Phytochemistry, Vol. 26, No. 7, p. 2143, 1987.
Pergamon Journals Ltd. Printed in Great Britain.

BOOK REVIEWS

The Alkaloids, volume 27: edited by A. Brossi, Academic Press, Orlando, Florida, 1986, 437 pp. £79 hardback, £58.50 paperback.

This volume follows the traditional formula of previous issues and provides four comprehensive reviews of plant alkaloid chemistry and pharmacology. The first chapter on the *Tabernaemontana* alkaloids breaks new ground in that it is the first detailed account of these indole derivatives, of which 250 are now known. The taxonomy of these members of the Apocynaceae is still being worked out by A. J. M. Leeuwenberg in Holland, but undoubtedly the alkaloid chemistry will eventually make a useful contribution to systematic revision. From the lists in this chapter, it is apparent that most species each contain up to 20 different alkaloids. The second chapter provides an account of the corynantheine and yohimbine alkaloids, covering the 1968–1984 literature; the emphasis is on laboratory synthesis and spectroscopy.

The third chapter is devoted to the pyrrolidine alkaloids, which range from simple structures such as hygrine, stachydrine and piperine to the alkaloidal flavones, ficine and phyllospadine. These five-membered ring alkaloids have now been reported in about 20 plant families and they have also been found in algae, millipedes and ants. The final chapter is of more general interest, since it deals with the metabolic transformations which alkaloids may undergo. After describing the various enzymes that catalyse these transformations, the authors Rosazza and Duffel survey what is known of the metabolism of such well known structures as ellipticine, lysergic acid, morphine, nicotine, senecionine and vindoline.

Overall, the volume is well produced, is illustrated with a wealth of structural formulae and has a good index. There is a paperback version available for the first time, but I doubt whether this will encourage individual purchase, since the price of nearly £60 is off-putting.

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

Nutritional and Toxicological Significance of Enzyme Inhibitors in Foods, in Advances in Experimental Medicine and Biology, Vol. 199: edited by Mendel Friedman, Plenum Press, New York, 1986. 572 pp. $102.

The latest volume in this well-known series contains 31 papers covering various multidisciplinary aspects of the nutritional and toxicological significance of naturally occurring inhibitors of digestive enzymes, and some related agronomic, biochemical and food processing problems. About half of the papers are the proceedings of a Symposium sponsored by the American Institute of Nutrition, Federation of American Societies for Experimental Biology and held at its annual meeting in Anaheim, California during 21–26 April 1985. The remainder are specially invited contributions from international authorities in the field who were unable to attend.

As might be expected the great majority of the papers deal with enzyme inhibitors from plant sources, with a particular emphasis on the familiar proteinase (trypsin and chymotrypsin) inhibitors from soybean (Kunitz and Bowman–Birk types) and other legume seeds, but there are interesting and timely sections on the inhibitors from cereals and brief mention of the amylase- and lipase-inhibitors which have recently begun to attract an increasing attention.

Several of the papers concentrate on the comparative levels of inhibition caused by these plant proteins on the enzymes from animal and human sources. The emphasis given to human aspects is welcome and long overdue, as far too many previous reports have dealt exclusively with the interactions of the inhibitors with the enzymes from rats, mice and chickens. It has been well established for some time that the plant inhibitors in the diets of rodents can cause a marked perturbation of the negative feedback mechanisms of pancreatic exocrine secretion mediated via cholecystokinin, but it now seems likely that a similar pattern of events can also occur in humans. Reviews of the adverse effects of inhibitors in stimulating pancreatic hypertrophy, hyperplasia and adenoma during long-term feeding trials with the rat have suggested that fad-dieters and human infants fed on prolonged soybean-based diets, because of allergy to cows milk, might be at risk unless steps are taken during food processing to remove or inactivate the inhibitors. However the difficulties of assessing the real dangers to humans are stressed in several papers, particularly in view of the relatively short periods in their life cycles during which humans are likely to receive these predominantly plant-based diets. The complexity of the assessment is also highlighted by the contrary results of long-term feeding trials with soy-based diets in primates such as the *Cebus* monkey, where no adverse effects on the pancreas were detected even after 4 years. Moreover, balancing these warnings, other results are reported which show that plant inhibitors of chymotrypsin, particularly of the heat-stable Bowman–Birk type, may actually contribute to the prevention of human cancers such as those of the breast, colon and prostate.

A major merit of this book is that it provides an up-to-date and rich source collection of references from many little-known or poorly circulated journals. For this reason alone it is to be warmly recommended to any University or Research Institute with interests in medicine, nutrition and or plant biochemistry.

Dept. of Botany, University of Durham. MICHAEL RICHARDSON