

Antibacterial Activity And Increased Freeze Drying

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SWANSON GRIFFIN

Volume 2: Composites and Nanocomposites from Chitin and Chitosan, Manufacturing and Characterisations Academic Press

Medicinal herbs are rich in vitamins, minerals and antioxidants, and are able to synthesize secondary metabolites with disease preventive properties. It is due to these qualities that herbs have been used throughout history for flavouring and in food, medicine and perfumery preparations. They are also often considered to be safe alternatives to modern medicines because of their healing properties. Though interest in medicinal and aromatic crops is growing worldwide, there is still little focus on the area of leafy medicinal herbs. This book compiles the literature for 23 globally relevant leafy medicinal herbs. Beginning with a general overview and discussion of the importance of these plants, it then handles each herb by chapter. Chapters discuss the botany of the crop, including its history and origin, geographical distribution and morphology, before focusing on the chemical composition and phytochemical attributes. They then review postharvest technology aspects such as processing and value addition, before concluding with the general and pharmacological uses for each crop. A complete compilation of the subject, this book forms a vital resource for researchers, students, farmers and industrialists in the area of leafy medicinal herbs.

Food Hydrocolloids as Encapsulating Agents in Delivery Systems John Wiley & Sons

Biopolymers have the potential to cut carbon emissions and reduce carbon dioxide in the atmosphere. The carbon dioxide released when they degrade can be reabsorbed by plants, which makes them close to carbon neutral. Biopolymers are biodegradable and some are compostable, too. This book presents key topics on biopolymers, including their synthesis, characterization, and physiochemical properties, and discusses their applications in key areas such as biomedicine, agriculture, and environmental engineering. It will serve as an in-depth reference for the biopolymer industry—material suppliers and processors, producers, and fabricators—and engineers and scientists who are designing biopolymers or evaluating options for switching from traditional plastics to biopolymers.

Handbook of Biopolymers Woodhead Publishing

The book gives detailed insights into the application of nanomaterials in food packaging, covering recent innovations as well as future perspectives. The chapters provide a comprehensive review on

the types of nanomaterials used in food packaging and their processing and characterization. In addition, the book discusses the use of nanoparticles in the development of active and functional food packaging and the related environmental and toxicological aspects.

A Promising Strategy CRC Press

This widely expanded second edition offers a compilation of robust, reproducible techniques for the conservation of a wide range of biological materials. It includes novel approaches and protocols that were not preservable when the first edition was published. The book begins with a discussion of long term ex situ conservation of biological resources, the role of biological resource centers, and fundamental principles of freeze-drying and cryopreservation. Each chapter focuses on the preservation of specific biological materials, including proteins, microorganisms, cell lines, and multicellular structures.

Antibacterial Activity of Nanomaterials Academic Press

Reports of the beneficial health effects of some peptides have begun to make their way into the scientific literature. Peptides can act as immunomodulators, and have been shown to have a positive influence on calcium absorption, and on regulation of serum cholesterol. A number of peptides may also possess antimicrobial properties that enhance the body's defense mechanisms, and others may produce inhibitory effects for angiotensin-I-converting enzyme (ACE), leading to novel treatments for blood pressure conditions, heart failure, and diabetes. Modern food biotechnology may also allow for the production of highly important products for those suffering life-altering food allergies. A compendium of cutting-edge information for research scientists and clinicians *Nutraceutical Proteins and Peptides in Health and Disease* is the first book that provides comprehensive discussions on bioactive proteins and peptides in the area of nutraceutical and functional foods. It looks at protein and peptide impact on the body's absorption, defense, regulating, and nervous systems, then delves into hypo-allergenic foods and modern approaches to nutraceutical research and production. With 32 chapters written by 63 scientists working at the frontier of this revolutionizing field, it includes state-of-the-art information on-- The cholesterol-lowering capabilities of proteins and peptides Opioid-like peptides The antibodies found in milk and egg yolks Enzymes derived from traditional Asian fermented foods found useful in novel thrombolytic therapy ACE-inhibitory peptides Enzymatic treatments used to create anti-allergenic food Recent developments in proteomics that are making certain processes economically feasible, including those employed in the binding of bioactive peptides *Nutraceutical Proteins and Peptides in Health and Disease* provides a compendium of

cutting-edge information that can be put to direct use in research, therapy, and production. Biochemists, nutritional scientists, food scientists, and health professionals, as well as graduate students in these fields, will find this book highly useful.

[Aquaculture Biotechnology](#) John Wiley & Sons

This book provides an overview of biocomposite chemistry, chemical modifications, characterization and applications in biomedicine, with emphasis on recent advances in the field. Authored by experts, the chapters discuss the design, development and selection of biomedical composites for a particular therapeutic application, as well as providing insight into the regulatory and clinical aspects of biomedical composite use. While this book is primarily intended for scientists from the fields of medical, pharmaceutical, biotechnological and biomedical engineering, it is also useful as an advanced text for students and research scholars.

[Cryopreservation and Freeze-Drying Protocols](#) Springer

Polysaccharide Carriers for Drug Delivery presents the latest information on the selection of safe materials. Due to reported safety profiles on polysaccharides; they have been the natural choice for investigation. A wide variety of drug delivery and biomedical systems have been studied, however, the related information either concept-wise or application-oriented is scattered, therefore becoming difficult for readers and researchers to digest in a concise manner. This gathering of information will help readers easily comprehend the subject matter. Focuses on biopolysaccharide-based, distinct approaches for drug delivery applications Illustrates new concepts and highlights future scope for clinical development Provides comprehensive, up-to-date information on different aspects of drug delivery technology

Polysaccharide Carriers for Drug Delivery CRC Press

This book is a printed edition of the Special Issue "Antibacterial Activity of Nanomaterials" that was published in *Nanomaterials*

Cutting-Edge Enabling Technologies for Regenerative Medicine Springer Nature

Advances in Insect Physiology publishes volumes containing important, comprehensive and in-depth reviews on all aspects of insect physiology. It is an essential reference source for invertebrate physiologists and neurobiologists, entomologists, zoologists and insect biochemists. First published in 1963, the serial is now edited by Steven Simpson and Jerome Casas to provide an international perspective. Contributions from the leading researchers in entomology Discusses physiological diversity in insects Includes in-depth reviews with valuable information for a variety of entomology disciplines

[The Antibacterial Activity of Honey](#) Springer Science & Business Media

Biopolymer Membranes and Films: Health, Food, Environment, and Energy Applications presents the latest techniques for the design and preparation of biopolymer-based membranes and films, leading to a range of cutting-edge applications. The first part of the book introduces the fundamentals of biopolymers, two-dimensional systems, and the characterization of biopolymer membranes and films, considering physicochemical, mechanical and barrier properties. Subsequent sections are organized by application area, with each chapter explaining how biopolymer-based membranes or films can be developed for specific innovative uses across the health, food, environmental and energy sectors. This book is a valuable resource for researchers, scientists and advanced students

involved in biopolymer science, polymer membranes and films, polymer chemistry and materials science, as well as for those in industry and academia who are looking to develop materials for advanced applications in the health, food science, environment or energy industries. Presents detailed coverage of a range of novel applications in key strategic areas across health, food, environment and energy Considers the difficulties associated with two-dimensional materials Assists the reader in selecting the best materials and properties for specific applications Helps researchers, scientists and engineers combine the enhanced properties of membranes and films with the sustainable characteristics of biopolymer-based materials

Handbook of Tissue Engineering Scaffolds: Volume One CRC Press

This book explores in depth the latest enabling technologies for regenerative medicine. The opening section examines advances in 3D bioprinting and the fabrication of electrospun and electrosprayed scaffolds. The potential applications of intelligent nanocomposites are then considered, covering, for example, graphene-based nanocomposites, intrinsically conductive polymer nanocomposites, and smart diagnostic contact lens systems. The third section is devoted to various drug delivery systems and strategies for regenerative medicine. Finally, a wide range of future enabling technologies are discussed. Examples include temperature-responsive cell culture surfaces, nanopatterned scaffolds for neural tissue engineering, and process system engineering methodologies for application in tissue development. This is one of two books to be based on contributions from leading experts that were delivered at the 2018 Asia University Symposium on Biomedical Engineering in Seoul, Korea - the companion book examines in depth novel biomaterials for regenerative medicine.

From Synthesis to Application CRC Press

Oral Microbiology and Immunology John Wiley & Sons

Advanced Green Composites CRC Press

The Handbook of Chitin and Chitosan: Composites and Nanocomposites from Chitin and Chitosan, Manufacturing and Characterisations, Volume Two, is a must-read for polymer chemists, physicists and engineers interested in the development of ecofriendly micro and nanostructured functional materials based on chitin and their various applications. The book addresses their isolation, preparation and properties, through composites, nanomaterials, manufacturing and characterizations. This is the second of three volumes in a series that contains the latest on the major applications of chitin and chitosan based IPN's, blends, gels, composites and nanocomposites, including environmental remediation, biomedical applications and smart material applications. Provides a comprehensive overview of Chitin and Chitosan materials, from their synthesis and nanomaterials, to their manufacture and applications Volume Two focuses on Chitin and Chitosan composites Includes contributions from leading researchers across the globe and from industry, academia, government and private research institutions Highlights current status and future opportunities

Nanoparticles in Anti-microbial Materials John Wiley & Sons

The book consists of 21 chapters by subject matter experts and is divided into four parts: Soil Microenvironment and Biotransformation Mechanisms; Synergistic effects between substrates and Microbes; Polyhydroxyalakanooates: Resources, Demands and Sustainability; and Cellulose based biomaterials: Benefits and challenges. Included in the chapters are classical bioremediation

approaches and advances in the use of nanoparticles for removal of radioactive waste. The book also discusses the production of applied emerging biopolymers using diverse microorganisms. All chapters are supplemented with comprehensive illustrative diagrams and comparative tables.

A Sophisticated Multifunctional Material Springer Nature

Wine grape pomace (WGP), the byproduct from winemaking, is a good source of polyphenols and dietary fibers, and may be utilized as antioxidant dietary fibers (ADF) for food applications. The objectives of this thesis research were to first determine the phenolic compounds, antioxidant and antimicrobial activities in red WGP under different drying processes for long-term storage, and to further evaluate the feasibility of using WGP as a functional food ingredient in yogurt and salad dressing for enhancing the nutritional value and improving storability of the products. Two types of WGP samples, pomace containing seeds and skins (P) and pomace with skins only (S) from Pinot Noir (PN) and Merlot (M) were studied. Samples were subjected to four different drying conditions: 40 °C conventional and vacuum oven, 25 °C ambient air and freeze dry. Total phenolic content (TPC, by Folin-Ciocalteu assay), anthocyanins (ACY, by pH differential method) and flavanols content (TFC, by vanillin assay) of the samples along with their antioxidant activity (DPPH radical scavenge method, RSA) and antibacterial activity (minimum inhibition concentration, MIC) were determined during 16 weeks of storage under vacuum condition at 15±2 °C. Meanwhile, dietary fiber profile was evaluated by using gravimetric-enzyme method. Results showed that dietary fiber contents of PN-P, PN-S, M-P and M-S were 57-63% d.m. with the majority of insoluble fraction. Freeze dried WGP retained the highest bioactive compounds with TPC 21.19-67.74 mg GAE/g d.m., ACY of 0.35-0.76 mg Mal-3-glu/g d.m., TFC of 30.16-106.61 mg CE/g d.m. and RSA of 22.01-37.46 mg AAE/g d.m., followed with ambient air dried samples. Overall, TPC, TFC and RSA were higher in PN than in M, and higher in pomace than in skins, while reverse results were observed in ACY. All samples lost significant amount of bioactive compounds during storage, in which ambient air and freeze dried samples had TPC reduction of 32-56% and 35-58%, respectively at the end of 16 weeks of storage. RSA in PN-P and M-P remained more than 50 mg TE/g d.m., meaning WGP still met the criteria of ADF definition after 16 weeks of storage. WGP extracts showed higher antibacterial efficiency against *L. innocua* than that of *E. coli* with MIC of 2, 7, 3 and 8% against *L. innocua*, and 3, 6, 4 and 9% against *E. coli* for PN-P, PN-S, M-P and M-S samples, respectively. This study demonstrated that Pinot Noir and Merlot pomace are good sources of ADF even after 16 weeks of storage at 15 °C and vacuum condition. Due to the highest antioxidant activity (RSA 37.46 mg AAE/g) and dietary fiber content (61%), PN-P was selected as ADF to be fortified in yogurt and salad dressing. Three types of WGP: whole powder (WP), liquid extract (LE) and freeze dried extract (FDE) with different concentrations were incorporated into yogurt (Y), Italian (I) and Thousand Island (T) salad dressings. TPC, RSA and dietary fiber content, major quality attributes including pH and peroxide value (PV) during the shelf life and consumer acceptance of fortified products were evaluated. The highest ADF were obtained in 3% WP-Y, 1% WP-I and 2% WP-T samples with the dietary fiber contents of 1.98%, 2.12% and 1.83% and RSA of 935.78, 585.60 and 706.67 mg AAE/kg, respectively. WP fortified products had more dietary fiber content than that of LE and FDE fortified ones because of the insoluble fractions. The pH dropped from 4.52 to 4.32 for 3% WP-Y during three weeks of storage at 4 °C, but remained stable in WGP-I and WGP-T samples after four weeks of storage at 4 °C. Adding

WGP resulted in 35-65% reduction of PV in all samples compared to the control. In WGP-Y, the viscosity increased, but syneresis and lactic acid percentage were stable during storage. The 1%WP-Y, 0.5%WP-I and 1%WP-T samples were mostly liked by consumers. Study demonstrated that WGP can be used as a functional food ingredient for enhancing nutraceutical content and extending shelf-life of the food products. This study provided important information about the economically feasible drying methods for retaining the bioactive compounds in WGP during processing and storage and also suggested that WGP can be utilized as antioxidant dietary fiber to be fortified in consumer products to promote nutritional benefit and extend product shelf-life.

Lactic Acid Bacteria: Genetics, Metabolism and Applications Academic Press

The first book dedicated to the potential applications and unique properties of bacterial cellulose (BC), this seminal work covers the basic science, technology, and economic impact of this bulk chemical as well as the companies and patents that are driving the field. It reviews the biosynthesis and properties of BC, including genetics and characterization; discusses the advancing technology as it relates to product development, bioreactors, and production; and analyzes the economic impact of BC on a diverse range of industry applications, including materials and biomaterials, biological and polymer sciences, and electromechanical engineering.

Electrospun Nanofibers of Polymer Nanocomposite with Cichorium Intybus Extract and Investigating Their Antioxidant and Antibacterial Activities Elsevier

A Brief History of Polymeric Cryogels Vladimir I. Lozinsky Basic Principles of Cryotropic Gelation Vladimir I. Lozinsky, Oguz Okay Synthesis, Structure-Property Relationships of Cryogels Oguz Okay, Vladimir I. Lozinsky Kinetic Analysis of Cryotropic Gelation of Poly(vinyl alcohol)/water Solutions by Small-Angle Neutron Scattering Claudio De Rosa, Finizia Auriemma, Rocco Di Girolamo Cryogels via UV Irradiation Technique Petar D. Petrov, Christo B. Tsvetanov Inorganic Cryogels Oleg A. Shlyakhtin Cryogels for Biotechnological Applications Bo Mattiasson Poly(vinyl alcohol) Cryogels for Biomedical Applications Wankei Wan, A. Dawn Bannerman, Lifang Yang, Helium Mak.

Handbook of Antimicrobial Coatings MDPI

Handbook of Tissue Engineering Scaffolds: Volume One, provides a comprehensive and authoritative review on recent advancements in the application and use of composite scaffolds in tissue engineering. Chapters focus on specific tissue/organ (mostly on the structure and anatomy), the materials used for treatment, natural composite scaffolds, synthetic composite scaffolds, fabrication techniques, innovative materials and approaches for scaffolds preparation, host response to the scaffolds, challenges and future perspectives, and more. Bringing all the information together in one major reference, the authors systematically review and summarize recent research findings, thus providing an in-depth understanding of scaffold use in different body systems. Dedicated to the specialist topic of composite scaffolds, featuring all human body systems Covers basic fundamentals and advanced clinical applications Includes up-to-date information on preparation methodology and characterization techniques Highlights clinical data and case studies

Nanotoxicity John Wiley & Sons

Antimicrobial packaging has recently attracted a great deal of interest from the food industry due to the boost in consumer demand for minimally-processed, preservative-free products. Antimicrobial polymeric packaging systems can be considered an emerging technology that could have an

important impact on shelf life extension and food safety. Novel polymeric-based packaging materials are continually being developed. This book collects carefully chosen examples of the most recent and relevant advances in the preparation and characterization of antimicrobial composites for food packaging applications. Different polymer nanocomposites with improved packaging properties are discussed along with their mechanisms of action. Further, future perspectives for antimicrobial polymeric nanomaterials are provided.

Advances and Multifaceted Applications Elsevier

Biological Synthesis of Nanoparticles and Their Applications gives insight into the synthesis of nanoparticles utilizing the natural routes. It demonstrates various strategies for the synthesis of

nanoparticles utilizing plants, microscopic organisms like bacteria, fungi, algae and so forth. It orchestrates interdisciplinary hypothesis, ideas, definitions, models and discoveries associated with complex cell of the prokaryotes and eukaryotes. Highlights: Discusses biological approach towards the nanoparticle synthesis Describes the role of nanotechnology in the field of medicine and its medical devices Covers application and usage of the chemicals at the molecular level to act as catalysts and binding products for both organic and inorganic Chemical Reactions Reviews application in physics such as solar cells, photovoltaics and other usage Microorganisms can aggregate and detoxify substantial metals because of different reductase enzymes, which can diminish metal salts to metal nanoparticles. The readers after going through this book will have detailed account of mechanism of bio-synthesis of nanoparticles.