Essential Oils In Food Preservation Flavor And Safety

Consumer concerns play a critical role in dictating the direction of research and development in food protection. The rising demand for minimally processed foods, growing concerns about the use of synthetic preservatives, and suspected links between the overuse of antibiotics and multi-drug resistance in microbes has made food safety a global priority. Natural Food Antimicrobial Systems focuses on advances in the technology of food safety. Numerous antimicrobial agents exist in animals and plants where they evolved as defense mechanisms. For example, the antimicrobial components of milk have been unraveled in recent years. The book covers how these components - such as lactoferrin - can be used as multifunctional food additives such as antioxidants and immuno-modulating agents. The six sections cover lacto-antimicrobials, ovo-antimicrobials, phyto-antimicrobials, bacto-antimicrobials, acid-antimicrobials, and milieu-antimicrobials. Each chapter provides background and historical information, molecular properties, antimicrobial activity, biological advantage, applications, safety, tolerance, and efficacy, and biotechnology. To satisfy the rapidly changing consumption patterns of the global market, the food processing industry continuously searches for new technologies in food science. Designed as a reference for academia and corporate R & D, Natural Food Antimicrobial Systems fills this need, offering in-depth information on emerging biotechnology, efficacy, and applications of natural food antimicrobial systems. This comprehensive handbook is a "one-stop-shop" for all researchers involved in the field of alcohol-related harm at the whole body or cellular level. Over 100 chapters provide abundant information of a wide range of topics that extend from the evolutionary aspects of alcohol consumption and the prevalence of alcohol misuse to programmed cell death. Each chapter is highly illustrated with tables and figures making this a valuable reference for students, clinicians and researchers alike. *Over 100 chapters conveniently divided into 3 sections *Represents a 'one-stop-shop' of information with suitable indexing of the various pathways and processes *Each chapter is highly illustrated with tables as well as figures

In recent years, rapid strides have been made in the fields of microbiological aspects of food safety and quality, predictive microbiology and microbial risk assessment, microbiological aspects of food preservation, and novel preservation techniques. Written by the experts and pioneers involved in many of these advances, Microbial Food Safety and P Food Safety and Preservation: Modern Biological Approaches to Improving Consumer Health explores the most recent and investigated hot topics in food safety, microbial contamination, food-borne diseases and advanced preservation methods. It brings together the significant, evidence-based scientific progress of various approaches to improve the safety and quality of foods, also offering solutions to help address food industry challenges. Recent studies and technological advancements in biological control are presented to control foodborne pathogens. In addition, analytical methods for reducing potential biological hazards make this book essential to researchers, scientists, technologists and grad students. Covers all aspects of food contamination, from food degradation, to food-borne diseases Examines validated, biological control approaches to reduce microbial and chemical contamination Includes detailed discussions of risk and safety assessments in food preservation

Essential Oils in Food Preservation, Flavor and SafetyAcademic Press

Essential Oils in Food Preservation, Flavor and Safety discusses the major advances in the understanding of the Essential Oils and their application, providing a resource that takes into account the fact that there is little attention paid to the scientific basis or toxicity of these oils. This book provides an authoritative synopsis of many of the complex features of the essential oils as applied to food science, ranging from production and harvesting, to the anti-spoilage properties of individual components. It embraces a holistic approach to the topic, and is divided into two distinct parts, the general aspects and named essential oils. With more than 100 chapters in parts two and three, users will find valuable sections on botanical aspects, usage and applications, and a section on applications in food science that emphasizes the fact that essential oils are frequently used to impart flavor and aroma. However, more recently, their use as anti-spoilage agents has been extensively researched. Explains how essential oils can be used to improve safety, flavor, and function Embraces a holistic approach to the topic, and is divided into two distinct parts, the general aspects and named essential oils Provides exceptional range of information, from general use insights to specific use and application information, along with geographically specific information Examines traditional and evidence-based uses Includes methods and examples of investigation and application

This volume covers a selection of important novel technological interventions in dairy science, from the physical properties of milk and other milk products to nonthermal processing of milk. It also discusses safety methods in dairy science, which includes cleaning-in-place and techniques to determine adulteration in milk. Milk is a perishable commodity, and being rich in nutrients, it acts as the perfect substrate for the growth of microflora (sometimes dangerous for consumption). To reduce this, different thermal and nonthermal techniques are used. Thermal treatments are common techniques used for extending the shelf life of milk, such as, for example, pasteurization, sterilization, and UHT, but loss of nutrients is a concern associated with these treatments. Nonthermal treatments like high-pressure processing, pulse electric field, ultra-sonication, and irradiation are also explored in the processing of milk to minimize the loss of nutrients as compared to thermal treatment. Post-process contamination is also a major factor that can affect the shelf life of milk, and safe packaging plays an important role when the milk and milk products are stored at refrigeration or ambient temperature. Many advances in these dairy technologies are presented in this informative volume. Technological Interventions in Dairy Science: Innovative Approaches in Processing, Preservation, and Analysis of Milk Products will prove valuable for industrial professionals, scientists, regulatory personnel, consultants, academics, students and field-related personnel. The book also attempts to bridge the gap between research and industrial application of recent
techniques. This book discusses practical application of natural antimicrobials in food preservation. Topics covered include: the use of bacteriocins in preserving animal and other food products; the current and future uses of certain preservatives and the use of natural antimicrobials in edible coatings. Three chapters are devoted to antimicrobials from plants and their use in a wide range of applications. With its practical emphasis and authoritative coverage, this book will be a standard work for the food industry in developing new preservation systems that extend the shelf life of foods without compromising safety or sensory quality.

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

Preserving food can be one of the most intimidating aspects of homesteading and cooking. Luckily, no one makes it as easy and as much fun as farm-girl-in-the-making Ann Acetta-Scott. For a beginner new to the world of preserving, the ideal tool is a detailed reference guide, and in The Farm Girl’s Guide to Preserving the Harvest, Ann covers all the basics on canning, dehydrating, freezing, fermenting, curing, and smoking, including how to select and use the right tools for each method. This guide takes home preservers through the beginning, moderate, and advanced stages of preserving. Newcomers can start with a simple jam and jelly recipe using a hot water bath canner, while others may be advanced enough to have mastered the pressure canner and are ready to move onto curing and smoking meat and fish. With more than 30 delicious and healthy recipes and Ann’s expertise and encouragement, the home preserver will build confidence in the most common methods of preserving.

Neuroscience of Nicotine: Mechanisms and Treatment presents the fundamental information necessary for a thorough understanding of the neurobiological underpinnings of nicotine addiction and its effects on the brain. Offering thorough coverage of all aspects of nicotine research, treatment, policy and prevention, and containing contributions from internationally recognized experts, the book provides students, early-career researchers, and investigators at all levels with a fundamental introduction to all aspects of nicotine misuse. With an estimated one billion individuals worldwide classified as tobacco users—and tobacco use often being synonymous with nicotine addiction—nicotine is one of the world’s most common addictive substances, and a frequent comorbidity of misuse of other common addictive substances. Nicotine alters a variety of neurological processes, from molecular biology, to cognition, and quitting is exceedingly difficult because of the number of withdrawal symptoms that accompany the process. Integrates cutting-edge research on the pharmacological, cellular and molecular aspects of nicotine use, along with its effects on neurobiological function Discusses nicotine use as a component of dual-use and poly addictions and outlines numerous screening and treatment strategies for misuse Covers both the physical and psychological effects of nicotine use and withdrawal to provide a fully-formed view of nicotine dependency and its effects.

Neuroscience of Alcohol: Mechanisms and Treatment presents the fundamental information necessary for a thorough understanding of the neurobiological underpinnings of alcohol addiction and its effects on the brain. Offering thorough coverage of all aspects of alcohol research, treatment and prevention, and containing contributions from internationally recognized experts, the book provides students, early-career researchers, and investigators at all levels with a fundamental introduction to all aspects of alcohol misuse. Alcohol is one of the world’s most common addictive substances, with about two billion individuals worldwide consuming it in one form or another and three million annual deaths that are associated with alcohol misuse. Alcohol alters a variety of neurological processes, from molecular biology, to cognition. Moreover, addiction to alcohol can lead to numerous other health concerns and damage virtually every organ system in the body, making diagnosis and treatment of individuals addicted to alcohol of critical importance. Integrates cutting-edge research on the pharmacological, cellular and molecular aspects of alcohol use, along with its effects on neurobiological function Discusses alcohol use as a component of dual-use and poly addictions Outlines numerous screening and treatment strategies for alcohol misuse Covers both the physical and psychological effects of alcohol use and withdrawals to provide a fully-formed view of alcohol dependency and its effects.

In this book the author utilizes his over fifty years of experience in food chemistry and technology in order to produce the most detailed and comprehensive guide on natural food flavors and colors. Unique coverage of natural flavors and natural colorants in the same volume Includes chemical structures of all principal constituents and CAS, FEMA and E numbers. Wherever available FCC (Food Chemicals Codex) Includes techniques and characteristics of extracts, such as solvent extraction, dispersion and solubilization, nutraceutical function and effect of heat.

A guide to the use of essential oils in food, including information on their composition, extraction methods, and their antioxidant and antimicrobial applications Consumers’ food preferences are moving away from synthetic additives and preservatives and there is an increase demand for convenient packaged foods with long shelf lives. The use of essential oils fills the need for more natural preservatives to extend the shelf-life and maintaining the safety of foods. Essential Oils in Food Processing offers researchers in food science a guide to the chemistry, safety and applications of these easily accessible and eco-friendly substances. The text offers a review of essential oils components, history, source and their application in foods and explores common and new extraction methods of essential oils from herbs and spices. The authors show how to determine the chemical composition of essential oils as well as an explanation of the antimicrobial and antioxidant activity of these oils in foods. This resource also delves into the effect of essential oils on food flavor and explores the interaction of essential oils and food components. Essential Oils in Food Processing offers a: Handbook of the use of essential oils in food, including their composition, extraction methods and their antioxidant and antimicrobial applications Guide that shows how essential oils can be used to extend the shelf life of food products whilst meeting.
consumer demand for "natural" products Review of the use of essential oils as natural flavour ingredients Summary of relevant food regulations as pertaining to essential oils Academic researchers in food science, R&D scientists, and educators and advanced students in food science and nutrition can tap into the most recent findings and basic understanding of the chemistry, application, and safe us of essential oils in food processing.

This distinguished organic chemist shares his in depth knowledge of the particular current value of essential oils, for health on all levels. In an era when Western allopathic medicine has less and less appeal, this self-care method is a potent alternative, with roots going back to ancient times. Dr. Schaubelt has a gift for presenting facts and information in a way that is intriguing and easy to assimilate. In the flood of "coffee table" aromatherapy books currently available, this is a much needed and welcome source for those truly interested in taking responsibility for their own health.

This important book focuses on specific topics in food analysis and preservation investigated in the Laboratory of Food Chemistry and Technology at the University Ioannina, Greece, over the past five years. The book specifically targets consumer protection. Foods are being processed to preserve quality and prevent spoilage caused by physical, chemical, and mostly microbiological agents. In this sense, microbiology is inherently related to food preservation. This book provides invaluable information regarding food substrates, toxicology, nutritional content, microbiology, and more. The experimental investigations in this book focus on information regarding chemical and microbiological analysis as well as nonthermal methods of food preservation such as active packaging, essential oils, chitosan, ozonation, irradiation, bacteriocins, etc. This important book emphasizes the interrelationships between food analysis, food processing and preservation, and food microbiology, which will be invaluable for food scientists around the world.

Packaging continues to be one of the most important and innovative areas in food processing. Edited by a leading expert in the field, and with its distinguished international team of contributors, Novel food packaging techniques provides an authoritative and comprehensive review of the key trends. Part one discusses the range of active packaging techniques such as the use of oxygen and other scavengers, moisture regulation and antimicrobial packaging in food preservation. It also covers the use of intelligent systems such as time-temperature and freshness indicators to assess food quality. Part two reviews developments in modified atmosphere packaging (MAP) and its role in enhancing product safety and quality. Part three describes packaging applied to particular products such as meat and fish. Part four covers other key issues such as packaging optimisation, the legislative context, sustainable packaging and consumer attitudes. Novel food packaging techniques is a standard reference for the food industry in optimising the use of packaging to improve product safety and quality. Provides an authoritative and comprehensive review of the key trends of food packaging Discusses the range of active packaging techniques such as the use of oxygen and other scavengers, moisture regulation and antimicrobial packaging in food preservation Covers packaging optimisation, the legislative context, sustainable packaging and consumer attitudes

This volume presents a wide range of new approaches aimed at improving the safety and quality of food products and agricultural commodities. Each chapter provides in-depth information on new and emerging food preservation techniques including those relating to decontamination, drying and dehydration, packaging innovations and the use of botanicals as natural preservatives for fresh animal and plant products. The 28 chapters, contributed by an international team of experienced researchers, are presented in five sections, covering: Novel decontamination techniques Novel preservation techniques Active and atmospheric packaging Food packaging Mathematical modelling of food preservation processes Natural preservatives This title will be of great interest to food scientists and engineers based in food manufacturing and in research establishments. It will also be useful to advanced students of food science and technology.

The processing of food is no longer simple or straightforward, but is now a highly inter-disciplinary science. A number of new techniques have developed to extend shelf-life, minimize risk, protect the environment, and improve functional, sensory, and nutritional properties. The ever-increasing number of food products and preservation techniques To meet the challenge of feeding ever increasing human population, efficient, economical and environment friendly disease control methods are required. Pests are responsible for heavy crop losses and reduced food supplies, poorer quality agricultural products, economic hardship for growers and processor. Generally, chemical control methods are neither always economical nor are they effective and may have associated unwanted health, safety and environmental risks. Biological control involves use of beneficial microorganisms to control plant pathogens and diseases they cause and offers an environmental friendly approach to the effective management of plant diseases. This book provides a comprehensive account of interaction of host and its pathogens, induced host resistance, development of biological control agents for practical applications, the underlying mechanism and signal transduction. The book is useful to all those working in academia or industry related to crop protection.

This book is intended to provide an overview and review of the latest developments in microencapsulation processes and technologies for various fields of applications. The general theme and purpose are to provide the reader with a current and general overview of the existing microencapsulation systems and to emphasize various methods of preparation, characterization, evaluation, and potential applications in various fields such as medicine, food, agricultural, and composites. The book targets readers, including researchers in materials science processing and/or formulation and microencapsulation science, engineers in the area of microcapsule development, and students in colleges and universities.

"The book covers the applications of some alternative approaches for prolonging food shelf life. The book describes the role of food safety objectives, natural compounds (such as oils and microbial enzymes), pressure and atmospheric techniques and alternat" Essential oils were used globally as a folk medicine for the treatment of a number of diseases because of the high content of natural compounds. Therefore, this book looks at research topics dealing with isolation, purification, and identification of active ingredients of essential oils from plants. This knowledge will provide significant information about essential oils to researchers and others interested in the field.

Consumer preferences for cleaner label products require the food industry to replace synthetic preservatives with natural substances. Compared with other types of food preservatives, plant essential oils are becoming more and more popular because they meet the current development requirements of food additives on "green", "safe" and "healthy". However, there are still many problems to be solved urgently in the application of essential oil in food preservation industry. For example, plant essential oils usually have strong odor, are sensitive to light and heat, are easy to oxidize and decompose, have strong volatility and short effect, and the minimum inhibitory concentration in food matrix is usually higher than the minimum inhibitory concentration in vitro. Therefore, in order to solve these problems effectively and meet the learning needs of engineering technicians in food industry and scientific researchers in higher education, the author has compiled this monograph which integrates the application and academic value combining years of research experience in plant essential oil research and food preservation.

The search for better strategies to preserve foods with minimal changes during processing has been of great interest in recent decades. Traditionally, edible films and coatings have been used as a partial barrier to moisture, oxygen, and
carbon dioxide through selective permeability to gases, as well as improving mechanical handling properties. The advances in this area have been breathtaking, and in fact their implementation in the industry is already a reality. Even so, there are still new developments in various fields and from various perspectives worth reporting. Edible Films and Coatings: Fundamentals and Applications discusses the newest generation of edible films and coatings that are being especially designed to allow the incorporation and/or controlled release of specific additives by means of nanoencapsulation, layer-by-layer assembly, and other promising technologies. Covering the latest novelties in research conducted in the field of edible packaging, it considers state-of-the-art innovations in coatings and films; novel applications, particularly in the design of gourmet foods; new advances in the incorporation of bioactive compounds; and potential applications in agriculture, an as yet little explored area, which could provide considerable advances in the preservation and quality of foods in the field.

Phenolic compounds comprise a broad class of natural products formed mainly by plants, but also microorganisms and marine organisms that have the capacity to form them. Nowadays the interest in these compounds has increased mainly due to their diverse chemical structure and wide biological activity valuable in the prevention of some chronic or degenerative diseases. The functional foods are a rich source of these phytochemicals, and this is the starting point for this book, which shows the state of the art of the phenolic compounds and their biological activity. This book integrates eleven chapters that show the state of the art of diverse biological activity of the phenolic compounds, present in some crops or fruits. Essential oils have recently received much attention globally due to the increased use of essential oils as well as the positive impacts from economic backgrounds. New compounds of essential oils have been discovered from medicinal plants and used in anti-disease treatment as well as in most houses as a source of natural flavor. This book covers some interesting research topics for essential oils, including identification of active ingredients from wild and medicinal plants. This book will add significant value for researchers, academics, and students in the field of medicine. This volume focuses on food preservation prior to distribution and sale, which is a major challenge in the tropical climates of most developing nations. In order to assure that food products are safe for human consumption, due importance must be given to the quality and safety aspects of production, processing, and distribution. This volume provides an informative overview of recent research on the therapeutic potential of various new and natural compounds along with novel technologies for enhanced shelf-life longevity and food safety. It also looks at the antimicrobial constituents of different sources and the history of their use as biopreservatives. It includes scientific evaluations of their use as alternative or potential biopreservatives. Focusing on real-life applications in consumer and food products, the book is divided into three parts, covering health and quality aspects of food preservation, applications of novel biomolecules for quality and safety of foods, and novel research techniques in food biopreservation.

BEHIND THE WALL is a compelling social history, which provides an insight into Adelaide's Destitute Asylum and the women who experienced life behind its walls. Based on historical documents and accounts provided by descendants of the Destitute Asylum.

Implement the most current science and practice in antimicrobial research. Now, find the newest approaches for evaluating the activity, mechanisms of action, and bacterial resistance to antibiotics with this completely updated, landmark reference. Turn to this comprehensive reference for groundbreaking evidence on the molecular link between chemical disinfectants, sterilants, and antibiotics. On the latest methods for detecting antibacterial resistance genes in the clinical laboratory, and antivirogram use to select the most active antiviral components against your patient's HIV. Plant essential oils have been used for centuries in the preparation of cosmetic fragrances and food flavors, as well as in traditional medicines as therapeutic remedies. In recent years they have been attracting the renewed interest of both the scientific community and the general public. Their use in different aspects of human life is generally regarded as being part of a healthier, natural-oriented life style. On the other hand, a wealth of scientific studies has been documenting their biological properties, particularly associated with their antimicrobial and antioxidant activities, although additional medicinal properties have also been brought to light. This book offers an up-to-date examination of scientific literature on the antimicrobial and antioxidant activity of main dietary essential oils from all over the world, together with a general introduction to their chemistry, classification, bio-synthetic origin, preparation and analysis. (Imprint: Nova)

Essential oils have been used for centuries by communities all over the world in various areas and for various purposes. These include uses in medicine, flavoring, perfumery, cosmetics, insecticides, fungicides, and bactericides, among others. They are natural and biodegradable substances, generally nontoxic or with low toxicity to humans and other animals. Therefore, constant research in these areas represents an alternative for new and more efficient drugs with less side effects as well as obtaining new products and supplies. This book provides a comprehensive overview of the diverse applications of essential oils in a variety of human activities with a focus on the most important evidence-based developments in the various fields of knowledge.

This book is a printed edition of the Special Issue "Application of Essential Oils in Food Systems" that was published in Foods Food Preservation, Volume Six, the latest in the Nanotechnology in the Agri-Food Industry series, discusses how nanotechnology can improve and control the growth of pathogenic and spoilage compounds to improve food safety and quality. The book includes research information on nanofood technologies, food safety and quality, safety and quality, and food safety and quality. The book includes research information on nanovesicles, nanospheres, metallic nanoparticles, nanofibers, and nanotubes, and how they are capable of trapping bioactive substances to increase and maintain the stability of compounds often sensitive under typical food processing and storage conditions. This book will be useful to a wide audience of food science research professionals and professors and students doing research in the field.

Describes the effective utilization of nanostructured antimicrobials in toxicological studies and real food systems. Offers research strategies for understanding opportunities in antimicrobial nanostructures and the potential challenges of their toxicity. Presents diverse applications of nanostructured antimicrobials in food preservation, Covers the potential benefits of nanotechnology and methods of risk assessment that ensure food safety.
The book is devoted to the highly versatile and potential ingredient Cyclodextrin, a family of cyclic oligosaccharides composed of \( (1,4) \)-linked glucopyranose subunits. Its molecular complexation phenomena and negligible cytotoxic effects attribute toward its application such as in pharmaceuticals, cosmetics, food, agriculture, textile, separation process, analytical methods, catalysis, environment protection, and diagnostics. Efforts have also been made to concentrate on recent research outcomes along with future prospects of cyclodextrins to attract the interest of scientists from the industry and academia. The contributions of the authors are greatly acknowledged, without which this compilation would not have been possible.

Natural additives are increasingly favoured over synthetic ones as methods of ensuring food safety and long shelf-life. The antimicrobial properties of both plant-based antimicrobials such as essential oils and proteins such as bacteriocins are used in, for example, edible preservative films, in food packaging and in combination with synthetic preservatives for maximum efficacy. New developments in delivery technology such as nanoencapsulation also increase the potential of natural antimicrobials for widespread use in industry. Part one introduces the different types of natural antimicrobials for food applications. Part two covers methods of application, and part three looks at determining the effectiveness of natural antimicrobials in food. Part four focuses on enhancing quality and safety, and includes chapters on specific food products. Reviews different types of antimicrobials used in food safety and quality Covers how antimicrobials are created to be used in different foods. Examines how the antimicrobials are used in foods to enhance the safety and quality.

Nanoemulsions: Formulation, Applications, and Characterization provides detailed information on the production, application, and characterization of food nanoemulsion as presented by experts who share a wealth of experience. Those involved in the nutraceutical, pharmaceutical and cosmetic industries will find this a useful reference as it addresses findings related to different preparation and formulation methods of nanoemulsions and their application in different fields and products. As the last decade has seen a major shift from conventional emulsification processes towards nanoemulsions that both increase the efficiency and stability of emulsions and improve targeted drug and nutraceutical delivery, this book is a timely resource. Summarizes general aspects of food nanoemulsions and their formulation Provides detailed information on the production, application, and characterization of food nanoemulsion. Revises the potential of nanoemulsions, as well as their novel applications in functional foods, nutraceutical products, delivery systems, and cosmetic formulations.

Explains the preparation of nanoemulsions by both low- and high-energy methods.

Documenting the latest research in the field of different pathogenic organisms, this book presents the current scenario about promising antimicrobials in the following areas: Part I. Plants as source of antibacterials, Part II. Naturally occurring antifungal natural products, Part III. Antiparasitic natural products, Part IV. Antiviral natural products. Renowned scientists from the globe have been selected as authors to contribute chapters. Use of plants for various ailments is as old as human civilization and continuous efforts are being made to improve medicinal plants or to produce their bioactive secondary metabolites in high amounts through various technologies. About 200,000 natural products of plant origin are known and many more are being identified from higher plants and micro-organisms. Some plants based drugs are used since centuries and there is no alternative medicine for many such drugs as cardiac glycosides. Drug discovery from medicinal plants or marine micro-organisms continues to provide an important source of new drug leads. Research on new antibacterials represents a real and timely challenge of this century, particularly for the infection treatments caused by clinical isolates that show multidrug resistance. The main microorganisms involved in the resistance process have been identified and given the acronym ESKAPE for Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumanii, Pseudomonas aeruginosa and Enterobacteriaceae. Multidrug resistant Mycobacterium tuberculosis including highly drug-resistant strains (XDR-TB) has also emerged as one of the most important clinical challenges of this century. Plants of diverse taxa and marine micro-organisms are rich source of these antimicrobials. An attempt has been made to compile the recent information about natural sources of antibacterials and their sustainable utilization. Increased panic of these pathogens warrants a growing demand for research to undertake the threat of multidrug resistance. The search for new antifungal, antiparasitic and antiviral natural products is far from devoid of interest. According to the WHO report in 2013, malaria still represents some 207 million cases worldwide and more than 3 billion of people are still exposed to this risk. Similarly, about 350 million people are considered at risk of contracting leishmaniasis. The fight against some viruses also requires that the research on natural products continue. For example, even if an antiretroviral with direct action was recently approved in Europe in 2013, its high cost does not allow to offer it to an exposed population in countries where the cost of drugs remains a problem for a large part of the population. These books are useful to researchers and students in microbiology, biotechnology, pharmacology, chemistry and biology as well as medical professionals. Research on microbes plays an essential role in the improvement of biotechnological and biomedical areas. It has turned into a subject of expanding significance as new organisms and their related biomolecules are being characterized for several applications in health and agriculture. Microbial biomolecules confer the ability of microbes to cope with a range of adverse conditions. However, these biomolecules have several advantages over the plant origin, which makes them a suitable target in drug discovery and development. The reasons could be that microbial sources can be genetically engineered to enhance the production of desired natural production by large-scale fermentation. The interaction between microbes and their biotic and abiotic environment is fundamental to numerous processes taking place in the biosphere. The natural environments and hosts of these microorganisms are extremely diverse being reflected by the fact that microbes are widespread and occur in nearly every biological community on Earth. This metabolic versatility makes microbes interesting objects for a range of economically important biotechnological applications. Most of the biotechniques are established but inefficient genetic engineering strategies are still a bottleneck for selected microbes producing industrial scale biomolecules. Therefore, untapped microbial biodiversity and related metabolomics, give a noteworthy wellspring of biologicals for the advancement of meds, immunizations, enhanced plants and for other natural applications. The present eBook volume contains articles on microbial secondary metabolites, microbial biosynthetic potential including biosynthetic gene expression, and metagenomics obtained from microorganism isolated unique from habitats like marine sources, endophytes, thermal springs, deserts, etc.