

Book Reviews Recensions

The Psychopharmacology of Herbal Medicine: Plant Drugs That Alter Mind, Brain and Behavior. Spinella M. Cambridge (MA): The MIT Press; 2001. 578 pp with index. ISBN 0-262-69265-1 (paper). US\$24.95.

This paperback publication has 428 pages of text, an additional 131 pages of references and an 18-page subject index. The text is organized in 10 chapters, each liberally endowed with relevant figures and tables.

The first 3 chapters (72 pages) are very useful because they contain numerous definitions and introduce the reader to neuroscientific and pharmacological topics that appear throughout the text. Chapters 2 (Basic Neurosciences) and 3 (Basic Pharmacology) contain only general information on many topics, but they contribute to the reader's understanding of subsequent material. Clearly, readers are meant to expand their knowledge of these topics, where necessary, by referring to texts and research papers dedicated to these topics, many of which appear in the extensive and up-to-date reference section.

Psychoactive plants are discussed in chapters 4–10 in a consistent manner. A drawing of each plant or plant part is usually provided, and each herb is discussed under the headings History and Botany, Chemical Constituents, Mechanisms of Action, Pharmacokinetic Properties, Toxicity, and General Effects. Chemical structures of some of the important constituents are also included.

Chapter 4 (Stimulant Plants) is dedicated to plants with puriner-gic (coffee, tea, cocoa, guarana, maté, kola), cholinergic (tobacco, areca, lobelia) and monoaminergic stimulant effects (ephedra, coca, khat). Active constituents are identified, and fairly extensive comments on their mechanisms of action are provided.

Chapter 5 (Cognitive Enhancers) is devoted to plants that enhance cognitive functions. Cognitive deficits that occur in normal aging and in various diseases, including Alzheimer's disease, Parkinson's disease and Wilson's disease, are identified, and synthetic drugs that are commonly used to treat these diseases are listed. Such drugs are called nootropics. Plants that have nootropic components and are claimed to be useful in the treatment of various dementias are also discussed (e.g., ginkgo, ginseng, ergot, tobacco, areca, solanaceous plants and fava beans). Ginkgo, for example, is discussed in considerable detail under the headings common to each chapter, but in addition, various general effects (e.g., vascular, hematological, sexual, vestibulocochlear, neuroprotective, neurophysiological, neuroendocrine, electrophysiological and cognitive) are also provided. The distinctive leaves and fruits of *Ginkgo biloba* are illustrated, and structures of important chemical constituents are provided. The other cognitive enhancing plants are discussed in a similar manner.

Herbal sedatives and anxiolytics are reviewed in chapter 6. Most of these plant drugs are central ner-

vous system depressants. Valerian and kava are extensively discussed under the headings common to each chapter. In addition, various important physiological effects of these plant drugs are identified. Passion flower, chamomile, catnip, hops, skullcap, lemon balm and geranium are reviewed in less detail.

Chapter 7 is devoted to psychotherapeutic herbs but also includes interesting information on depression and anxiety, psychotic disorders and pharmaceutical (synthetic) antidepressants, anxiolytics and antipsychotics. Three herbal antidepressants and anxiolytics (St. John's wort, ginger, ginkgo) and 1 antipsychotic plant (rauwolfia) are identified and discussed in detail. Proposed uses, active ingredients and other constituents, and mechanisms of action are concisely documented.

The sensory transmission and neural inhibition of pain are briefly reviewed and plants with analgesic and anesthetic properties are discussed in chapter 8. Analgesic plants have a diverse pharmacology and are allocated to various pharmacological groups in the text: opioid (poppy, myrrh), cholinergic (areca, lobelia, tobacco), eicosanoid (feverfew, willow), neurokinin (chili, ginger), puriner-gic (coffee, tea, chocolate, guarana, kola, maté; also discussed in chapter 4); cannabinoids (THC and derivatives), monoamines (khat, cocoa) and uncertain mechanisms (ginseng). The opium poppy is reviewed in most detail. In addition to the general heading topics, other important properties (analgesia,

cardiovascular, miosis, respiratory, digestive system, cough, neuroendocrine, behavioural and emotional effects, cerebral blood flow, cognitive, addiction and dependence, and neonatal toxicity) are discussed. Two plants with local anesthetic effects (coca and clove) are also reviewed in this chapter.

Chapter 9, which is devoted to hallucinogenic plants, is relatively lengthy. The parasitic fungus, ergot (*Claviceps purpurea*), several mushrooms in the *Psilocybe* genus and in other related genera, and the peyote cactus (*Lophophora williamsi* and *L. diffusa*) are the most important sources of hallucinogens and receive the most attention. Also included are other cacti that contain hallucinogenic constituents. Cawe is a source of tetrahydroisoquinoline alkaloids, and yage contains dimethyltryptamine and various harmaline alkaloids. Morning glory, nutmeg, mace, iboga, cholinergic hallucinogenic plants (belladonna, henbane, mandrake, various *Datura* species) and the mushroom fly agaric are discussed in some detail.

Chapter 10 provides a brief and interesting history of the cultivation, use and abuse of cannabis.

Various preparations derived from the 3 species of cannabis (*Cannabis indica*, *C. ruderalis* and *C. sativa*) and their effects and uses are identified. The major psychoactive cannabinoids are listed, and the chemical structure and numerous properties of the most common cannabinoid, Δ^9 -tetrahydrocannabinol, are provided. Interesting information on endocannabinoids is also presented, along with many physiological and various other effects of cannabinoids and endocannabinoids. Other topics include cannabinoid receptors and their central distribution, tolerance, dependence, addiction, withdrawal, abuse, pharmacokinetics, therapeutic uses and toxicity.

Many textbooks and pharmacopoeias devoted to natural products and their physiological and pharmacological properties are currently readily available, and one might ask whether another text on herbal medicine is required. This reviewer believes that this is a very useful, well-written introductory text for individuals who seek concise and current information on psychoactive herbal products. Its major strength is that it introduces the reader to numer-

ous relevant topics that, of necessity, can only be discussed briefly, but each is complemented with an excellent and extensive list of references.

The text, however, is not immune from criticism. Many chemical structures contain errors. On page 204, for example, 2 different structures are both named dihydrovaltrate; on page 213, a double bond at the C3-C4 position of the lactone ring is omitted in the structures of all 6 kavalactones; additional errors are apparent in the structures of yangonin and 11-methoxyyangonin; on page 264, the structure of zingiberine lacks a ring-methyl group, and the ring should contain only 2 double bonds, not 3 as shown; on page 343, the putative structure of psilocybin with a ring tetravalent oxygen atom is particularly offensive. Other structural errors and drawing inconsistencies can also be found. In my opinion, these errors are very annoying and avoidable; they certainly detracted from my pleasure in reading an otherwise praiseworthy text.

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