Food Enrichment With Omega 3 Fatty Acids Woodhead Publishing Series In Food Science Technology And Nutrition


Many food ingredients are supplied in powdered form, as reducing water content increases shelf life and aids ease of storage, handling and transport. Powder technology is therefore of great importance to the food industry. The Handbook of food powders explores a variety of processes that are involved in the production of food powders, the further processing of these powders and their functional properties. Part one introduces processing and handling technologies for food powders and includes chapters on spray, freeze and drum drying, powder mixing in the production of food powders and safety issues around food powder production processes. Part two focusses on powder properties including surface composition, rehydration and techniques to analyse the particle size of food powders. Finally, part three highlights speciality food powders and includes chapters on dairy powders, fruit and vegetable powders and coating foods with powders. The Handbook of food powders is a standard reference for professionals in the food powder production and handling industries, development and quality control professionals in the food industry using powders in foods, and researchers, scientists and academics interested in the field. Explores the processing and handling technologies in the production of food powders Examines powder properties, including surface composition, shelf life, and techniques used to examine particle size Focuses on speciality powders such as dairy, infant formulas, powdered egg, fruit and vegetable, and culinary and speciality products

Foodborne Parasites in the Food Supply Web: Occurrence and Control provides an overview of the occurrence, transmission, and control of parasites in the food chain, including an introduction to the topic from the perspectives of various issues surrounding foodborne parasites. The text then explores the different types of foodborne parasites, the dynamics of parasite transmission in different food sources, and the prevention and control of foodborne parasites in the food chain. Provides an overview of the occurrence, transmission, and control of parasites in the food chain Explores the different types of foodborne parasites and the dynamics of parasite transmission in different food sources Highlights prevention and control methods to ensure the safety of the
Food chain
Maintaining the high standards that made the previous editions such well-respected and widely used references, Food Lipids: Chemistry, Nutrition, and Biotechnology, Fourth Edition provides a new look at lipid oxidation and highlights recent findings and research. Always representative of the current state of lipid science, this edition provides 16 new chapters and 21 updated chapters, written by leading international experts, that reflect the latest advances in technology and studies of food lipids. New chapters include: Analysis of Fatty Acid Positional Distribution in Triacylglycerol, Physical Characterization of Fats and Oils, Processing and Modification Technologies for Edible Oils, Fats Crystallization Behavior of Fats: Effect of Processing Conditions, Enzymatic Purification and Enrichment of Polyunsaturated Fatty Acids, and Conjugated Linoleic Acid Isomers. Microbial Lipid Production, Food Applications of Lipids, Encapsulation Technologies for Lipids, Rethinking Lipid Oxidation, Digestion, Absorption and Metabolism of Lipids, Omega-3 Polyunsaturated Fatty Acids and Health, Brain Lipids in Health and Disease, Biotechnologically Enriched Cereals with PUFAs in Ruminant and Chicken Nutrition, Enzyme-Catalyzed Production of Lipid Based Esters for the Food Industry: Emerging Process and Technology, Production of Edible Oils Through Metabolic Engineering, Genetically Engineered Cereals for Production of Polyunsaturated Fatty Acids, The most comprehensive and relevant treatment of food lipids available, this book highlights the role of dietary fats in foods, human health, and disease. Divided into five parts, it begins with the chemistry and properties of food lipids covering nomenclature and classification, extraction and analysis, and chemistry and function. Part II addresses processing and food applications including modification technologies, microbial production of lipids, crystallization behavior, chemical interesterification, purification, and encapsulation technologies. The third part covers oxidation, measurements, and antioxidants. Part IV explores the myriad interactions of lipids in nutrition and health with information on heart disease, obesity, and cancer, with a new chapter dedicated to brain lipids. Part V continues with contributions on biotechnology and biochemistry including a chapter on the metabolic engineering of edible oils.

Packaging plays an essential role in protecting and extending the shelf life of a wide range of foods, beverages and other fast-moving consumer goods. There have been many key developments in packaging materials and technologies in recent years, and Trends in packaging of food, beverages and other fast-moving consumer goods (FMCG) provides a concise review of these developments and international market trends. Beginning with a concise introduction to the present status and trends in innovations in packaging for food, beverages and other fast-moving consumer goods, the book goes on to consider modified atmosphere packaging and other active packaging systems, including smart and intelligent packaging, and the role these play in augmenting and securing the consumer brand experience. Developments in plastic and bioplastic materials and recycling systems are then discussed, followed by innovations and trends in metal, paper and paperboard packaging. Further chapters review international environmental and sustainability regulatory and legislative frameworks, before the use of nanotechnology, smart and interactive packaging developments for enhanced communication at the packaging/user interface are explored. Finally, the book concludes by considering potential future trends in materials and technologies across the international packaging market. With its
distinguished editor and international team of expert contributors, Trends in packaging of food, beverages and other fast-moving consumer goods (FMCG) is an important reference tool, providing a practical overview of emerging packaging technologies and market trends for research and design professionals in the food and packaging industry, and academics working in this area. Introduces the present status, current trends and new innovations in the field whilst considering future trends in materials and technologies Considers modified atmosphere packaging and other active packaging systems including smart and intelligent packaging Discusses developments in plastic and bioplastic materials and recycling systems

Food contact materials such as packaging, storage containers and processing surfaces can pose a substantial hazard to both food manufacturer and consumer due to the migration of chemicals or other substances from the material to the food, which can cause tainting of flavours and other sensory characteristics, or even illness. This book reviews the main materials used for food contact in terms of the global legislation in place to ensure their safe and effective use. Part One provides an overview of food contact legislation issues such as chemical migration and compliance testing. Part Two looks in detail at the legislation for specific food contact materials and their advantages, hazards and use in industry. Includes global coverage of food contact legislation Features expert analysis of future trends in global food packaging regulation Focus on specific materials such as plastic, paper and rubber materials in contact with food

Instrumental measurements of the sensory quality of food and drink are of growing importance in both complementing data provided by sensory panels and in providing valuable data in situations in which the use of human subjects is not feasible. Instrumental assessment of food sensory quality reviews the range and use of instrumental methods for measuring sensory quality. After an introductory chapter, part one goes on to explore the principles and practice of the assessment and analysis of food appearance, flavour, texture and viscosity. Part two reviews advances in methods for instrumental assessment of food sensory quality and includes chapters on food colour measurement using computer vision, gas chromatography-olfactometry (GC-O), electronic noses and tongues for in vivo food flavour measurement, and non-destructive methods for food texture assessment. Further chapters highlight in-mouth measurement of food quality and emerging flavour analysis methods for food authentication. Finally, chapters in part three focus on the instrumental assessment of the sensory quality of particular foods and beverages including meat, poultry and fish, baked goods, dry crisp products, dairy products, and fruit and vegetables. The instrumental assessment of the sensory quality of wine, beer, and juices is also discussed. Instrumental assessment of food sensory quality is a comprehensive technical resource for quality managers and research and development personnel in the food industry and researchers in academia interested in instrumental food quality measurement. Reviews the range and use of instrumental methods for measuring sensory quality Explores the principles and practice of the assessment and analysis of food appearance, flavour, texture and viscosity Reviews advances in methods for instrumental assessment of food sensory quality

With growing concerns about the rising incidence of obesity, there is interest in understanding how the human appetite contributes to energy balance and how it might be affected by the foods we consume, as well as other cultural and environmental factors.
Satiation, satiety and the control of food intake provides a concise and authoritative overview of these areas. Part one introduces the concepts of satiation and satiety and discusses how these concepts can be quantified. Chapters in part two focus on biological factors of satiation and satiety before part three moves on to explore food composition factors. Chapters in part four discuss hedonic, cultural and environmental factors of satiation and satiety. Finally, part five explores public health implications and evaluates consumer understanding of satiation and satiety and related health claims. Provides a concise and authoritative overview of appetite regulation Focuses on the effects of biological factors, food composition and hedonic, cultural and environmental factors affecting appetite control Discusses implications for public health

A nutritional whodunit that takes readers from Greenland to Africa to Israel, The Queen of Fats gives a fascinating account of how we have become deficient in a nutrient that is essential for good health: the fatty acids known as omega-3s. Writing with intelligence and passion, Susan Allport tells the story of these vital fats, which are abundant in greens and fish, among other foods. She describes how scientists came to understand the role of omega-3s in our diet, why commercial processing has removed them from the food we eat, and what the tremendous consequences have been for our health. In many Western countries, epidemics of inflammatory diseases and metabolic disorders have been traced to omega-3 deficiencies. The Queen of Fats provides information for every consumer who wants to reduce the risk of heart disease, cancer, arthritis, and obesity and to improve brain function and overall health. This important and compelling investigation into the discovery, science, and politics of omega-3s will transform our thinking about what we should be eating. * Includes steps you can take to add omega-3s to your diet * Shows why eating fish is not the only way, or even the best way, to increase omega-3s. * Provides a new way to understand the complex advice about the role and importance of fats in the body * Explains how and why the food industry has created a deadly imbalance of fats in our foods * Shows how omega-3s can be reintroduced to our diet through food enrichment and changes in the feeding of livestock

The Role of Materials Science in Food Bioengineering, Volume 19 in the Handbook of Food Bioengineering, presents an up-to-date review of the most recent advances in materials science, further demonstrating its broad applications in the food industry and bioengineering. Many types of materials are described, with their impact in food design discussed. The book provides insights into a range of new possibilities for the use of materials and new technologies in the field of food bioengineering. This is an essential reference on bioengineering that is not only ideal for researchers, scientists and food manufacturers, but also for students and educators. Discusses the role of material science in the discovery and design of new food materials Reviews the medical and socioeconomic impact of recently developed materials in food bioengineering Includes encapsulation, coacervation techniques, emulsion techniques and more Identifies applications of new materials for food safety, food packaging and consumption Explores bioactive compounds, polyphenols, food hydrocolloids, nanostructures and other materials in food bioengineering Microencapsulation is being used to deliver everything from improved nutrition to unique consumer sensory experiences. It’s rapidly becoming one of the most important opportunities for expanding brand potential. Microencapsulation in the Food Industry:
A Practical Implementation Guide is written for those who see the potential benefit of using microencapsulation but need practical insight into using the technology. With coverage of the process technologies, materials, testing, regulatory and even economic insights, this book presents the key considerations for putting microencapsulation to work. Application examples as well as online access to published and issued patents provide information on freedom to operate, building an intellectual property portfolio, and leveraging ability into potential in licensing patents to create produce pipeline. This book bridges the gap between fundamental research and application by combining the knowledge of new and novel processing techniques, materials and selection, regulatory concerns, testing and evaluation of materials, and application-specific uses of microencapsulation. Practical applications based on the authors’ more than 50 years combined industry experience Focuses on application, rather than theory Includes the latest in processes and methodologies Provides multiple "starting point" options to jump-start encapsulation use

Innovation and Future Trends in Food Manufacturing and Supply Chain Technologies focuses on emerging and future trends in food manufacturing and supply chain technologies, examining the drivers of change and innovation in the food industry and the current and future ways of addressing issues such as energy reduction and rising costs in food manufacture. Part One looks at innovation in the food supply chain, while Part Two covers emerging technologies in food processing and packaging. Subsequent sections explore innovative food preservation technologies in themed chapters and sustainability and future research needs in food manufacturing. Addresses issues such as energy reduction and rising costs in food manufacture Assesses current supply chain technologies and the emerging advancements in the field, including key chapters on food processing technologies Covers the complete food manufacturing scale, compiling significant research from academics and important industrial figures

The development of high-quality foods with desirable properties for both consumers and the food industry requires a comprehensive understanding of food systems and the control and rational design of food microstructures. Food microstructures reviews best practice and new developments in the determination of food microstructure. After a general introduction, chapters in part one review the principles and applications of various spectroscopy, tomography and microscopy techniques for revealing food microstructure, including nuclear magnetic resonance (NMR) methods, environmental scanning electron, probe, photonic force, acoustic, light, confocal and infrared microscopies. Part two explores the measurement, analysis and modelling of food microstructures. Chapters focus on rheology, tribology and methods for modelling and simulating the molecular, cellular and granular microstructure of foods, and for developing relationships between microstructure and mechanical and rheological properties of food structures. The book concludes with a useful case study on electron microscopy. Written by leading professionals and academics in the field, Food microstructures is an essential reference work for researchers and professionals in the processed foods and nutraceutical industries concerned with complex structures, the delivery and controlled release of nutrients, and the generation of improved foods. The book will also be of value to academics working in food science and the emerging field of soft matter. Reviews best practice and essential developments in food microstructure microscopy and modelling Discusses the principles and applications of various microscopy techniques used to discover food microstructure Explores the
The emergence of the discipline of encapsulation and controlled release has had a great impact on the food and dietary supplements sectors; principally around fortifying food systems with nutrients and health-promoting ingredients. The successful incorporation of these actives in food formulations depends on preserving their stability and bioavailability as well as masking undesirable flavors throughout processing, shelf life and consumption. This second edition of Encapsulation and Controlled Release Technologies in Food Systems serves as an improvement and a complement companion to the first. However, it differentiates itself in two main aspects. Firstly, it introduces the reader to novel encapsulation and controlled release technologies which have not yet been addressed by any existing book on this matter, and secondly, it offers an in-depth discussion on the impact of encapsulation and controlled release technologies on the bioavailability of health ingredients and other actives. In common with the first edition the book includes chapters written by distinguished authors and researchers in their respective areas of specialization. This book is designed as a reference for scientists and formulators in the food, nutraceuticals and consumer products industries who are looking to formulate new or existing products using microencapsulated ingredients. It is also a post-graduate text designed to provide students with an introduction to encapsulation and controlled release along with detailed coverage of various encapsulation technologies and their adaptability to specific applications.

Innovative Food Analysis presents a modern perspective on the development of robust, effective and sensitive techniques to ensure safety, quality and traceability of foods to meet industry standards. Significant enhancements of analytical accuracy, precision, detection limits and sampling has expanded the practical range of food applications, hence this reference offers modern food analysis in view of new trends in analytical techniques and applications to support both the scientific community and industry professionals. This reference covers the latest topics across existing and new technologies, giving emphasis on food authenticity, traceability, food fraud, food quality, food contaminants, sensory and nutritional analytics, and more. Covers the last ten years of applications across existing and new technologies of food analytics Presents an emphasis on techniques in food authenticity, traceability and food fraud Discusses bioavailability testing and product analysis of food allergens and foodomics

It is well known that fats, proteins, and carbohydrates are all energy-yielding nutrients that influence health and physical performance. Yet many recreational, collegiate, and professional athletes still consume more fats, saturated fats, and cholesterol than is recommended, as well as inappropriate amounts of proteins. What is needed is a nuts and bolts reference to guide athletes, coaches, and trainers to make educated choices when designing a diet to yield optimal performance. Sports Nutrition: Fats and Proteins is an up-to-date compilation of critical reviews on the influence of dietary and supplemental fats and proteins on physical performance. Each chapter is written by a recognized scientist with notable expertise in the area of fat or protein as it relates to exercise and sports. It provides a detailed introduction to sports nutrition with an emphasis on the influence of fats and proteins. Covering the quantity and types of fats that effect performance and health, the book includes a general chapter on total fats, saturated fats, and cholesterol, as well as chapters on specific supplements including omegas-3 and -6, medium-chain
triglycerides, conjugated linoleic acid, wheat germ oil, and octacosonol. The book also focuses on proteins and the amounts, types, and combinations of selected supplements and their role in performance. Well-researched articles analyze whey, soy, and casein proteins; select amino acids such as creatine, glutamine, and branched-chain; and other beneficial supplements. The book concludes with a discussion of recommended intakes of the energy-yielding nutrients and, more importantly, recommended proportions of carbohydrates to fats to proteins. Armed with the valuable information found in Sports Nutrition: Fats and Proteins, sports nutritionists, fitness professionals, researchers, and the well-informed layman can create and tailor the appropriate diet to help them and others maximize performance and reach their highest potential.

The Encyclopedia of Food and Health provides users with a solid bridge of current and accurate information spanning food production and processing, from distribution and consumption to health effects. The Encyclopedia comprises five volumes, each containing comprehensive, thorough coverage, and a writing style that is succinct and straightforward. Users will find this to be a meticulously organized resource of the best available summary and conclusions on each topic. Written from a truly international perspective, and covering all areas of food science and health in over 550 articles, with extensive cross-referencing and further reading at the end of each chapter, this updated encyclopedia is an invaluable resource for both research and educational needs. Identifies the essential nutrients and how to avoid their deficiencies Explores the use of diet to reduce disease risk and optimize health Compiles methods for detection and quantitation of food constituents, food additives and nutrients, and contaminants

Contains coverage of all areas of food science and health in nearly 700 articles, with extensive cross-referencing and further reading at the end of each chapter

Metabolomics enables valuable information about the biochemical composition of foods to be rapidly obtained. Since the biochemical profile of food largely determines key food properties such as flavour and shelf life, the information gained using metabolomics-based methods will enable greater control of food quality and also help to determine the relationship between diet and health. Metabolomics in food and nutrition provides an overview of their current and potential use in the food industry. Part one reviews equipment, methods and data interpretation in metabolomics including the use of nuclear magnetic resonance (NMR), statistical methods in metabolomics, and metabolic reconstruction databases and their application to metabolomics research. Part two explores applications of metabolomics in humans, plants and food. Chapters discuss metabolomics in nutrition, human samples for health assessments, and current methods for the analysis of human milk oligosaccharides (HMOs) and their novel applications. Further chapters highlight metabolomic analysis of plants and crops, metabolomics for the safety assessment of genetically modified (GM) crops, and applications of metabolomics in food science including food composition and quality, sensory and nutritional attributes. With its distinguished editors and team of expert contributors, Metabolomics in food and nutrition is a technical resource for industrial researchers in the food and nutrition sectors interested in the potential of metabolomics methods and academics and postgraduate students working in the area. Provides an overview of the current and potential future use of metabolomics in the food industry Chapters focus on key applications and review the analytical methods used and the
bioinformatics techniques involved in processing the results. Discusses metabolomics in nutrition, human samples for health assessments, and current methods for the analysis of human milk oligosaccharides (HMOs) and their novel applications. Discusses omega-3 fatty acids and their impact on health.

Developing Food Products for Customers with Specific Dietary Needs explains the process for developing foods for customers who have specific dietary needs, further shining a light on the number of increasing medical conditions related to food intake that have emerged in the past few decades. From increased fat and sugar intake leading to higher levels of obesity, to greater levels of coeliac disease, the ingredients and nutritional content of food is becoming more and more important. Additionally, consumers are following particular diets for many different reasons, be it health related, or for religious or moral reasons. The first part of the book looks, in detail, at the organizational structure required within a company to allow for the development of food products which meet the needs of these customers, while the second part presents a number of case studies highlighting the development of food products for various dietary requirements. Precise coverage includes section on the development of low-sodium, low-sugar, low-fat, and low-carbohydrate products with the aim of producing healthier foods, as well as the development of organic and vegetarian products for consumers who are following diets for personal reasons. The potential solutions for developing foods for customers who have specific dietary needs are likely to include both ingredients and technology developments. The ingredients area includes simple reductions as well as replacement strategies, whilst technology will be applied to both the ingredient itself and the host food product. All are aimed at maintaining the product quality as perceived by the customer. Provides an overview of the organizational structure required within a company to develop foods for specific customer needs. Includes section on the development of low-sodium, low-sugar, low-fat, and low-carbohydrate products with the aim of producing healthier foods. Presents case studies that deliver a best practice view on developing foods for customers with specific dietary needs. Written by industry professionals, this book offers in-depth coverage of this topic of ever increasing importance to the food industry.

Omega-3 fatty acids provide many health benefits, from reducing cardiovascular disease to improving mental health, and consumer interest in foods enriched with omega-3 fatty acids is increasing. Formulating a product enriched with these fatty acids that is stable and has an acceptable flavour is challenging. Food enrichment with omega-3 fatty acids provides an overview of key topics in this area. Part one, an introductory section, reviews sources of omega-3 fatty acids and their health benefits. Chapters in part two explore the stabilisation of both fish oil itself and foods enriched with omega-3 fatty acids. Part three focuses on the fortification of different types of foods and beverages with omega-3 fatty acids, including meat products, by the modification of animal diets and other methods, infant formula and baked goods. Finally, part four
highlights new directions in the field and discusses algal oil as a source of omega-3 fatty acids and labelling and claims in foods containing omega-3 fatty acids. Food enrichment with omega-3 fatty acids is a standard reference for professionals in the functional foods industry involved with research, development and quality assessment and for researchers in academia interested in food lipids, oxidation and functional foods. Provides a comprehensive overview of formulating a product enriched with omega-3 fatty acids that is stable, provides many health benefits and has an acceptable flavour. Reviews sources of omega-3 fatty acids and their health benefits and explores the stabilisation of fish oil and foods enriched with omega-3 fatty acids. Focuses on the fortification of different types of foods and beverages with omega-3 fatty acids and highlights new directions in the field.

Encapsulation of bioactives is a fast-growing approach in the food and pharmaceutical industry. Spray Drying: Encapsulation of Bioactive Materials serves as a source of information to offer specialized and in-depth knowledge on the most well-known and used encapsulation technology (i.e., spray drying) and corresponding advances. It describes the efficacy of spray drying in terms of its advantages and challenges for encapsulation of bioactive ingredients. Discusses the potential of this technique to pave the way toward cost-effective, industrially relevant, reproducible, and scalable processes that are critical to the development of delivery systems for bioactive incorporation into innovative functional food products and pharmaceuticals. Presents the latest research outcomes related to spray drying technology and the encapsulation of various bioactive materials. Covers advances in spray drying technology that may result in a more efficient encapsulation of bioactive ingredients. Includes computational fluid dynamics, advanced drying processes, as well as the morphology of the dried particles, drying kinetics analyzers, process controllers and adaptive feedback systems, inline powder analysis technologies, and cleaning-in-place equipment. Aimed at food manufacturers, pharmacists, and chemical engineers, this work is of interest to anyone engaged in encapsulation of bioactive ingredients for both nutraceutical and pharmaceutical applications.

Essential fatty acids are fatty acids that humans must ingest because the body requires them for good health, but it cannot synthesize itself. Therefore, such nutrients need to be supplied from either diet or dietary supplements. Recent studies raised scientific and medical interest in the beneficial effects of these fatty acids on brain and retina function, as well as reducing ill health effects, such as cardio-metabolic diseases. Thus, there is an interest in developing requirements and dietary recommendations. Essential Fatty Acids: Sources, Processing Effects, and Health Benefits provides a systematic introduction and comprehensive information about the essentiality of diets rich in omega fatty acids for successful human growth, development and disease prevention. This book presents detailed knowledge about essential fatty acids, their different food sources, biochemistry, and metabolism. It provides a comprehensive assessment.
of current knowledge about the effects of various processing and storage conditions on essential fatty acids, their bioavailability and supplementation in foods and diet. Chapters highlight the contribution of essential fatty acids in prevention and improvement of various conditions such as heart problems, arthritis, cancer, brain and bone health, especially in developing fetuses and children. Key Features: Presents comprehensive information on nutritional and health aspects of fats and essential fatty acids Contains a wealth of information on the structure, sources, biochemistry and nutritional properties of essential fatty acids Provides the latest information about the changes in essential fatty acids during various processing and storage conditions Highlights the bioavailability, supplementation and dietary requirements of these fatty acids By bringing together diverse areas of biochemistry, storage, as well as processing behavior and dietary requirements, this book lays the groundwork for striking expansion in our understanding of these important biochemicals and their role in health and disease prevention. Essential Fatty Acids will be of interest to a large and varied audience of researchers in academia, industry, nutrition, dietetics, food science, agriculture, and regulators.

Research and legislation in food microbiology continue to evolve, and outbreaks of foodborne disease place further pressure on the industry to provide microbiologically safe products. This second volume in the series Advances in Microbial Food Safety summarises major recent advances in this field, and complements volume 1 to provide an essential overview of developments in food microbiology. Part one opens the book with an interview with a food safety expert. Part two provides updates on single pathogens, and part three looks at pathogen detection, identification and surveillance. Part four covers pathogen control and food preservation. Finally, part five focuses on pathogen control management. Extends the breadth and coverage of the first volume in the series Includes updates on specific pathogens and safety for specific foods Reviews both detection and management of foodborne pathogens

The hygienic processing of food concerns both potential hazards in food products and the regulation, design, and management of food processing facilities. This second edition of Hygiene in Food Processing gives a revised overview of the practices for safe processing and incorporates additional chapters concerning pest control, microbiological environmental sampling, and the economics of food plants. Part one addresses microbial risks in foods and the corresponding regulation in the European Union. Part two discusses the hygienic design of food factory infrastructure, encompassing the design and materials for the factory itself, as well as food processing equipment. This edition includes a new chapter on the control of compressed gases used to pneumatically operate equipment. Part three focuses on cleaning and disinfection practices in food processing. The chapter on cleaning in place also considers more cost-effective systems, and complements the additional chapter on maintenance of equipment. These chapters also explore issues such as the hygiene of workers, potential infection by foreign bodies, and pest control. Further, the chapter on
microbiological sampling explains how to calculate the risk of contamination depending on the product's environment. This essential second edition is useful to professionals responsible for hygiene in the food industry. It provides a comprehensive, yet concise and practical reference source for food plant managers, suppliers of food processing equipment, building contractors, and food inspectors looking for an authoritative introduction to hygiene regulation, hygienic design, and sanitation. Provides a revised overview of the practices for safe processing Incorporates additional chapters concerning pest control, microbiological environmental sampling, and the economics of food plants This essential second edition is useful for professionals responsible for hygiene in the food industry Superfoods and functional foods are receiving increasing attention because of their important roles in health. This book focuses on the production of superfoods and functional foods and their role as medicine. In the early chapters, prominent researchers introduce the roles and production of microalgae and functional fruits through metabolic engineering, the use of food waste, and effective cooking procedures. In the latter chapters, other prominent researchers introduce the medical effects of polyphenols, glutamine, and unsaturated fatty acids, which are contained in superfoods and functional foods. They suggest the importance of superfoods and functional foods in the treatment and prevention of many diseases. It is also recommended for readers to take a look at a related book, Superfood and Functional Food: An Overview of Their Processing and Utilization. This book presents a cutting-edge, in-depth investigation into new methods of health promotion. It is one of the first books to focus on the role of omega-3 polyunsaturated fatty acids in unhealthy diets. The book also contains reviews of the economic benefits of novel health promotion and disease prevention methods. Leading experts present recent examples and clinical trials. Written by experts at the forefront of phytochemical analysis, this book covers the important classes of bioactive components of functional foods and nutraceuticals. It also includes some components for which no acceptable methods of analysis are yet available. Organized by compound class, Methods of Analysis for Functional Foods and Nutraceuticals Omega-3 Delivery Systems: Production, Physical Characterization and Oxidative Stability offers the most recent updates for developing, characterizing, and stabilizing both traditional and novel omega-3 delivery systems, including their final incorporation into food matrices and physicochemical changes during digestion. The book brings chapters on novel omega-3 delivery systems (e.g., high-fat emulsions, Pickering emulsions, electrospayed capsules, and solid lipid nanoparticles), the application of advanced techniques to evaluate physical and oxidative stabilities (e.g., SAXS, SANS, ESR, and super-resolution fluorescence microscopy), and new developments of food enrichment and physicochemical changes during digestion. The book provides a unique multidisciplinary and multisectoral approach, i.e., featuring authors from industry and academy. Long chain omega-3
polyunsaturated fatty acids (PUFA) present numerous health benefits; however, the consumption of natural products rich in omega-3 PUFA (e.g., fish, krill, and algae) is not enough to reach the daily-recommended values. Therefore, the food industry is highly interested in producing omega-3 fortified foods. Brings a holistic approach of omega-3 delivery systems, bringing scientific understanding on production, physical characterization, and oxidative stability Covers key aspects to develop, characterize, and use omega-3 delivery systems for food enrichment, considering physicochemical changes occurring during digestion Serves as an interface between lipid oxidation and colloid chemistry, encapsulation techniques, soft matter physics, food development, and nutrients bioavailability

Allergens in food and their detection, management and elimination constitute a key issue for food manufacturers, especially in terms of safety. This book reviews current and emerging technologies for detecting and reducing allergens, as well as issues such as traceability, regulation and consumer attitudes. Following an introductory chapter by a distinguished expert, part one covers allergen management throughout the food chain. Part two details current and emerging methods of allergen detection in food, and part three covers methods for reducing and eliminating allergens in food. Finally, part four focuses on the control and detection of individual food allergens and the risks each one presents in food manufacture. Reviews current and emerging technologies for detecting and reducing allergens, as well as issues such as traceability, regulation and consumer attitudes Covers allergen management throughout the food chain and reviews current and emerging methods of allergen detection Examines methods for reducing and eliminating allergens in food and provides a detailed overview of the control and detection of individual food allergens Foods, Nutrients and Food Ingredients with Authorised EU Health Claims provides an overview of how health claims are regulated in the European Union, as well as detailed scientific and regulatory information about permitted health claims for particular types of foods and ingredients. Part one provides a background to the regulation of health claims in Europe. Part two focuses on authorised disease risk reduction claims, claims relating to children’s development, and health and proprietary claims. Part three sets out ingredients with permitted “general function claims, including choline, creatine, sweeteners, dietary lactase supplements, and polyphenols in olive oil. Part four outlines foods and nutrients with permitted health claims, with chapters on vitamins and minerals, proteins, meat, fish, water, and the replacement of saturated fats. Foods, Nutrients and Food Ingredients with Authorised EU Health Claims is the go-to resource for R&D managers and technical managers in the food, and beverage and dietary supplements industry, product development managers, health professionals and academic researchers in the field. Provides a comprehensive overview of foods and food substances that have achieved approved health claims in Europe under Regulation EC 1924/2006 Covers properties and applications of each ingredient, as well as evidence for the health claim and how it benefits consumers Outlines the importance of each claim in product development and marketing and regulatory issues such as conditions of use

Oxidative rancidity is a major cause of food quality deterioration, leading to the formation of undesirable off-flavours as well as unhealthy compounds. Antioxidants are widely employed to inhibit oxidation, and with current consumer concerns about synthetic
additives and natural antioxidants are of much interest. The two volumes of Oxidation in foods and beverages and antioxidant applications review food quality deterioration due to oxidation and methods for its control. The second volume reviews problems associated with oxidation and its management in different industry sectors. Part one focuses on animal products, with chapters on the oxidation and protection of red meat, poultry, fish and dairy products. The oxidation of fish oils and foods enriched with omega-3 polyunsaturated fatty acids is also covered. Part two reviews oxidation in plant-based foods and beverages, including edible oils, fruit and vegetables, beer and wine. Oxidation of fried products and emulsion-based foods is also discussed. Final chapters examine encapsulation to inhibit lipid oxidation and antioxidant active packaging and edible films. With its distinguished international team of editors and contributors, the two volumes of Oxidation in foods and beverages and antioxidant applications is standard references for R&D and QA professionals in the food industry, as well as academic researchers interested in food quality. Reviews problems associated with oxidation and its management in different industry sectors Examines animal products, with chapters on the oxidation and protection of red meat, poultry and fish Discusses oxidation of fish oils and foods enriched with omega-3 and polyunsaturated fatty acids Active ingredients in foods must remain fully functional for as long as necessary and be transported and discharged appropriately to have the desired nutritional effect. Delivery and controlled release systems are an essential way to achieve these aims. This important book reviews how to optimise these systems to maximise the health-promoting properties of food products. Opening chapters review factors affecting nutrient bioavailability and methods to test delivery system efficacy. Part two addresses materials used and specific techniques for delivery and release. The benefits and drawbacks of structured lipids, micro- and nano-emulsions, food-protein-derived materials, complexes and conjugates of biopolymers, and starch as an encapsulation material for delivery of functional food ingredients, are all considered. Part three discusses the delivery and controlled release of particular nutraceuticals such as antioxidants and vitamins, folic acid, probiotics, fish oils and proteins. Part four covers regulatory issues and future trends in bioactives and nutraceuticals. Edited by a leading expert in the field, Delivery and controlled release of bioactives in foods and nutraceuticals is a valuable reference for those working in the food industry and particularly those developing nutraceuticals. Reviews techniques to optimise the delivery and release of bioactives in food Discusses the factors that affect nutrient bioavailability and methods to test delivery system efficacy Addresses materials used and specific techniques for delivery and release Handbook of Functional Beverages and Human Health provides potential applications and new developments in functional beverages, nutraceuticals, and health foods. In addition to serving as a reference manual, it summarizes the current state of knowledge in key research areas and contains novel ideas for future research and development. Additionally, Advances in Food and Beverage Labelling reviews recent advances in labelling research and regulation, covering issues such as nutrition and hazard information, traceability, health claims and standardisation, as well as new labelling technologies and consumer issues. The EU Food Information Regulation will come into force in December 2014 and the book is designed to provide
timely and useful information to manufacturers in this area, as well as on a global scale. Part one covers the different types of information that can, or must be present on a food label. Part two looks at recent developments in food labelling technology, regulations and enforcement. Brings together contributions from industry, trade bodies, government and academia. Offers timely advice for those concerned with the legal framework for food labelling, with information about the EU Food Information Regulation, as well as the US market. Reviews issues surrounding nutrition and health claims and GM, ethical and environmental labelling. There is increasing evidence in studies conducted over recent decades that numerous health benefits are associated with the consumption of long chain omega-3 (ω-3) polyunsaturated fatty acids (LCω-3PUFA) throughout the human lifecycle(1). This has created a demand for functional food products enriched with LCω-3PUFA. Nanoemulsions, systems with extremely small droplet sizes have been shown to increase LCω-3PUFA bioavailability(2). However, nanoemulsion creation and processing methods may impact on the oxidative stability of these systems due to small lipid droplet sizes and large droplet surface areas(3). This study aimed to systematically review published literature that focused on the oxidative stability of LCω-3PUFA nanoemulsions suitable for integration into food vehicles. The review followed the PRISMA checklist for systematic reviews. Searches were conducted and titles and abstracts screened for relevance by two independent review authors (KEL, LB or LS). Studies were included in the review if they evaluated the oxidative stability of LCω-3PUFA nanoemulsions suitable for food enrichment and were published from January 2007 to July 2017. The search criteria identified 1880 articles, which were reduced to 1403 upon abstract and title screening. Further application of inclusion/exclusion criteria led to the identification of 17 key studies. Researchers used a range surfactants and antioxidants to create systems which, were evaluated during 7 to 100 days of storage. Nanoemulsions were created using high and low power methods with synthetic and natural emulsifiers. Natural emulsifiers offered equivalent or increased oxidative stability compared to synthetic sources, which is useful as consumers are demanding natural, cleaner label food products(4). LCω-3PUFA source oils evaluated included fish (n = 9), flaxseed (n = 2), algae (n = 3), krill (n = 2), walnut (n = 1). Equivalent vegetarian sources of LCω-3PUFA to those found in fish oils such as algal oils show potential as they provide direct sources without the need for conversion in the human metabolic pathway. Quillaja saponin is a promising natural emulsifier that can produce nanoemulsion systems with equivalent/increased oxidative stability in comparison to other emulsifiers particularly when additional antioxidants are used. Further studies to evaluate the oxidative stability of quillaja saponin nanoemulsions combined with algal sources of LCω-3PUFA are warranted to enable the development of safe, clean label functional food products.

Food Enrichment with Omega-3 Fatty AcidsElsevier

This book presents an integrated and multidisciplinary approach to quality and innovation in the food sector with particular emphasis on consumer perception of quality. Chapters cover such topics as identification of environmental variables, practices crops, and cultivars to improve nutritional and functional quality of different food matrices; increased preservation of biodiversity through the use of genetic resources; nutritional and functional characterization of food matrices; and evaluation of the main
bioactive substances that give food its functional qualities. This volume argues for the importance of essential nutrients in our diet. Over the last two decades there has been an explosion of research on the relationship of Omega-3 fatty acids and the importance of antioxidants to human health. Expert authors discuss the importance of a diet rich in Omega-3 fatty acids for successful human growth and development and for the prevention of disease. Chapters highlight their contribution to the prevention and amelioration of a wide range of conditions such as heart disease, diabetes, arthritis, cancer, obesity, mental health and bone health. An indispensable text designed for nutritionists, dietitians, clinicians and health related professionals, Omega-3 Fatty Acids: Keys to Nutritional Health presents a comprehensive assessment of the current knowledge about the nutritional effects of Omega-3 fatty acids and their delivery in foods.

Nanotoxicity: Prevention, and Antibacterial Applications of Nanomaterials focuses on the fundamental concepts for cytotoxicity and genotoxicity of nanomaterials. It sheds more light on the underlying phenomena and fundamental mechanisms through which nanomaterials interact with organisms and physiological media. The book provides good guidance for toxic prevention methods and management in the manufacture/application/disposal. The book also discusses the potential applications of nanomaterials-based antibiotics. The potential toxic effects of nanomaterials result not only from the type of base materials, but also from their size/ligands/surface chemical modifications. This book discusses why different classes of nanomaterials display toxic properties, and what can be done to mitigate this toxicity. It also explores how nanomaterials are being used as antimicrobial agents, being used to purify air and water, and counteract a range of infectious diseases. This is an important reference for materials scientists, environmental scientists and biomedical scientists, who are seeking to gain a greater understanding of how nanomaterials can be used to combat toxic agents, and how the toxicity of nanomaterials themselves can best be mitigated. Explains the underlying phenomena and fundamental mechanisms through which nanomaterials interact with organisms and physiological media Outlines major methods for mitigating and prevention of nanotoxicity Discusses the applications of nanomaterials-based antibiotics

Innovative Food Processing Technologies: Extraction, Separation, Component Modification and Process Intensification focuses on advances in new and novel non-thermal processing technologies which allow food producers to modify and process food with minimal damage to the foodstuffs. The book is highly focused on the application of new and novel technologies, beginning with an introductory chapter, and then detailing technologies which can be used to extract food components. Further sections on the use of technologies to modify the structure of food and the separation of food components are also included, with a final section focusing on process intensification and enhancement. Provides information on a variety of food processing technologies Focuses on advances in new and novel non-thermal processing technologies which allow food producers to modify and process food with minimal damage to the foodstuffs Presents a strong focus on the application of technologies in a variety of situations Created by editors who have a background in both the industry and academia

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