

Book review

Methods in polyphenol analysis, C. Santos-Buelga and G. Williamson (eds.), Royal Society of Chemistry, Cambridge, 2003, pp. 384 + xiv, £99.50, ISBN 0-85404-580-5.

Polyphenols are major constituents of plants and consequently of many foods, where they have an important role to play as anti-oxidants and as contributors to the astringency of the foodstuff. Their separations, characterisations and quantifications are a topic of current widespread interest. This book is a collection of 16 chapters each written by different authors, and it aims to survey the latest techniques in the analysis of polyphenols in a variety of different contexts.

The first two chapters are concerned with a critical review of general methods of polyphenol extraction from foods, biological fluids and tissues. Subsequent chapters deal in more detail with particular groups of compound such as the flavonoids, flavonoid conjugates, flavanols, catechins, proanthocyanidins, chlorogenic acid derivatives, anthocyanins and chalcones. In the past the highly conjugated system of the polyphenols made their detection by ultraviolet spectroscopy the standard method. However, other analytical techniques, including mass spectrometric, nuclear magnetic resonance and coulometric methods, now play an important role. This is particularly true for establishing the structures of the dimers and oligomers. The range of polarity revealed by the polyphenols and their conjugates have led to the development of a series of liquid chromatography particularly HPLC separations. Since a number of the po-

lyphenols occur not just as glycosides but also as dimers and oligomers various hydrolytic and fractionation methods have become important in their analysis. Enzymatic methods of preparing extracts under mild conditions are described. There is a need for appropriate reference compounds and there is a chapter which reviews the methods of synthesis of flavonoid conjugates. The physicochemical properties of the polyphenols under the mechanism by which they exert their protective effects on human health. These are also reviewed.

The methodology described in the different chapters is well-documented and illustrated with specific examples. Sources of material, solvent systems, retention times and the physical data associated with particular compounds are given. Spectroscopic data are tabulated. The book is well-illustrated with diagrams and formulae, even of some of the more complex natural products. Each chapter is accompanied by relevant references and a number of these are to work published in 2002. There is an overall subject index.

This book makes an important and useful contribution to the analysis of these significant components of foodstuffs and can be recommended to those working in this area.

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