Phytochemistry, Vol. 27, No. 3, pp. 963–966, 1988.
Printed in Great Britain. Pergamon Journals Ltd.

BOOK REVIEWS

Key to Carotenoids: edited by H. PFANDER, Second Edition, Birkhauser, Basle, 1987. 296 pp, 98 Swiss Francs.

Very little needs to be remarked about this excellent little handbook, except to say that it does exactly what it sets out to do. It provides an accurate and authoritative key to the 563 carotenoid structures reported in the literature up to July 1986. Compounds are arranged according to structural class and formulae are given, with names and synonyms and then there are references to isolation, physical properties, chemical reactions, biochemistry and synthesis. Where there is some doubt whether a particular pigment occurs naturally or whether its structure has been correctly elucidated, this is shown by the presence of a question mark against that compound. There are over 2500 literature references collected in alphabetical order at the end and the book concludes with an alphabetical listing by common name.

School of Plant Science, University of Reading. JEFFREY B. HARBORNE

The Pharmacology of Benzopyrone Derivatives and Related Compounds: by M. GABOR, Akademiai Kiado, Budapest, 1986. 254 pp. £19.15.

Unlike other plant drugs, flavonoids are dietary constituents in Man so that it is difficult to assess the effects of a therapeutic dose against a background in which normal consumption of about a gram a day may in itself be beneficial. This is but one of the reasons why flavonoids are not yet included in the pharmacopieas of the UK and the USA, although they are widely prescribed on the continent. In fact there is no single clinical study as yet which shows convincingly that they are able to cure the complaints for which they are used. In spite of this, flavonoids are employed in Europe for treating a variety of conditions, especially viral hepatitis, and literally millions of doses of (+)-catechin (sold as cyanidanol), *Vaccinium* anthocyanin or trihydroxyethylrutoside are taken annually.

Fortunately, we are learning more and more about the effects of flavonoids on isolated mammalian systems and on animal enzymes and we know something about the way that they are absorbed and metabolized in experimental animals. Dr Miklos Gabor has written earlier on the anti-inflammatory properties of flavonoids but this new book of his, is the first to provide a more general account of their pharmacology. He considers the natural flavonoids [e.g. (+)-catechin], modified flavonoids (e.g. the hydroxyethyl esters of rutin), synthetic flavonoids (e.g. piperidinoethyl-3-methylflavone 8-carboxylate) and related molecules (e.g. coumarin). He discusses in turn their effects on the central nervous system, the cardiovascular system, smooth muscle, the respiratory system and the gastro-intestinal tract. Most of the experiments he describes were done on dogs, cats, guinea pigs, etc. but in some cases, human volunteers were employed.

The problem with this book as with much else that is written about the therapeutic properties of flavonoids is the lack of critical appraisal of the experimental data. Flavonoids may well work and have beneficial effects on human disease but the evidence that they do is still very limited. As Elliott Middleton puts it in his foreword to Dr Gabor's book, "the major question of whether dietary flavonoids affect *in vivo* cell functions in humans remains largely unexplored". Since flavonoids are so rapidly metabolized *in vivo*, do they ever reach the site of inflammation? Until we have an answer to such questions, some doubt must remain about their therapeutic importance. This monograph usefully assembles the available literature up to 1984 and hence provides a valuable source book for anyone seeking information on flavonoid pharmacokinetics.

School of Plant Science, University of Reading. JEFFREY B. HARBORNE