

SPRINGER BRIEFS IN MOLECULAR SCIENCE
CHEMISTRY OF FOODS

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Food Packaging Materials



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Food Packaging Materials Luciano Piergiovanni, Sara Limbo, 2015-11-26 This Brief is concerned with the material chemistry of food packaging materials. It introduces the properties and peculiarities of typical packaging materials such as plastics, cellulose, components, ceramics, and metals. Their overall performance as food packaging material is determined by the chemical and physical properties. The Brief describes how the final properties of a food packaging material can be influenced through chemical modifications in the structure and composition of the used components. The authors also cover potential chemical reactions of food packaging materials that may affect their performance. Potential hazards that may arise such as influences on the product quality or effects on their recycling or disposal are discussed. Different influences like metal corrosion, chemical resistance, and degradability of the main packaging materials or properties like hydrophobicity, surface energy, and migration have to be taken into account. This Brief gives an introduction to all these different aspects of food packaging.

Raw Material Scarcity and Overproduction in the Food Industry Suresh D. Sharma, Arpan R. Bhagat, Salvatore Parisi, 2019-04-09 This book describes the consequences of an increased demand for food for human consumption for the global food industry. In four concise chapters, the authors explore the trend for the overproduction of food, the concomitant diminution of raw materials, and the increase in environmental concerns. Chapter one describes the variations in biochemical properties of fishmeal depending on the season and geographical location. Chapter two discusses how the expansion of cropland and pastures to meet the rising demand for food is damaging the environment, while chapter three examines the impact of bee viruses on food crops and production. Lastly, the fourth chapter addresses the issue of food adulteration and provides specific examples of fraud in the American dairy industry. This book is of interest to researchers working in the area of food production in academia and industry as well as certification and scientific bodies involved in food inspection.

Trends in Food Chemistry, Nutrition and Technology in Indian Sub-Continent Suni Mary Varghese, Salvatore Parisi, Rajeev K. Singla, A. S. Anitha Begum, 2022-07-05 This brief outlines the state of art of the food industry within the Indian Subcontinent, providing a detailed insight into the current science of nutrition and industrial technology. The Hygiene, Integrity, Traceability, and Sharing (HITS) strategy has been proposed recently as a coordinated and powerful tool to contextualize the plethora of different menaces for the food consumer. The book examines this approach from eight different perspectives, with a particular emphasis on the Indian Subcontinent. Topics such as food additives, the importance of water in the food industry, the use of antioxidants, and novel food preservation methods are used to illustrate these points of view. This book is particularly appealing as a guide for graduate and undergraduate courses covering food production, food safety, and the training of teachers working in these science areas.

Natural Inflammatory Molecules in Fruits and Vegetables Ramesh Kumar Sharma, Maria Anna Coniglio, Pasqualina Laganà, 2021-11-29 This book explores the role that some natural molecules found in fruits and vegetables and their derivatives play in excessive oxidation reactions that lead to inflammation in the

human body Particular attention is given to oxidation during food processing especially when it comes to high energy foods derived from cereals with notable amounts of oxidation sensible lipids and protein chains This book critically assesses the increased consumption of high energy foods from a public health perspective In addition it provides an overview of the research into the unsaturated fatty acids and polypeptides responsible for nitric oxide production and elucidates the analytical identification of natural inflammatory molecules in fruits and vegetables The book appeals not only to academic researchers and professors interested in public hygiene and food safety medicine food production HACCP studies but also to public health practitioners and regulatory specialists and consultants

Chemistry and Hygiene of Food Gases

Pasqualina Laganà,Giovanni Campanella,Paolo Patanè,Maria Assunta Cava,Salvatore Parisi,Maria Elsa Gambuzza,Santi Delia,Maria Anna Coniglio,2019-11-22 This book focuses on the use of food gases in the food industry their different applications and their role in food processing packaging and transportation Since these gases come into contact with food they must comply with strict of labeling purity and hygiene standards in order to ensure food safety The book discusses various implications of food gases in the food chain providing examples of how they can be used to limit food waste and losses The first two chapters examine the classification and role of food gases in Europe and the third chapter then explores the chemical and physical features of commonly used food gases in the food and food packing industries The fourth chapter highlights the impact of food gases on human health due to their possible abuse and misuse This book appeals to researchers and professionals working in food production and quality control

Chemical Profiles of Selected Jordanian Foods

Moawiya A. Haddad,Mohammed I. Yamani,Saeid M. Abu-Romman,Maher Obeidat,2021-08-21 This book provides an overview of various traditional Middle Eastern food products and beverages and investigates their chemical microbial and physical profiles The authors selected 5 traditional Jordanian products that represent the region s historical foods and beverages and examined them with a focus on their chemical composition and preparation as well as features such as food safety and quality management The first chapter provides a general introduction to traditional foods in Jordan Subsequent chapters then shed light on specific product classes including Shaneenah a popular fermented dairy drink Mujaddara and Rashoof two products based on lentils Kebab products soft cheese and Muhallabiaah a traditional milk pudding This book offers a valuable reference guide to many traditional historical products in the Middle East and due to region s historical influence on the Mediterranean diet it is also of interest to researchers in southern Europe

Lathyrus sativus and Nutrition

Michele Barone,Rita Tulumello,2020-10-07 This book addresses the traditional use of a specific crop legume grass pea Lathyrus sativus as a food product and ingredient for typical food products Grass pea has very interesting nutritional qualities including an abundance of proteins and peculiar organoleptic properties As the crop also shows an enhanced resistance to adverse conditions it is used in many geographical areas as the main ingredient of certain traditional foods On the other hand grass pea is questionable as a source of human and animal nutrition because it contains a neurotoxin N oxalyl L

diaminopropionic acid that is known for its neurological effects The related disease is referred to as neurolathyrism and occurs when grass pea based foods are consumed in large quantities The book is divided into five chapters the first of which summarizes the chemical and biochemical properties of grass pea and provides nutritional evaluations The second chapter provides an overview of foods containing *Lathyrus sativus* around the world while the third describes Italian foods in detail The fourth chapter focuses on the problem of neurolathyrism in connection with human nutrition and health In closing the fifth chapter sheds light on the historical and traditional food products sector from a food traceability and authenticity standpoint

Food Sharing Alessandra Pellerito, Ralf Dounz-Weigt, Maria Micali, 2019-08-20 This book presents the concept of food sharing from a European perspective and provides a concise analysis of its safety implications and the chemical properties of recovered foods In our modern world 33% of the total food produced is lost each year with serious economic environmental and social consequences Food worth approximately 1 trillion USD is wasted per year and it is estimated that this wasted food could feed more than 3.4 billion people Considering that 1/10 of the global population still does not have enough money for basic needs and in view of the impact of consumer behaviour food retailers and industry in food waste food sharing appears to be an attractive solution and several communities have recently been created with the main goal of saving food and giving it to those in need Despite the positive impact of food sharing it also raises concerns since recovered foods are subject to spoilage decay and irreversible chemical physical transformations In this book the authors explore the current situation and the regulatory definition of food sharing in various European countries presenting the German experience in the city of Magdeburg where food sharing networks have been implemented They also discuss the chemical and safety evaluations of durable foods and provide a simulation of food waste by comparing a food product with the same food produced with reworked and still edible raw materials recovered foods

Polyphenols and the Mediterranean Diet Manel Issaoui, Amélia Martins Delgado, Candela Iommi, Nadia Chammem, 2020-02-25 This book focuses on polyphenols in the Mediterranean diet providing a detailed overview of their chemical structure extraction and analysis methods and their role in the diet and in flavor Phenols are important not only in terms of preventing a number of diseases due to their antimicrobial and antioxidant effects but also in shaping our perception of foods The first chapter discusses consumers sensory assessment of foods containing polyphenols in terms of flavor and color as well as the chemical properties and natural sources of phenolic compounds The second chapter examines hygiene and safety claims with respect to naturally occurring polyphenols especially in connection with organoleptic features The third and final chapter examines the dietary sources of these molecules from various fruits including processed products such as infusions wines oils and olives Given its scope this book is a valuable resource for researchers in academia and industry interested in food safety hygiene and production issues related to the Mediterranean diet

Polymer and Biopolymer Nanocomposites Muhammad Moniruzzaman, A. Vijaya Bhaskar Reddy, 2025-12-19 Polymer and Biopolymer Nanocomposites Recent Advances and Applications delves into the fundamental

principles of polymer and biopolymer nanocomposites while examining the latest technological advancements in their fabrication and characterization The book brings together contributions from leading scientists and researchers worldwide offering a comprehensive review of cutting edge developments and techniques in this field By covering a wide spectrum of current applications the book aims to showcase the potential for future technological progress and commercialization It emphasizes the diverse range of applications for polymer and biopolymer nanocomposites demonstrating their significance in various industries Finally the book discusses innovative fabrication methods advanced characterization techniques and potential commercial uses The insights provided aim to pave the way for new technological breakthroughs and enhanced industrial applications Covers fundamentals and properties of polymer and biopolymer nanocomposites Addresses the latest technological developments in fabrication and characterization Discusses LCA and the environmental impact of polymer and biopolymer nanocomposites Includes coverage of industries such as biomedical drilling fluids cosmetics and personal care energy storage gas sensing and solar energy conversion biodegradable electronics water purification aerospace and automotive applications

Food Traceability in Jordan Moawiya A. Haddad, Mohammed I. Yamani, Da'san M.M. Jaradat, Maher Obeidat, Saeid M. Abu-Romman, Salvatore Parisi, 2021-02-02 This book outlines the evolution of food traceability matters in the current traditional foods market and particularly with regard to selected historical foods based in Jordan At present traceability is just one of the many requirements the food industry is forced to meet The topic can be approached from various angles regulation technological perspectives food business operators packaging manufacturers software producers and consumer views In addition traceable food products provide an interesting legacy for many geographical and ethnic cultures Consequently the examination of certain recipes or food products linked with history and traditions can make a unique and valuable contribution to future developments in this area In this regard Jordanian foods offer a prime example This book examines three traditional products from different viewpoints paying special attention to their chemical composition the identification of raw materials preparation procedures and traceability The book begins with a more general discussion on food traceability without detailed regional implications while the second chapter discusses the product hummus in its many versions In turn the third and fourth chapters focus on two fermented dairy products labaneh and jameed and their connections with the Mediterranean diet The book offers a valuable reference guide to many traditional historical products in the Middle East with a particular focus on traceability matters and solutions

Lignocellulosic Materials and Their Use in Bio-based Packaging Lina Fernanda Ballesteros, Michele Michelin, António Augusto Vicente, José António Teixeira, Miguel Ângelo Cerqueira, 2018-06-18 This brief provides a comprehensive review of lignocellulosic materials and their primary role in the future development of bio based packaging Topics such as sources and extraction methods of lignocellulosic materials main constituents of lignocellulosic materials functionality of lignocellulosic materials the development of bio based and biodegradable packaging incorporation of lignocellulosic materials in bio based packaging

materials properties and functionality of bio based packaging are discussed by authors who are experts in the field *Food Packaging Hygiene* Caterina Barone, Luciana Bolzoni, Giorgia Caruso, Angela Montanari, Salvatore Parisi, Izabela

Steinka, 2015-01-17 This Brief is concerned with the connection between food packaging and the chemical composition of packaging materials In terms of the food packaging hygiene the influence of the containers on the contained foods is discussed The book explores new and emerging risks related to food packaging materials in connection with the contained commodities It also discusses the technology of production with relation to the chemical risk in a Hazard Analysis and Critical Control Point HACCP investigation *The Importance of Packaging Design for the Chemistry of Food Products*

Giovanni Brunazzi, Salvatore Parisi, Amina Pereno, 2014-07-08 This Brief defines reliable correlations between the food packaging design and its chemical features in terms of an integrated food product the synergistic union composed of the edible content and its container A good design as described in this Brief implies the best choices from a series of possibilities taking into account economical and commercial influences or limitations in the production and processing chain and the chemical interactions that can arise between the food containers and the contained edible material This Brief highlights how the different requirements can be combined while avoiding dangerous food risks originating from the chemical interaction between the container and the product Different designs are critically analysed with relation to the effect on contained foods The influences and resulting consequences of different possible food packaging designs are highlighted and discussed in selected case studies for some every day products like potato chips *Sustainable Innovations in Food Packaging* Teresa De

Pilli, Antonietta Baiano, Giuseppe Lopriore, Carlo Russo, Giulio Mario Cappelletti, 2021-08-19 This book explores the latest advances in the sustainable production of packaged foods Packaging plays an important role in sustainable food production and consumption in industrialized countries where there is an increasing pressure to reduce the environmental impact of packaged foods For example the European Union recommends packaging from renewable sources with a focus on bio based materials Sustainable packaging processes guarantee the reuse of the entire waste material and at the same time avoid the loss of food safety and quality during storage by preventing food borne diseases and chemical contamination Furthermore the dramatic problem of plastic waste accumulation and the conservation of oil and food resources need to be taken into consideration This book presents eco friendly packaging strategies to reduce food and plastic waste and address the end of life issues of persistent materials It particularly focuses on the production of biodegradable microbial polymers and the use of by products and waste from the agricultural and food industries These strategies promote an innovative and productive waste based food packaging economy separating the food packaging industry from fossil reserves and allowing bio polymers to return to the soil Lastly the book covers life cycle assessment life cycle costing and externality assessment to help readers understand the economical reliability of the innovations presented **The Influence of Chemistry on New Foods and**

Traditional Products Giampiero Barbieri, Caterina Barone, Arpan Bhagat, Giorgia Caruso, Zachary Ryan Conley, Salvatore

Parisi,2014-09-13 This Brief concerns the influence of chemistry in the modern food and beverages industry The world of traditional foods has been soundlessly but increasingly interconnected with the chemical industry in the last century Different areas are considered in a multidisciplinary approach the production of chemical additives and of non food components needed in the food industry e g packaging materials the regulatory perspective of the whole food production chain commercialization of food commodities the problem of food safety from the viewpoint of official auditors with medical or veterinarian competencies new and emerging risks related to food packaging materials the assessment of the authenticity of edible products This Brief includes different viewpoints ranging from the management of allergens and food additives in the food plant to the complex matter of the formulation of traditional products with the consequent production of alternative versions of the same food *Non-Intentionally Added Substances in PET-Bottled Mineral Water* Maria Anna

Coniglio,Cristian Fioriglio,Pasqualina Laganà,2020-01-02 This book discusses a major issue in the food contact materials industry non intentionally added substances NIAS and their impact on PET bottled water NIAS are chemical compounds that are present in food contact materials but have not been added for technical reasons during the production process and consumers are usually unaware of their presence NIAS can include decomposition or degradation products impurities in the raw materials unwanted by products or contaminants from recycling processes and they pose a challenge for packaging manufacturers In Europe the EU Regulations No 1935 2004 and 10 2011 set out respectively the general principles of safety and inertness for all packaging materials and rules on the composition of plastic food contact materials Among the plastics commonly used for bottled water and other non alcoholic refreshment beverages polyethylene terephthalate PET is the most favoured thanks to its chemical and physical stability its transparency low weight and good recyclability Further very few additives are used for its manufacture Nonetheless due to the complex formulations of polymers processes and storage NIAS can also be found in PET bottled water with potential cancerogenic or toxic effects This book provides an overview of the European regulation of NIAS in plastic packaging materials offering insights into their chemical composition in PET bottled water Lastly it provides a useful discussion on NIAS and their toxicity **Food Packaging and Preservation** M.

Mathlouthi,2013-12-14 This book is an updating of Food Packaging and Preservation Theory and Practice published in 1986 by Elsevier Applied Science Since that date many things have changed in the world Hence the name given to the first IFTEC meeting held at the Hague NL November 15 18 1992 Food Technology for a Changing World Is the world changing for better or worse and what can food technology improve The keynote lecture of the IFTEC meeting dealt with hunger and the challenge it represents to food science and technology In the preface to the 1986 book it was suggested that food packaging could solve some of the problems of crop preservation in countries where starvation is prevalent However such thoughts did not solve any problems The famine is still spreading in Africa The unbalanced north south situation evoked in the 1986 preface has not improved The international market of foods and agricultural products is constantly changing and food

packaging scientists can only explore new ways to help cope with this Some of these ideas are approached in this book particularly in chapters 9 10 and 12 Food Packaging Sanjay Mavinkere Rangappa,Jyotishkumar Parameswaranpillai,Senthil Muthu Kumar Thiagamani,Senthilkumar Krishnasamy,Suchart Siengchin,2020-10-20 Food Packaging Advanced Materials Technologies and Innovations is a one stop reference for packaging materials researchers working across various industries With chapters written by leading international researchers from industry academia government and private research institutions this book offers a broad view of important developments in food packaging Presents an extensive survey of food packaging materials and modern technologies Demonstrates the potential of various materials for use in demanding applications Discusses the use of polymers composites nanotechnology hybrid materials coatings wood based and other materials in packaging Describes biodegradable packaging antimicrobial studies and environmental issues related to packaging materials Offers current status trends opportunities and future directions Aimed at advanced students research scholars and professionals in food packaging development this application oriented book will help expand the reader s knowledge of advanced materials and their use of innovation in food packaging Plastic Packaging Materials for Food Otto G. Piringer,A. L. Baner,2008-07-11 Plastics have developed into the most important class of packaging materials Their relative impermeability for substances from the surroundings has great influence on the shelf life and the quality of the packed goods At the same time the interaction between the contents and the various components of the packaging plays a decisive role This particular book is indispensable in the search for the optimal plastic packaging It facilitates the estimation of the influence on the goods which come from the surroundings and from the packaging The authors do not restrict themselves only to the description of the phenomena of diffusion or transport in theory but they show what they mean for practical applications Food represents the central theme as main area of application for plastic packaging It can be considered to be the model substance and the findings are to be applied to many other products and systems The main rules and regulations for food packaging of the European Community and the United States are presented in this book Furthermore the authors emphasize the testing methods for proving the mass transport and the sensory check of the quality of the products

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