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Advanced Applications of Biobased Materials - Shakeel Ahmed 2023-03-01
Advanced Applications of Biobased Materials: Food, Biomedical, and Environmental Applications brings

together cutting-edge developments in the preparation and application of biobased materials. This book begins by providing an overview of biobased materials, their

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classification, and their physical and chemical modifications. This is followed by a section covering the latest techniques in fabrication, processing, and characterization. Subsequent chapters are grouped by application area, offering insights into advanced and emerging utilizations of biobased materials in food, biomedical, environmental, and other industrial applications. The final part of the book highlights other key considerations, including life cycle assessment, circular economy, sustainability, and future potential. Presents processing methods, characterization techniques, and the latest advances in biobased materials. Focuses on advanced and emerging applications of biobased materials in three key areas – food,

biomedicine and the environment. Considers sustainability issues relating to biobased materials, including environmental impact, lifecycle assessment and the circular economy.

Drying in the Dairy Industry - Cécile Le Floch-Fouéré 2020-11-25
With more than 12M tons of dairy powders produced each year at a global scale, the drying sector accounts to a large extent for the processing of milk and whey. It is generally considered that 40% of the dry matter collected overall ends up in a powder form. Moreover, nutritional dairy products presented in a dry form (eg, infant milk formulae) have grown quickly over the last decade, now accounting for a large share of the profit of the sector. Drying in the Dairy Industry: From Established Technologies

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to Advanced Innovations deals with the market of dairy powders issues, considering both final product and process as well as their interrelationships. It explains the different processing steps for the production of dairy powders including membrane, homogenisation, concentration and agglomeration processes. The book includes a presentation of the current technologies, the more recent development for each of them and their impact on the quality of the final powders. Lastly, one section is dedicated to recent innovations and methods directed to more sustainable processes, as well as latter developments at lab scale to go deeper in the understanding of the phenomena occurring during spray drying. Key Features: Presents

state-of-the-art information on the production of a variety of different dairy powders Discusses the impact of processing parameters and drier design on the product quality such as protein denaturation and viability of probiotics Explains the impact of drying processes on the powder properties such as solubility, dispersibility, wettability, flowability, floodability, and hygroscopicity Covers the technology, modelling and control of the processing steps This book is a synthetic and complete reference work for researchers in academia and industry in order to encourage research and development and innovations in drying in the dairy industry.

Agricultural Research - 2009

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Sustainable Biological Systems for Agriculture

- Megh R. Goyal

2018-05-03

Sustainable Biological Systems for Agriculture: Emerging Issues in Nanotechnology, Biofertilizers, Wastewater, and Farm Machines explores and introduces the use of nanotechnology, biofertilizers, and design of farm machines in agriculture. The contributions are from India, Africa and the USA; the chapters emphasize sustainable solutions for the enhancement of agriculture processes. The volume provides a wealth of information on new and emerging issues in this interdisciplinary field. The book is divided into several sections: Potential Applications of Nanotechnology in Biological Systems Emerging Issues,

Challenges and Specific Examples of Nanotechnology for Sustainable Biological Systems Potential of Nano- and Bio-fertilizers in Sustainable Agriculture Emerging Focus Areas in Biological Systems Performance of Farm Machines for Sustainable Agriculture The information provided here will be valuable to government agricultural professionals, scientists, researchers, farmers, and faculty and students all over the world.

Milk Proteins - Mike Boland 2014-07-08

Understanding of the interactions of milk proteins in complex food systems continues to progress, resulting in specialized milk-protein based applications in functional foods, and in protein ingredients for specific health applications. Milk

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Proteins is the first and only presentation of the entire dairy food chain – from the source to the nutritional aspects affecting the consumer. With focus on the molecular structures and interactions of milk proteins in various processing methods, Milk Proteins presents a comprehensive overview of the biology and chemistry of milk, as well as featuring the latest science and developments.

Significant insight into the use of milk proteins from an industry viewpoint provides valuable application-based information. Those working with food and nutritional research and product development will find this book useful. 20% new chapter content – full revision throughout New chapters address: role of milk proteins in human health; aspects of

digestion and absorption of milk proteins in the GIT; consumer demand and future trends in milk proteins; and world supply of proteins with a focus on dairy proteins Internationally recognized authors and editors bring academic and industrial insights to this important topic

Nanotechnology Applications in the Food Industry - V Ravishankar Rai 2018-01-31

Nanotechnology is increasingly used in the food industry in the production, processing, packaging, and preservation of foods.

It is also used to enhance flavor and color, nutrient delivery, and bioavailability, and to improve food safety and in quality management.

Nanotechnology Applications in the Food Industry is a comprehensive reference book containing

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exhaustive information on nanotechnology and the scope of its applications in the food industry. The book has five sections delving on all aspects of nanotechnology and its key role in food industry in the present scenario. Part I on Introduction to Nanotechnology in Food Sector covers the technological basis for its application in food industry and in agriculture. The use of nanosized foods and nanomaterials in food, the safety issues pertaining to its applications in foods and on market analysis and consumer perception of food nanotechnology has been discussed in the section. Part II on Nanotechnology in Food Packaging reviews the use of nanopolymers, nanocomposites and nanostructured coatings in food packaging. Part

III on Nanosensors for Safe and Quality Foods provides an overview on nanotechnology in the development of biosensors for pathogen and food contaminant detections, and in sampling and food quality management. Part IV on Nanotechnology for Nutrient Delivery in Foods deals with the use of nanotechnology in foods for controlled and effective release of nutrients. Part V on Safety Assessment for Use of Nanomaterials in Food and Food Production deliberates on the benefits and risks associated with the extensive and long term applications of nanotechnology in food sector.

Advances in Food Rheology and Its Applications - Jasim Ahmed 2016-09-13
Advances in Food Rheology and Its Applications presents

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the latest advances in the measurement and application of food rheology, one of the most important tools for food companies when characterizing ingredients and final products, and a predictor of product performance and consumer acceptance. Split into two main focuses, the book gives in-depth analysis of the general advances in the field, with coverage of the relationship between food microstructure and rheology, the use of tribology in the study of oral processing, the use of large amplitude oscillatory shear (LAOS) measurement and Fourier-transform rheology in food, and the influence of fibers and particle size distribution on food rheology, as well as many other advances. Written by a leading international team of authors, the book

provides an in-depth and state-of-the-art coverage of this essential topic on the consumer acceptance of food. Brings together top researchers in the field of rheology, providing in-depth and state-of-the-art coverage on an area of study essential for managing the quality of foods and gaining consumer acceptance. Presents in-depth coverage of advances in rheology, many of which have never been featured before, including tribology, large amplitude oscillatory shear measurement, and the influence of fibers and particle size distribution on food rheology. Contains information that is highly relevant to the industrialist who wants to improve the rheological properties of the foods with which they are working.

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Sustainable Green Chemical Processes and their Allied Applications - Inamuddin

2020-05-30

Urbanization, industrialization, and unethical agricultural practices have considerably negative effects on the environment, flora, fauna, and the health and safety of humanity. Over the last decade, green chemistry research has focused on discovering and utilizing safer, more environmentally friendly processes to synthesize products like organic compounds, inorganic compounds, medicines, proteins, enzymes, and food supplements. These green processes exist in other interdisciplinary fields of science and technology, like chemistry, physics, biology, and biotechnology. Still the majority of processes in

these fields use and generate toxic raw materials, resulting in techniques and byproducts which damage the environment. Green chemistry principles, alternatively, consider preventing waste generation altogether, the atom economy, using less toxic raw materials and solvents, and opting for reducing environmentally damaging byproducts through energy efficiency. Green chemistry is, therefore, the most important field relating to the sustainable development of resources without harmfully impacting the environment. This book provides in-depth research on the use of green chemistry principles for a number of applications.

From Milk By-Products to Milk Ingredients - Ruud de Boer 2014-03-06

Milk is a complex substance, and a variety

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of constituents can be extracted from it for use as ingredients in other foods. The main ingredients from milk are milk fat, cheese and serum, but this range is continually expanding as food companies, dairies and dairy scientists seek to utilize as many raw materials and by-products as possible, to reduce waste, maximize efficiency, and increase productivity.

Ingredients from Milk is a concise, fresh approach to ingredients derived from milk, containing guidance and new techniques for dairy industry professionals and scientists. Its structure is designed to mirror the process of extracting ingredients from milk, beginning with the basic concepts and following through the processes until finally arriving at the consumer products which constitute the end uses

of ingredients from milk. This book is primarily targeted at the dairy industry, but also provides a valuable insight for academics and students seeking an industry perspective.

Functional Foods - Maria Saarela 2011-04-30

The first edition of *Functional foods: Concept to product* quickly established itself as an authoritative and wide-ranging guide to the functional foods area. There has been a remarkable amount of research into health-promoting foods in recent years and the market for these types of products has also developed. Thoroughly revised and updated, this major new edition contains over ten additional chapters on significant topics including omega-3 polyunsaturated fatty acids, consumers and

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health claims and functional foods for obesity prevention. Part one provides an overview of key general issues including definitions of functional foods and legislation in the EU, the US and Asia. Part two focuses on functional foods and health investigating conditions such as cardiovascular disease, diabetes, cancer, obesity and infectious diseases as well as and the impact of functional foods on cognition and bone health. Part three looks at the development of functional food products. Topics covered include maximising the functional benefits of plant foods, dietary fibre, functional dairy and soy products, probiotics and omega-3 polyunsaturated fatty acids (PUFAs). With its distinguished editors and international team of expert contributors,

Functional foods: Concept to product is a valuable reference tool for health professionals and scientists in the functional foods industry and to students and researchers interested in functional foods. Provides an overview of key general issues including definitions of functional foods and legislation in the EU, the US and Asia Focuses on functional foods and health investigating conditions such as cardiovascular disease, diabetes, cancer, obesity and infectious diseases Examines the development of functional food products featuring maximising the functional benefits of plant foods, dietary fibre, functional dairy and soy products
Functional Dairy Ingredients and Nutraceuticals - Megh R. Goyal 2022-10-13

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Here is a comprehensive summary of new research and advancements in the unique functional and nutraceutical therapeutic and physiochemical aspects of dairy foods. The book explores the specific health benefits of dairy ingredients in nutraceuticals and functional foods as well as delves into production techniques that enhancement their therapeutic value. The first section of the book looks at the physicochemical and technological aspects of milk-derived components, discussing production, extraction and purification, and functional and technological applications of various functional dairy ingredients (such as lactulose, casein and whey protein-derived bioactive peptides). The volume also considers

the therapeutic aspects of dairy ingredients, detailing the physiological and health effects of colostrum, oligosaccharides, conjugated linoleic acid, and lactoferrin. The third section focuses on enhancing the functionality of dairy foods by assessing the functional attributes that can be augmented by the addition of nutraceuticals such as probiotics, vitamins, and minerals or by the removal of cholesterol. Functional Dairy Ingredients and Nutraceuticals: Physicochemical, Technological, and Therapeutic Aspects provides an abundance of important research on the use of dairy ingredients in functional foods and nutraceuticals that will be valued by researchers, scientists, students, growers,

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traders, processors, industries, and others involved with the physicochemical, technological and therapeutic aspects of various nutraceuticals and functional dairy ingredients and their application in food and dairy industry.

Agents of Change - Alan L. Kelly 2021-01-07

The enzymology of milk and other products is of enormous significance for the production and quality of almost every dairy product. Milk itself is a complex biological fluid that contains a wide range of enzymes with diverse activities, some of which have identifiable functions while others are present as an accidental consequence of the mechanism of milk secretion. Over time milk enzymology has become an incredibly essential component of milk and other dairy

product production, and with advancing technology and processing techniques, its importance is at its peak. Dairy Enzymology presents an expansive overview of the enzymology of milk and other dairy products, focusing on the use of indigenous and endogenous enzymes in milk and exogenous enzymes in cheese processing. A full section is dedicated to the enzymology of bovine milk, focusing on the main families of indigenous enzymes as well as their potential significance in the mammary gland plus the technological significance for the properties of dairy products. Implications for the manufacture and ripening of cheese plus the use of enzymes such as alkaline phosphatase for measuring heat treatment in milk are

explored in full, and the role of milk protease plasmin and other indigenous enzymes in the age-gelation is focused on. Further sections focus on enzymes found in raw milk and enzymes deliberately added for manufacture or modification of properties and the manufacture of food ingredients from dairy-derived ingredients. The key bacterial families are discussed in depth as well as their known contributions to the quality of dairy products. With its comprehensive scope and fully up-to-date coverage of dairy product enzymology, this text is a singular source for researchers looking to understand this essential dairy processing aspect.

Nanotechnology in the Food, Beverage and Nutraceutical Industries

- Qingrong Huang

2012-04-19

Nanotechnology has the potential to impact on food processing significantly. This important book summarises current research in this area and provides an overview of both current and possible future applications of nanotechnologies in the food industry. Issues such as safety and regulation are also addressed. After an introductory overview, the first part discusses general issues such as risk assessment, the regulatory framework, detection and characterisation of nanoparticles in food. Part two summarises the wide range of applications of nanotechnology in food processing, including nanoscale nutraceutical delivery systems, nanoemulsions and

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colloids, nanoscale rapid detection devices for contaminants, nanofiltration and nanocomposite packaging materials. With its distinguished editor and international team of contributors, *Nanotechnology in the food, beverage and nutraceutical industries* is a valuable reference work for both food processors and those researching this expanding field. Discusses issues such as risk assessment, regulatory framework, detection and characterisation of nanoparticles in food Summarises the wide range of applications of nanotechnology in food processing, including nutraceutical delivery and packaging materials Written by a distinguished team of international contributors, this book is an invaluable

reference for industry professionals and academics alike
Enzymes in Food Biotechnology - Mohammed Kuddus 2018-08-23
Enzymes in Food Biotechnology: Production, Applications, and Future Prospects presents a comprehensive review of enzyme research and the potential impact of enzymes on the food sector. This valuable reference brings together novel sources and technologies regarding enzymes in food production, food processing, food preservation, food engineering and food biotechnology that are useful for researchers, professionals and students. Discussions include the process of immobilization, thermal and operational stability, increased product specificity and specific activity,

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enzyme engineering, implementation of high-throughput techniques, screening to relatively unexplored environments, and the development of more efficient enzymes. Explores recent scientific research to innovate novel, global ideas for new foods and enzyme engineering Provides fundamental and advanced information on enzyme research for use in food biotechnology, including microbial, plant and animal enzymes Includes recent cutting-edge research on the pharmaceutical uses of enzymes in the food industry

Lactose and Lactose Derivatives - Néstor Gutiérrez-Méndez
2020-11-11

Lactose is a unique disaccharide found exclusively in the milk of mammals. This sugar has a crucial role in nourishing newborn and young mammals; however,

some adults have difficulties in fully metabolizing lactose. Despite lactose intolerance in the population, the dairy industry produces 400,000 tons of crystalline lactose worldwide. The food and pharmaceutical industries use lactose as well as lactose derivatives in a wide variety of products. This book reviews some aspects of lactose properties and synthesis as well as recent advances in the recovery of lactose and lactose derivatives from cheese whey.

Biobased Polymers -

Pratima Bajpai
2019-06-14

Biobased Polymers: Properties and Applications in Packaging looks at how biopolymers may be used in packaging as a potential green solution. The book

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addresses bio-based feedstocks, production processes, packaging types, recent trends in packaging, the environmental impact of bio-based polymers, and legislative demands for food contact packaging materials. Chapters explore opportunities for biopolymers in key end-use sectors, the penetration of biopolymer based concepts in the packaging market, and barriers to widespread commercialization. As the development of bio-based material is an important factor for sustainably growing the packaging industry, these recent trends in consumer markets are extremely important as we move towards greener packaging. Hence, this resource is an invaluable addition on the topic. Offers a comprehensive introduction to the

subject for researchers interested in bio-based products, green and sustainable chemistry, polymer chemistry and materials science Covers the market for bio-based materials Includes discussions on legislative demands for food contact packaging materials Describes interesting new technologies, including nanotechnology approaches

Dairy-Derived

Ingredients - M Corredig
2009-10-26

Advances in technologies for the extraction and modification of valuable milk components have opened up new opportunities for the food and nutraceutical industries. New applications for dairy ingredients are also being found. Dairy-derived ingredients reviews the latest research in these dynamic areas. Part one

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covers modern approaches to the separation of dairy components and manufacture of dairy ingredients. Part two focuses on the significant area of the biological functionality of dairy components and their nutraceutical applications, with chapters on milk oligosaccharides, lactoferrin and the role of dairy in food intake and metabolic regulation, among other topics. The final part of the book surveys the technological functionality of dairy components and their applications in food and non-food products. Dairy ingredients and food flavour, applications in emulsions, nanoemulsions and nanoencapsulation, and value-added ingredients from lactose are among the topics covered. With its distinguished editor and international team of

contributors, Dairy-derived ingredients is an essential guide to new developments for the dairy and nutraceutical industries, as well as researchers in these fields. Summarises modern approaches to the separation of dairy components and the manufacture of dairy ingredients Assesses advances in both the biological and technological functionality of dairy components Examines the application of dairy components in both food and non-food products
Eastern Regional Research Center Research Highlights 2000-2010, Issued April 2012 - 2012

Novel Proteins for Food, Pharmaceuticals, and Agriculture - Maria Hayes 2018-09-12
A groundbreaking text that highlights the various sources, applications and

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advancements concerning proteins from novel and traditional sources Novel Proteins for Food, Pharmaceuticals and Agriculture offers a guide to the various sources, applications, and advancements that exist and are currently being researched concerning proteins from novel and traditional sources. The contributors— noted experts in the field— discuss sustainable protein resources and include illustrative examples of bioactive compounds isolated from several resources that have or could obtain high market value in specific markets. The text also explores a wide range of topics such as functional food formulations and pharmaceutical applications, and how they alter biological activity to provide

therapeutic benefits, nutritional values and health protection. The authors also examine the techno-functional applications of proteins and looks at the screening process for identification of bioactive molecules derived from protein sources. In addition, the text provides insight into the market opportunities that exist for novel proteins such as insect, by-product derived, macroalgal and others. The authors also discuss the identification and commercialization of new proteins for various markets. This vital text: Puts the focus on the various sources, applications and advancements concerning proteins from novel and traditional sources Contains a discussion on how processing technologies currently applied to dairy could

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be applied to novel protein sources such as insect and macroalgal Reviews the sustainability of protein sources and restrictions that exist concerning development Offers ideas for creating an innovative and enterprising economy that is built on recent developments Details the potential to exploit key market opportunities in sports, infant and elderly nutrition and techno-functional protein applications Written for industrial researchers as well as PhD and Post-doctoral researchers, and undergraduate students studying biochemistry, food engineering and biological sciences and those interested in market developments, Novel Proteins for Food, Pharmaceuticals and Agriculture offers an essential guide to the sources, applications

and most recent developments of the proteins from both innovative and traditional sources. **Improving the Safety and Quality of Milk** - Mansel W Griffiths 2010-04-21 Consumers demand quality milk with a reasonable shelf-life, a requirement that can be met more successfully by the milk industry through use of improved processes and technologies. Guaranteeing the production of safe milk also remains of paramount importance. Improving the safety and quality of milk provides a comprehensive and timely reference to best practice and research advances in these areas. Volume 1 focuses on milk production and processing. Volume 2 covers the sensory and nutritional quality of cow's milk and addresses quality improvement of a

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range of other milk-based products. The health aspects of milk, its role in the diet and milk-based functional foods are the focus of the opening section of Volume 2. Part two reviews essential aspects of milk quality, including milk microbial spoilage and chemical deterioration, sensory evaluation, factors affecting milk vitamin and mineral content and the impact of packaging on quality. Chapters in part three look at improving particular products, such as organic milk, goat milk and sheep milk. The impact of milk on the quality of yoghurt and cheese is also covered. With its distinguished editor and international team of contributors, volume 2 of *Improving the safety and quality of milk* is an essential reference for researchers and those in

industry responsible for milk safety and quality. Examines the sensory and nutritional quality of cow's milk and addresses quality improvement of a range of other milk-based products Reviews the health aspects of milk and its role in the diet, as well as the essential aspects of milk quality, including microbial spoilage and chemical deterioration, sensory evaluation and factors affecting milk vitamin and mineral content Discusses various application requirements of milk such as milk quality requirements in yoghurt-making, cheesemaking, infant formulas and applications of milk components in products other than foods
Milk and Milk Products in Human Nutrition - Roger A. Clemens 2011
The role of milk during the life cycle -- a global view Milk, the

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first and for a time only source of nutrition for mammals, influences early growth and development and may provide a foundation for health throughout the entire lifespan. It is therefore mandatory that milk substitutes have a composition which fulfills the same goals and confers as close as possible the overall health benefits of human milk. Moreover, in many populations, milk continues to play a major role in a healthy and balanced diet throughout life: During childhood, pregnancy and adulthood, intake of cow's milk has important beneficial effects on linear growth, bone development and the risk of developing caries, and it is important in the prevention and treatment of undernutrition in low-income countries. This publication contains the

presentations and discussions of the Nestlé Nutrition Institute Workshop held in Marrakech in March 2010. It focuses on three main topics: milk during pregnancy and infancy, milk during childhood in low- and high-income countries, and general aspects of milk in adult nutrition. Together, these contributions cover most aspects of milk during the life cycle in a global perspective, making the publication a comprehensive textbook. **Handbook of Functional Dairy Products** - Colette Shortt 2003-11-24 Functional dairy products have been the focus of intense research and product development over the last two decades. At last, this valuable information has been compiled into one resource that reveals key advances in

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functional dairy ingredients and products and identifies directions for marketing and product development. Handbook of Functional Byproducts from Agriculture and Fisheries - Benjamin K. Simpson 2019-11-04 Ranging from biofuels to building materials, and from cosmetics to pharmaceuticals, the list of products that may be manufactured using discards from farming and fishery operations is extensive. Byproducts from Agriculture and Fisheries examines the procedures and technologies involved in this process of reconstitution, taking an environmentally aware approach as it explores the developing role of value-added byproducts in the spheres of food security, waste management, and climate control. An

international group of authors contributes engaging and insightful chapters on a wide selection of animal and plant byproducts, discussing the practical business of byproduct recovery within the vital contexts of shifting socio-economic concerns and the emergence of green chemistry. This important text: Covers recent developments, current research, and emerging technologies in the fields of byproduct recovery and utilization Explores potential opportunities for future research and the prospective socioeconomic benefits of green waste management Includes detailed descriptions of procedures for the transformation of the wastes into of value-added food and non-food products With its combination of practical

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instruction and broader commentary, *Byproducts from Agriculture and Fisheries* offers essential insight and expertise to all students and professionals working in agriculture, environmental science, food science, and any other field concerned with sustainable resources.

Milk and Dairy Products in Human Nutrition -

Young W. Park 2013-04-09

Milk is nature's most complete food, and dairy products are considered to be the most nutritious foods of all. The traditional view of the role of milk has been greatly expanded in recent years beyond the horizon of nutritional subsistence of infants: it is now recognized to be more than a source of nutrients for the healthy growth of children and nourishment of

adult humans. Alongside its major proteins (casein and whey), milk contains biologically active compounds, which have important physiological and biochemical functions and significant impacts upon human metabolism, nutrition and health. Many of these compounds have been proven to have beneficial effects on human nutrition and health. This comprehensive reference is the first to address such a wide range of topics related to milk production and human health, including: mammary secretion, production, sanitation, quality standards and chemistry, as well as nutrition, milk allergies, lactose intolerance, and the bioactive and therapeutic compounds found in milk. In addition to cow's milk, the book

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also covers the milk of non-bovine dairy species which is of economic importance around the world. The Editors have assembled a team of internationally renowned experts to contribute to this exhaustive volume which will be essential reading for dairy scientists, nutritionists, food scientists, allergy specialists and health professionals.

Bioactive Food Proteins and Peptides - Navam S. Hettiarachchy 2011-12-02
Many naturally occurring compounds from foods such as rice, vegetables, fruits, and animal products possess properties that help to slow disease progression, inhibit pathophysiological mechanisms, or suppress activities of pathogenic molecules. Proteins and peptides play significant roles in such activities and are

gaining importance as nutraceuticals that benefit numerous aspects of health and nutrition. Bioactive Food Proteins and Peptides:

Applications in Human Health provides a human health perspective on food-derived proteins and peptides. It describes the potential for large-scale production with advances in technology and proposes challenges and opportunities for the future of health, nutrition, medicine, and the biosciences. The book begins by addressing properties related to chemistry and bioactivity. It examines proteins and peptides as allergens, antihypertensive agents, antimicrobials, antioxidants, and anticancer agents. It also discusses findings on the bioavailability and toxicity of food-derived peptides and

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intestinal functions. Next, the contributors present information on therapeutic peptides. They discuss recent developments in proteomics, bioavailability, and opportunities for designing future peptide-based foods. Providing a comprehensive review of bioactive proteins and peptides obtained from food sources, the book brings together the most up-to-date and essential information from eminent researchers from all over the world. Academics, food scientists and technologists, nutritionists, biochemists, persons in industry, and government researchers and regulators will find this book to be an essential resource for new data and developments.

Handbook of Food Powders

- Bhesh Bhandari

2013-08-31

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

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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

Focusses on speciality powders such as dairy, infant formulas, powdered egg, fruit and vegetable, and culinary and speciality products
Emerging Dairy Processing Technologies
- Nivedita Datta

2015-07-01

Fluid milk processing is energy intensive, with high financial and energy costs found all along the production line and supply chain. Worldwide, the dairy industry has set a goal of reducing GHG emissions and other environmental impacts associated with milk processing. Although the major GHG emissions associated with milk production occur on the farm, most energy usage associated with milk processing occurs at the milk processing plant and afterwards, during refrigerated storage (a key requirement for the transportation, retail

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and consumption of most milk products). Sustainable alternatives and designs for the dairy processing plants of the future are now being actively sought by the global dairy industry, as it seeks to improve efficiency, reduce costs, and comply with its corporate social responsibilities. Emerging Dairy Processing Technologies: Opportunities for the Dairy Industry presents the state of the art research and technologies that have been proposed as sustainable replacements for high temperature-short time (HTST) and ultra-high temperature (UHT) pasteurization, with potentially lower energy usage and greenhouse gas emissions. These technologies include pulsed electric fields, high hydrostatic pressure, high pressure

homogenization, ohmic and microwave heating, microfiltration, pulsed light, UV light processing, and carbon dioxide processing. The use of bacteriocins, which have the potential to improve the efficiency of the processing technologies, is discussed, and information on organic and pasture milk, which consumers perceive as sustainable alternatives to conventional milk, is also provided. This book brings together all the available information on alternative milk processing techniques and their impact on the physical and functional properties of milk, written by researchers who have developed a body of work in each of the technologies. This book is aimed at dairy scientists and technologists who may be working in dairy companies or academia.

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It will also be highly relevant to food processing experts working with dairy ingredients, as well as university departments, research centres and graduate students.

Food Oligosaccharides -

F. Javier Moreno

2014-03-26

A growing awareness of the relationship between diet and health has led to an increasing demand for food products that support health beyond simply providing basic nutrition. Digestive health is the largest segment of the burgeoning functional food market worldwide.

Incorporation of bioactive oligosaccharides into foods can yield health benefits in the gastrointestinal tract and other parts of the body that are linked via the immune system.

Because oligosaccharides can be added to a wide

variety of foodstuffs, there is much interest within the food industry in incorporating these functional ingredients into healthy food products. Moreover, other areas such as pharmaceuticals, bioenergy and environmental science can exploit the physicochemical and physiological properties of bioactive oligosaccharides too.

There is therefore a considerable demand for a concentrated source of information on the development and characterization of new oligosaccharides with novel and/or improved bioactivities. *Food Oligosaccharides: Production, Analysis and Bioactivity* is a comprehensive reference on the naturally occurring and synthesised oligosaccharides, which will enable food

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professionals to select and use these components in their products. It is divided into three sections: (i) Production and bioactivity of oligosaccharides, (ii) Analysis and (iii) Prebiotics in Food Formulation. The book addresses classical and advanced techniques to structurally characterize and quantitatively analyse food bioactive oligosaccharides. It also looks at practical issues faced by food industry professionals seeking to incorporate prebiotic oligosaccharides into food products, including the effects of processing on prebiotic bioavailability. This book is essential reading for food researchers and professionals, nutritionists and product developers working in the food

industry, and students of Food Science with an interest in functional foods.

Fibre-Rich and Wholegrain Foods - Jan A Delcour 2013-03-26

Consumers are increasingly seeking foods that are rich in dietary fibre and wholegrains, but are often unwilling to compromise on sensory quality. Fibre-rich and wholegrain food reviews key research and best industry practice in the development of fibre-enriched and wholegrain products that efficiently meet customer requirements. Part one introduces the key issues surrounding the analysis, definition, regulation and health claims associated with dietary fibre and wholegrain foods. The links between wholegrain foods and health, the range of fibre dietary

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ingredients and a comparison of their technical functionality are discussed, as are consumption and consumer challenges of wholegrain foods. Part two goes on to explore dietary fibre sources, including wheat and non-wheat cereal dietary fibre ingredients, vegetable, fruit and potato fibres. Improving the quality of fibre-rich and wholegrain foods, including such cereal products as wholegrain bread, muffins, pasta and noodles, is the focus of part three. Fibre in extruded products is also investigated before part four reviews quality improvement of fibre-enriched dairy products, meat products, seafood, beverages and snack foods. Companion animal nutrition as affected by dietary fibre inclusion is discussed, before the book concludes with a

consideration of soluble and insoluble fibre in infant nutrition. With its distinguished editors and international team of expert contributors, Fibre-rich and wholegrain foods provides a comprehensive guide to the field for researchers working in both the food industry and academia, as well as all those involved in the development, production and use of fibre-enriched and wholegrain foods. Reviews key research and best industry practice in the development of fibre-enriched and wholegrain products Considers analysis, definition, regulation and health claims associated with dietary fibre and wholegrain foods Explores sources of dietary fibre including: wheat and non-wheat cereal, vegetable, fruit and

potato fibres
*Lactose-Derived
Prebiotics* - Andrés
Illanes 2016-07-06
*Lactose-Derived
Prebiotics: A Process
Perspective* is the first
scientific reference to
provide a comprehensive
technological overview
of the processes to
derive oligosaccharides
from dairy for use in
functional foods. With
their combined 90+ years
in industry and
research, the authors
present the functional
properties of prebiotics
derived from lactose and
the production
technology required to
make them. The book
focuses on process
engineering and includes
an overview of green
chemistry processes
involving enzyme
biocatalysis, providing
detailed coverage of the
use of whey lactose as
raw material for
producing
oligosaccharides. The

book's focus on
processes and products
allows the reader to
understand the
constraints and impacts
of technology on
lactose-derived
prebiotics. Presents the
challenges of and
opportunities for
deriving
oligosaccharides from
lactose Details the
technologies and methods
required to produce
lactose-derived
prebiotics, including a
comparison between
chemical and enzymatic
synthesis Discusses the
potential use of whey as
a raw material for the
synthesis of non-
digestible lactose-
derived oligosaccharides
Provides a process
engineer perspective and
includes valuable
information about
kinetics and reactor
design for the enzymatic
synthesis of lactose-
derived oligosaccharides
Handbook of Biopolymer-

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Based Materials - Sabu Thomas 2013-04-16
This first systematic scientific reference in the area of micro- and nanostructured biopolymer systems discusses in two volumes the morphology, structure, dynamics, properties and applications of all important biopolymers, as well as their blends, composites, interpenetrating networks and gels. Selected leading researchers from industry, academia, government and private research institutions around the globe comprehensively review recent accomplishments in the field. They examine the current state of the art, new challenges, and opportunities, discussing all the synthetic routes to the generation of both micro- and nano-

morphologies, as well as the synthesis, characterization and application of porous biopolymers. An outstanding resource for anyone involved in the field of eco-friendly biomaterials for advanced technologies.
Nanomaterials for Food Applications - 2018-11-16
Nanomaterials for Food Applications highlights recent developments in nanotechnologies, covering the different food areas where these novel products or technologies can be applied. The book covers five major themes, showing how nanotechnology is used in food, the use of ingredients in nanoform to improve bioavailability or nanoencapsulation technologies, nanotechnologies for food processing, nanosensors for food

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quality and safety, nanotechnologies for food packaging, and methods to evaluate potential risks and regulatory issues. This is an important research reference that will be of great value to academic and industrial readers, as topics of importance, both at a research level and for commercial applications, are covered. Regulatory agencies will also be interested in the latest developments covered in the book as they will help set the foundation for further regulations. Demonstrates how nanotechnology can improve food quality and safety Shows how nanotechnology is used to create more effective food processing techniques Discusses the regulatory issues surrounding the use of nanomaterials in food to ensure they are used safely and responsibly

Improving the Safety and Quality of Milk - M. Griffiths 2010-04-08
Consumers demand quality milk with a reasonable shelf-life, a requirement that can be met more successfully by the milk industry through use of improved processes and technologies. Guaranteeing the production of safe milk also remains of paramount importance. Improving the safety and quality of milk provides a comprehensive and timely reference to best practice and research advances in these areas. Volume 1 focuses on milk production and processing. Volume 2 covers the sensory and nutritional quality of cow's milk and addresses quality improvement of a range of other milk-based products. The opening section of Volume 1: Milk production and

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processing introduces milk biochemistry and raw milk microbiology. Part two then reviews major milk contaminants, such as bacterial pathogens, pesticides and veterinary residues. The significance of milk production on the farm for product quality and safety is the focus of Part three. Chapters cover the effects of cows' diet and mastitis, among other topics. Part four then reviews the state-of-the-art in milk processing. Improving the quality of pasteurised milk and UHT milk and novel non-thermal processing methods are among the subjects treated. With its distinguished editor and international team of contributors, volume 1 of Improving the safety and quality of milk is an essential reference for researchers and those in industry responsible for

milk safety and quality. Addresses consumer demand for improved processes and technologies in the production, safety and quality of milk and milk products Reviews the major milk contaminants including bacterial pathogens, pesticides and veterinary residues as well as the routes of contamination, analytical techniques and methods of control Examines the latest advances in milk processing methods to improve the quality and safety of milk such as modelling heat processing, removal of bacteria and microfiltration techniques

Advanced Dairy Chemistry

- Paul L. H. McSweeney
2015-10-30

The chemistry and physico-chemical properties of milk proteins are perhaps the largest and most rapidly

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evolving major areas in dairy chemistry. Advanced Dairy Chemistry-1B: Proteins: Applied Aspects covers the applied, technologically-focused chemical aspects of dairy proteins, the most commercially valuable constituents of milk. This fourth edition contains most chapters in the third edition on applied aspects of dairy proteins. The original chapter on production and utilization of functional milk proteins has been split into two new chapters focusing on casein- and whey-based ingredients separately by new authors. The chapters on denaturation, aggregation and gelation of whey proteins (Chapter 6), heat stability of milk (Chapter 7) and protein stability in sterilised milk (Chapter 10) have been revised and

expanded considerably by new authors and new chapters have been included on rehydration properties of dairy protein powders (Chapter 4) and sensory properties of dairy protein ingredients (Chapter 8). This authoritative work describes current knowledge on the applied and technologically-focused chemistry and physico-chemical aspects of milk proteins and will be very valuable to dairy scientists, chemists, technologists and others working in dairy research or in the dairy industry.

Handbook of Food

Proteins - Glyn O.

Phillips 2011-09-09

Traditionally a source of nutrition, proteins are also added to foods for their ability to form gels and stabilise emulsions, among other properties. The range of specialised protein

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ingredients used in foods is increasing. Handbook of food proteins provides an authoritative overview of the characteristics, functionalities and applications of different proteins of importance to the food industry in one convenient volume. The introductory chapter provides an overview of proteins and their uses in foods. The following chapters each focus on a particular protein ingredient or group of ingredients covering their origins, production, properties and applications. The proteins discussed are caseins, whey proteins, gelatin and other meat-derived protein ingredients, seafood proteins, egg proteins, soy proteins, pea and other legume proteins, mycoprotein, wheat gluten, canola and other oilseed proteins, algal

proteins and potato protein. A chapter on texturised vegetable proteins completes the volume. Innovative products and potential methods for improving nutrition and diet using these proteins are described. With its distinguished editors and international team of expert contributors Handbook of food proteins is an invaluable reference tool for professionals using food protein ingredients for both food and other applications. An authoritative overview of the characteristics, functionalities and applications of different proteins of importance to the food industry Chapters each focus on a particular protein ingredient or group of ingredients Innovative products and potential methods for improving nutrition and

diet using proteins is also described

Microstructure of Dairy Products - Mamdouh El-Bakry 2018-07-13

Provides the most recent developments in microscopy techniques and types of analysis used to study the microstructure of dairy products This comprehensive and timely text focuses on the microstructure analyses of dairy products as well as on detailed microstructural aspects of them. Featuring contributions from a global team of experts, it offers great insight into the understanding of different phenomena that relate to the functional and biochemical changes during processing and subsequent storage. Structured into two parts, *Microstructure of Dairy Products* begins with an overview of microscopy techniques

and software used for microstructural analyses. It discusses, in detail, different types of the following techniques, such as: light microscopy (including bright field, polarized, and confocal scanning laser microscopy) and electron microscopy (mainly scanning and transmission electron microscopy). The description of these techniques also includes the staining procedures and sample preparation methods developed. Emerging microscopy techniques are also covered, reflecting the latest advances in this field. Part 2 of the book focuses on the microstructure of various dairy foods, dividing each into sections related to the microstructure of milk, cheeses, yogurts, powders, and fat products, ice cream and

frozen dairy desserts, dairy powders and selected traditional Indian dairy products. In addition, there is a review of the localization of microorganism within the microstructure of various dairy products. The last chapter discusses the challenges and future trends of the microstructure of dairy products. Presents complete coverage of the latest developments in dairy product microscopy techniques Details the use of microscopy techniques in structural analysis An essential purchase for companies, researchers, and other professionals in the dairy sector Microstructure of Dairy Products is an excellent resource for food scientists, technologists, and chemists—and physicists, rheologists, and microscopists—who deal

in dairy products. **Chemical Contaminants and Residues in Food** - D Schrenk 2012-08-23 Chemical contaminants are a major concern for the food industry. Chemical contaminants and residues in food provides an essential guide to the main chemical contaminants, their health implications, the processes by which they contaminate food products, and methods for their detection and control. Part one focuses on risk assessment and analytical methods. Gas chromatography and mass spectroscopy techniques for the detection of chemical contaminants and residues are discussed, as are applications of HPLC-MS techniques and cell-based bioassays. Major chemical contaminants are then discussed in part two, including

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dioxins and polychlorinated biphenyls, veterinary drug and pesticide residues, heat-generated and non-thermally-produced toxicants, D- and cross-linked amino acids, mycotoxins and phycotoxins, and plant-derived contaminants. Finally, part three goes on to explore the contamination of specific foods. Chemical contamination of cereals, red meat, poultry and eggs are explored, along with contamination of finfish and marine molluscs. With its distinguished editor and international team of expert contributors, Chemical contaminants and residues in food is an invaluable tool for all industrial and academic researchers involved with food safety, from industry professionals responsible for producing safe food, to

chemical analysts involved in testing the final products. Provides an essential guide to the main chemical contaminants, their health implications, the processes by which they contaminate food products, and methods for their detection and control. Sections provide in-depth focus on risk assessment and analytical methods, major chemical contaminants, and the contamination of specific foods. Chemical contamination of cereals, red meat, poultry and eggs are explored, along with contamination of finfish and marine molluscs.

Functional Ingredients from Algae for Foods and Nutraceuticals -
Herminia Dominguez
2013-09-30

Algae have a long history of use as foods and for the production of food ingredients.

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There is also increasing interest in their exploitation as sources of bioactive compounds for use in functional foods and nutraceuticals.

Functional ingredients from algae for foods and nutraceuticals reviews key topics in these areas, encompassing both macroalgae (seaweeds) and microalgae. After a chapter introducing the concept of algae as a source of biologically active ingredients for the formulation of functional foods and nutraceuticals, part one explores the structure and occurrence of the major algal components. Chapters discuss the chemical structures of algal polysaccharides, algal lipids, fatty acids and sterols, algal proteins, phlorotannins, and pigments and minor compounds. Part two highlights biological properties of algae and

algal components and includes chapters on the antioxidant properties of algal components, anticancer agents derived from marine algae, anti-obesity and anti-diabetic activities of algae, and algae and cardiovascular health. Chapters in part three focus on the extraction of compounds and fractions from algae and cover conventional and alternative technologies for the production of algal polysaccharides. Further chapters discuss enzymatic extraction, subcritical water extraction and supercritical CO₂ extraction of bioactives from algae, and ultrasonic- and microwave-assisted extraction and modification of algal components. Finally, chapters in part four explore applications of algae and algal components in foods,

functional foods and nutraceuticals including the design of healthier foods and beverages containing whole algae, prebiotic properties of algae and algae-supplemented products, algal hydrocolloids for the production and delivery of probiotic bacteria, and cosmeceuticals from algae. Functional ingredients from algae for foods and nutraceuticals is a comprehensive resource for chemists, chemical engineers and medical researchers with an interest in algae and those in the algaculture, food and nutraceutical industries interested in the commercialisation of products made from algae. Provides an overview of the major compounds in algae, considering both macroalgae (seaweeds) and microalgae Discusses

methods for the extraction of bioactives from algae Describes the use of algae and products derived from them in the food and nutraceutical industries

Advanced Dairy Chemistry, Volume 2 - Paul L. H. McSweeney
2020-12-08

The Advanced Dairy Chemistry series was first published in four volumes in the 1980s (under the title *Developments in Dairy Chemistry*) and revised in three volumes in the 1990s and 2000s. The series is the leading reference on dairy chemistry, providing in-depth coverage of milk proteins, lipids, lactose, water and minor constituents. *Advanced Dairy Chemistry Volume 2: Lipids, Fourth Edition*, is unique in the literature on milk lipids, a broad field that encompasses a diverse range of topics,

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including synthesis of fatty acids and acylglycerols, compounds associated with the milk fat fraction, analytical aspects, behavior of lipids during processing and their effect on product characteristics, product defects arising from lipolysis and oxidation of lipids, as well as nutritional significance of milk lipids. In the years since the publication of the third edition there have been significant developments in milk lipids and these are reflected in changes to this volume. Most topics included in the third edition are retained in the current edition, which has been updated; in some cases, new authors have given their perspective on certain topics. Chapters on nutritional significance of dairy lipids have been considerably revised. This

authoritative work summarizes current knowledge on milk lipids and suggests areas for further work. It will be very valuable to dairy scientists, chemists and others working in dairy research or in the dairy industry.

Modifying Food Texture - Jianshe Chen 2015-05-23
Modifying Food Texture, Volume 1: Novel Ingredients and Processing Techniques discusses texture as an important aspect of consumer food acceptance and preference, and the fact that specific consumer groups, including infants, the elderly, and dysphagia patients require texture-modified foods. Topics covered include ingredients and processing techniques used in texture modification of foods, an overview of food texture issues, the novel use of processing

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techniques for texture modification, and the uses of food ingredients in texture-modified foods. Discusses texture as an important aspect of consumer food acceptance and preference Presents findings and tactics that address the special

needs of infants, the elderly, and dysphagia patients Topics covered include ingredients and processing techniques used in texture modification of foods, along with an overview of food texture issues, amongst others