

Book reviews

Analytical Chemistry of Foods. C.S. James, Blackie Academic and Professional, Glasgow, UK, 1995. 178 pp. Price £15.99. ISBN 0-7514-0196-X.

Accurate and precise analytical methods for component analysis of foods are required to ensure that the product complies with its specifications. There are numerous laws and guidelines set out for food stuffs which are designed to protect the consumer and many of these require a physical or chemical analysis to be performed. Depending upon the investigation being carried out, identification of an extender or determination of the quantity of a component, qualitative and/or quantitative information is required. It is, therefore, essential that not only proven methods of analysis are available but also that scientists are trained in the necessary skills to be able to perform the analysis.

'*Analytical Chemistry of Foods*' is written in an easy to follow, logical manner which covers the basic requirements for performing assays and presentation and interpretation of data and also details the specific methods for the analysis of major classes of food components. Part I contains three chapters dealing with theory, assessment of analytical methods and data, principles of the applicable techniques and theory of specific analytical methods; and Part II provides the experimental procedures for estimation of the major food constituents. Carbohydrates, being one of the primary components of food, are covered including three methods for the determination of dietary fibre, two variants of the Lane and Eynon method of copper reduction for sugar determination, the use of the dinitrosalicylic acid colorimetric method for the determination of available carbohydrate, three methods for lactose determination in dairy foods and a method of determining sugars in milk.

The book is written in a way which would make it suitable reading for food scientists with limited knowledge of analytical techniques and who require guidance in assessing methods for precision and accuracy and in the presentation of results. The methods are clearly written, and where appropriate, the standard method reference, BS or ISO, is given. There are no references but there is a list of 13 books given under the heading 'Additional reading material', including the standard works of Birch and Southgate, both of which detail the analysis of food carbohydrates.

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Maillard Reactions in Chemistry, Food and Health. Edited by T.P. Labuza, G.A. Reineccius, V.M. Monnier, J. O'Brien & J.W. Baynes, The Royal Society of Chemistry, Cambridge, UK, 1994. xviii + 440 pp. Price £67.50. ISBN 0-85186-802-9.

The Maillard reaction is responsible for the generation of aromatic, flavourful compounds which enhance the taste of food products, and explains the decreased nutritional availability of food which occurs with prolonged storage. The importance of the Maillard reaction *in vivo* has only recently been appreciated; studies have implicated the Maillard reaction in ageing and in the normal physiological turnover of proteins. Ageing is characterised by structural changes in the extracellular matrix throughout the body in virtually every tissue and organ system. There is considerable evidence that some age-associated changes in the properties of collagen result from crosslinks derived from non-enzymatically glycated residues.

This volume comprises the proceedings of the *Fifth International Symposium on the Maillard Reaction*, held at the University of Minnesota in 1993. Previous symposia were held in Switzerland in 1989, Japan in 1985, the USA in 1982 and Sweden in 1979. The conference covered aspects of chemistry, kinetics, technology and toxicology of the reactions in foods and how they relate to health and ageing.

The Maillard reaction in foods is a complex network of chemical reactions which usually take place during food processing or storage. Products of Maillard reactions are significant in foods since they often influence food quality and acceptance, and are thus discussed in some detail. The Maillard reaction can have a significant effect on drug metabolism and stability. A large majority of drugs have amine functionality. These drugs when mixed with reducing sugars or other carbonyl containing pharmaceutical adjuvants often result in extensive mottling or discolouration ('Maillard browning') of the final product over time.

Other sections discuss topics such as the enhancement of the gelation of food macromolecules using the Maillard reaction and elevated temperatures, the kinetics of Maillard reactions, lactose-protein Maillard complexes, and the physiological effects of glycated proteins *in vivo*. The application of techniques such as matrix assisted laser desorption/ionisation mass spectrometry to the investigation of glycated proteins is also discussed.

Overall, this is a far-reaching collection of papers on a multitude of Maillard related topics providing a detailed and thoroughly comprehensive coverage of this fundamentally important area of organic chemistry. This is, therefore, an invaluable tome for anyone in the

food industry or those concerned with any branch of food science.

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