

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

Egg Innovations and Strategies for Improvements examines the production of eggs from their development to human consumption. Chapters also address consumer acceptance, quality control, regulatory aspects, cost and risk analyses, and research trends. Eggs are a rich source of macro- and micronutrients which are consumed not only by themselves, but also within the matrix of food products, such as pastas, cakes, and pastries. A wholesome, versatile food with a balanced array of essential nutrients, eggs are a staple of the human diet. Emerging strategies entail improvements to the composition of eggs via fortification or biological enrichment of hen's feed with polyunsaturated fatty acids, antioxidants, vitamins, or minerals. Conversely, eggs can be a source of food-borne disease or pollutants that can have effects on not only human health, but also egg production and commercial viability. Written by an international team of experts, the book presents a unique overview of the biology and science of egg production, nutrient profiling, disease, and modes for increasing their production and quality. Designed for poultry and food scientists, technologists, microbiologists, and workers in public health and the food and egg industries, the book is valuable as an industrial reference and as a resource in academic libraries. Focuses on the production and food science aspects of eggs Includes a broad range of microbial contaminants, their risks, and prevention, as well as non-microbial contaminant risks Presents analytical techniques for practical application

Frontiers in Natural Product Chemistry is a book series devoted to publishing monographs that highlight important advances in natural product chemistry. The series covers all aspects of research in the chemistry and biochemistry of naturally occurring compounds, including research on natural substances derived from plants, microbes and animals. Reviews of structure elucidation, biological activity, organic and experimental synthesis of natural products as well as developments of new methods are also included in the series. Volume nine of the series brings together 7 reviews on a variety of natural products and sources along with a chapter on the basics of investigating antioxidant activity. Propolis and its key chemical constituents: a promising natural product in therapeutic applications Investigation of the effects of using omega-3 fatty acids on egg quality in functional egg production Quercetin, a flavonoid with remarkable anticancer activity Sweetgum oil as a multiple health promoting function oil Overview of traditional uses, phytochemistry and pharmacology of Pegannum harmala I. Investigation of measurement methods of antioxidant activity and involved mechanisms Recent progress on natural and synthetic flavanone and its derivatives Role of virgin coconut oil as a multiple health promoting function oil

The limited aqueous solubility of bioactive pharmaceutical ingredients presents a tremendous challenge in the development of new drugs. In recent years, methods have been developed to protect these sensitive bioactive compounds, namely antioxidants, with the aim of increasing the public sanitation grades. Emulsion-based systems are particularly interesting as colloidal delivery encapsulation systems, because they can easily be created from food-grade ingredients using relatively simple processing protocols. It is one of the most favorable delivery systems to increase the solubility of phytochemicals, nutraceuticals and food additives. Emulsion-based Encapsulation of Antioxidants: Design and Performance advances the field of colloid science through the investigation of the effects of formulation and process parameters that influence emulsion production. The book offers a deeper comprehension of the technological and biological aspects of the incorporation of encapsulated compounds in food matrices and explication of their activity. Chapters provide an overview of the status of emulsion-based formulations to encapsulate antioxidants, fabrication, properties, applications, and biological fate with emphasis on systems suitable for utilization within industry. Special emphasis is placed on the antioxidant activity of the carriers being the key advantage of these emulsion-based systems. The main aim of the book is to inspire and to guide fellow scientists and students in this field. Filled with illustrations, figures, case studies, practical examples, and historical perspectives, the book can also be used as a practical handbook or graduate textbook. For industry professionals, the book presents easy-to-achieve approaches to industrial pharmaceutical production.

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.

Proceedings of 11th European Nutrition and Dietetics Conference 2017

Methods of Analysis for Functional Foods and Nutraceuticals

Bio-Based Nanoemulsions for Agri-Food Applications

Wild-type Food in Health Promotion and Disease Prevention

Frontiers in Natural Product Chemistry: Volume 9

Omega-3 Delivery Systems

*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.*

*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*

*Recent agricultural, food, and pharmaceutical research focuses attention on the development of delivery systems that can encapsulate, protect, and deliver natural compounds. Nanoemulsions are recognized as the best delivery systems for natural-origin nutraceuticals and phytochemicals, having many agri-food applications. Bio-based Nanoemulsions for Agri-Food Applications provides information on food-grade nanoemulsions and their application in agriculture and the food industry. This book covers concepts, techniques, current advances, and challenges in the formulation of the application of emerging food grade nanoemulsions. Particular attention is placed on food-grade nanoemulsion production methods and components used, such as plant/microbial products, biosurfactants, cosurfactants, emulsifiers, ligand targets, and bioactive/inactive ingredients. This is an important reference source for materials scientists, engineers and food scientists who are looking to understand how nanoemulsions are being used in the agri-food sector. Provides an overview of a range of bio-based nanoemulsions used in the agrifood sector Explores how nanotechnology improves the properties of bio-based emulsions Assesses the major challenges of manufacturing nanoemulsions at an industrial scale*

*Bread and flour-based foods are an important part of the diet for millions of people worldwide. Their complex nature provides energy, protein, minerals and many other macro- and micronutrients. However, consideration must be taken of three major aspects related to flour and bread. The first is that not all cultures consume bread made from wheat flour. There are literally dozens of flour types, each with their distinctive heritage, cultural roles and nutritive contents. Second, not all flours are used to make leavened bread in the traditional (i.e., Western) loaf form. There are many different ways that flours are used in the production of staple foods. Third, flour and breads provide a suitable means for fortification; either to add components that will increase palatability or promote health and reduce disease per se. Flour and Breads and their Fortification in Health and Disease Prevention provides a single-volume reference to the healthful benefits of a variety of flours and flour products, and guides the reader in identifying options and opportunities for improving health through flour and fortified flour products. Examines those flour and bread related agents that affect metabolism and other health-related conditions Explores the impact of compositional differences between flours, including differences based on country of origin and processing technique Includes methods for analysis of flours and bread-related compounds in other foods*

Trait-Modified Oils in Foods

Food Lipids

Oxidation in Foods and Beverages and Antioxidant Applications

A Human Health Perspective

Design and Performance

Production, Physical Characterization and Oxidative Stability

Bioactive Lipids presents the topic of bioactive lipids from a functional food development perspective. This book explores the potential of dietary lipids to understand how such bioactive compounds can be used in the development of functional foods and nutraceuticals. The book includes case studies to enable readers to understand the potential of several dietary lipids and the possibilities regarding their incorporation into several food matrices. Bioactive Lipids will be a welcome reference for researchers, lecturers and students from the food science and nutrition fields. Reviews the health benefits of several lipids and dietary sources, providing bioactive targets for therapeutic purposes Provides readers with tools for the development of new lines of research and for supporting ongoing investigations Includes case studies to present solutions for bioactive lipids incorporation into food matrices, and consequently to functional foods and nutraceuticals development

Discusses omega-3 fatty acids and their impact on health

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 product 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

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 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 octacosanol. The book also focuses on proteins and the amounts, types, and combinations of selected supplements and their role in performance. Well-researched articles analyze why, soy, and casien 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.

Omega-3 Oils

Handbook of eggs in human function

Delivery and Controlled Release of Bioactives in Foods and Nutraceuticals

Systematic Review To Evaluate The Oxidative Stability Of Omega-3 Nanoemulsion Systems Suitable For Functional Food Enrichment

Seafoods

Sports Nutrition

In recent years, the food industry has made substantial advances in replacing partially hydrogenated oils, high in trans-fatty acids, in foods. Trait-modified oils were then developed to produce trans-fat free, low saturated functional oils. Trait-modified Oils in Foods offers top line information on the sources, composition, performance, health, taste, and availability of modified next generation oils. Coverage extends to public policy development, discussions of real world transition to healthy oils by food service and food processing industries and the future of trait-modified oils. The book provides solutions to food companies with the potential of improving the health benefits of foods through eliminating trans-fats and reducing saturated fats from formulations.A landmark resource on modified next-generation, trait-modified oils, this book is essential reading for oil processors, manufacturers and producers, as well as any professional involved in food quality assurance and public health.

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

Seafoods covers selected but vital topics of fish processing with an emphasis on quality, technology and nutraceutical applications in an up-to-date survey. The aspects of seafood quality covered range from the impact of slaughter procedures, through protein functionality, texture, flavour, histamine toxicity to the practical evaluation of quality and measurement. Technological aspects concentrate on automation in processing, waste-water treatment and reuse of scraps. Marine nutraceuticals/functional foods are discussed in detail. This book is highly recommended for scientists and technologists in the seafood industries, plus fish processing professionals, quality managers, and nutritionists..

There is increasing evidence in studies conducted over recent decades that numerous health benefits are associated with the consumption of long chain omega-3 polyunsaturated fatty acids (LCu03c93PUFA) throughout the human lifecycle(1). This has created a demand for functional food products enriched with LCu03c93PUFA. Nanoemulsions, systems with extremely small droplet sizes have been shown to increase LCu03c93PUFA 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 LCu03c93PUFA 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 LCu03c93PUFA 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 of 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). LCu03c93PUFA source oils evaluated included fish (n = 9), flaxseed (n = 2), algae (n = 3), krill (n = 2), walnut (n = 1). Equivalent vegetarian sources of LCu03c93PUFA 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. Quilajaja 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 quilajaja saponin nanoemulsions combined with algal sources of LCu03c93PUFA are warranted to enable the development of safe, clean label functional food products.

Egg Innovations and Strategies for Improvements

Microencapsulation and Microspheres for Food Applications

The Queen of Fats

Food Enrichment with Omega-3 Fatty Acids

Technology of Functional Cereal Products

Bioactive Lipids

This book addresses new applications of omega-3 fatty acids from both plant and marine sources in food supplements and pharmaceuticals and covers three basic areas: structure and function, production and processing, and health effects. The authors review the latest clinical evidence on the impact of consumption of omega-3 polyunsaturated fatty acids on prevalent human diseases such as inflammatory-related illnesses in general and cardiovascular illnesses in particular. They also examine technologies to purify marine oils and protect them against oxidation as well as novel techniques for their incorporation into foods. Covers the role omega-3 plays in general health and disease and includes several reviews on the latest clinical evidence Explains different methods to deliver omega-3 to the consumer, through various methods including food fortification, nutritional supplements, and more Considers factors for the processing of omega-3 oils to minimize conditions that could destroy the nutritional properties

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 Analysis of Fatty Acid Positional Distribution in Triacylglycerol Physical Characterization of Fats and Oils Processing and Modification Technologies for Edible Oils and Fats Crystallization Behavior of Fats: Effect of Processing Conditions Enzymatic Purification and Enrichment and Purification 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, health, and medicine, and discusses 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.

This text addresses critical topics in the expanding market and production for lipids. It combines novel and traditional methods from technological and biological perspectives to achieve the most effective pathways for production of modified lipids. The book is organized into three sections exploring development, new production methods and successful products and uses. 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 a standard reference 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

Structured and Modified Lipids

Sources, Processing Effects, and Health Benefits

Encyclopedia of Food and Health

Journal of Food and Nutritional Disorders : Volume 6

Essential Fatty Acids

Keys to Nutritional Health

Over the past several years, extensive research has been done on the microbial production of polyunsaturated fatty acids (PUFA). Regardless, research on the oleaginous microalgae used as feedstock for biofuels production and the overall story about the production of nutraceutical fatty acids from oleaginous microalgae has been very limited. This volume provides an exclusive insight on the production of nutraceutical fatty acids from oleaginous microalgae and their role on human health. Some saturated and monounsaturated fatty acids can be synthesized by humans, whereas long-chain polyunsaturated fatty acids (PUFAs) such as  $\alpha$ -linolenic acid and linoleic acid cannot and are deemed essential. The products of these acids, such as DHA, which is important for early visual and neurological development, are extremely important to human health. Replacing SFAs with omega-3 and omega-6 fatty acids in the diet reduce the risk of cardiovascular diseases and prevent Alzheimer's, bipolar disorder, and schizophrenia, among other benefits. The ever-rising global demand for omega-3 & 6 PUFAs, however, cannot be met solely by fish oil, due to diminishing fish stocks and pollution of marine ecosystems, which has led to increased interest in alternative sustainable sources. Vegetable oils from genetically engineered plant cultivars and microorganisms are two potential alternatives to fish oil, even though omega-3 PUFAs are highest in the latter. Although transgenic plants present numerous advantages, their production is dependent on seasonal and climatic conditions and the availability of arable land. Moreover, there are public concerns regarding the cultivation of transgenic crops in open ecosystems. These, together with regulatory issues restrict the large-scale production of genetically modified crops. Microorganisms, however, are known natural producers of microbial oils similar to those obtained from plants and animals and a possible source of nutritionally important omega-3 & 6 PUFAs. This groundbreaking volume presents invaluable new research on essential fatty acids, their production from various oleaginous microorganisms, biochemistry and metabolic engineering to improve PUFAs content in oil, extraction and purification of omega 3 fatty acids, and the current market scenario. Whether a veteran engineer or scientist using it as a reference or a professor using it as a textbook, this outstanding new volume is a must-have for any engineer or scientist working in food science.

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, electrosprayed 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 colloids chemistry, encapsulation techniques, soft matter physics, food development, and nutrients bioavailability

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

This book provides a comprehensive overview of current knowledge of cannabinoid activity in human physiology and points out the importance of endocannabinoid system for the maintenance of human health and treatment of diseases. Each chapter has been organized with the aim to cover basic concepts in the modulation of endocannabinoid system in both physiological and pathological conditions, thanks to the integration of data from experimental animal models and clinical observations. A special focus has been put on the medical use of cannabinoids and on the targeting of endocannabinoid system as new therapeutic strategy for the prevention and treatment of human diseases. Taken together, this book targets a wide audience of basic and clinical scientists, teachers and students interested in gaining a better understanding in the field of cannabinoids.

The Columbus Concept

Chemistry, Nutrition, and Biotechnology, Fourth Edition

Handbook of Functional Beverages and Human Health

Flour and Breads and their Fortification in Health and Disease Prevention

Quality, Technology and Nutraceutical Applications

The Development of Superfoods and Their Roles as Medicine

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 diet, 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.

June 29-July 01, 2017 Madrid, Spain Key Topics : Clinical Nutrition, Sports Nutrition, Kinesiology, Plant Nutrition, Animal and Dairy Nutrition, Malnutrition or Nutritional Deficiency, Nutrient related Chronic Diseases, Nutrition and Cancer, Nutrition in Pregnancy and Lactation, Paediatric Nutrition, Nutrition During Adolescence, Diet in Obesity and Underweight, Diet for Gastrointestinal Diseases, Nutrition and Psychology, Nutrition, Health and Choice, Current Research in Nutrition and Dietetics, Food and Nutrition, Nutritional Epidemiology, Food Science & Chemistry, Public Health Research, Diet & Appetite, Vitaminsology & Lipidology, Nutritional Neuroscience & Eating Disorders, Renal Nutrition & Metabolism, Nutraceuticals & Medicinal Foods, Holistic & Integrative Nutrition, Food & Nutritional Immunology, Food & Nutritional Toxicology, Food & Nutritional Metabolomics, Protein Science, Behavioral Nutrition & Physical Activity.

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, cereal grains and their fractions contain many health-protecting compounds such as phytochemicals, vitamins and indigestible carbohydrates, but the texture and taste of functional cereal products can be less than ideal. This important collection reviews technologies for producing a wide range of cereal products with different health-promoting properties and more acceptable sensory quality. The first part of the book discusses the health effects of cereals, with chapters on topics such as whole grain foods, cereal micronutrients and resistant starch. Consumer perception of health-promoting cereal products and regulatory and labelling issues are also described. The second part focuses on technologies to improve the quality of functional cereal products, reviewing issues such as grain improvement, novel cereal-derived ingredients and formulation of low GI products. Chapters dedicated to a wide range of product types are also included, covering cereal foods made from oats, rye, barley and specialty grains and breads fortified with vitamins and minerals, soy and omega-3 lipids among others. Technology of functional cereal products is an essential reference for all those involved in research and development of health-promoting cereal-based foods. Reviews technologies for producing a wide range of cereal products Discusses the health effect of cereals, including whole grain foods and cereal micronutrients Describes consumer perception of health promoting cereal products

Nutraceutical Fatty Acids from Oleaginous Microalgae

Emulsion-based Encapsulation of Antioxidants

Applications in Functional Foods

Microencapsulation in the Food Industry

Next-Generation Plant-based Foods

Cannabinoids in Health and Disease

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 of 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

The aim of this Special Issue is to publish high quality papers concerning poultry nutrition and the interrelations between nutrition, metabolism, microbiota and the health of poultry. Therefore, I invite submissions of recent findings, as original research or reviews, on poultry nutrition, including, but not limited to, the following areas: the effect of feeding on poultry meat end egg quality; nutrient requirements of poultry; the use of functional feed additives to improve gut health and immune status; microbiota; nutraceuticals; soybean meal replacers as alternative sources of protein for poultry; the effects of feeding poultry on environmental impacts; the use of feed/food by-products in poultry diet; and feed technology.

Eggs have been used as key part of the human diet for millennia. They contain a great variety of nutrients and material to sustain life and growth. The role of the egg as natural source of vitamins, proteins, fats, and other nutrients, continues to develop. Some nutrients have a controversy in benefits and risks. This controversy is the subject of several chapters in this book. Eggs have been used for decades by pharmaceutical companies as vehicles to grow viruses for vaccines. Currently, eggs are being developed to make antibodies for human use, so-called designer eggs. Eggs can also be used as vehicle to transport vitamins and minerals to humans via nutrient supplemented laying hens. These benefits are subject to commercial expansion, as well as being an active research area. This book, with summary points for each chapter, helps you to understand the role of eggs (including designer eggs) in general nutrition, health promotion and disease. It is aimed at health scientists, nutritionists, dieticians, and food industry groups.

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 presents an array of key topics in this area. Part one, an introductory section, reviews sources of omega-3 fatty acids and their health benefits. Chapters part two explore the stabilisation of both fish oil itself and omega-3 fatty acids. Part three focuses on the fortification of different types of foods and beverages with omega-3 fatty acids, including bakery products, by the modification of animal diets and other methods. 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

Next Generation Agriculture: Understanding Plant Life for Food, Health and Energy

Encapsulation and Controlled Release Technologies in Food Systems

Fats and Proteins

Omega-3 Fatty Acids

Superfood and Functional Food

Management in Different Industry Sectors

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.

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.

Functional food is a food containing components that show beneficial effects on one or more body functions and improve general condition and health or significantly affect lowering of disease risks. This chapter is aimed to examine the effect of dietary intake of omega-3 polyunsaturated fatty acids (n3-PUFA) on cardiovascular health. This chapter presents current knowledge on functional poultry products and the reasons to consume them. omega-3 enrichment of eggs and poultry meat, and the differences in profile of fatty acids in conventional and omega-3-enriched eggs. The second part of the chapter focuses on the metabolism of fatty acids and effectiveness of n-3 PUFA in the improvement of endothelial function, improvement of elasticity of the vascular wall and the anti-inflammatory effects in patients with chronic diseases, such as metabolic syndrome, diabetes mellitus and hypercholesterolemia, and overall effect on cardiovascular health and protection. To achieve long-term protective effects, the functional food should be consumed on daily basis. There are no specific constraints in taking functional food; even more, it can be recommended to athletes and cardiovascular patients. General population can also benefit from eating functional food enriched with n-3 PUFA due to their anti-inflammatory and vascular-protective effects.

Microencapsulation and Microspheres for Food Applications is a solid reflection on the latest developments, challenges, and opportunities in this highly expanding field. This reference examines the various types of microspheres and microcapsules essential to those who need to develop stable and impermeable products at high acidic conditions. It's also important for the novel design of slow releasing active compound capsules. Each chapter provides an in-depth account of controlled release technologies, evidence based abstracts, descriptions of chemical and physical principals, and key relevant facts relating to food applications. Written in an accessible manner, the book is a must have resource for scientists, researchers, and engineers. Discusses the most current encapsulation technology applied in the food industry, including radiography, computed tomography, magnetic resonance imaging, and dynamic NMR microscopy Presents the use of microsphere immunoassay for mycosis detection Covers a broad range of applications of microcapsules and microspheres, including food shelf-life, pesticides for crop protection, and nanocapsulated bacteriophage for food safety

A Practical Implementation Guide

**The Effect of Dietary Intake of Omega-3 Polyunsaturated Fatty Acids on Cardiovascular Health: Revealing Potentials of Functional Food Poultry Nutrition**  
**Why Omega-3s Were Removed from the Western Diet and What We Can Do to Replace Them**  
**Design, Production, and Properties**