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Bacteriocins

Advanced Fermentation and Cell Technology, 2 Volume Set

New and Future Developments in Microbial Biotechnology and Bioengineering: Microbial Secondary Metabolites
Biochemistry and Applications examines the areas of biotechnology and chemical engineering, covering aspects of plants, bacteria and machines, and using microbes as factories. The book is aimed at undergraduates, post-graduates and researchers studying microbial secondary metabolites, and is an invaluable reference source for biochemical engineers working in biotechnology, manipulating microbes, and developing new uses for bacteria and fungi. The applications of secondary metabolites in biotechnology, pharmaceuticals, diagnostics and medical device development are also extensively covered. The book integrates the aforementioned frontline branches into an interdisciplinary research work to satisfy those working in biotechnology, chemical engineering, alternative fuel development, diagnostics and pharmaceuticals. Chapters related to important research work on applications of microbial secondary metabolites are written by specialists in the various disciplines from the international community. Compiles the latest developments in the area of microbial secondary metabolites
Authored by the top international researchers in this area
Includes information related to nearly all

areas of a microbial secondary metabolites system

Research and Applications in Bacteriocins

Aquaculture has been expanding in a fast rate, and further development should rely on the assimilation of scientific knowledge of diverse areas such as molecular and cellular biology, and ecology. Understanding the relation between farmed species and their pathogens and parasites, and this relation to environment is a great challenge. Scientific community is involved in building a model for aquaculture that does not harm ecosystems and provides a reliable source of healthy seafood. This book features contributions from renowned international authors, presenting high quality scientific chapters addressing key issues for effective health management of cultured aquatic animals. Available for open internet access, this book is an effort to reach the broadest diffusion of knowledge useful for both academic and productive sector.

Peptide Antibiotics

Through four editions, *Lactic Acid Bacteria: Microbiological and Functional Aspects*, has provided readers with information on the how's and why's lactic acid-producing fermentation improves the storability, palatability, and nutritive value of perishable foods. Thoroughly updated and fully revised, with 12 new chapters, the Fifth Edition covers regulatory aspects globally, new findings on health effects, properties and stability of LAB as well as production of target specific LAB. The new edition also addresses the technological use of LAB in various fermentations of food, feed and beverage, and their safety considerations. It features the detailed description of the main genera of LAB as well as such novel bacteria as fructophilic LAB and novel probiotics and discusses such new targets as cognitive function, metabolic health, respiratory health and probiotics. Key Features: In 12 new chapters, findings are presented on health effects, properties and stability of LAB as well as production of target specific LAB Covers such novel bacteria as fructophilic LAB and novel probiotics Presents new discoveries related to the mechanisms of lactic acid bacterial metabolism and function Covers the benefits of LAB, both in fermentation of dairy, cereal, meat, vegetable and silage, and their health benefits on humans and animals Discusses the less-known role of LAB as food spoilers Covers the global regulatory framework related to safety and efficacy

Encyclopedia of Food Microbiology

Microbiology is the study of tiny microbes including bacteria, viruses, archaea, fungi, microalgae, protozoans etc. They are ubiquitous in nature, survive and grow in both hospitable and unhospitable ecosystems, vital to environment, having both harmful & beneficial facet to the entire biological world and are exploited by researchers. Microbiology exists in the world from the dawn of civilization. Our Grand mothers prepare curd since time immemorial without the knowledge that the bacterium *Lactobacillus* convert milk to curd. Our Grand fathers use to grow legumes after rice as a system of crop rotation to find better productivity without any scientific knowledge. It

is the fact that the soil bacterium Rhizobium, symbiotically get associated with leguminous roots, form root nodules and fix atmospheric Nitrogen, increasing soil fertility. After the Monstrous discovery of bacteria in 1674 by Antony Van Leeuwenhoek, Microbiology Developed as a branch of Science. Exploring knowledge over conversion of hypothesis to phenomenon paves the way for new approaches leading to milestones in the dome of microbiology. Scientists with their research excellence have recognised the potentiality of Microorganisms and today Microorganisms find their applications in Agriculture, Food, Textile, Paper, Leather, Pharmaceutical, Cosmetic Industries etc. for quality value added products and sustainability of Human Society. Not only that, microbes find their wide application in environment cleaning through bioremediation, sewage treatment methods, biotransformation Technologies and so on. Microbial fuel cells are an alternate to fossil fuels too. Genetically modified microorganisms, show a great potentiality and applications, for the growth, development and sustainability of human society in various fields. Recent Advances in Microbiology Research deals with application of potential microbes to a specific endeavors viz., natural resources recovery, bioremediation, production of foods & supplements, chemicals, biomaterials, bio-energy, drugs, vaccines and development of diagnostic tools & biosensor techniques carried out by different workers in the field of microbiology. The Editors Have tried to compile this book, as a maiden effort to collate documentation to augment visibility pertaining to recent developments in microbiological research. The editors, take vanity to congratulate and express their sincere thanks & gratitude to all the valuable contributions & the contributors received from diverse nook & corners of globe and administrative & technical support received from the publisher. As a matter of fact, it would help the students, academicians, researchers to abreast the recent knowledge in the field of Microbiological research.

Food and Feed Safety Systems and Analysis

Pore Forming Cytotoxic Proteins: Advances in Research and Application: 2011 Edition is a ScholarlyBrief that delivers timely, authoritative, comprehensive, and specialized information about Pore Forming Cytotoxic Proteins in a concise format. The editors have built Pore Forming Cytotoxic Proteins: Advances in Research and Application: 2011 Edition on the vast information databases of ScholarlyNews. You can expect the information about Pore Forming Cytotoxic Proteins in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Pore Forming Cytotoxic Proteins: Advances in Research and Application: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Lactic Acid Bacteria: Microbial Metabolism and Expanding Applications

Microbial applications encompass areas including biotechnology, chemical engineering, and

alternative fuel development. Research on their technological developments cover many aspects of work using microbes as cell factories. The fields of biotechnology, chemical engineering, pharmaceuticals, diagnostics and medical device development also employ these microbial products. There is an urgent need to integrate all these disciplines that caters to the need of all those who are interested to work in the area of microbial technologies. This book is a step forward to integrate the aforesaid frontline branches into an interdisciplinary research work quenching the academic as well as research thirst of all those concerned about microbes in the respective area of biotechnology, chemical engineering, and pharmaceuticals. All the chapters in this book are related to important research on microbial applications, written by international specialists for researchers and academics in the concerned disciplines. This publication aims to provide a detailed compendium of experimental work and information used to investigate different aspects of microbial technologies, their products as well as interdisciplinary interactions including biochemistry of metabolites, in a manner that reflects the recent developments of relevance to researchers/scientists investigating microbes.

Industrial, medical and environmental applications of microorganisms

New Insights on Antiviral Probiotics

Nanoscience and nanotechnologies are leading to a major point to our understanding of nature. Nanotechnology can be generally defined as creation and use of nano-sized systems, devices, and structures which have special functions or properties because of their small size. This volume on Nanotechnology Applications in Health and Environmental Sciences focuses on biotechnological and environmental applications of nanomaterials. It covers popular and various nanomedical topics such as oncology, genetics, and reconstructive medicine. Additionally, many chapters give leading-edge information on nano-sensor applications and usage in specific disciplines. Also, two chapters on novel subjects have been included on Lantibiotics and microbiota. This book should be useful for nanotechnologists, microbiologists, and researchers interested in nanomedicine and nano-biotechnology, as well as environmental nanotechnology.

Safety of Meat and Processed Meat

Meat and meat products constitute one of the most important foods in western societies. However, the area of meat biotechnology is not as comprehensively covered as other areas of food biotechnology. Missing from this area are the recent developments for better sensory and nutritional quality as well as improved safety. The main goal of this book is to provide the reader with the recent developments in biotechnology and their applications in the meat processing chain. To achieve this goal, the book is divided into four parts. The first part deals with the use of modern biotechnology applied to farm animals. The second part focuses on the recent biotechnological developments in starter cultures for better meat fermentation. The third part discusses current approaches to improve the quality and nutritional properties of meats. The final

part presents the latest advances in protection against foodborne pathogens, and other recent trends in the field. Written by distinguished international contributors, this book brings together the advances in such varied and different biotechnological topics.

Biotechnology of Lactic Acid Bacteria

Lactates—Advances in Research and Application: 2013 Edition is a ScholarlyEditions—book that delivers timely, authoritative, and comprehensive information about Lactic Acid. The editors have built Lactates—Advances in Research and Application: 2013 Edition on the vast information databases of ScholarlyNews.— You can expect the information about Lactic Acid in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Lactates—Advances in Research and Application: 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions— and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Microbial Biotechnology in Food and Health

The demands of producing high quality, safe (pathogen-free) food rely increasingly on natural sources of antimicrobials to inhibit food spoilage organisms and food-borne 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. Covering antimicrobials derived from microbial sources (bacteriophages, bacteria, algae, fungi), animal-derived products (milk proteins, chitosan, reduction of biogenic amines), plants and plant-products (essential oils, phytochemicals, bioactive compounds), this book covers the development and use of natural antimicrobials for processed and fresh food products. New and emerging technologies concerning antimicrobials are also discussed.

Biomimetics

'Industrial, medical and environmental applications of microorganisms' offers an excellent opportunity to learn about new insights, methods, techniques and advances in applied microbiology. It is useful not only for those traditionally involved in this research area but for everyone that needs to keep up with this diverse discipline. The articles are written by researchers from around the world and focus on seven themes: - Environmental microbiology -Agriculture, soil and forest microbiology -Food microbiology -Industrial microbiology - Medical microbiology -Biotechnologically relevant enzymes and proteins - Methods and techniques - education This book contains a compilation of papers presented at the V International Conference on

Environmental Industrial and Applied Microbiology (BioMicroWorld2013), held in Madrid, Spain, in October 2013.

Encyclopedia of Food and Health

The reduction in nutritional quality of food due to microbial contamination is a problem faced by much of the developing world. To address contamination-related hunger and malnutrition, it is crucial to enforce quantitative and qualitative protection of agri-food commodities after harvesting, as well as to create low cost, rational strategies to protect post-harvest losses and nutritional properties of food products in a sustainable manner. Research and Technological Advances in Food Science provides readers with a systematic and in-depth understanding of basic and advanced concepts in food science and post-harvest technology, including the most up-to-date information about different natural food source sources (of microbial, plant, and animal origin) and their health benefits. It also highlights current research and technological advances in food science related to health, such as personalized food and nutrition, seafood nutraceuticals, meat processing and product development, microbial enzymes for the tenderization of meat, feruloylated oligosaccharides for human health, and the role of microbial antagonistic in post-harvest management of fruit. In addition, the book explores the role of modern tools and techniques such as instrumentation, nanotechnology, biotechnology, ultrasound in food processing and food-omics in food science. Research and Technological Advances in Food Science is an excellent resource for researchers, food scientists, biochemists, pharmacologists, nutritionists, policymakers, and students working in the food science domain. Includes information about different natural sources of food (microbes, plants and animal origin), and their health benefits Highlights current research and technological advances in food science related to health Brings the role of microbial antagonistic, plant volatiles and technological advances in the post-harvest management of food commodities

Health and Environment in Aquaculture

Lactic acid bacteria (LAB) have historically been used as starter cultures for the production of fermented foods, especially dairy products. Over recent years, new areas have had a strong impact on LAB studies: the application of omics tools; the study of complex microbial ecosystems, the discovery of new LAB species, and the use of LAB as powerhouses in the food and medical industries. This second edition of Biotechnology of Lactic Acid Bacteria: Novel Applications addresses the major advances in the fields over the last five years. Thoroughly revised and updated, the book includes new chapters. Among them: The current status of LAB systematics; The role of LAB in the human intestinal microbiome and the intestinal tract of animals and its impact on the health and disease state of the host; The involvement of LAB in fruit and vegetable fermentations; The production of nutraceuticals and aroma compounds by LAB; and The formation of biofilms by LAB. This book is an essential reference for established researchers and scientists, clinical and advanced students, university professors and instructors, nutritionists and food technologists working on food microbiology, physiology and biotechnology of lactic acid

bacteria.

New and Future Developments in Microbial Biotechnology and Bioengineering

Safety of Meat and Processed Meat provides the reader with the recent developments in the safety of meat and processed meat, from the abattoir along the processing chain to the final product. To achieve this goal, the editor uses five approaches. The first part deals with the main biological contaminants like pathogen microorganisms, specially *E. coli* and *L. monocytogenes*, toxins and biogenic amines that can be present either in meat or its derived products. The second part focuses on main technologies for meat decontamination as well as developments like active packaging or bioprotective cultures to extend the shelf life. The third part presents non-biological contaminants and residues in meat and meat products including nitrosamines, PAH, veterinary drugs and environmental compounds. The fourth part discusses current methodologies for the detection of microorganisms, its toxins, veterinary drugs, environmental contaminants and GMOs, and the final part deals with predictive models, risk assessment, regulations on meat safety, consumer perception, and other recent trends in the field. This book is written by distinguished international contributors with excellent experience and reputation. In addition, brings together advances in different safety approaches.

Bioprospecting of Microorganism-Based Industrial Molecules

Bacteriocins are potent protein toxins produced by virtually every bacterial and archaeal species examined to date. These bactericidal peptides play an important role in regulating competitive interactions in natural microbial systems. From the perspective of human health, the bacteriocins represent a library of potential lead compounds honed over three billion years of evolution. Their narrow target range, high activity, surprising stability and low toxicity position them as viable alternatives or complements to existing small molecule antibiotics. The rise of antibiotic resistant pathogens and the growing awareness of the importance of the microbiome to human health underscore the need for this new class of antimicrobials, emblematic of a new approach to the treatment of infectious disease. In this volume, a range of experts explore our current understanding of the biology of these important compounds, and identify the prospects for their use in medical and veterinary applications. In so doing, this volume introduces the vast diversity of bacteriocin molecules and mechanisms and brings readers to the cutting edge of a new XXIst century approach to antibiotic discovery and design. Topics covered include: the natural history of bacteriocins; killing strategies and applications of microcins; the mode of action of nuclease colicins; the role of the van der Waals zone in the design of a new family of bacteriocins; the use of pyocins in the treatment of infections; the role of streptococcal bacteriocins as oral probiotics; veterinary applications of bacteriocins (nisin) in treating mastitis, and an exploration of the genetics of bacteriocin resistance. This volume is essential reading for everyone involved in antimicrobial research in academia, biotechnology companies, and the pharmaceutical industry and a recommended volume for all microbiology libraries

Nanotechnology Applications in Dairy Science

This new volume, *Nanotechnology Applications in Dairy Science*, is designed to provide new insight into the utilization of nanotechnology in dairy science and food science. It focuses on applications of nanotechnology in packaging and drying of dairy and meat products, nanofiltration use in the dairy industry, and whey processing and dairy encapsulation. In addition, this book will facilitate the necessary understanding of the different aspects and concerns with regard to the new technological advances that nanotechnologies are contributing to the dairy industry. It also addresses several of the challenges that are overcome by the continuing development of nanotechnology applications in the food and dairy industries. Nanotechnology has the potential to provide healthier, safer, and better tasting foods as well as improved food packaging. It will also play a major role in food safety and agricultural sustainability. Nanotechnology application in the food industry has also contributed to the exponential progress in research and new material formulations due to its unique physicochemical properties useful to a number of other fields.

Application of Protective Cultures and Bacteriocins for Food Biopreservation

Attempts to provide safer and higher quality fresh and minimally processed produce have given rise to a wide variety of decontamination methods, each of which have been extensively researched in recent years. *Decontamination of Fresh and Minimally Processed Produce* is the first book to provide a systematic view of the different types of decontaminants for fresh and minimally processed produce. By describing the different effects – microbiological, sensory, nutritional and toxicological – of decontamination treatments, a team of internationally respected authors reveals not only the impact of decontaminants on food safety, but also on microbial spoilage, vegetable physiology, sensory quality, nutritional and phytochemical content and shelf-life. Regulatory and toxicological issues are also addressed. The book first examines how produce becomes contaminated, the surface characteristics of produce related to bacterial attachment, biofilm formation and resistance, and sublethal damage and its implications for decontamination. After reviewing how produce is washed and minimally processed, the various decontamination methods are then explored in depth, in terms of definition, generation devices, microbial inactivation mechanisms, and effects on food safety. Decontaminants covered include: chlorine, electrolyzed oxidizing water, chlorine dioxide, ozone, hydrogen peroxide, peroxyacetic acid, essential oils and edible films and coatings. Other decontamination methods addressed are biological strategies (bacteriophages, protective cultures, bacteriocins and quorum sensing) and physical methods (mild heat, continuous UV light, ionizing radiation) and various combinations of these methods through hurdle technology. The book concludes with descriptions of post-decontamination methods related to storage, such as modified atmosphere packaging, the cold chain, and modeling tools for predicting microbial growth and inactivation. The many methods and effects of decontamination are detailed, enabling industry professionals to understand the available state-of-the-art methods and select the most suitable approach for their purposes. The book serves as a compendium of information for food researchers and students of pre- and postharvest technology, food microbiology and food technology in general. The structure of the

book allows easy comparisons among methods, and searching information by microorganism, produce, and quality traits.

The Bacteriocins: Current Knowledge and Future Prospects

Microbial Biotechnology in Food and Health Science, volume one in the Applied Biotechnology Reviews series, offers two unique sections within the theme of genomics and bioprocessing and the bioengineering of microorganisms in the role of food science and human health. This volume provides review articles as the basis supporting biotechnological research useful to a wide scope of research initiatives. Important relevant information on genomics, proteomics and metabolomics are included as well as the emerging interdisciplinary area of synthetic biology which enables the metabolic engineering of microorganisms to produce pharmaceuticals. Applied Biotechnology Reviews is a series aimed at bringing all aspects of biotechnology as it is applied to food science from agriculture through product processing into focus through topical volumes. Each volume will cover a relevant application approach in industrial biotechnology. Covers the latest biotechnological research articles on applications of microbes for food and health science Presents research articles to emphasize research methods and techniques useful for research outcomes Analysis detoxification properties of microorganisms in foods Includes methods of bioengineering of microbes to improve human insulin synthesis/recombinant protein

Prokaryotic Antimicrobial Peptides

Advances in Enterococcaceae Research and Application: 2011 Edition is a ScholarlyBrief that delivers timely, authoritative, comprehensive, and specialized information about Enterococcaceae in a concise format. The editors have built Advances in Enterococcaceae Research and Application: 2011 Edition on the vast information databases of ScholarlyNews. You can expect the information about Enterococcaceae in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Advances in Enterococcaceae Research and Application: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Research and Technological Advances in Food Science

Bacteriocins comprise a large and functionally diverse family of toxins found in most microbial species. They play a critical role in mediating microbial interactions and in maintaining microbial diversity. The dramatic rise in antibiotic-resistant bacteria has resulted in renewed efforts to find new antimicrobials. Bacteriocins are an attractive focus for drug development because bacteriocins are active against most pathogens, already exist in nature, are remarkably stable,

and are not toxic to human cells. Recently, significant advances have enhanced our understanding of the genetics of bacteriocin production and of their mode of action. Research is currently under way to improve the efficacy of bacteriocins by genetic manipulation and to enable their production in non-native hosts. The authors in this book discuss the identification and characterisation of this diverse group of protein toxins and review the ever-increasing number of potential applications in human health, veterinary medicine, crop management, agriculture, food preservation and bioremediation. Topics covered include biosynthesis, structure and function, genetic modification, cytotoxic activity, potential as antimicrobials, and applications in agriculture and veterinary health.

Lactic Acid Bacteria

Written by the world's leading scientists and spanning over 400 articles in three volumes, the Encyclopedia of Food Microbiology, Second Edition is a complete, highly structured guide to current knowledge in the field. Fully revised and updated, this encyclopedia reflects the key advances in the field since the first edition was published in 1999. The articles in this key work, heavily illustrated and fully revised since the first edition in 1999, highlight advances in areas such as genomics and food safety to bring users up-to-date on microorganisms in foods. Topics such as DNA sequencing and E. coli are particularly well covered. With lists of further reading to help users explore topics in depth, this resource will enrich scientists at every level in academia and industry, providing fundamental information as well as explaining state-of-the-art scientific discoveries. This book is designed to allow disparate approaches (from farmers to processors to food handlers and consumers) and interests to access accurate and objective information about the microbiology of foods. Microbiology impacts the safe presentation of food. From harvest and storage to determination of shelf-life, to presentation and consumption. This work highlights the risks of microbial contamination and is an invaluable go-to guide for anyone working in Food Health and Safety. Has a two-fold industry appeal (1) those developing new functional food products and (2) to all corporations concerned about the potential hazards of microbes in their food products.

Nanotechnology Applications in Health and Environmental Sciences

Advances in Enterococcaceae Research and Application: 2011 Edition

The book will provide an overview of the advancement of fundamental knowledge and applications of antimicrobial peptides in biomedical, agricultural, veterinary, food, and cosmetic products. Antimicrobial peptides stand as potentially great alternatives to current antibiotics, and most research in this newly-created area has been published in journals and other periodicals. It is the editors' opinion that it is timely to sum up the most important achievements in the field and provide the scientific community in a reference book. The goals of this project include illustrating the achievements made so far, debating the state of the art, and drawing new perspectives.

Decontamination of Fresh and Minimally Processed Produce

Ongoing scientific research in many parts of the world on the genomics, proteomics and genetic engineering of LAB is increasing our understanding of their physiology, pushing further the boundaries for their potential applications. "Lactic Acid Bacteria - R

Pore Forming Cytotoxic Proteins—Advances in Research and Application: 2012 Edition

This book introduces readers to basic studies on and applied techniques involving lactic acid bacteria, including their bioengineering and industrial applications. It summarizes recent biotechnological advances in lactic acid bacteria for food and health, and provides detailed information on the applications of these bacteria in fermented foods. Accordingly, it offers a valuable resource for researchers and graduate students in the fields of food microbiology, bioengineering, fermentation engineering, food science, nutrition and health.

Lactic Acid Bacteria

This book focuses on probiotics with antiviral activities. The "antiviral probiotic" is a new concept in medical sciences. Recently, studies have shown that antiviral probiotics can fight or prevent viral infections in many ways. The immunomodulation of mucosal immunity, production of antiviral compounds, virus trapping and the use thereof as vaccination vectors are the principal modes of action of antiviral probiotics. The author dedicates an entire chapter of the book to discussing the methods and techniques used to assess the antiviral activity of probiotic strains and their metabolites.

Recent Developments in Microbial Technologies

Bacteriocins are a heterogeneous group of peptides or proteins with antimicrobial activity synthesised ribosomally and released extracellularly by bacteria belonging to nearly all taxonomic groups. These are classified according to their genetic, structural and biochemical characteristics. Use of bacteriocinogenic cultures to improve the safety of food products would represent an attractive alternative to the use of chemical preservatives, based on the long history of safe use of naturally occurring bacteriocin producing food-grade bacteria. Chapter One in this book discusses the effects of bacteriocin production in situ by bacteria in food products and evidence for the probiotic properties of bacteriocin producers are collected in order to identify processes in which the application of bacteriocinogenic cultures can be effectively implemented. Chapter Two examines the importance of the use of bacteriocins in food preservation and also their potential use in human health. Chapter Three discusses a broad range of bacteriocin applications focusing not only on food biopreservation but also on biofilm control. Chapter Four reviews the recent applications of bacteriocin-producing PC in meats and meat products throughout the world. Chapter Five evaluates the effect of mild pressure treatments in the survival of *Pediococcus*

acidilactici HA-6111-2 and on its bacteriocin production capacity.

Probiotic Research in Therapeutics

This reference summarizes the latest research on the structure, function, and design of synthetic and natural peptide antibiotics, describing practical applications of these compounds in food preservation and packaging, and in the prevention and treatment of infectious diseases by direct anti-bacterial action and as part of the adaptive immune response. Peptide Antibiotics discusses these unique compounds and their many and exciting applications, including: the distribution and classification of diverse antimicrobial peptides throughout nature the role in host defense of mucosal surface peptide antibiotics such as defensins and cathepsins the biosynthesis of lanthionine-containing antibiotics including nisin, epidermin, and mersacidin the genetic basis determining the production of bacterial peptide antibiotics the potential commercial use of magainin, nisin, and lactacin peptides as anti-infective agents the use of nisin as a commercial food preservative With contributions from 19 world-renowned experts in the field, Peptide Antibiotics is an indispensable source of information for pharmaceutical scientists, medicinal and organic chemists and biochemists, microbiologists, infectious disease specialists, molecular biologists, and upper-level undergraduate and graduate students in these disciplines.

Meat Biotechnology

Food and Feed Safety Systems and Analysis discusses the integration of food safety with recent research developments in food borne pathogens. The book covers food systems, food borne ecology, how to conduct research on food safety and food borne pathogens, and developing educational materials to train incoming professionals in the field. Topics include data analysis and cyber security for food safety systems, control of food borne pathogens and supply chain logistics. The book uniquely covers current food safety perspectives on integrating food systems concepts into pet food manufacturing, as well as data analyses aspects of food systems. Explores cutting edge research about emerging issues associated with food safety Includes new research on understanding foodborne Salmonella, Listeria and E. coli Presents foodborne pathogens and whole genome sequencing applications Provides concepts and issues related to pet and animal feed safety

Screening of Clinical and Environmental Enterococcus Isolates for Production of Bacteriocins

Discover a comprehensive and current overview of microbial bioprospecting written by leading voices in the field In Bioprospecting of Microorganism-Based Industrial Molecules, distinguished researchers and authors Sudhir P. Singh and Santosh Kumar Upadhyay deliver global perspectives of bioprospecting of biodiversity. The book covers diverse aspects of bioprospecting of microorganisms demonstrating biomass value of nutraceutical, pharmaceutical, biomedical, and bioenergetic importance. The authors present an amalgamation of translational research on

bioresource utilization and ecological sustainability that will further the reader's knowledge of the applications of different microbial diversity and reveal new avenues of research investigation. Readers will also benefit from: A thorough introduction to microbial biodiversity and bioprospecting An exploration of anti-ageing and skin lightening microbial products and microbial production of anti-cancerous biomolecules A treatment of UV protective compounds from algal biodiversity and polysaccharides from marine microalgal sources Discussions of microbial sources of insect toxic proteins and the role of microbes in bio-surfactants production Perfect for academics, scientists, researchers, graduate and post-graduate students working and studying in the areas of microbiology, food biotechnology, industrial microbiology, plant biotechnology, and microbial biotechnology, Bioprospecting of Microorganism-Based Industrial Molecules is an indispensable guide for anyone looking for a comprehensive overview of the subject.

Recent Advances in Microbiology Research

The volume sheds new light on role of gut dysbiosis in cancer and immunological diseases and their clinical manifestations. Contributions in the volume discuss about the gut microbiota as a therapeutic target and the role of probiotics in its management. The volume explores application of probiotics in the treatment of various cancers viz. colorectal, gastric, lung, and breast cancer and immunological diseases. The volume comprises of chapters from expert contributors organized into various important themes which include, introduction, relationship between gut microbiota and disease condition, mechanisms involved, clinical and in vivo status, conclusion and future directions. This is a highly informative and carefully presented book, providing recent and innovative insight for scholars and researchers with an interest in probiotics and its applications in cancer and immunological diseases.

Pore Forming Cytotoxic Proteins: Advances in Research and Application: 2011 Edition

This book focuses on the application of microorganisms in various aspects of life such as plant protection and improvement, environmental remediation, and the improvement of plant & human health. Various applications of microorganisms are examined in depth, e.g. applied microbiology in agriculture, microbes in the environment, the development of new microbial enzymes, and microbes in human health. In turn, the book shares insights into the diverse microorganisms that have been explored and exploited in the development of various applications for agricultural improvements. It also discusses the detection and exploitation of microorganisms in the diagnosis of human diseases, which offer potential holistic approaches to health. Presenting the latest information and findings on the applications of microbial biotechnology, the book offers a valuable resource.

Lactic Acid Bacteria

Pore Forming Cytotoxic Proteins—Advances in Research and Application: 2012 Edition is a

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Natural Antimicrobials in Food Safety and Quality

Bioinspired systems, technologies and techniques known as "biomimetics" or the "mimicry of nature," represent a ground-breaking method of scientific research based on innovation and a creative design approach of the "nature" laboratory to be applied to any scientific discipline. This approach and the associated way of thinking facilitates the cross-fertilization of scientific fields, integrating biology and the interdisciplinary knowledge featuring the evolution of models that have refined in nature within any scientific discipline.

Biotechnology of Lactic Acid Bacteria

A comprehensive and up-to-date reference covering both conventional and novel industrial fermentation technologies and their applications Fermentation and cell culture technologies encompass more than the conventional microbial and enzyme systems used in the agri-food, biochemical, bioenergy and pharmaceutical industries. New technologies such as genetic engineering, systems biology, protein engineering, and mammalian cell and plant cell systems are expanding rapidly, as is the demand for sustainable production of bioingredients, drugs, bioenergy and biomaterials. As the growing biobased economy drives innovation, industrial practitioners, instructors, researchers, and students must keep pace with the development and application of novel fermentation processes and a variety of cell technologies. Advanced Fermentation and Cell Technology provides a balanced and comprehensive overview of the microbial, mammalian, and plant cell technologies used by the modern biochemical process industry to develop new and improved processes and products. This authoritative volume covers the essential features of advanced fermentation and cell technology, and highlights the interaction of food fermentation and cell culture biopharmaceutical actives. Detailed chapters, organized into five sections, cover microbial cell technology, animal and plant cell technology, safety issues of new biotechnologies, and applications of microbial fermentation to food products, chemicals, and pharmaceuticals. Written by an internationally-recognized expert in food biotechnology, this comprehensive volume: Covers both conventional and novel industrial fermentation technologies and their applications in a range of industries Discusses current progress in novel fermentation, cell culture, commercial

recombinant bioproducts technologies Includes overviews of the global market size of bioproducts and the fundamentals of cell technology Highlights the importance of sustainability, Good Manufacturing Practices (GMP), quality assurance, and regulatory practices Explores microbial cell technology and culture tools and techniques such as genome shuffling and recombinant DNA technology, RNA interference and CRISPR technology, molecular thermodynamics, protein engineering, proteomics and bioinformatics, and synthetic biology Advanced Fermentation and Cell Technology is an ideal resource for students of food science, biotechnology, microbiology, agricultural sciences, biochemical engineering, and biochemistry, and is a valuable reference for food scientists, researchers, and technologists throughout the food industry, particularly the dairy, bakery, and fermented beverage sectors.

Microbial Applications

The Encyclopedia of Food and Health provides users with a solid bridge of current and accurate information spanning food production and processing, from distribution and consumption to health effects. The Encyclopedia comprises five volumes, each containing comprehensive, thorough coverage, and a writing style that is succinct and straightforward. Users will find this to be a meticulously organized resource of the best available summary and conclusions on each topic. Written from a truly international perspective, and covering of all areas of food science and health in over 550 articles, with extensive cross-referencing and further reading at the end of each chapter, this updated encyclopedia is an invaluable resource for both research and educational needs. Identifies the essential nutrients and how to avoid their deficiencies Explores the use of diet to reduce disease risk and optimize health Compiles methods for detection and quantitation of food constituents, food additives and nutrients, and contaminants Contains coverage of all areas of food science and health in nearly 700 articles, with extensive cross-referencing and further reading at the end of each chapter

New Methods of Food Preservation

The use of microorganisms and their metabolites for the preservation of foods began in prehistory. Lactic acid bacteria are generally recognized as safe (GRAS) for this purpose. They produce organic acids, diacetyl, acetoin, hydrogen peroxide, reuterin, reutericyclin and bacteriocins, all of which inhibit foodborne pathogens and spoilage microorganisms. Bacteriocins and the strains that produce them are particularly effective as bio-preservatives in cheese, meat and vegetables. They hold the promise of ensuring the quality and safety of ready-to-eat, extended-shelf-life, fresh-tasting and minimally processed foods without chemical preservatives. This Research Topic provides an overview of bacterial cultures, bacteriocins and other metabolites that have shown promise for use as antimicrobial bio-preservatives in foods in general. Articles describing novel analytical technologies, strategies to reduce or eliminate pathogens in food systems or emerging technologies for the production or use of protective cultures or their bacteriocins are presented.

Lactates—Advances in Research and Application: 2013 Edition

"Two important applications of bacteriocin research are in food preservation and in medicine. Enterococcus is a gram-positive, spherical microbe, found in chains. Some Enterococcus can produce low molecular weight extracellular antimicrobial proteins, bacteriocins. In this survey I tested 300 clinical and environmental isolates of Enterococcus for bacteriocin production. Listeria monocytogenes was used as the indicator organism to test bacteriocin production. This is a human and animal pathogen, often transmitted to humans through contaminated food. Enterococcal broth culture samples in BHI broth or their culture supernatants were tested, by spotting samples on Listeria monocytogenes seeded plates. After incubation, the size of zones of inhibition of growth of Listeria monocytogenes around each Enterococcus isolate was recorded. Sixty-six of 300 specimens produced zones of inhibition greater than 1mm. Bacteriocin produced by Enterococcus casseliflavus AI 259 was chosen for further characterization. The culture supernatant sample was exposed to different temperatures, pH and proteolytic enzymes. Their effect on bacteriocin activity was recorded. The bacteriocin activity was unchanged at a pH range of 4.5 to 9.0, unchanged at a temperature range of -16°C to 90°C, and was degraded by trypsin and proteinase K. Two fold serial dilutions were used to determine the effectiveness at high dilutions (i.e. titration). Based on the initial results, the classification of the bacteriocin produced by Enterococcus casseliflavus (AI 259) appeared to be a class II bacteriocin, bacteriocidal against Listeria monocytogenes"--Document.

Bacteriocins

This title represents a broad review of current research on LAB and their novel applications with contributions from a number of well-known leading scientists. The book encompasses a wide range of topics including both traditional and novel developing fields, and provides unparalleled, comprehensive information on new advances of genomics, proteomics, metabolism and biodiversity of LAB. Chapters contain state-of-the-art discussions of specific LAB applications such as their use as probiotics, live vaccines and starter cultures in old and new fermented products. The safety of these microorganisms and their interactions with diverse ecosystems natural biota are also covered as well as the new applications of well-known (bacteriocins) and novel (vitamins, low-calorie sugars, etc.) metabolites produced by LAB. This book is an essential reference for established researchers and scientists, doctoral and post-doctoral students, university professors and instructors, and food technologists working on food microbiology, physiology and biotechnology of lactic acid bacteria.

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