 individual monographs on dietary supplements. The monographs are listed alphabetically and include supplements such as amino acids, cofactors, enzymes, vitamins, minerals, trace elements, and some botanical dietary supplements such as evening primrose oil, garlic, ginseng, and guarana. For ease of reference, the monographs are arranged alphabetically and provide information, where appropriate, under standard headings. The headings include description of the substance, nomenclature, constituents, human requirements, intakes, actions, dietary sources, metabolism, possible uses, precautions/contraindications, pregnancy and breast-feeding, adverse reactions, interactions, dose, and references.

It is obvious from the "Preface" that the author intended this book primarily for health care professionals. In fact, most of the information categories within each monograph are those that a practicing health care professional would be most interested in during their day-to-day practice. The "monographs" for the amino acids, enzymes, vitamins, minerals, trace elements, and cofactors, while brief, appear to contain all the necessary data, such as dosing information and up-to-date research complete with references. Health care professionals will be particularly interested in the information concerning alpha-lipoic acid, bee pollen, branched-chain amino acids, bromelain, carnitine, chondroitin, Co-enzyme Q, DHEA, and melatonin. These are often dietary supplements that health care professionals know little about, yet such products are widely used by consumers.

The shortcomings of the book are in the monographs that describe botanical dietary supplements. Herbs such as aloe, evening primrose oil, garlic, ginseng, guarana, and green tea seem to have been arbitrarily selected for inclusion, without also including some of the more commonly used botanicals. Numerous errors are seen in the "descriptions", which probably occurred because pharmacopoeial descriptions were not used. For example, garlic is described as "the fresh bulb of *Allium sativum* which is related to the lily family (Liliaceae)". In fact most garlic dietary supplements are prepared from the dried bulbs, and the European pharmacopoeia definition of garlic includes both the fresh and dried bulbs. *Ginkgo biloba* is described as "an extract from the dried leaves, but in fact "Folium Ginkgo" consists of the dried whole leaves and is not just "an extract". The section entitled "Constituents" is also problematic. The evening primrose monograph contains a great deal of information on borage seed oil and blackcurrant oil under the constituents section. It was somewhat surprising to see *Ginkgo* contraindicated in cases of hypertension, as no reference for this could be found. Further cautions on the use of *Ginkgo* preparations in cases of epilepsy and seizure, as well as diabetes, are also questionable. The entire ginseng monograph is extremely confusing to the reader. Under the description, the author lists three genera and 10 species of plants, and under "constituents" only two genera and species are listed. Thus, since all ginsengs are

grouped together, including *Pfaffia paniculata* or Brazilian ginseng, the reader is generally left with the erroneous impression that the cited data on possible uses may apply to all types of ginseng. In addition, clinical data concerning American ginseng is also included under uses, but this species is not even listed in the description.

In conclusion, with the exception of the few monographs on botanical dietary supplements, the book provides health care professionals with interesting and up-to-date information on the other less well known dietary supplements, as well as vitamins, minerals, and trace elements.

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Recent Advances in Phytochemistry. Volume 34: Evolution of Metabolic Pathways. Edited by J. T. Romeo (University of South Florida), R. Ibrahim, L. Varin (Concordia University), and V. DeLuca (University of Montreal). Elsevier Science Publishers, The Netherlands, 2001. xii + 467 pp. 15 × 22.5 cm. \$222.50. ISBN 0-08-043860-1.

The title is like a magnet to those who have spent years isolating natural products, but have not had sufficient time to fully explore the genesis and role of the pertinent biosynthetic pathways. And, the book does not disappoint. It is a treasure chest filled with gems, each pertaining to bioactive compounds that one may have worked with directly, or become familiar with, over the years.

An essential element of the book is the preface, which is unusual in that it is a schematic for the chapters, an overview chapter, and, in a sense, an epilogue. It should not lightly be skipped over. To quote directly from that source, there are five major topics: "1. Role of secondary metabolites in evolution; 2. Evolutionary origins of polyketides and terpenes; 3. Roles of oxidative reactions in the evolution of secondary metabolism; 4. Evolutionary origin of substitution reactions: acylation, glycosylation, and methylation; and 5. Biochemistry and molecular biology of brassinosteroids." Contained within the chapters is a wealth of genetic information, specific enzymes that govern certain pathways, and natural product structures. The editors obviously spent considerable time planning and collating the material, and the result is a comprehensive book that will give the reader much to digest.

Some will argue that there is overlapping information throughout. While this may be the case, reiterated facts appear with bonus additions to present a well-rounded, overall picture. While the text is virtually error free, there are some minor flaws that frustrate the reader. In one chapter, I hunted in vain for Figure XVIII, while in another, the use of an unexplained acronym was vexing. As is usual these days, there are those maddening gaps between letters and words, giving rise to sentences that straggle across an entire page. It is one of the hazards of the electronic information age, and one with which we have all struggled. But, that in no way detracts from the value of the scientific content.

For those examiners who write preliminary questions for Ph.D. candidates, the material will give plenty of substance

to test the mettle of their graduate students. For graduate students who master the content, the essentials will give them a chance to dazzle their examiners. Indeed, the book will well serve all professionals in phytochemistry. It is not a book that I shall lend easily to my colleagues for fear that I shall never see it returned. And, it is an essential addition to the library of any serious researcher.

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