

Book reviews

Drugs of natural origin – a textbook of pharmacognosy, Gunnar Samuelsson, 4th revised edition, 551 pages, Apotekansocieteten, Swedish Pharmaceutical Press, Stockholm, 1999, (ISBN: 91-8627-481-3)

The third edition of this book was published in 1992 but in the interval great progress has been made in the biosynthesis of natural products and in enzymology. This newly revised textbook provides a comprehensive summary of the continuously expanding knowledge concerning biosynthetic processes occurring in plants.

The book is divided into 13 chapters. The Introduction (Chapter 1), gives definitions of what a natural product and a crude drug are and presents a brief history of natural products used in ancient and modern medicine. The role of ethnology and pharmacognosy in drug discovery is also briefly reminded. Chapter 2 offers basic knowledge relating to the production of crude drugs. This includes cultivation of medicinal plants, quality control of crude drugs, preparation of extracts and isolation of pure compounds.

The scientific community is increasingly aware of the importance of in vitro tissue culture. The development of biotechnology and the potential of genetically transformed cells, offer a chance to accelerate the process of plant improvement. Chapter 3 gives a brief overview of the different techniques used for in vitro production of plant-derived metabolites. Chapter 4 is of fundamental importance: it deals with the photosynthetic process related to the formation of pharmacologically active compounds in plants. Chapter 5 presents the production of important medicinal carbohydrates and their isolation from plant material. Economically important derivatives such as honey, sucrose, starch, dextran, cellulose, heparin, gums and mucilages are discussed. The following chapter covers the shikimic acid pathway and the natural products which derive from it. After a brief introduction on the localization of the shikimic acid pathway in plants and on the enzymes involved, a concise review deals with gallic acid and tannins. The remainder of the chapter offers a concise account of the aromatic amino acids phenylalanine, tyrosine and tryptophan which are important intermediates in the biosynthesis of many secondary metabolites such as alkaloids, phenols, hydroxycinnamic acids, phenylpropanes, xanthenes and others. The importance of acetate as starting material for the biosynthesis of many natural products is underlined in Chapter 7. The covered range of secondary metabolites is considerable

and a clear explanation is given of the two main routes originating from acetate, i.e. the acylpolymalonate pathway and the isopentenyl diphosphate pathway. Numerous classes of compounds are described and, for each class, a representative number of drugs are presented. Chapter 8 briefly describes some important amino acids. They are grouped into ‘families’ on the basis of the carbon skeleton to which the amino function is attached: α -ketoglutaric acid group, pyruvic acid group, oxalacetic acid group, serine group, histidine, aromatic amino acids and essential amino acids. Chapter 9, entitled ‘Natural products derived biosynthetically from amino acids’, deals with enzymes isolated from plants and with toxicologically interesting proteins and peptides, lectins and snake venoms. This chapter also covers glycopeptide and β -lactams antibiotics. Alkaloids are presented in Chapter 10. Because these secondary metabolites compose such a diverse group of chemical constituents, they are generally classified according to their biogenetic origin. But this is not the method used in this book. Here, they are classified according to the ring systems that constitute the main part of their structure. This classification, however, brings about confusion and is not very informative. For example, how is it possible to group ibotenic acid and colchicine in the same group? The two remaining chapters focus on purine derivatives (Chapter 12) and allergy and allergens (Chapter 13).

This new edition of ‘Drugs of Natural Origin’ is a well-written textbook which provides the latest information in a clear and accessible style. Furthermore, chapters 6–11 are advantageously completed by coloured pictures showing some important medicinal plants. On the whole, this book reaches a high standard of presentation and can be recommended not only to undergraduate and graduate students in plant biology or pharmacy but also to scientists interested in phytochemistry.

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Submicron Emulsions in Drug Delivery and Targeting

S. Benita (editor), Harwood Academic Publishers, New York, pp. 338, ISBN 90-5702-349-0