

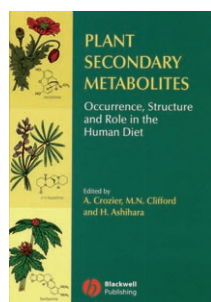
graphs, drawings, and other images of Pauling, his family, and colleagues (248 pp.); Illustration List (3 pp.).

Volume VI (xiv+317 pp., ISBN 0-9629082-9-0)—Introduction to Volume VI: Cliff Mead (4 pp.); Newspaper Clippings, Magazine and Journal Articles: more than 3000 items, domestic and foreign, either focusing on or mentioning Pauling (134 pp.); Personal Library: more than 4000 volumes from the Paulings' personal library, including pure science, sociological surveys, detective stories, crossword puzzles, annotated and alphabetically arranged by the author's last name (179 pp.); Illustration List (2 pp.).

Printed in an edition of 1000 copies, *The Pauling Catalogue*, with its lavishly illustrated listings of the Paulings' extensive correspondence, manuscripts, research notebooks, awards, and their scientific, peace, and personal papers, is a fittingly ambitious tribute to the extraordinary lives of this remarkable couple. As an invaluable resource for historians of science and chemistry, scholars of science policy, persons concerned with the peace movement, practicing chemists and scientists interested in the history of their fields, and science students, it also belongs in every library. Its fantastically inexpensive price, considering the scope of its contents and the number of its illustrations, makes it a "best buy."

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Plant Secondary Metabolites



Occurrence, Structure and Role in the Human Diet.

Edited by Alan Crozier, M. N. Clifford and H. Ashihara. Blackwell Publishing, Oxford 2006. 384 pp., hardcover £ 99.50.—ISBN 1-4051-2509-8

Human food contains many plant secondary metabolites, which can often have positive health benefits. Hardly a week goes by without something appearing in a newspaper or in a specialist journal about the beneficial effects of green tea, broccoli, olive oil, or red wine. This book contains a collection of articles on this subject, in which experts report on recent findings.

The first five chapters discuss the main classes of secondary metabolites that are relevant to human nutrition, namely polyphenols, sulfur compounds, terpenes, alkaloids, acetylenes and polyacetylenes, and psoralens, with details of the most important compounds of each group and their occurrence in plant-derived foods. Clear schemes are presented to show the biosynthetic pathways, with details of the enzymes that are involved, and in some cases the genetic fundamentals are also described and possibilities for metabolic engineering are discussed. Whereas polyphenols such as flavonoids, hydroxycinnamic acids, and stilbene derivatives occur in nearly all types of fruits and vegetables, the sulfur-containing compounds are limited to cabbage and *Allium* species. The preparation of these vegetables is accompanied by enzymatic changes and breakdown reactions, which are described in detail here. The article on terpenes is especially good; the biosynthetic pathways of the most important classes of terpenes are described, based on discoveries about the localization of the mevalonate and 1-deoxyxylulose-5-phosphate pathways in different cell compartments. The importance of terpenes for human health is also discussed. The choice of alkaloids for

discussion has had to be limited, for reasons of space, to those that are most important to humans, including the benzyloquinolines, tropanes, purines, and pyrrolizidines. Another important contribution is that on (poly)acetylenes and linear furocoumarins (psoralenes), which are present in carrots, for example; these have undesirable biological activities, but also beneficial long-term effects.

Building further on the basis of these fundamentals, Chapter 7 discusses the secondary metabolites present in individual types of fruits, vegetables, and cereals and the drinks produced from them, and also their effects. For example, the chemical processes that occur during the production of green and black tea are described in detail, and the effects of the roasting process on substances present in coffee is discussed.

The plant metabolites described in the book can only develop their physiological effects when they are taken up by the body and become available in the blood plasma. Important insights into this process have been gained in the last few years, and are discussed in the chapter on the absorption of secondary metabolites and their bioavailability. Another chapter of the book deals with the functions of the flora in the human gut and their importance for the uptake and conversion of secondary metabolites. Special attention is devoted to the importance of probiotics (bacteria preparations) and prebiotics (carbohydrates) in beneficially affecting the intestinal flora.

In summary, the book offers an excellent survey of the plant secondary metabolites that are most important for human nutrition, and a discussion of their significance for health. The literature covered is mainly that of the last 15 years, so that the book is a mine of information about recently gained knowledge. As the subject is treated in a multidisciplinary way, the book is of great interest for food chemists, nutrition scientists, pharmacologists, and medical scientists. It fills a significant gap in this area.

Unfortunately, the book contains some errors that have been overlooked. For example, the structure of berberine is shown with a pentavalent carbon atom, and this even "graces" the

book's dustcover. Other examples of carelessness are the incorrect formulas of the alkaloids vinblastine, senecionine, heliotrine, (–)-multiflorine, and cyclo-(pro-ile), and many wrongly written Latin names of plants (*Eschsholzia*, *Chondronendron*, *Rauwolfia serpentina*, *Spinaceae oleraceae* (spinach), *Olea*

europa (olive tree), *Juniperis*, *Pogestomon*, and others). However, despite these formal weaknesses, which can easily be corrected in a new edition, the book can be recommended unservedly for reading by the groups already mentioned.

Wolfgang Steglich
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