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Book Reviews

J. Shi, C.-T. Ho and F. Shahidi, editors. Asian Functional Foods, CRC Press/Taylor and Francis Group, Boca Raton, FL, USA, 2005 (xxi + 647 pp., £79.99, ISBN 0-8247-5855-2)

Functional foods have clearly emerged as a major food industry buzzword. A significant driving force in the functional foods marketplace is consumer demand, as the consumers want to optimise their health through food. Health and 'healing' foods have a long history in Asian countries. Traditionally, Asian functional foods were produced on a small scale with manual operations, and then consumed locally. In the last few decades, mass production of functional foods with modern techniques has begun to play an increasingly important role in the production of many Asian functional food products. During the past decade the consumption of functional foods has emerged as a major consumer-driven trend and this trend is expected to continue and need for scientific information on all aspects of functional foods is vital to the advancement of this emerging sector.

Asian Functional Foods discusses the biochemistry, nutrition, physiology and food technology for a wide range of traditional Asian foods. The 21 chapters in this book cover a wide range of traditional Asian functional foods, their history, functionality, chemical, physical and physiological properties and health benefits. Separate chapters have been included on the Asian herbal products, antiaging properties of Asian functional foods, functional foods from garlic and onion.

Fermentation plays an important role in the production of Asian foods. The topics of functional foods from fermented vegetable product 'kimchi' and soybean products have been discussed in the book. The operational principals of the conventional and emerging food processing methods are described in the last chapter of the book. Thousands of products with supposed health benefits are now available in the world market and the number of products is soaring. The scientific community must apply modern technologies to ensure the efficacy and safety of the traditional functional foods before developing them into first-class dietary supplements.

In conclusion, the information given in this book will generate opportunities for greater utilization of traditional Asian functional foods and will be useful to a wide spectrum of food scientists and technologists, nutritionists, biochemists and entrepreneurs worldwide.

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C. Wrigley, H. Corke and C. Walker, editors. Encyclopedia of Grain Science (2004, Academic Press, Oxford, UK) (xxvii + 1428 + l lxxxvpp., £510.00, ISBN 0-12-765490-9(3 Volume set))

Grains are the stuff of life. They have always been critical to mankind's existence. The cultivation of grains was thus the critical development that changed human from the hunter-gatherer nomad into the settled agriculturalist, leading in turn to opportunities for cultural activities. With the improvements in all aspects of grain science and technology, grains contribute to the wider range of our foods as well as enter an amazing diversity of non-food applications.

The *Encyclopedia of Grain Science* is an in-depth and authoritative reference covering all of areas of grain science. Coverage of three volumes includes everything from the genetics of grains to the commercial, economic and social aspects of this important food source. Also covered are the biology and chemistry of grains, the applied aspects of grain production and the processing of grains into various food and beverage products. With the paramount role of cereals as a global food source, this encyclopedia is sure to become the standard reference work in the field.

The aim in compiling this book is to cover everything in complex range of topics that a true encyclopedia of grain science should offer. This diversity is three dimensional:

1. One axis covers the wide range of grain species, especially those of economic value to mankind and his general environment. These include the cereal grains, the oilseeds, the pulses (grain legumes), the soybean (which is both a pulse and an oilseed), as well as amaranth and quinoa.

2. The second dimension covers the sequence of events that is common to all grains, namely, breeding and selection, the production of seed for sowing and the grain for harvest, harvesting, storage, transport and marketing of the grain, and finally processing of the grain to produce food and feed products.

3. A third axis also considered involves the diversity of scientific disciplines used to investigate the questions arising

from the study of grains at all stages of their production and utilization.

The editors bring together information about all areas of grain science, offering extensive articles that include bibliographies and lists of useful Wet site. One of the strengths of this book is the amount of effort put into its cross-referencing. This information is well organized making this set very easy to locate information as needed. The valuable information, authoritative answers to perplexing question, and numerous black and white photos, illustrations, and charts are supplied for complementing a useful and clear introduction of grain science. This book is highly recommended for academic collections with agriculture, food science, and/or nutrition departments.

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S.W. Cui, editor. Food Carbohydrates: Chemistry, physical properties, and applications, CRC Press/Taylor and Francis Group, Boca Raton, FL, USA, 2005 (x + 418 pp., £92.00, ISBN 0-8493-1574-3)

Carbohydrates are one of the most important ingredients in foods and are essential for the maintenance of life and good health. These may occur naturally or added to food products to provide nutrients and to improve the overall quality of a food product. Food carbohydrates can be classified according to their chemical structure into three main groups, low molecular weight mono- and disaccharides, intermediate molecular weight oligosaccharides and high molecular weight polysaccharides. However, nutritionists divide food carbohydrates into two classes on the basis of their metabolisation.

Food Carbohydrates: Chemistry, Physical Properties, and Applications opens with an introductory chapter on chemistry of food polysaccharides. The current methods used for the analysis of total carbohydrates, monosaccharides, oligosaccharides and dietary fibers in food products are described in the second chapter and structural analysis of polysaccharides is discussed in the subsequent chapter.

The functional properties of food polysaccharides are dependent on the structure, molecular weight and concentration of the polysaccharides present. The fourth chapter deals with the functional properties of food polysaccharides and associated characterisation methods. The basic concepts, terminologies and characterisation methodologies used in studying the conformation of polysaccharides are covered in the fifth chapter.

Polysaccharide gums occur in nature as storage materials, cell wall components, exudates and extracellular substances from plants or microorganisms. The structure, functional properties and application of different polymer gums are covered in the sixth chapter. The seventh chapter is focussed on starch chemistry, granular and molecular structure, functionality and the role of starch in food. Starch modifications using various techniques, the functional properties of starches and their application in foods are discussed in the final chapter of the book.

The only criticisms of the book are that some of the polysaccharide structures are poorly presented, i.e. not drawn very well, and some could be described as inaccurate or even incorrect. Likewise, the use of Haworth structures and chair structures is not consistent throughout. Also some of the written descriptions of the linkage configurations between monosaccharide units are not correct, e.g. one should not write β-(1→4) linkages, but e.g. (1→4-linked β-D-glucopyranose units since the β refers to the configuration of the monosaccharide unit present, not the linkage. Similarly the description of an α- or β-anomeric form is only specific if the absolute configurtion is co-named e.g. 'α-D-glucopyranose.' The naming of monosaccharide units is not consistent, since the absolute configuration is used sporadically. Sadly even the structure on the front cover has some poorly produced H's for hydrogen atoms.

In conclusion, this book is a useful reference book for all the persons working in the area of food carbohydrates.

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Robert Thomas, Practical guide to ICP-MS (2004, Marcel Dekker, INC, New York, USA) (xii + 324pp., £55.00, ISBN 0-8247-5319-4)

Inductively coupled plasma mass spectrometry has grown for over 20 years. Recently, even though numerous publications were available, no textbooks were being written specifically for beginners with a very limited knowledge of the technique. This book includes detailed knowledge of this technique, so it can be used as a reference book by both