

## Handbook Of Natural Antimicrobials For Food Safety And Quality Woodhead Publishing Series In Food Science Technology And Nutrition

Handbook of Modern Coating Technologies: Fabrication Methods and Functional Properties reviews different fabrication methods and functional properties of modern coating technologies. The topics in this volume consist of nanocoatings by sol–gel processes for functionalization of polymer surfaces and textiles and mechanical fabrication methods of nanostructured surfaces such surface mechanical attrition treatment, polymer nanofabrications and its plasma processing, chemical vapor deposition of oxide materials at atmospheric pressure, conventional chemical vapor deposition process at atmospheric pressure, feasibility of atmospheric pressure, chemical vapor deposition process, Langmuir–Blodgett technique, flame pyrolysis, confined-plume chemical deposition, electrophoretic deposition, in vitro and in vivo particle coating for oral targeting and drug delivery, novel coatings to improve the performance of multilayer biopolymeric films for food packaging, corrosion protection by nanostructured coatings, tribological behavior of electroless coatings, effect of peening-based processes on tribological and mechanical behavior of bioimplant materials, improved efficiency of ceramic cutting tools in machining hardened steel with nanostructured multilayered coatings, incorporation of elastomeric secondary phase into epoxy matrix influences mechanical properties of epoxy coatings, enhancement of biocompatibility by coatings, porous hydroxyapatite–based coatings, and bionic colloidal crystal coatings.

The processing of food is no longer simple or straightforward, but is now a highly inter-disciplinary science. A number of new techniques have developed to extend shelf-life, minimize risk, protect the environment, and improve functional, sensory, and nutritional properties. Since 1999 when the first edition of this book was published, it has facilitated readers' understanding of the methods, technology, and science involved in the manipulation of conventional and newer sophisticated food preservation methods. The Third Edition of the Handbook of Food Preservation provides a basic background in postharvest technology for foods of plant and animal origin, presenting preservation technology of minimally processed foods and hurdle technology or combined methods of preservation. Each chapter compiles the mode of food preservation, basic terminologies, and sequential steps of treatments, including types of equipment required. In addition, chapters present how preservation method affects the products, reaction kinetics and selected prediction models related to food stability, what conditions need be applied for best quality and safety, and applications of these preservation methods in different food products. This book emphasizes practical, cost-effective, and safe strategies for implementing preservation techniques for wide varieties of food products. Features: Includes extensive overview on the postharvest handling and treatments for foods of plants and animal origin Describes comprehensive preservation methods using chemicals and microbes, such as fermentation, antimicrobials, antioxidants, pH-lowering, and nitrite Explains comprehensive preservation by controlling of water, structure and atmosphere, such as water activity, glass transition, state diagram, drying, smoking, edible coating, encapsulation and controlled release Describes preservation methods using conventional heat and other forms of energy, such as microwave, ultrasound, ohmic heating, light, irradiation, pulsed electric field, high pressure, and magnetic field Revised, updated, and expanded with 18 new chapters, the Handbook of Food Preservation, Third Edition, remains the definitive resource on food preservation and is useful for practicing industrial and academic food scientists, technologists, and engineers.

Woodhead Publishing in Food Science, Technology and Nutrition '... a good reference book for food processors and packers of herbs and spices.' Food Technology (of Volume 1) '... a standard reference for manufacturers who use herbs and spices in their products.' Food Trade Review (of Volume 2) The final volume of this three-volume sequence completes the coverage of the main herbs and spices used in food processing. The first part of the book reviews ways of improving the safety of herbs and spices. There are chapters on detecting and controlling mycotoxin contamination, controlling pesticide and other residues, the use of irradiation and other techniques to decontaminate herbs and spices, packaging and storage, QA and HACCP systems. Part two reviews the potential health benefits of herbs and spices with chapters discussing their role in preventing chronic diseases such as cancer and cardiovascular disease and promoting gut health. The final part of the book comprises chapters on twenty individual herbs and spices, covering such topics as chemical composition, cultivation and quality issues, processing, functional benefits and uses in food. Herbs and spices reviewed range from asafoetida, capers and carambola to perilla, potato onion and spearmint. The final volume will consolidate the reputation of this three-volume series, providing a standard reference for R&D and QA staff using herbs and spices in their food products. The final volume of this three-volume sequence completes the coverage of the main herbs and spices used in food processing Incorporates safety issues, production, main uses and regulations Reviews the potential health benefits of herbs and spices

With over 2900 references, tables, and drawings, this book covers a wide variety of conventional and potential food preservation techniques. Emphasizing practical, cost-effective, and safe strategies, the book facilitates the selection of the best food ingredients and preservation techniques. It covers postharvest handling, explains conventional preservation methods, details the use of natural antimicrobials, antioxidants, edible coating, nitrites, food packaging, and HACCP in food safety. Highlighting the effects of preservation methods on the functional and sensory properties of foods, the book also features the exact mode or mechanisms involved in each preservation method.

The demands of producing high quality, safe (pathogen-free) food rely increasingly on natural sources of antimicrobials to inhibit food spoilage organisms and foodborne pathogens and toxins. Discovery and development of new antimicrobials from natural sources for a wide range of application requires that knowledge of traditional sources for food antimicrobials is combined with the latest technologies in identification, characterization and application. This book explores some

novel, natural sources of antimicrobials as well as the latest developments in using well-known antimicrobials in food. Documenting the latest research in the field of different pathogenic organisms, this book presents the current scenario about promising antimicrobials in the following areas: Part I. Plants as source of antibacterials, Part II. Naturally occurring antifungal natural products, Part III. Antiparasitic natural products, Part IV. Antiviral natural products. Renowned scientists from the globe have been selected as authors to contribute chapters. Use of plants for various ailments is as old as human civilization and continuous efforts are being made to improve medicinal plants or to produce their bioactive secondary metabolites in high amounts through various technologies. About 200,000 natural products of plant origin are known and many more are being identified from higher plants and micro-organisms. Some plants based drugs are used since centuries and there is no alternative medicine for many such drugs as cardiac glycosides. Drug discovery from medicinal plants or marine micro-organisms continues to provide an important source of new drug leads. Research on new antibacterials represents a real and timely challenge of this century, particularly for the treatment of infections caused by clinical isolates that show multidrug resistance. The main microorganisms involved in the resistance process have been identified and given the acronym ESKAPE for *Enterococcus faecium*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa* and *Enterobacteriaceae*. Multidrug resistant *Mycobacterium tuberculosis* including highly drug-resistant strains (XDR-TB) has also emerged as one of the most important clinical challenges of this century. Plants of diverse taxa and marine micro-organisms are rich source of these antimicrobials. An attempt has been made to compile the recent information about natural sources of antibacterials and their sustainable utilization. Increased panic of these pathogens warrants a growing demand for research to undertake the threat of multidrug resistance. The search for new antifungal, antiparasitic and antiviral natural products is far from devoid of interest. According to the WHO report in 2013, malaria still represents some 207 million cases worldwide and more than 3 billion of people are still exposed to this risk. Similarly, about 350 million people are considered at risk of contracting leishmaniasis. The fight against some viruses also requires that the research on natural products continue. For example, even if an antiretroviral with direct action was recently approved in Europe in 2013, its high cost does not allow to offer it to an exposed population in countries where the cost of drugs remains a problem for a large part of the population. These books are useful to researchers and students in microbiology, biotechnology, pharmacology, chemistry and biology as well as medical professionals.

From contaminated infant formula to a spate of all-too familiar headlines in recent years, food safety has emerged as one of the harsher realities behind China's economic miracle. Tainted beef, horse meat and dioxin outbreaks in the western world have also put food safety in the global spotlight. *Food Safety in China: Science, Technology, Management and Regulation* presents a comprehensive overview of the history and current state of food safety in China, along with emerging regulatory trends and the likely future needs of the country. Although the focus is on China, global perspectives are presented in the chapters and 33 of the 99 authors are from outside of China. Timely and illuminating, this book offers invaluable insights into our understanding of a critical link in the increasingly globalized complex food supply chain of today's world.

Plant secondary metabolites are organic compounds that aid in the growth and development of plants but are not required for the plant to survive by fighting off herbivores, pests, and pathogens. These plant secondary metabolites have been used since early times in various medicines and food products for beneficial health purposes and are still relevant and popular today. This new three-volume *Plant Secondary Metabolites* provides an abundance of valuable information on secondary metabolites, their health properties and possibilities, and their extraction and application methods.

*Food Quality and Shelf Life* covers all aspects and challenges of food preservation, packaging and shelf-life. It provides information on the most important pillars in the field, starting with active and smart packaging materials, novel technologies, and control tools in all stages between production and consumer. The book gives emphasis to methodological approaches for sensory shelf-life estimation and the impact of packaging on sensorial properties. Researchers and professionals alike will find this reference useful, especially those who are interested in the performance evaluation of future packaging for fresh produce in the cold chain and temperature management in the supply chain. Presents insights regarding new trends in emerging technologies in the field Includes hot topics, such as modified atmosphere packaging and active materials to improve shelf-life Provides shelf-life assessment and modeling methodologies and accelerated shelf-life testing

This second book in the three-volume *Plant Secondary Metabolites* covers the stimulation, extraction, and utilization of plant secondary metabolites, which are organic compounds that aid in the growth and development of plants but which are not required for the plant to survive by fighting off herbivores, pests, and pathogens. These plant secondary metabolites have been used since early times in various medicines and food products for beneficial health purposes and are still relevant and popular today.

*Practical Handbook of Microbiology*, 4th edition provides basic, clear and concise knowledge and practical information about working with microorganisms. Useful to anyone interested in microbes, the book is intended to especially benefit four groups: trained microbiologists working within one specific area of microbiology; people with training in other disciplines, and use microorganisms as a tool or "chemical reagent"; business people evaluating investments in microbiology focused companies; and an emerging group, people in occupations and trades that might have limited training in microbiology, but who require specific practical information. Key Features Provides a comprehensive compendium of basic information on microorganisms—from classical microbiology to genomics. Includes coverage of disease-causing bacteria, bacterial viruses (phage), and the use of phage for treating diseases, and added coverage of extremophiles. Features comprehensive coverage of antimicrobial agents, including chapters on anti-fungals and anti-virals. Covers the Microbiome, gene editing with CRISPR, Parasites, Fungi, and Animal Viruses. Adds numerous

chapters especially intended for professionals such as healthcare and industrial professionals, environmental scientists and ecologists, teachers, and businesspeople. Includes comprehensive survey table of Clinical, Commercial, and Research-Model bacteria.

Herbs and spices are among the most versatile ingredients in food processing, and alongside their sustained popularity as flavourants and colourants they are increasingly being used for their natural preservative and potential health-promoting properties. An authoritative new edition in two volumes, Handbook of herbs and spices provides a comprehensive guide to the properties, production and application of a wide variety of commercially-significant herbs and spices. Volume 1 begins with an introduction to herbs and spices, discussing their definition, trade and applications. Both the quality specifications for herbs and spices and the quality indices for spice essential oils are reviewed in detail, before the book goes on to look in depth at individual herbs and spices, ranging from basil to vanilla. Each chapter provides detailed coverage of a single herb or spice and begins by considering origins, chemical composition and classification. The cultivation, production and processing of the specific herb or spice is then discussed in detail, followed by analysis of the main uses, functional properties and toxicity. Volume 2 begins with a discussion of such issues as the medicinal uses of herbs and spices and their sustainable production. Herbs and spices as natural antimicrobials in foods and the effect of their natural antioxidants on the shelf life of food are explored, before the book goes on to look in depth at individual herbs and spices, ranging from ajowan to tamarind. Each chapter provides detailed coverage of a single herb or spice, and begins by considering origins, chemical composition and classification. The cultivation, production and processing of the specific herb or spice is then discussed in detail, followed by analysis of the main uses, functional properties and toxicity. Provides a comprehensive guide to the properties, production and application of a wide variety of commercially-significant herbs and spices Reviews the quality specifications for herbs and spices and examines the quality indices for spice essential oils

Food Nanotechnology: Applications and Approaches is the definitive guide on all aspects of nano-sized ingredients and devices for the food sector. The book brings science and applications together on the nano-scale into nano-structured food materials, with an emphasis on their production, processing, engineering, characterization, and applications of food materials containing true nano-sized dimensions or nano-structures that enable novel/enhanced properties or functions. All chapters emphasize original results relating to experimental, theoretical, computational, and/or applications of nano-materials in food. Topics such as the application of nanotechnology in food processing operations, functional ingredients, quality control, nutraceutical delivery, and packaging of food products are very attractive and beneficial to both academics and practitioners. Finally, the safety of applying nano ingredients and nano devices is covered. Brings novel applications of nanotechnology in processing food products Shows how to improve the formulation of food products with nano-structured ingredients Explores new opportunities in food packaging through nano-structured materials Nanotechnology can be used to address challenges faced by the food and bioprocessing industries for developing and implementing improved or novel systems that can produce safer, nutritious, healthier, sustainable, and environmental-friendly food products. This book overviews the most recent advances made on the field of nanoscience and nanotechnology that significantly influenced the food industry. Advances in Processing Technologies for Bio-Based Nanosystems in Food provides a multidisciplinary review of the complex mechanisms involved in the research, development, production and legislation of food containing nanostructures systems. Features: Presents the most recent advances made in the field of nanoscience and nanotechnology as applied to the food industry Discusses innovative approaches and processing technologies Shows how nanotechnology can be used to produce safer, nutritious, healthier, sustainable and environmental-friendly food products Covers the complex mechanisms involved in the research, development, production and legislation of food containing nanostructures Selected examples of nanotechnology applications in food industry are shown, focusing on advanced aspects of food packaging, processing and preservation; followed by one contribution that presents the potential commercialization and the main challenges for scale-up. Comprised of 15 chapters, this book provides much-needed and up-to-date information on the use of emergent technologies in bio-based nanosystems for foods, and serves as an ideal reference for scientists, regulators, industrialists, and consumers that conduct research and development in the food processing industry.

From health and economic consequences to exposure assessment and detoxification, this reference comprehensively covers the formation, characteristics, and control of various toxins that occur in the production, storage, handling, and preparation of food. The author discusses toxin sources, mechanisms, routes of exposure and absorption, and their chemical and biochemical components to prevent contamination of food products and reduce epidemics of foodborne disease. The book contains more than 3000 references to facilitate further research, as well as recent guidelines from the FDA and World Health Organization regarding food hygiene and safety.

Milk-Based Beverages, Volume 9 in The Science of Beverages series, presents current status, developments, and technologies for researchers and developers to meet consumer demand and understand consumer trends toward healthy drinks. This resource takes a multidisciplinary approach to address issues in safety and quality control, while also discussing the nutritional and functional information that professionals in the beverage industry need. The book presents a framework for researchers, product developers, engineers, and regulators in the beverages industry for understanding new research developments in milk-based products to meet industry needs in producing competitive products. Covers the most recent advances in various milk-based products Includes a solid review of safety and hygiene for the development of new products Presents engineering techniques and applications using novel technologies

Primarily intended for biotechnology graduates, this handbook provides an overview of the requirements, opportunities and drawbacks of Biotech Entrepreneurship, while also presenting valuable training materials tailored to the industrial and market reality in the European Biotech Business. Potential investors and business consultants will find essential

information on the benefits and potential risks involved in supporting biotech businesses. Further, the book addresses a broad range of Biotechnology fields, e.g. food biotech, industrial biotech, bioinformatics, animal and human health. Readers will learn the essentials of creating innovations, founding a biotech start-up, business management strategies, and European funding sources. In addition, the book discusses topics such as intellectual property management and innovation transfer. The book offers a comparative analysis of different countries' perspectives and reviews the status quo in Western and Eastern European regions, also in comparison with other leading biotech countries such as the USA and Canada. A long list of potentially profitable biotech start-up ideas and a collection of success stories involving European companies are also included. The book is based on the Erasmus+ Strategic Partnership project "Supporting biotechnology students oriented towards an entrepreneurial path" ([www.supbioent.usamv.ro](http://www.supbioent.usamv.ro)), which involved the collaboration of Life Sciences and Economics departments at higher education institutions throughout Western and Eastern Europe.

**Solve any building air quality problem** A complete reference for the design of air filtration systems and HVAC systems used in homes, schools, hospitals, laboratories, or animal facilities, this book offers complete descriptions of each of the major technologies currently used for air disinfection. Each subject, chemical or microbial, is treated in sufficient detail to allow the design of these components to solve specific building air quality problems. Design solutions for control of gases and odors Recommended technologies and methods to combat biological terrorist weapons in HVAC systems Diagnosis of air quality problems Complete airborne pathogen database for the identification of infection risk

This book discusses practical application of natural antimicrobials in food preservation. Topics covered include: the use of bacteriocins in preserving animal and other food products; the current and future uses of certain preservatives and the use of natural antimicrobials in edible coatings. Three chapters are devoted to antimicrobials from plants and their use in a wide range of applications. With its practical emphasis and authoritative coverage, this book will be a standard work for the food industry in developing new preservation systems that extend the shelf life of foods without compromising safety or sensory quality.

**Handbook of Microbial Coatings** is the first comprehensive work on the developments being made in the emerging field of antimicrobial coatings. Crucial aspects associated with coating research are presented in the form of individual chapters. Particular close attention has been given to essential aspects necessary to understand the properties of novel materials. The book introduces the reader to progress being made in the field, followed by an outline of applications in different areas. Various methods and techniques of synthesis and characterization are detailed as individual chapters. Chapters provide insight into the ongoing research, current trends and technical challenges in this rapidly progressing field. The covered topics were chosen so that they can be easily understood by new scholars as well as advanced learners. No book has been written on this topic thus far with so much crucial information for materials scientists, engineers and technologists. Offers the first comprehensive work on developments being made in the emerging field of antimicrobial coatings Features updates written by leading experts in the field of anti-microbial coatings Includes discussions of coatings for novel materials Provides various methods and techniques of synthesis and characterization detailed in individual chapters

Active antimicrobial food packaging is a new generation of packaging. Antimicrobial food additives are incorporated in the food packaging systems to inhibit, retard, or inactivate microbial growth to extend the shelf life of foods. This book is composed of five chapters, and is aimed at introducing the reader to active antimicrobial food packaging, as well as concerns of the consumers on synthetic-based food additives.

**Food Packaging and Preservation, Volume 9** in the Handbook of Food Bioengineering series, explores recent approaches to preserving and prolonging safe use of food products while also maintaining the properties of fresh foods. This volume contains valuable information and novel ideas regarding recently investigated packaging techniques and their implications on food bioengineering. In addition, classical and modern packaging materials and the impact of materials science on the development of smart packaging approaches are discussed. This book is a one-stop-shop for anyone in the food industry seeking to understand how bioengineering can foster research and innovation.

Presents cutting technologies and approaches utilized in current and future food preservation for both food and beverages Offers research methods for the creation of novel preservatives and packaging materials to improve the quality and lifespan of preserved foods Features techniques to ensure the safe use of foods for longer periods of time Provides solutions of antimicrobial films and coatings for food packaging applications to enhance food safety and quality

Fifteen years have passed since the 3rd edition of Antimicrobials in Food was published. It was arguably considered the "must-have" reference for those needing information on chemical antimicrobials used in foods. In the years since the last edition, the food industry has undergone radical transformations because of changes on several fronts. Reported consumer demands for the use of "natural" and "clean-label" antimicrobials have increased significantly. The discovery of new foodborne pathogen niches and potentially hazardous foods, along with a critical need to reduce food spoilage waste, has increased the need for suitable antimicrobial compounds or systems. Novel natural antimicrobials continue to be discovered, and new research has been carried out on traditional compounds. These and other related issues led the editors to develop the 4th edition of Antimicrobials in Food. In the 4th edition, the editors have compiled contemporary topics with information synthesized from internationally recognized authorities in their fields. In addition to updated information, new chapters have been added in this latest release with content on the use of bacteriophages, lauric arginate ester, and various systems for antimicrobial encapsulation and delivery. Comprehensive revisions of landmark chapters in previous editions including naturally occurring antimicrobials from both animal and plant sources, methods for determining antimicrobial activity, new approaches to multifactorial food preservation or "hurdle technology," and mechanisms of action, resistance, and stress adaptation are included. Complementing these topics is new information on quantifying the capability of "clean" antimicrobials for food preservation when compared to traditional food preservatives and industry considerations when antimicrobials are evaluated for use in food manufacture. Features Covers all food antimicrobials, natural and synthetic, with the latest research on each type Contains 5,000+ references on every conceivable food antimicrobial Guides in the selection of appropriate additives for specific food products Includes innovations in antimicrobial delivery technologies and the use of multifactorial food preservation with antimicrobials

This reference examines laboratory techniques and FDA and industry perspectives on medical, food service, and consumer product applications of antimicrobials. It offers methods to conduct investigations of effectiveness that simulate use of consumer, food, and medical antimicrobials in real-world conditions and environments, validate neutralizing s

**Application of Nano/Microencapsulated Ingredients in Food Products**, a volume in the Nanoencapsulation in the Food Industry series, presents applications of nano/micro-encapsulated ingredients such as vitamins, minerals, flavors, colorants, enzymes, probiotics antioxidants and many other bioactive components in different groups of food products. Each chapter explores nano/microencapsulated ingredients in food products, including beverages, cereal flours and bakery products, meat, oils and fats, salt, spices and seasonings, functional supplements, and in chewing gum. In addition, the book explores active food packaging and edible coatings with nano/microencapsulated ingredients. Authored by a team of global experts in the fields of nano and microencapsulation of food, nutraceutical and pharmaceutical

ingredients, this title is of great value to those engaged in the various fields of nanoencapsulation. Clarifies which nanoencapsulated ingredients can be applied for different food products Thoroughly explores the influence of nanoencapsulated ingredients on the qualitative properties of different food products

Twelve years have passed since its last edition - making Antimicrobials in Foods, Third Edition the must-have resource for those interested in the latest information on food antimicrobials. During that time, complex issues regarding food preservation and safety have emerged. A dozen years ago, major outbreaks of Escherichia coli O157:H7 and Listeria monocytogenes had not yet occurred, consumer and regulatory demands for improved food safety were just surfacing, the use of naturally occurring antimicrobials was in its infancy, and lysozyme, lactoferrin, ozone, and several other compounds were not approved for use in or on foods in the United States. The editors have addressed these contemporary topics by synthesizing information from internationally recognized authorities in their fields. Five new chapters have been added in this latest release, including the most recent details on lysozyme, naturally occurring antimicrobials from both animal and plant sources, hurdle technology approaches, and mechanisms of action, resistance, and stress adaptation. Existing chapters have been extensively revised to reflect the most relevant research and information available on antimicrobials. Complementing these topics is information on the progress that has been made in determining the effects and mechanisms of action involved in a number of naturally occurring antimicrobials.

Handbook of Natural Antimicrobials for Food Safety and Quality Elsevier

Encapsulations, a volume in the Nanotechnology in the Agri-Food Industry series, presents key elements in establishing food quality through the improvement of food flavor and aroma. The major benefits of nanoencapsulation for food ingredients include improvement in bioavailability of flavor and aroma ingredients, improvement in solubility of poor water-soluble ingredients, higher ingredient retention during production process, higher activity levels of encapsulated ingredients, improved shelf life, and controlled release of flavor and aroma. This volume discusses main nanoencapsulation processes such as spray drying, melt injection, extrusion, coacervation, and emulsification. The materials used in nanoencapsulation include lipids, proteins, carbohydrates, cellulose, gums, and food grade polymers. Applications and benefits of nanoencapsulation such as controlled release, protections, and taste masking will be explained in detail. Includes the most up-to-date information on nanoencapsulation and nanocontainer-based delivery of antimicrobials Presents nanomaterials for innovation based on scientific advancements in the field Provides control release strategies to enhance bioactivity, including methods and techniques for research and innovation Provides useful tools to improve the delivery of bioactive molecules and living cells into foods

Outbreaks of E. Coli and Salmonella from eating tainted meat or chicken and Mad Cow Disease have consumers and the media focused on food safety-related topics. This handbook aimed at students as well as consumers is an excellent starting point for locating both print and electronic resources with timely information about food safety issues, organizations and associations, and careers in the field.

Consumer concerns play a critical role in dictating the direction of research and development in food protection. The rising demand for minimally processed foods, growing concerns about the use of synthetic preservatives, and suspected links between the overuse of antibiotics and multi-drug resistance in microbes has made food safety a global priority. Natural Food Antimicrobial Systems focuses on advances in the technology of food safety. Numerous antimicrobial agents exist in animals and plants where they evolved as defense mechanisms. For example, the antimicrobial components of milk have been unraveled in recent years. The book covers how these components - such as lactoferrin - can be used as multifunctional food additives such as antioxidants and immuno-modulating agents. The six sections cover lacto-antimicrobials, ovo-antimicrobials, phyto-antimicrobials, bacto-antimicrobials, acid-antimicrobials, and milieu-antimicrobials. Each chapter provides background and historical information, molecular properties, antimicrobial activity, biological advantage, applications, safety, tolerance, and efficacy, and biotechnology. To satisfy the rapidly changing consumption patterns of the global market, the food processing industry continuously searches for new technologies in food science. Designed as a reference for academia and corporate R & D, Natural Food Antimicrobial Systems fills this need, offering in-depth information on emerging biotechnology, efficacy, and applications of natural food antimicrobial systems.

Consumers demand food products with fewer synthetic additives but with increased safety, quality and shelf-life. These demands have led to renewed interest in the use of natural antimicrobials to preserve foods. However, despite the wide range of potential antimicrobials, relatively few are suitable for use in practice in particular food products. Edited by a leading expert in the field, and with a distinguished international team of contributors, Natural antimicrobials for the minimal processing of foods discusses their practical application in food preservation, often in conjunction with other preservation techniques. After an introductory chapter, the book first discusses the use of bacteriocins such as nisin in preserving animal and other food products, often in conjunction with other preservation techniques such as high hydrostatic pressure and pulsed electric fields. Subsequent chapters discuss the current and future uses of natamycin, organic acids, antimicrobials from animals and chitosan as preservatives. Three chapters are devoted to antimicrobials from plants and their use in a wide range of applications, including the preservation of fresh and minimally-processed fruits and vegetables. A final group of chapters discuss the use of natural antimicrobials in edible coatings, applications of natural antifungal agents, the combination of natural antimicrobials with irradiation, and the regulatory context. With its practical emphasis and authoritative coverage, Natural antimicrobials for the minimal processing of foods is a standard work for the food industry in developing new preservation systems that extend the shelf-life of foods without compromising safety or sensory quality. Discusses the practical application of antimicrobials in food preservation, often in conjunction with other preservation techniques Discusses the uses of natamycin, organic acids, antimicrobials from animals and chitosan as preservatives A standard work for the food industry in developing new preservation systems that extend the shelf-life of foods without compromising safety or sensory quality

Herbs and spices are among the most versatile ingredients in food processing, and alongside their sustained popularity as flavourants and colourants they are increasingly being used for their natural preservative and potential health-

promoting properties. An authoritative new edition in two volumes, Handbook of herbs and spices provides a comprehensive guide to the properties, production and application of a wide variety of commercially-significant herbs and spices. Volume 2 begins with a discussion of such issues as the medicinal uses of herbs and spices and their sustainable production. Herbs and spices as natural antimicrobials in foods and the effect of their natural antioxidants on the shelf life of food are explored, before the book goes on to look in depth at individual herbs and spices, ranging from ajowan to tamarind. Each chapter provides detailed coverage of a single herb or spice, and begins by considering origins, chemical composition and classification. The cultivation, production and processing of the specific herb or spice is then discussed in detail, followed by analysis of the main uses, functional properties and toxicity. With its distinguished editor and international team of expert contributors, the two volumes of the new edition of Handbook of herbs and spices are an essential reference for manufacturers using herbs and spices in their products. They also provide valuable information for nutritionists and academic researchers. Provides a comprehensive guide to the properties, production and application of a wide variety of commercially-significant herbs and spices Begins with a discussion of such issues as the medicinal uses of herbs and spices and their sustainable production Explores herbs and spices as natural antimicrobials in foods and the effect of their natural antioxidants on the shelf life of food

Multidrug-resistant bacteria play a significant role in public health by destroying the potency of existing antibiotics. Meanwhile, cancer remains one of the most common health problems that impact society, resulting in many deaths worldwide. Novel strategies are required to combat antimicrobial resistance and create efficient anticancer drugs that could revolutionize treatment. Nanomedicine is one such innovation that plays a significant role in developing alternative and more effective treatment strategies for antimicrobial resistance and cancer theranostics. The Handbook of Research on Nano-Strategies for Combatting Antimicrobial Resistance and Cancer is an essential scholarly resource that examines (1) how to overcome the existing, traditional approaches to combat antimicrobial resistance and cancer; (2) how to apply multiple mechanisms to target the cancer cells and microbes; and (3) how the nanomaterials can be used as carriers. Featuring a range of topics such as bacteriophage, nanomedicine, and oncology, this book is ideal for molecular biologists, microbiologists, nanotechnologists, academicians, chemists, pharmacists, oncologists, researchers, healthcare professionals, and students.

The processing of food is no longer simple or straightforward, but is now a highly inter-disciplinary science. A number of new techniques have developed to extend shelf-life, minimize risk, protect the environment, and improve functional, sensory, and nutritional properties. The ever-increasing number of food products and preservation techniques cr With antibiotic-resistant infections on the rise, herbal remedies present a naturally effective alternative to standard antibiotics. Herbal expert Stephen Harrod Buhner explains the roots of antibiotic resistance, explores the value of herbal treatments, and provides in-depth profiles of 30 valuable plants, noting the proper dosages, potential side effects, and contraindications of each.

Natural additives are increasingly favoured over synthetic ones as methods of ensuring food safety and long shelf-life. The antimicrobial properties of both plant-based antimicrobials such as essential oils and proteins such as bacteriocins are used in, for example, edible preservative films, in food packaging and in combination with synthetic preservatives for maximum efficacy. New developments in delivery technology such as nanoencapsulation also increase the potential of natural antimicrobials for widespread use in industry. Part one introduces the different types of natural antimicrobials for food applications. Part two covers methods of application, and part three looks at determining the effectiveness of natural antimicrobials in food. Part four focuses on enhancing quality and safety, and includes chapters on specific food products. Reviews different types of antimicrobials used in food safety and quality Covers how antimicrobials are created to be used in different foods Examines how the antimicrobials are used in foods to enhance the safety and quality The world is full of plants and animals that have their own defenses, producing various substances in their daily fight against bacteria, fungi, or other agents. These products are alternatives to conventional antimicrobials that have a poor reputation with consumers. Many of these compounds are well known; however, the multiple types of structures together with the variable responses depending of the type of biocontrol needed in a wide range of applications, such as clinical, agricultural, general hygiene, and food, necessitates the continuous search for specific applications and the continuous study of how to use these substances. The present book provides a summary of reviews and original research works that explore the multiple alternatives for the use of these compounds.

Focusing on the application of nanotechnology in pharmaceutical technology the editors seek to integrate the two in order to obtain innovative products and solutions in pharmacology. Interdisciplinary in content it is of interest to those who are involved in the development of nanoproducts including nanotechnologists, microbiologists, biotechnologists pharmacologists and clinicians. Recent studies are presented that include the biosynthesis of nanoparticles focusing on antimicrobials; nanomaterial-based formulations that treat cancer, infections, skin disorders and wounds;nanomaterials in eye diseases and toxicity and safety issues. It demonstrates the crucial role this plays in tackling multi-drug resistant threats.

Biofilms are highly organized polymicrobial communities that are embedded in an extracellular matrix and formed on natural and artificial surfaces. In the oral cavity, biofilms are formed not only on natural teeth, but also on restorative materials, prosthetic constructions, and dental implants. Oral diseases like caries, gingivitis, periodontitis, and also pulp inflammation are associated with biofilms. This publication is an up-to-date overview on oral biofilms from different clinically relevant perspectives. Experts comprising basic researchers and clinicians report on recent research relating to biofilms - from general summaries to recommendations for daily clinical work. This book covers all aspects of oral biofilms, including models used in the laboratory, biofilms in dental water unit lines, periodontal and peri-implant biofilms, caries-related biofilms, halitosis, endodontic biofilms, and Candida infections, as well as biofilms on dental materials and

on orthodontic appliances. Several chapters deal with anti-biofilm therapy, from the efficacy of mechanical methods and the use of antimicrobials, to alternative concepts. This publication is particularly recommended to dental medicine students, practitioners, other oral healthcare professionals, and scientists with an interest in translational research on biofilms.

Food Preservation, Volume Six, the latest in the Nanotechnology in the Agri-Food Industry series, discusses how nanotechnology can improve and control the growth of pathogenic and spoilage compounds to improve food safety and quality. The book includes research information on nanovesicles, nanospheres, metallic nanoparticles, nanofibers, and nanotubes, and how they are capable of trapping bioactive substances to increase and maintain the stability of compounds often sensitive under typical food processing and storage conditions. This book will be useful to a wide audience of food science research professionals and professors and students doing research in the field. Describes the effective utilization of nanostructured antimicrobials in toxicological studies and real food systems Offers research strategies for understanding opportunities in antimicrobial nanostructures and the potential challenges of their toxicity Presents diverse applications of nanostructured antimicrobials in food preservation Covers the potential benefits of nanotechnology and methods of risk assessment that ensure food safety

Handbook of Antimicrobial Coatings is the first comprehensive work on the developments being made in the emerging field of antimicrobial coatings. Crucial aspects associated with coating research are presented in the form of individual chapters. Particular close attention has been given to essential aspects necessary to understand the properties of novel materials. The book introduces the reader to progress being made in the field, followed by an outline of applications in different areas. Various methods and techniques of synthesis and characterization are detailed as individual chapters. Chapters provide insight into the ongoing research, current trends and technical challenges in this rapidly progressing field. The covered topics were chosen so that they can be easily understood by new scholars as well as advanced learners. No book has been written on this topic thus far with so much crucial information for materials scientists, engineers and technologists. Offers the first comprehensive work on developments being made in the emerging field of antimicrobial coatings Features updates written by leading experts in the field of anti-microbial coatings Includes discussions of coatings for novel materials Provides various methods and techniques of synthesis and characterization detailed in individual chapters

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