

Book Reviews

Food Colloids: Fundamentals of Formulation

E. Dickinson, R. Miller (Eds.); The Royal Society of Chemistry, Cambridge, 2001, x + 424 pages, ISBN 0-85404-850-2, £79-50

The food scientist is regularly required to modify the formulation of a food product in order to enhance taste, texture, nutritional profile or appearance, increase shelf-life, reduce cost (by altering constituents or processing conditions), etc. A fundamental understanding of the key physicochemical factors affecting product properties is required in order to successfully facilitate such formulation modifications. With respect to food colloids, it is important to understand how the interfacial and aggregation behaviour of proteins is affected by processing conditions, such as heat or shear forces, or by molecular interactions with other components, such as fats, emulsifiers and hydrocolloids.

The advances presented in this volume are the proceedings of a conference organised by the Food Chemistry Group of the RSC. The volume is divided into five broad sections, the first of which covers new techniques and includes four chapters covering surface quasi-elastic light scattering (SQELS), atomic force microscopy (AFM), Brewster angle microscopy (BAM), and dynamic interactions, respectively. The second section is comprised of nine chapters on emulsions, dispersions and foams. Specific topics covered in this section include foams and antifoams, colloidal dispersions based on solid lipids, and emulsion stabilisation, coalescence, creaming, rheology and crystallisation. Seven chapters on interfacial properties (e.g. protein adsorption and penetration, dilational rheology, etc) make up the third section. Protein structure and interactions are covered in the fourth section (10 chapters), which includes information on agitation, spectroscopy, functional properties, binding, complexation, colloidal stability, and effects of processing conditions. The final section is composed of eight chapters, which focus upon aggregation and gelation. Information on acid induced gelation, enzymic crosslinking, sol–gel transitions, emulsion gels and mixed biopolymer gel systems are included in this section.

This authoritative volume describes the physicochemical principles underlying the formulation of multi-component, multi-phase food systems via overviews of conceptual issues, details of new experimental techniques and recent research findings. It is therefore of great value to food scientists, both in industry and academia.

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Whole Grains and Their Health Benefits

Whole Grains Symposium: Health and Nutrition from *Cereal Foods World* (CFW), 2000, **45**(2), 50–78; American Association of Cereal Chemists (AACC), 2000, 26 pages, \$30.00 (additional copies \$3-00 each)

Until a decade ago, fibre was the nutritional focus with respect to whole-grains and high-fibre diets were associated with decreased risk of disease. The focus has now shifted to whole-grains as a rich source of other beneficial compounds besides fibre. Phytochemicals, such as phenolics, phytic acid, lignans, and tocotrienols, are believed to contribute to the disease-preventing properties of whole-grains, partly due to their protective antioxidant properties. This AACC publication presents important information regarding whole-grains and their impact on health, which featured in the journal *Cereal Foods World*. The presented series of articles provides current information on health benefits of whole-grains and their role in disease prevention.

The opening article discusses the impact of whole-grain intake on chronic diseases. Diets rich in whole-grain foods and other plant foods and low in saturated fat and cholesterol are claimed to possibly reduce risk of coronary heart disease and certain cancers. This claim relies heavily on epidemiological evidence and feeding and laboratory studies that provided insight into active grain constituents, including fibre, minerals, vitamins, phytoestrogens, and polyphenolic compounds. The purpose of this article is to indicate the role, strengths and weaknesses of epidemiological methods in defining the impact of whole-grains on the incidence of chronic disease. The second article discusses the proposed mechanisms for decreased cancer risk due to consumption of whole-grain foods. Surprisingly, little

research has been conducted on the physiological effects of diets rich in whole-grains. This article covers the definition of whole grains, epidemiological evidence, and possible mechanisms for cancer protection based upon the presence of fermentable carbohydrates, decreased transit time and increased stool weight, and antioxidants. This leads nicely into the next article, which focuses upon whole-grain products and antioxidants. Studies have indicated that the consumption of grains, fruits and vegetables is related to lower incidence of aging diseases, as they contain a variety of chemoprotective substances such as antioxidants. Specific areas covered in this article include the determination of antioxidant activity, and the antioxidant activity of fruits, vegetables, and grains.

A number of whole-grain foods and grain fibre sources are beneficial in reduction of insulin resistance and improvement of glucose tolerance. Dietary recommendations of health organisations suggest consumption of three servings per day of whole-grain foods. The next article discusses research using various grains and grain products (based on barley, corn, oats, rice, rye and wheat), effective in improving insulin resistance or lowering glycaemic index. The penultimate article discusses antioxidants in wheat-based breakfast cereals, specifically covering the identity of dietary antioxidants in wheat and the impact of their digestion. It is encouraging that the final article discusses the recommendations for the dietary intake of whole-grains, comparing recommended consumption levels (which are not based upon research data), with actual levels of consumption (in the US). This article highlights topics such as understanding the benefits, identifying whole-grain products, and their convenience and availability.

This informative publication provides a concise account of the scientific evidence for the health benefits of whole-grains and their derived products, and is therefore recommended to researchers with interests in such areas of nutrition and food science.

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Food Chemical Safety, Volume 1: Contaminants

D. Schomburg, I.D.H. Watson (Eds.); Woodhead Publishing

Ltd, Cambridge, UK, 2001, xiii + 322 pages, ISBN 1-85573-462-1, £135.00

In recent years, the scientific knowledge of contaminants has grown considerably. The food industry is well aware of food becoming chemically contaminated from various sources, such as pesticides, veterinary drug residues, food packaging and others and is thus a major concern. This volume put together by an international team of contributors reviews the many aspects of food contamination from its source to methods of control.

The opening chapter 1 of *Food Chemical Safety* introduces the reader into this field. Part 1 containing chapters 2–5 is based on analytical methods for detecting and analysing contaminants. The chapters contain information on the risk analysis on establishing priorities and the quality control and selection of analytical methods. Other chapters discuss the molecular imprint-based sensors and bioassays in contaminant analysis. Part 2 containing chapters 6–11 focuses on particular contaminants. These include veterinary drug residues, inorganic contaminants, such as metals and nitrates, environmental organics, such as aromatic hydrocarbons, chemical migration from food packaging, pesticides, and mycotoxins. Part 3 addresses the regulation aspects of contamination internationally, in the EU and US in chapters 12–14.

This volume is well written and contains numerous references. It is recommended for a broad range of professional scientists wishing to consolidate and update their knowledge in areas of food safety.

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Instrumentation and Sensors for the Food Industry

E. Kress-Rogers, J.B. Brimelow (Eds.); Woodhead Publishing Ltd, Cambridge, UK, 2001, xxx + 836 pages, ISBN 1-85573-560-1, £175.00

The food processing industry has become more advanced with developments in technology and efficient large scale processing plants. Today's customers expect quality in the