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Book Reviews

Protein-based surfactants: synthesis, physicochemical properties and applications, vol. 101

I.A. Nnanna, J. Xia (Eds.) Marcel Dekker Inc., New York, 2001, x + 290 pages, ISBN 0-8247-00004-X (£150.00)

Surfactants have a broad range of applications. For example, they can be used as additives for the production of household and industrial detergents and cosmetics, and can also aid in the processing and manufacturing of materials. The pharmaceutical, textile, food and petroleum industries use surfactants as wetting, emulsifying, defoaming or solubilising agents. Recent regulatory pressures and environmental issues have resulted in a need for the replacement of petroleum-based surfactants with those derived from naturally occurring renewable sources. Surfactants derived from natural biopolymers should be biodegradable and/or biocompatible. This has stimulated interest in the synthesis and formulation of such surfactants, protein-based surfactants (PBS) in particular. Literature on PBS is scarce, thus this book is intended to provide an update of recent developments within this area of research.

The book begins with an introductory chapter, which provides an overview of surfactant properties, underlying technologies, applications, and environmental issues of PBS. Subsequent chapters describe the various enzymatic and chemical techniques utilised for the preparation of PBS from various amino acids, and examine their resultant physicochemical properties. Chapters are also devoted to ionic and non-ionic surfactants containing amino acids or peptides with perhydrogenated or perflorinated chains, and the generation of new surfactants from underutilised protein and oil sources that have high value potential. The potential market place applications of PBS in medical products, detergents, cosmetics, foods, emulsions, foams and personal care products, is also presented.

Each chapter contains a comprehensive set of references and illustrations in the form of graphs, chemical structures and tables, resulting in a well presented volume that is highly recommended for scientists interested and/or directly involved with aspects of surfactant science.

Jamie Mistry
John F. Kennedy*
Chembiotech Laboratories,
Institute of Research and Development,
University of Birmingham Research Park,
Birmingham B15 2SQ, UK

* Corresponding author.

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Mass spectrometry of natural substances in food

F. Mellon, R. Self, J.R. Startin, The Royal Society of Chemistry, Cambridge, UK, 2000, xii + 300 pages, ISBN 0-85404-571-6 (£59.50)

Research establishments often employ a range of spectroscopic techniques for the analysis of foods, such as mass spectrometry (MS), near-infrared (NIR), nuclear magnetic resonance (NMR), and ultraviolet (UV)/visible light methods. Each of these techniques has a different degree of potential with respect to its application to analytical food science. The continuous development of MS has made it an increasingly used analytical tool, in both analytical and research laboratories.

In recent years the newly introduced soft ionisation technique of matrix-assisted laser desorption ionisation (MALDI) and electrospray ionisation (ESI) have revolutionised the analysis of biopolymeric materials, which has had major implications for the analysis of food structures. For example, MS techniques now play a pivotal role in the analysis of oligosaccharides and food proteins, as well as in proteomics, food pathogens and food components derived from genetically modified organisms.

The opening chapters of this volume begin by introducing the principles and practise of MS techniques, followed by a guide to interpreting data from an organic mass spectrum. Subsequent chapters describe specific food science applications of MS. Topics covered include MS analysis of flavours, bioactive non-nutrients, amino acids, peptides, proteins, lipids, sugars, carbohydrates and vitamins. The remaining chapters discuss the quantification and metabolism of inorganic nutrients, macronutrient metabolism, and pyrolysis mass spectrometry of foods, respectively. Each chapter concludes with a comprehensive set of references.

This is an informative volume, which provides a detailed account of the application of MS techniques for food analysis. It is therefore highly recommended for researchers with interests in food compositional analysis, nutrition and food safety.

Jamie Mistry
John F. Kennedy*
Chembiotech Laboratories,
Institute of Research and Development,
University of Birmingham Research Park,
Birmingham B15 2SQ, UK

* Corresponding author.

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