The Microbiological Safety Of Low Water Activity Foods And Spices Food Microbiology And Food Safety

Drawing together the work of a wide range of experts, this extremely important book provides a clear, practical account of the salient features of foodborne pathogenic microorganisms and of the particular risks that they pose to vulnerable groups of the population in hospitals, nursing and residential homes, nurseries, and in the community at large. Chapters cover the following topics: • Properties and importance of microorganisms that cause foodborne disease • Surveillance of foodborne disease in healthcare settings • Vulnerable groups of the population • Provisions for food and water • Implementation of safety systems Presenting a wealth of information of great importance, this comprehensive and well-edited book is a vital resource for physicians, doctors and nurses responsible for the control of infection, clinicians, physicians, public health doctors and specialists, those responsible for catering management, microbiologists, environmental health officers, food scientists and food technologists. It is also designed to be accessible to policy makers and administrators who may not have specialist training. Libraries in all universities, research establishments and medical schools where these subjects are studied and taught should have copies of this essential work on their shelves.

A complete guide to the principles and practical application of modified atmosphere packaging Modified atmosphere packaging (MAP) is one of the most cost-effective, versatile, and commonly used methods of preserving food products available today. Employed in both ambient and chilled conditions, it can prolong shelf-life and preserve the quality of a wide array of items via careful processes of atmospheric engineering. The essential scientific principles underlying this technology can, however, be difficult to grasp and effectively apply. With Modified Atmosphere Packaging of Foods, esteemed food science professor Dong Sun Lee provides a thorough and practical explanation of all aspects of MAP. Chapters covering the development, impact, and day-to-day application of the technique give a well-rounded understanding of its pivotal role in the food industry, while accounts of other active packaging methods help to provide broader context. This important new book includes: Detailed guidance on all aspects of MAP – from its scientific background to its practical application Information on how specific MAP products may be developed according to their particular engineering principles Coverage of the related active and intelligent packaging techniques Discussion of relevant food safety issues and regulations Containing vital information for industry professionals and food science researchers alike, Modified Atmosphere Packaging of Foods is an essential text for all those working to improve the quality and shelf-life of the food we eat.

The continuous RF-assisted thermal processing of EWP and SWF in packaging conditions was demonstrated experimentally. The package processed EWP at 80°C for 16 h exhibited excellent foaming and gelling properties as compared to that of the traditional and batch mode processed EWP. The important quality and functionality of the packaged SWF at 80°C for 7 h was not significantly different from that of the unpasteurized SWF. Thus, the RF-assisted thermal processing has shown great potential for thermal processing of low-moisture food powders by reducing the come-up time without compromising their quality and functionality. This study demonstrated a novel method to pasteurize low-moisture food powders. This study also determined the physical, thermal, and dielectric properties of EWP, which are important inputs for modeling RF heating. This helps further optimization of the electrode and food packaging configurations, which would further reduce the come-up time.

Low water activity (aw) and dried foods such as dried dairy and meat products, grain-based and dried ready-to-eat cereal products, powdered infant formula, peanut and nut pastes, as well as flours and meals have increasingly been associated with product recalls and foodborne outbreaks due to contamination by pathogens such as Salmonella spp. and enterohemorrhagic E. coli. In particular, recent foodborne outbreaks and product recalls related to Salmonella-contaminated spices have raised the level of public health concern for spices as agents of foodborne illnesses. Presently, most spices are grown outside the U.S., mainly in 8 countries: India, Indonesia, China, Brazil, Peru, Madagascar, Mexico and Vietnam. Many of these countries are under-developed and spices are harvested and stored with little heed to sanitation. The FDA has regulatory oversight of spices in the United States; however, the agency's control is largely limited to enforcing regulatory compliance through sampling and testing only after imported foodstuffs have crossed the U.S. border. Unfortunately, statistical sampling plans are inefficient tools for ensuring total food safety. As a result, the development and use of decontamination treatments is key. This book provides an understanding of the microbial challenges to the safety of low aw foods, and a historic backdrop to the paradigm shift now highlighting low aw foods as vehicles for foodborne pathogens. Up-to-date facts and figures of foodborne illness outbreaks and product recalls are included. Special attention is given to the uncanny ability of Salmonella to persist under dry conditions in food processing plants and foods. A section is dedicated specifically to processing plant investigations, providing practical approaches to determining sources of persistent bacterial strains in the industrial food processing environment. Readers are guided through dry cleaning, wet cleaning and alternatives to processing plant hygiene and sanitation. Separate chapters are devoted to low aw food commodities of interest including spices, dried dairy-based products, low aw meat products, dried ready-to-eat cereal products, powdered infant formula, nuts and nut pastes, flours and meals, chocolate and confectionary, dried teas and herbs, and pet foods. The book provides regulatory testing guidelines and recommendations as well as guidance through methodological and sampling challenges to testing spices and low aw foods for the presence of foodborne pathogens. Chapters also address decontamination processes for low aw foods, including heat, steam, irradiation, microwave, and alternative energy-based treatments.

Studies on Product Quality and Microbiological Safety

Milk Production and Processing

Modified Atmosphere Packaging of Foods

Bacteriological Analytical Manual

Statistical aspects of microbiological criteria related to foods

Lipid-based ready-to-use foods (RUFs) for the nutritional management of moderate acute malnutrition (MAM) and severe acute malnutrition (SAM) are provided to children from 6 months to 59 months of age within the context of emergency feeding programmes supervised by governments. Based on the review, the expert committee considered that children with SAM have an increase in susceptibility to bacteraemia and sepsis that is probably between twofold and fivefold compared with children who are not malnourished and are of the same age and live in the same communities. On the basis of its common occurrence as a cause of infections and serious illnesses in children with SAM, and its documented ability to contaminate, survive in, and cause outbreaks of illness associated with low-moisture foods similar to RUFs, the expert committee concluded that Salmonella is the pathogen of most concern in lipid-based RUFs.Many outbreaks of foodborne salmonellosis have been determined to be associated with low-moisture foods that were contaminated at low levels. Therefore, the expert committee carefully considered the qualitative microbiological analyses of RUFs and the contamination levels that could be inferred, and entered into an extended deliberation of dose-response modelling to find a path toward a reasonable approximation of the likely morbidity and mortality in SAM children that could be anticipated from consumption of RUFs contaminated at the estimated levels and observed frequency.The expert committee described three approaches that purchasers of RUFs might use to establish microbiological criteria to assure the safety of RUFs and to communicate to manufacturers their safety expectations. These approaches are: (i) reference to existing standards established for similar low-moisture foods; (ii) determining an acceptable increase in risk over the pre-existing baseline of illness from other sources of exposure; and (iii) process verification sampling using the moving window technique. The microbiological criteria derived by each of these approaches accomplish different purposes, and which is most appropriate is determined by the conditions of manufacture and use.

Increasing consumer demand for low-input cultivation and minimal processing has significantly increased the risk of microbiological contamination of fresh produce. This both presents a health risk to consumers and undermines trust in the food supply chain from farm to fork. Advances in ensuring the microbiological safety of fresh produce reviews our current understanding of the main pathogenic risks to fresh produce, including their epidemiology, genetics and behaviour. The book addresses recent advances in improving safety along the value chain, from advances in detection to improving consumer handling of fresh produce. By providing a comprehensive insight into the pathogenic risks facing the fresh produce sector, the book details how key stakeholders across the agri-food supply chain can reduce the risk of pathogen contamination and outbreaks of foodborne illnesses. Edited by an internationally-renowned expert in the field and featuring contributions from a team of expert authors, Advances in ensuring the microbiological safety of fresh produce will be a standard reference for researchers in food safety, agricultural engineers specialising in fresh produce storage, retail and other companies involved in the fresh produce supply chain, as well as government and commercial agencies responsible for safety and quality monitoring of agri-food supply chains.

The FAO/WHO expert meeting held in December 2014 considered microbial contamination of lipid-based ready-to-use foods (RUFs) and the risk of foodborne infections in the malnourished population of children that consume RUFs. The goals of the expert meeting were to: review the status of the microbiological safety of lipid-based RUFs used to manage moderate acute malnutrition and severe acute malnutrition; conduct a comprehensive risk assessment; provide guidance to producers on the general approach and requirements for manufacturing RUFs that are safe for their intended use; and provide guidance to the agencies that purchase RUFs on how best to judge their microbiological safety. The expert committee described three approaches that purchasers of RUFs might use to establish microbiological criteria to assure the safety of RUFs and to communicate to manufacturers their safety expectations. These approaches are: (i) reference to existing standards established for similar low-moisture foods; (ii) determining an acceptable increase in risk over the pre-existing baseline of illness from other sources of exposure; and (iii) process verification sampling using the moving window technique. The microbiological criteria derived by each of these approaches accomplish different purposes, and which is most appropriate is determined by the conditions of manufacture and use.

Food Plant Safety: UV Applications for Food and Non-Food Surfaces discusses the fundamental principles of ultraviolet (UV) light technology, and gives practical recommendations on UV processes and systems design for specific processing operations, as well as how microbial efficacy of UV light can improve the quality of existing product lines. Innovative research of ultraviolet light for food applications has been growing worldwide. With increased consumer demand for fresher, minimally processed but safe foods, comes the need for novel technologies to meet that demand. Ultraviolet technology has been taking its niche in food production as a non-chemical treatment to control and enhance safety of processing plants and storage facilities. This concise resource covers the fundamentals of this promising technology and its applications; it will benefit a broad audience of professionals in food engineering, processing, and product development, as well as graduate level students. Focuses on plant processing operations in the food industry Presents the benefits of UV light technology applications for air quality, and safety of non-food and food contact surfaces Covers the cost benefits and energy and environmental advantages of using UV technologies

The Microbiological Safety of Low Water Activity Foods and Spices

Radiofrequency-assisted Thermal Processing for Improving Microbiological Safety of Low-moisture Food Powders

The Microbiological Safety of Food

An Evaluation of the Role of Microbiological Criteria for Foods and Food Ingredients

Principles of Microbiological Troubleshooting in the Industrial Food Processing Environment

Virulence Factors and Host Susceptibility

Abstract: Synergy of combining pressure-electric field-heat for preserving shelf-stable low-acid foods was investigated. Our hypothesis was that synergy of pressure (rapid temperature increase with heat of compression as well as instant adiabatic cooling) can be simultaneously combined with ohmic heating (rapid internal heat generation) to produce microbiologically safe and better quality shelf stable low acid food products.

Cover -- Title Page -- Copyright -- Contents -- List of Contributors -- Chapter 1 Introduction and Overview -- 1.1 Introduction -- 1.2 Definition of Low-Moisture Foods (LMF) and Water Activity Controlled Foods -- 1.3 Salmonella as a Continuing Challenge and Ongoing Problem in Low-Moisture Foods -- 1.4 Foodborne Outbreaks of Salmonella spp. and Other Implicated Microbial Pathogens in Low-Moisture Foods -- 1.5 Major Safety Concerns in Low-Moisture Foods -- 1.6 Content and Brief Book Chapter Review -- 1.7 Goal of the Book -- 1.8 How to Use the Book -- References -- Chapter 2 Regulatory Requirements for Low-Moisture Foods – The New Preventive Controls Landscape (FSMA) -- 2.1 Introduction -- 2.2 FSMA Sanitation and cGMPs -- 2.3 FSMA Preventive Controls -- 2.4 Process Controls -- 2.5 Sanitation Controls -- 2.6 Supplier Controls -- 2.7 Summary of Requirements for Low-Moisture FSMA Regulated Products -- References -- Chapter 3 Potential Sources and Risk Factors -- 3.1 Introduction -- 3.2 Raw Ingredients Control and Handling -- 3.2.1 Identifying Vulnerable Ingredients -- 3.2.2 Supplier Management -- 3.2.3 Receiving and Transport -- 3.2.4 Segregation/Isolation of Raw, Vulnerable Ingredients -- 3.2.5 Assessment of Remediation Practices after Loss of Control (Potential Contamination of Facility) or Assessing Sanitation Practice Effectiveness -- 3.3 Pest Control -- 3.3.1 Integrated Pest Management -- 3.3.2 Web Resources for More Information -- 3.3.3 Choosing a Pest Control Partner -- 3.4 Salmonella Harborage in the Facility -- 3.4.1 Sanitation Practices that may Lead to the Spread of Pathogens -- 3.4.2 Equipment Sources -- 3.4.3 Hygienic Sources -- 3.4.4 Management Practices for Cleaning Equipment -- 3.4.5 Rolling Stock -- 3.4.6 Raw Materials -- 3.5 Conclusions -- References

The central theme for this volume was chosen since consumers have great interest in purchasing low fat, low salt and reduced cholesterol meat, poultry and fish products. As in past volumes, experts in the field have been chosen to write chapters with emphasis on their breadth of knowl edge in each specific area. Efforts were also made to obtain authors from different countries in order to give the book a worldwide perspective. Chapter I stresses the nutritional and sensory properties that meat, poultry and fish products make to healthful diets and discusses consumer concerns about these products. Chapter 2 covers dietary recommendations in major consumer nations, along with data from food composition tables and the dietary contributions of meat, poultry and fish to meeting dietary needs. Chapter 3 discusses the labeling of low and reduced fat/salt prod ucts which, although written mainly from the US viewpoint, may serve as a model for labeling in other countries. Chapter 4 reviews the rationale for reducing fat-energy levels in muscle foods, problems encountered in their production and how these may be solved. Chapter 5 discusses the scientific basis for reducing the salt (sodium) content in food products and the health benefits derived from lowering salt intake. Methods of reducing the cholesterol content of these animal products is reviewed in Chapter 6.

Bacteriology of various commodities in relation to food poisoning; Epidemiology of food-borne infection in man and animals; Special laboratory techniques; Legislation and non-legal specifications.

Effects of Modified Atmosphere Packaging and Low-dose Irradiation on the Shelf Life and Microbiological Safety of Fresh Pork

Improving the Safety and Quality of Milk

Microbial safety of lipid-based ready-to-use foods for management of moderate acute malnutrition and severe acute malnutrition. Second report

Workshop Summary

Microbiological Safety of Retail Foods Available in Low and High Socioeconomic Neighborhoods in Memphis Metropolitan Area

Hearings on H.R. 2496 (H.R. 2797)

Microbiological Criteria have been used in food production and the food regulatory context for many years. While the food-specific aspects of microbiological criteria are well understood, the mathematical and statistical aspects are often less well appreciated, which hinders the consistent and appropriate application of microbiological criteria in the food industry. This document has been developed to begin redressing this situation. A particular aim of this document is to illustrate the important mathematical and statistical aspects of microbiological criteria, but with minimal statistical jargon, equations and mathematical details. It is hoped that the resulting document and support materials make this subject more accessible to a broad audience. This volume and others in this Microbiological Risk Assessment Series contain information that is useful to both food safety risk assessors and risk managers, the Codex Alimentarius Commission, governments and regulatory agencies, food producers and processers and other institutions and individuals with an interest in Microbiological Criteria. This volume in particular aims to support food business operators, quality assurance managers, food safety-policy makers and risk managers.

Consistent with the need to provide safe food for young children, particularly during the complementary feeding period between 6 and 24 months and the period of rapid development to age 59 months, FAO and WHO convened a technical meeting in FAO headquarters, Rome, Italy, from 11 to 14 December 2012 that addressed the microbial safety of ready-to-use foods (RUF) for the management of acute malnutrition. The meeting was held at the request of the WFP and UNICEF to help them formulate a science-based response to the finding of Cronobacter spp. in lipid-based RUF and to provide guidance on appropriate microbiological specifications to include among other purchase requirements to enhance the safety of lipid-based RUF. This report provides an overview of the assessment of the risk posed by Cronobacter spp in this product and provides guidance to agencies distributing the product as well of the producers on how to manage this problem and minimise the risk to the vulnerable consuming popula tion.

Reducing the intake of sodium is an important public health goal for Americans. Since the 1970s, an array of public health interventions and national dietary guidelines has sought to reduce sodium intake. However, the U.S. population still consumes more sodium than is recommended, placing individuals at risk for diseases related to elevated blood pressure. Strategies to Reduce Sodium Intake in the United States evaluates and makes recommendations about strategies that could be implemented to reduce dietary sodium intake to levels recommended by the Dietary Guidelines for Americans. The book reviews past and ongoing efforts to reduce the sodium content of the food supply and to motivate consumers to change behavior. Based on past lessons learned, the book makes recommendations for future initiatives. It is an excellent resource for federal and state public health officials, the processed food and food service industries, health care professionals, consumer advocacy groups, and academic researchers.

"The effects of irradiation dose (0, 0.5 and 1.0 kGy), various gas atmospheres and storage temperature (5, 15 and 25$ sp circ$C) on the physical, chemical, microbiological, and organoleptic changes in fresh pork were studied using factorial design experiments. The effects on toxin production by Clostridium botulinum were also investigated using challenge studies. Shelf life could be extended to 21 d when product was packaged in 0% O$ sb2$, irradiated at 1.0 kGy and stored at 5$ sp circ$C compared to 4 d for control samples. While the presence of O$ sb2$ in the package headspace enhanced the antimicrobial effects of low-dose irradiation, it adversely affected the organoleptic qualities of pork. Botulinum toxin was detected after only 2 d in all inoculated treatments stored at 25$ sp circ$C. At 15$ sp circ$C, toxin was produced faster when pork was initially packaged with O$ sb2$ or low levels of CO$ sb2$ (15-30%) as compared to 100% N$ sb2$. Higher levels of CO$ sb2$ (45-75%) delayed toxin production. In most treatments, spoilage preceded toxigenesis. Models were developed relating the above factors to the time until toxin production and to the probability of toxigenesis. Temperature, initial O$ sb2$ and irradiation were all significant factors." --

Microbiologically Safe Foods

Principles and Applications

Microbiology

Significance, Prevention and Control of Food Related Diseases

Microbiological Safety of Low Salt and Low Fat Cheddar Cheese

Quantitative Microbial Risk Assessment

Food-borne diseases are major causes of morbidity and mortality in the world. It is estimated that about 2.2 million people die yearly due to food and water contamination. Food safety and consequently food security are therefore of immense importance to public health, international trade and world economy. This book, which has 10 chapters, provides information on the incidence, health implications and effective prevention and control strategies of food-related diseases. The book will be useful to undergraduate and postgraduate students, educators and researchers in the fields of life sciences, medicine, agriculture, food science and technology, trade and economics. Policy makers and food regulatory officers will also find it useful in the course of their duties.

The Bad Bug Book 2nd Edition, released in 2012, provides current information about the major known agents that cause foodborne illness.Each chapter in this book is about a pathogen—a bacterium, virus, or parasite—or a natural toxin that can contaminate food and cause illness. The book contains scientific and technical information about the major pathogens that cause these kinds of illnesses.A separate "consumer box" in each chapter provides non-technical information, in everyday language. The boxes describe plainly what can make you sick and, more important, how to prevent it.The information provided in this handbook is abbreviated and general in nature, and is intended for practical use. It is not intended to be a comprehensive scientific or clinical reference.The Bad Bug Book is published by the Center for Food Safety and Applied Nutrition (CFSAN) of the Food and Drug Administration (FDA), U.S. Department of Health and Human Services.

Foodborne illnesses continue to be a major public health concern. All members of a particular bacterial genera (e.g., Salmonella, Campylobacter) or species (e.g., Listeria monocytogenes, Cronobacter sakazakii) are often treated by public health and regulatory agencies as being equally pathogenic; however, this is not necessarily true and is an overly conservative approach to ensuring the safety of foods. Even within species, virulence factors vary to the point that some isolates may be highly virulent, whereas others may rarely, if ever, cause disease in humans. Hence, many food safety scientists have concluded that a more appropriate characterization of bacterial isolates for public health purposes could be by virotyping, i.e., typing food-associated bacteria on the basis of their virulence factors. The book is divided into two sections. Section I, "Foodborne Pathogens and Virulence Factors," hones in on specific virulence factors of foodborne pathogens and the role they play in regulatory requirements, recalls, and foodborne illness. The oft-held paradigm that all pathogenic strains are equally virulent is untrue. Thus, we will examine variability in virulence between strains such as Listeria, Salmonella, Campylobacter, Cronobacter, etc. This section also examines known factors capable of inducing greater virulence in foodborne pathogens. Section II, "Foodborne Pathogens, Host Susceptibility, and Infectious Dose" , covers the ability of a pathogen to invade a human host based on numerous extraneous factors relative to the host and the environment. Some of these factors include host age, immune status, genetic makeup, infectious dose, food composition and probiotics. Readers of this book will come away with a better understanding of foodborne bacterial pathogen virulence factors and pathogenicity, and host factors that predict the severity of disease in humans.

As a group of organisms that are too small to see and best known for being agents of disease and death, microbes are not always appreciated for the numerous supportive and positive contributions they make to the living world. Designed to support a course in microbiology, Microbiology: A Laboratory Experience permits a glimpse into both the good and the bad in the microscopic world. The laboratory experiences are designed to engage and support student interest in microbiology as a topic, field of study, and career. This text provides a series of laboratory exercises compatible with a one-semester undergraduate microbiology or bacteriology course with a three- or four-hour lab period that meets once or twice a week. The design of the lab manual conforms to the American Society for Microbiology curriculum guidelines and takes a ground-up approach -- beginning with an introduction to biosafety and containment practices and how to work with biological hazards. From there the course moves to basic but essential microscopy skills, aseptic technique and culture methods, and builds to include more advanced lab techniques. The exercises incorporate a semester-long investigative laboratory project designed to promote the sense of discovery and encourage student engagement. The curriculum is rigorous but manageable for a single semester and incorporates best practices in biology education.

Control of Salmonella and Other Bacterial Pathogens in Low-Moisture Foods

Bad Bug Book

Department of Energy National Security and Military Applications of Nuclear Energy Authorization Act of 1984 Before the Procurement and Military Nuclear Systems Subcommittee of the Committee on Armed Services, House of Representatives, Ninety-eighth Congress, First Session, Hearings Held March 1 and 2, 1983

A Risk Manager's Guide

Foodborne Pathogenic Microorganisms & Natural Toxins

UV Applications for Food and Non-Food Surfaces

Low-moisture foods (LMF) are foods that are naturally low in moisture or are produced from higher moisture foods through drying or dehydration processes. These foods typically have a long shelf life and have been perceived for many years to not represent microbiological food safety risk hazards. However, in recent years, a number of outbreaks of foodborne illnesses linked to LMF has illustrated that despite the fact that microorganisms cannot grow in these products, bacteria do have the possibility to persist for long periods of time in these matrices. Responding to a request from the Codex Committee on Food Hygiene (CCFH), the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) implemented a series of activities aimed at collating and analysing the available information on microbiological hazards related to LMF and ranking the foods of greatest concern from a microbiological food safety perspective. Seven categories of LMF which were ultimately included in the ranking process, and the output of the risk ranking, in descending order was as follows: cereals and grains; dried protein products; spices and dried herbs; nuts and nut products; confections and snacks; dried fruits and vegetables; and seeds for consumption.

The Microbiological Safety of Low Water Activity Foods and SpicesSpringer

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.

This tutorial text provides an introduction to basics of bioluminescent methods used for rapid analysis of microbiological safety and quality of food and environmental samples. This book is intended for engineers, scientists, students, and managers involved in the design and/or use of biosafety assays. It discusses the practical aspects of bioluminescent microbiological analysis. Some basic knowledge of biochemistry, microbiology, and biophysics is preferable; however, a brief review of fundamental principles are included that will allow people who are unfamiliar with these disciplines to grasp their basic concepts.

Foodborne Pathogenic Microorganisms and Natural Toxins Handbook

Microbiological safety of lipid-based ready-to-use foods for management of moderate acute malnutrition and severe acute malnutrition

Bioluminescence for Food and Environmental Microbiological Safety

Improving Food Safety Through a One Health Approach

Food Plant Safety

A Laboratory Experience

Retail foods available in areas with higher food insecurity and Low Socioeconomic Status (SES) are known to be of inferior quality than High SES areas. The purpose of this research was to assess the availability of different food choices and evaluate the microbiological quality of foods available at retail outlets in Low SES and High SES areas in Memphis metropolitan. Survey of Low and High SES stores, aerobic plate count, selective plating, and multiplex polymerase chain reactions were conducted to determine the differences in food availability, microbial load, and the microbial composition of selected retail foods procured form Low and High SES areas. Foods from Low SES areas were found to have higher bacterial loads and a differential microbial composition (with an abundance of generic E. coli) as compared to food items obtained form High SES areas. The results indicate the disparity in microbiological quality of foods available to populations.

This book focuses on state of the art technologies to produce microbiologically safe foods for our global dinner table. Each chapter summarizes the most recent scientific advances, particularly with respect to food processing, pre- and post-harvest food safety, quality control, and regulatory information. The book begins with a general discussion of microbial hazards and their public health ramifications. It then moves on to survey the production processes of different food types, including dairy, eggs, beef, poultry, and fruits and vegetables, pinpointing potential sources of human foodborne diseases. The authors address the growing market in processed foods as well novel interventions such as innovative food packaging and technologies to reduce spoilage organisms and prolong shelf life. Each chapter also describes the ormal flora of raw product, spoilage issues, pathogens of concern, sources of contamination, factors that influence survival and growth of pathogens and spoilage organisms, indicator microorganisms, approaches to maintaining product quailty and reducing harmful microbial populations, microbial standards for end-product testing, conventional microbiological and molecular methods, and regulatory issues. Other important topics include the safety of genetically modified organisms (GMOs), predictive microbiology, emerging foodborne pathogens, good agricultural and manufacturing processes, avian influenza, and bioterrorism.

Principles of Microbiological Troubleshooting in the Industrial Food Processing Environment provides proven approaches and suggestions for finding sources of microbiological contamination of industrially produced products. Industrial food safety professionals find themselves responsible for locating and eliminating the source(s) of food contamination. These are often complex situations for which they have not been adequately prepared. This book is written with them, the in-plant food safety/quality assurance professional, in mind. However, other professionals will also benefit including plant managers, regulatory field investigators, technical food safety policy makers, college instructors, and students of food science and microbiology. A survey of the personal and societal costs of microbial contamination of food is followed by a wide range of respected authors who describe selected bacterial pathogens, emerging pathogens, spoilage organisms and their significance to the industry and consumer. Dr. Kornacki then provides real life examples of in-plant risk areas / practices (depicted with photographs taken from a wide variety of food processing facilities). Factors influencing microbial growth, survival and death area also described. The reader will find herein a practical framework for troubleshooting and for assessing the potential for product contamination in their own facilities, as well as suggestions for conducting their own in-plant investigations. Selected tools for testing the environment and statistical approaches to testing ingredients and finished product are also described. The book provides suggestions for starting up after a processing line (or lines) have been shut down due to a contamination risk. The authors conclude with an overview of molecular subtyping and its value with regard to in-plant investigations. Numerous nationally recognized authors in the field have contributed to the book. The editor, Dr. Jeffery L. Kornacki, is President and Senior Technical Director of the consulting firm, Kornacki Microbiology Solutions in Madison, Wisconsin. He is also Adjunct Faculty with the Department of Food Science at the University of Georgia and also with the National Food Safety & Toxicology Center at Michigan State University.

Provides the latest QMRA methodologies to determine infection riskcause by either accidental microbial infections or deliberateinfections caused by terrorism • Reviews the latest methodologies to quantify at everystep of the microbial exposure pathways, from the first release ofa pathogen to the actual human infection • Provides techniques on how to gatherinformation, on how each microorganism moves through theenvironment, how to determine their survival rates on variousmedia, and how people are exposed to the microorganism • Explains how QMRA can be used as a tool to measure theimpact of interventions and identify the best policies andpractices to protect public health and safety • Includes new information on genetic methods • Techniques use to develop risk models for drinkingwater, groundwater, recreational water, food and pathogens in theindoor environment

The Microbiological Safety of Food in Healthcare Settings

Foodborne Pathogens

Guidelines to the Principles of Assuring the Microbiological Safety of Low Moisture Foods Such as Nuts and Seeds

Strategies to Reduce Sodium Intake in the United States

Decontamination of Fresh and Minimally Processed Produce

Microbiological Safety of Food

Globalization of the food supply has created conditions favorable for the emergence, reemergence, and spread of food-borne pathogens-compounding the challenge of anticipating, detecting, and effectively responding to food-borne threats to health. In the United States, food-borne agents affect 1 out of 6 individuals and cause approximately 48 million illnesses, 128,000 hospitalizations, and 3,000 deaths each year. This figure likely represents just the tip of the iceberg, because it fails to account for the broad array of food-borne illnesses or for their wide-ranging repercussions for consumers, government, and the food industry-both domestically and internationally. A One Health approach to food safety may hold the promise of harnessing and integrating the expertise and resources from across the spectrum of multiple health domains including the human and veterinary medical and plant pathology communities with those of the wildlife and aquatic health and ecology communities. The IOM's Forum on Microbial Threats hosted a public workshop on December 13 and 14, 2011 that examined issues critical to the protection of the nation's food supply. The workshop explored existing knowledge and unanswered questions on the nature and extent of food-borne threats to health. Participants discussed the globalization of the U.S. food supply and the burden of illness associated with foodborne threats to health; considered the spectrum of food-borne threats as well as illustrative case studies; reviewed existing research, policies, and practices to prevent and mitigate foodborne threats; and, identified opportunities to reduce future threats to the nation's food supply through the use of a "One Health" approach to food safety. Improving Food Safety Through a One Health Approach: Workshop Summary covers the events of the workshop and explains the recommendations for future related workshops.

Consumers demand quality milk with a reasonable shelf-life, a requirement that can be met more successfully by the milk industry through use of improved processes and technologies. Guaranteeing the production of safe milk also remains of paramount importance. Improving the safety and quality of milk provides a comprehensive and timely reference to best practice and research advances in these areas. Volume 1 focuses on milk production and processing. Volume 2 covers the sensory and nutritional quality of cow's milk and addresses quality improvement of a range of other milk-based products. The opening section of Volume 1: Milk production and processing introduces milk biochemistry and raw milk microbiology. Part two then reviews major milk contaminants, such as bacterial pathogens, pesticides and veterinary residues. The significance of milk production on the farm for product quality and safety is the focus of Part three. Chapters cover the effects of cows' diet and mastitis, among other topics. Part four then reviews the state-of-the-art in milk processing. Improving the quality of pasteurised milk and UHT milk and novel non-thermal processing methods are among the subjects treated. With its distinguished editor and international team of contributors, volume 1 of Improving the safety and quality of milk is an essential reference for researchers and those in industry responsible for milk safety and quality. Addresses consumer demand for improved processes and technologies in the production, safety and quality of milk and milk products Reviews the major milk contaminants including bacterial pathogens, pesticides and vetinary residues as well as the routes of contamination, analytical techniques and methods of control Examines the latest advances in milk processing methods to improve the quality and safety of milk such as modelling heat processing, removal of bacteria and microfiltration techniques

This authoritative two-volume reference provides valuable, necessary information on the principles underlying the production of microbiologically safe and stable foods. The work begins with an overview and then addresses four major areas: 'Principles and application of food preservation techniques' covers the specific techniques that defeat growth of harmful microorganisms, how those techniques work, how they are used, and how their effectiveness is measured. 'Microbial ecology of different types of food' provides a food-by-food accounting of food composition, naturally occurring microflora, effects of processing, how spoiling can occur, and preservation. 'Foodborne pathogens' profiles the most important and the most dangerous microorganisms that can be found in foods, including bacteria, viruses, parasites, mycotoxins, and 'mad cow disease.' The section also looks at the economic aspects and long-term consequences of foodborne disease. 'Assurance of the microbiological safety and quality of foods' scrutinizes all aspects of quality assurance, including HACCP, hygienic factory design, methods of detecting organisms, risk assessment, legislation, and the design and accreditation of food microbiology laboratories. Tables, photographs, illustrations, chapter-by-chapter references, and a thorough index complete each volume. This reference is of value to all academic, research, industrial and laboratory libraries supporting food programs; and all institutions involved in food safety, microbiology and food microbiology, quality assurance and assessment, food legislation, and generally food science and technology.

Evaluating the Feasibility of Producing Shelf-stable Low-acid Vegetables Through Pressure-ohmic-thermal Sterilization

Microbiology Laboratory Guidebook

Biosafety in Microbiological and Biomedical Laboratories

Proceedings of the Eighth International Symposium on Food Microbiology, Reading, Eng

Ranking of low-moisture foods in support of microbiological risk management: Meeting report and systematic review

Microbial safety of lipid-based ready-to-use foods for management of moderate acute malnutrition and severe acute malnutrition – Second report

Microbiological Safety and Quality of Food