Flavonoids And Related Compounds Bioavailability

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Studies in Natural Products Chemistry Athanasios Valavanidis 2013-03-15 Plant polyphenols are considered among the most abundant phytochemicals that are present in human diets, and their regular consumption has been associated with reduced risk of a number of chronic diseases, including cancer, and cardiovascular and neurodegenerative disorders. In the past decades, plant polyphenols have drawn increasing scientific attention due to their potent antioxidant and other properties and their marked effects in the prevention of various oxidative stress-associated diseases. Recently, the polyphenolic extracts from different plants have become a major area of health- and medical-related research. This review provides an update and comprehensive overview of various plant polyphenolic compounds, and the quantification of their antioxidant properties, anticancer activities, and therapeutic effects. Also, the review discusses the current scientific knowledge of various plant polyphenols to inhibit tumorigenesis in animal models and to modulate cell signaling pathways involved in inflammation and the development of malignant tumors, and related biochemical interventions in cell function under both normal and pathological conditions. We present in vitro and in vivo studies (in experimental animals) in which polyphenols showed increased anticancer potential. Also, numerous epidemiological research data and findings from human intervention studies, as well preclinical studies supporting cancer prevention mechanisms. Lastly, we present recent clinical trials for anticancer action of certain polyphenols that showed promising anticancer and therapeutic properties.

Antioxidant Status, Diet, Nutrition, and Health Andreas M. Papas 2019-10-16 This is the first book to integrate the biological, nutritional, and health aspects of antioxidant status. Fifty contributors integrate and transfer the knowledge of free radicals and antioxidants from the test tube to the laboratory of the biologist, clinical nutritionist, and medical researcher, as well as to the office of the dietician, nutritionist, and physician. Topics examined include factors affecting and methods for evaluating antioxidant status in humans; effect of diet and physiological stage (infancy, aging, exercise, alcoholism, HIV infection, etc.) on antioxidant status; and the role of antioxidant status in nutrition, health, and disease.

Nutraceuticals Alexandru Grumezescu 2016-11-08 Nutraceuticals, the fourth volume in the Nanotechnology in the Agri-Food Industry series, is an invaluable resource for anyone in the food industry who needs the most current information about scientific advances in this field. Nutraceuticals are gaining significant attention because of their apparent safety, as well as their nutritional and therapeutic uses. Scientific indications have reinforced dietary interposition as an effective implement for a healthy lifestyle. Bioactive components have been shown to exhibit antioxidant, anti-inflammatory, antimicrobial, hypocholesterolemic, hypoglycemic, anti-mutagenic, and anti-carcinogenic roles in the living system. Research professionals, professors, and students will all find this book useful. Includes the most up-to-date research on nanotechniques and the applications most useful in the food industry Presents various natural and synthetic polymer-based nanoparticulate systems and their conjugates to the food industry including proteins, lipids, carbohydrates, and other biopolymers for applications Provides uses of nanoparticle uptake in ingredients as well as the potential side effects of nanoparticle carriers Covers potential benefits and methods of risk assessment for food safety

Berries and Berry Bioactive Compounds in Promoting Health Dorothy Klimis-Zacas 2022-06-01 This comprehensive book brings together international experts to review state-of-the-art research findings on the exponentially growing area of berries and berry bioactive compounds in promoting health.

Innovative Thermal and Non-Thermal Processing, Bioaccessibility and Bioavailability of Nutrients and Bioactive Compounds Francisco J. Barba 2019-06-07 Innovative Thermal and Nonthermal Processing, Bioacessibility and Bioavailability of Nutrients and Bioactive Compounds presents the implications of conventional and innovative processing on the nutritional and health aspects of food products. Chapters cover the relationship between gastronomic science, nutrition and food science in the development of healthy products, introduce the most commonly used conventional and innovative approaches to preserve foods and extract valuable compounds, describe how processing affects bioavailability and bioaccessibility of lipids, particularly fatty acids, protein, amino acids and carbohydrates, and discuss how processing affects bioavailability and bioaccessibility of minerals, water-soluble vitamins, and fat soluble vitamins. Final sections cover processing, bioavailability and bioaccessibility of bioactive compounds, describing how processing (conventional and non-conventional) is affecting to bioavailability and bioaccessibility of bioactive sulphur compounds, polyphenols, flavonoids, and bioactive peptides. Presents the implications of conventional and innovative processing on the nutritional and health aspects of food products Introduces the most commonly used conventional and innovative approaches to preserve foods and extract valuable compounds Explains how processing (conventional and non-conventional) affects the bioavailability and bioaccessibility of bioactive sulphur compounds, polyphenols, flavonoids and bioactive peptides

Functional Foods and Nutraceuticals in Metabolic and Non-communicable Diseases Ram B. Singh 2021-11-30 Functional Foods and Nutraceuticals in Metabolic and Non-communicable Diseases presents strategies for the prevention of non-communicable diseases and undernutrition through the use of functional foods and nutraceuticals. Research has shown that the use of certain functional foods and nutraceuticals, including spices, herbs, and millets, animal foods and plant foods can play a role in the treatment and prevention of various diseases and in health promotion. Finally, the book explores epigenetic modulation as a new

method for the development of functional foods and functional farming. Intended for nutritionists, food scientists and those working in related health science professions, this book contributes to the discussions focused on nutritional transition, globalization, how to administer foods in the treatment of metabolic syndrome, hypertension, diabetes, heart attacks, neuropsychiatric disorders, bone and joint diseases, and carcinogenesis. Places emphasis on food diversity to provide perfect combinations of nutritional ingredients Presents the utility and necessity of functional food production for health promotion Offers suggestions to increase functional food production while simultaneously decreasing production costs

Oxidative Stress and Dietary Antioxidants in Neurological Diseases Colin R. Martin 2020-06-12 Oxidative Stress and Dietary Antioxidants in Neurological Diseases provides an overview of oxidative stress in neurological diseases and associated conditions, including behavioral aspects and the potentially therapeutic usage of natural antioxidants in the diet. The processes within the science of oxidative stress are described in concert with other processes, such as apoptosis, cell signaling, and receptor mediated responses. This approach recognizes that diseases are often multifactorial and oxidative stress is a single component of this. The book examines basic processes of oxidative stress—from molecular biology to whole organs—relative to cellular defense systems, and across a range of neurological diseases. Sections discuss antioxidants in foods, including plants and components of the diet, examining the underlying mechanisms associated with therapeutic potential and clinical applications. Although some of this material is exploratory or preclinical, it can provide the framework for further in-depth analysis or studies via well-designed clinical trials or the analysis of pathways, mechanisms, and components in order to devise new therapeutic strategies. Very often oxidative stress is a feature of neurological disease and associated conditions which either centers on or around molecular and cellular processes. Oxidative stress can also arise due to nutritional imbalance during a spectrum of timeframes before the onset of disease or during its development. Offers an overview of oxidative stress from molecular biology to whole organs Discusses the potentially therapeutic usage of natural antioxidants in the patient diet Provides the framework for further in-depth analysis or studies of potential treatments

Recent Advances in Polyphenol Research Annalisa Romani 2014-10-20 Plant polyphenols are secondary metabolites that constitute one of the most common and widespread groups of natural products. They express a large and diverse panel of biological activities including beneficial effects on both plants and humans. Many polyphenols, from their structurally simplest representatives to their oligo/polymeric versions (also referred to as vegetable tannins) are notably known as phytoestrogens, plant pigments, potent antioxidants, and protein interacting agents. Sponsored by the scholarly society Groupe Polyphénols, this publication, which is the fourth volume in this highly regarded Recent Advances in Polyphenol Research series, is edited by Annalisa Romani, Vincenzo Lattanzio, and Stéphane Quideau. They have once again, like their predecessors, put together an impressive collection of cutting-edge chapters written by expert scientists, internationally respected in their respective field of polyphenol sciences. This Volume 4 highlights some of the latest information and opinion on the following major research topics about polyphenols: Biosynthesis and genetic manipulation Ecological role of polyphenols in plant defense Actions of polyphenols in human health protection Physical organic chemistry and organic synthesis Chemists, biochemists, plant scientists, pharmacognosists and pharmacologists, biologists, ecologists, food scientists and nutritionists will all find this book an invaluable resource. Libraries in all universities and research institutions where these disciplines are studied and taught should have copies on

their bookshelves.

Applied Biocatalysis Lutz Hilterhaus 2016-06-14 This reference book originates from the interdisciplinary research cooperation between academia and industry. In three distinct parts, latest results from basic research on stable enzymes are explained and brought into context with possible industrial applications. Downstream processing technology as well as biocatalytic and biotechnological production processes from global players display the enormous potential of biocatalysts. Application of "extreme" reaction conditions (i.e. unconventional, such as high temperature, pressure, and pH value) - biocatalysts are normally used within a well defined process window - leads to novel synthetic effects. Both novel enzyme systems and the synthetic routes in which they can be applied are made accessible to the reader. In addition, the complementary innovative process technology under unconventional conditions is highlighted by latest examples from biotech industry.

Flavonoids Oyvind M. Andersen 2005-12-09 Advances in the flavonoid field have been nothing short of spectacular over the last 20 years. While the medical field has noticed flavonoids for their potential antioxidant, anticancer and cardioprotectant characteristics, growers and processors in plant sciences have utilized flavonoid biosynthesis and the genetic manipulation of the flavonoid pa

Dietary Polyphenols Francisco A . Tomás-Barberán 2020-10-20 Presents recent research on metabolism and the health effects of polyphenols Consumer interest in the health benefits of many phenolic compounds found in plant foods and derivatives has grown considerably in recent years, giving rise to an increased demand for functional foods. Although preclinical and observational studies have promoted the protective properties of polyphenols for a range of chronic diseases, evidence has shown that most dietary polyphenols have little bioavailability. Once ingested, most of them are metabolized by either the intestinal enzymes or by the gut microbiota and then undergo extensive phase-II metabolism reaching significant concentrations of conjugated metabolites. They remain in the systemic circulation and target systemic tissues where trigger biological effects. The polyphenol-derived metabolites produced in humans are dependent upon the composition of the gut microbiota and the subject genetics. Thus all the metabolites do not show the same biological activity in different individuals. To fully understand the health effects of polyphenols, further clinical investigations are required. Dietary Polyphenols describes the latest findings on the polyphenol metabolism and reviews the current evidence on their health effects and that of their bioavailable metabolites. Emphasizing the importance of interindividual variability and the critical role of gut microbiota, this authoritative volume features contributions from recognized experts in the field, exploring specific families of extractable and non-extractable phenolic compounds that exhibit potential health effects. Topics include structural diversity of polyphenols and distribution in foods, bioavailability and bioaccessibility of phenolics, metabolism, and gastrointestinal absorption of various metabolites and their health effects. This comprehensive volume: Discusses the bioavailability, bioaccessibility, pharmacokinetics studies, and microbial metabolism of different groups of phenolic compounds Examines the interaction between polyphenols and gut microbiota Describes analytical methods for identifying and quantifying polyphenols in foods and biological samples Reviews recent epidemiological and clinical intervention studies showing protective effects of polyphenols Dietary Polyphenols: Metabolism and Health Effects is an important resource for scientists working in the area of dietary polyphenols and health effects, microbiota, and their interaction with other nutritional

compounds, and for health professionals, nutritionists, dieticians, and clinical researchers with interest in the role of polyphenols in the prevention and treatment of chronic diseases

Flavonoids and Related Compounds Jeremy P. E. Spencer 2012-04-24 Flavonoids exert a multiplicity of biological effects on humans and can have beneficial implications for numerous disease states. Flavonoids and Related Compounds: Bioavailability and Function examines current knowledge regarding the absorption, metabolism, and bioavailability of individual flavonoids and related phenolic compounds. Profiling the latest evidence of their impact on various human pathological conditions, the book summarizes current thinking with regard to the biotransformation and conjugation of individual compounds in the gastrointestinal tract, liver, large intestine, and cells. It highlights a topic that has been largely ignored—namely the extent to which dietary phenolics components undergo metabolism in the large intestine. It also explores the generation of bacterially derived metabolites. Individual chapters discuss which metabolites enter the circulatory system and are likely to offer protective actions against human diseases. Edited by internationally recognized leaders in the field, the book presents contributions by a panel of experts who demonstrate the potential of flavonoids in ameliorating a range of disease states, including cardiovascular disease, Alzheimer's and Parkinson's disease and other neurodegenerative disorders, and cancer. The research presented in this volume provides a reliable starting point for further inquiry and experimentation.

Issues in Medical Microbiology, Mycology, Virology, and Molecular Medicine: 2011 Edition 2012-01-09 Issues in Medical Microbiology, Mycology, Virology, and Molecular Medicine: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Medical Microbiology, Mycology, Virology, and Molecular Medicine. The editors have built Issues in Medical Microbiology, Mycology, Virology, and Molecular Medicine: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Medical Microbiology, Mycology, Virology, and Molecular Medicine in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Medical Microbiology, Mycology, Virology, and Molecular Medicine: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

Nutritional Influences on Bone Health Peter Burckhardt 2013-03-20 Nutritional Influences on Bone Health presents a collection of papers from the 8th International Symposium on Nutritional Aspects of Osteoporosis, the primary forum for and only regular meeting exclusively devoted to the topic of nutritional influences on bone health. The outcome is a fusion of the most current and up-to-date research in this area. Key themes include the permeation of the Western diet across the globe, calcium, vitamin D and acid-base balance. Written by authorities on the impact of nutrition on bone health, Nutritional Influences on Bone Health brings the reader the emerging trends, new messages and the latest scientific data in the field, to inform future research and clinical practice. This comprehensive, well researched volume is an essential reference for professionals in the field of bone health and nutrition.

Dictionary of Flavonoids with CD-ROM John Buckingham 2015-03-13 Widely distributed throughout plant families, flavonoids give many flowers and fruits their vibrant colors. They also play a role in protecting the plants from microbe and insect attacks. More importantly, the consumption of foods containing flavonoids has been linked to numerous health benefits. Recent research indicates that flavonoids can be nut

Antioxidants in Sport Nutrition Manfred Lamprecht 2014-09-17 The use of antioxidants in sports is controversial due to existing evidence that they both support and hinder athletic performance. Antioxidants in Sport Nutrition covers antioxidant use in the athlete´s basic nutrition and discusses the controversies surrounding the usefulness of antioxidant supplementation. The book also stresses how antioxidants may affect immunity, health, and exercise performance. The book contains scientifically based chapters explaining the basic mechanisms of exercise-induced oxidative damage. Also covered are methodological approaches to assess the effectiveness of antioxidant treatment. Biomarkers are discussed as a method to estimate the bioefficacy of dietary/supplemental antioxidants in sports. This book is useful for sport nutrition scientists, physicians, exercise physiologists, product developers, sport practitioners, coaches, top athletes, and recreational athletes. In it, they will find objective information and practical guidance.

Phytochemicals Venketeshwer Rao 2012-03-21 Phytochemicals are biologically active compounds present in plants used for food and medicine. A great deal of interest has been generated recently in the isolation, characterization and biological activity of these phytochemicals. This book is in response to the need for more current and global scope of phytochemicals. It contains chapters written by internationally recognized authors. The topics covered in the book range from their occurrence, chemical and physical characteristics, analytical procedures, biological activity, safety and industrial applications. The book has been planned to meet the needs of the researchers, health professionals, government regulatory agencies and industries. This book will serve as a standard reference book in this important and fast growing area of phytochemicals, human nutrition and health.

Flavonoids and Other Polyphenols 2001-06-05 The critically acclaimed laboratory standard for more than forty years, Methods in Enzymology is one of the most highly respected publications in the field of biochemistry. Since 1955, each volume has been eagerly awaited, frequently consulted, and praised by researchers and reviewers alike. Now with more than 300 volumes (all of them still in print), the series contains much material still relevant today-truly an essential publication for researchers in all fields of life sciences. This volume presents an extensive collection of new methodologies to aid progress in solving unanswered questions concerning the bioavailability and metabolism of flavonoids and polyphenols, their biochemical and molecular biological effects on cell regulation, and their effects on health. Major topics in this volume include sources, characterization, analytical methods, bioavailability, antioxidant action, and biological activity.

Flavonoids in Health and Disease, Second Edition, Catherine A. Rice-Evans 2003-05-20 Revised and expanded throughout, this blue-ribbon reference emphasizes the latest developments in the identification, utilization, and analysis of flavonoids for the prevention of disease and maintenance of good health-examining the processes involved in the absorption, metabolism, distribution, and excretion of these compounds and the impact of biotransformation on flavonoid function.

Reptiles Robert Matero 1994-01-01 Describes the physical characteristics, habits, and natural environment of various species of reptiles, including crocodiles and alligators, snakes, lizards, and turtles.

Plant and Human Health, Volume 2 Munir Ozturk 2019-01-22 Early anthropological evidence for plant use as medicine is 60,000 years old as reported from the Neanderthal grave in Iraq. The importance of plants as medicine is further supported by archeological evidence from Asia and the Middle East. Today, around 1.4 billion people in South Asia alone have no access to modern health care, and rely instead on traditional medicine to alleviate various symptoms. On a global basis, approximately 50 to 80 thousand plant species are used either natively or as pharmaceutical derivatives for life-threatening conditions that include diabetes, hypertension and cancers. As the demand for plant-based medicine rises, there is an unmet need to investigate the quality, safety and efficacy of these herbals by the “scientific methods”. Current research on drug discovery from medicinal plants involves a multifaceted approach combining botanical, phytochemical, analytical, and molecular techniques. For instance, high throughput robotic screens have been developed by industry; it is now possible to carry out 50,000 tests per day in the search for compounds which act on a key enzyme or a subset of receptors. This and other bioassays thus offer hope that one may eventually identify compounds for treating a variety of diseases or conditions. However, drug development from natural products is not without its problems. Frequent challenges encountered include the procurement of raw materials, the selection and implementation of appropriate high-throughput bioassays, and the scaling-up of preparative procedures. Research scientists should therefore arm themselves with the right tools and knowledge in order to harness the vast potentials of plant-based therapeutics. The main objective of Plant and Human Health is to serve as a comprehensive guide for this endeavor. Volume 1 highlights how humans from specific areas or cultures use indigenous plants. Despite technological developments, herbal drugs still occupy a preferential place in a majority of the population in the third world and have slowly taken roots as alternative medicine in the West. The integration of modern science with traditional uses of herbal drugs is important for our understanding of this ethnobotanical relationship. Volume 2 deals with the phytochemical and molecular characterization of herbal medicine. Specifically, It will focus on the secondary metabolic compounds which afford protection against diseases. Lastly, Volume 3 focuses on the physiological mechanisms by which the active ingredients of medicinal plants serve to improve human health. Together this three-volume collection intends to bridge the gap for herbalists, traditional and modern medical practitioners, and students and researchers in botany and horticulture.

Characterization of Nanoencapsulated Food Ingredients 2020-03-07 Characterization of Nanoencapsulated Food Ingredients, Volume Four in the Nanoencapsulation in the Food Industry series, introduces some of the common instrumental analysis and characterization methods for the evaluation of nanocarriers and nanoencapsulated ingredients in terms of their morphology, size distribution, surface charge and composition, appearance, physicochemical and rheological properties, and antioxidant activity. Divided in five sections, the book covers the qualitative and quantitative properties of nanoencapsulated food ingredients by different characterization techniques, besides correlating nanocarrier behavior to their physicochemical and functional properties. Authored by a team of global experts in the fields of nano- and microencapsulation of food, nutraceutical, and pharmaceutical ingredients, this title is of great value to those engaged in the various fields of nanoencapsulation and nanodelivery systems. Shows how different properties of nanoencapsulated food ingredients can be analyzed

Presents the mechanism of each characterization technique Investigates how the analytical results can be understood with nanoencapsulated ingredients

Effects of Polyphenol-Rich Foods on Human Health Giuseppe Grosso 2018-08-27 This book is a printed edition of the Special Issue "Effects of Polyphenol-Rich Foods on Human Health" that was published in Nutrients

Innovation Strategies in the Food Industry Charis Michel Galanakis 2016-06-10 Innovation Strategies in the Food Industry: Tools for Implementation is an indispensable resource for the food industry to introduce innovations in the market, stand out from the competition and satisfy consumer demands. This reference reports the most trend advances of the food science, while providing insights and ideas to overcome limitations for their actual implementation in the industry. Innovation Strategies in the Food Industry: Tools for Implementation fills the gap between strategy developers and technical R&D associates by interpreting the technological adequacy of innovative techniques with the reaction of related consumers. It deals with the interaction of academia and industry, describing innovation and long term R&D strategies to overcome bottlenecks during know-how transfer between these two sectors. Reports the development of cooperative networks for the commercialization of new food products Includes the concept of open innovation, denoting the particular issues that SMEs are facing during their innovation efforts and suggest respective innovation policies in the agrifood sector Discusses the challenges of introducing innovations in traditional food products Describes the sustainability problems and restrictions (safety and energy issues) of innovations in food processing and emerging technologies Exploits the cutting-edge innovation cases of food science and their applications in the food industry Addresses the observed problems and provides solutions to meet market and consumers' needs

Medicinal Natural Products Paul M. Dewick 2002-01-03 This guide covers classes of natural products in medicine, whether derived from plants, micro-organisms or animals. Structured according to biosynthetic pathway, it is written from a chemistry-based approach.

Dietary Polyphenols Francisco A . Tomás-Barberán 2020-12-15 Presents recent research on metabolism and the health effects of polyphenols Consumer interest in the health benefits of many phenolic compounds found in plant foods and derivatives has grown considerably in recent years, giving rise to an increased demand for functional foods. Although preclinical and observational studies have promoted the protective properties of polyphenols for a range of chronic diseases, evidence has shown that most dietary polyphenols have little bioavailability. Once ingested, most of them are metabolized by either the intestinal enzymes or by the gut microbiota and then undergo extensive phase-II metabolism reaching significant concentrations of conjugated metabolites. They remain in the systemic circulation and target systemic tissues where trigger biological effects. The polyphenol-derived metabolites produced in humans are dependent upon the composition of the gut microbiota and the subject genetics. Thus all the metabolites do not show the same biological activity in different individuals. To fully understand the health effects of polyphenols, further clinical investigations are required. Dietary Polyphenols describes the latest findings on the polyphenol metabolism and reviews the current evidence on their health effects and that of their bioavailable metabolites. Emphasizing the importance of interindividual variability and the critical role of gut microbiota, this authoritative volume features contributions from recognized experts in the field, exploring specific families of extractable and non-extractable phenolic compounds that

exhibit potential health effects. Topics include structural diversity of polyphenols and distribution in foods, bioavailability and bioaccessibility of phenolics, metabolism, and gastrointestinal absorption of various metabolites and their health effects. This comprehensive volume: Discusses the bioavailability, bioaccessibility, pharmacokinetics studies, and microbial metabolism of different groups of phenolic compounds Examines the interaction between polyphenols and gut microbiota Describes analytical methods for identifying and quantifying polyphenols in foods and biological samples Reviews recent epidemiological and clinical intervention studies showing protective effects of polyphenols Dietary Polyphenols: Metabolism and Health Effects is an important resource for scientists working in the area of dietary polyphenols and health effects, microbiota, and their interaction with other nutritional compounds, and for health professionals, nutritionists, dieticians, and clinical researchers with interest in the role of polyphenols in the prevention and treatment of chronic diseases.

Natural Products and Cancer Signaling: Isoprenoids, Polyphenols and Flavonoids 2014-12-03 Natural compounds from a variety of natural resources including plants have emerged as important source of anticancer drug development. This special issue will highlight the significant advance in elucidating mechanisms of action of these natural compounds, focusing especially on isoprenoids and polyphenols/flavonoids. Informs and updates on all the latest developments in the field Contributions from leading authorities and industry experts

Flavonoids in Health and Disease, Second Edition Catherine A. Rice-Evans 2003-05-20 Revised and expanded, this blue-ribbon reference emphasizes the latest developments in the identification, utilization, and analysis of flavonoids for the prevention of disease and maintenance of good health. The book examines the processes involved in the absorption, metabolism, distribution, and excretion of these compounds and the impact of biotransformation on flavonoid function.The Second Edition contains new discussions on the potential of dietary flavonoids to attenuate neurological dysfunction and degeneration, developments in gene expression and genomics for identification of therapeutic targets and markers of disease, and the mechanisms regulating flavonoid bioavailability.

Plant-Based Functional Foods and Phytochemicals Megh R. Goyal 2021-03-30 Plant-Based Functional Foods and Phytochemicals: From Traditional Knowledge to Present Innovation covers the importance of the therapeutic health benefits of phytochemicals derived from plants. It discusses the isolation of potential bioactive molecules from plant sources along with their value to human health. It focuses on physical characteristics, uniqueness, uses, distribution, traditional and nutritional importance, bioactivities, and future trends of different plant-based foods and food products. Functional foods, beyond providing basic nutrition, may offer a potentially positive effect on health and cures for various disease conditions, such as metabolic disorders (including diabetes), cancer, and chronic inflammatory reactions. The volume looks at these natural products and their bioactive compounds that are increasingly utilized in preventive and therapeutic medications and in the production of pharmaceutical supplements and as food additives to increase functionality. It also describes the concept of extraction of bioactive molecules from plant sources, both conventional and modern extraction techniques, available sources, biochemistry, structural composition, and potential biological activities.

Phenolic Compounds Marcos Soto-Hernández 2017-03-15 Phenolic compounds as a large class of metabolites found in plants have attracted attention since long time ago due to their

properties and the hope that they will show beneficial health effects when taken as dietary supplements. This book presents the state of the art of some of the natural sources of phenolic compounds, for example, medicinal plants, grapes or blue maize, as well as the modern methods of extraction, quantification, and identification, and there is a special section discussing the treatment, removal, and degradation of phenols, an important issue in those phenols derived from the pharmaceutical or petrochemical industries.

Phytochemicals from Medicinal Plants Hafiz Ansar Rasul Suleria 2019-11-15 Phytochemicals from Medicinal Plants: Scope, Applications and Potential Health Claims explores the importance of medicinal plants and their potential benefits for human health. This book looks at bioactive compounds from medicinal plants, the health benefits of bioactive compounds, the applications of plant-based products in the food and pharmaceutical industries. The first section discusses available sources of bioactive compounds from medicinal plants, biochemistry, structural composition, potential biological activities, and how bioactive molecules are isolated from medicinal plants. The authors examine the applications of bioactive molecules from a health perspective, looking at the pharmacological aspects of medicinal plants, the phytochemical and biological activities of different natural products, and ethnobotany/and medicinal properties, and also present a novel dietary approach for disease management. The book goes on to examine the plant-based products are used and can be used in various sectors of the food and pharmaceutical industries.

Flavonoids José Justino 2017-08-23 Flavonoids are abundant secondary metabolites found in plants and fungi that have various roles in these organisms, including pigmentation, cell signalling, plant defence and inter-organism communication. Due to their abundance in nature, flavonoids are also important components of the human diet, and the last four decades have seen an intense study focused on the structure characterization of flavonoids and on their roles in mammal metabolism. This book reviews most of the well-established activities of flavonoids, and we also present more recent research studies on the area of flavonoids, including the chemical aspects of structure characterization of flavonoids, the biosynthesis of flavonoids in model plants as well as their role in abiotic stress situations and in agriculture, the role of flavonoids in metabolism and health and their importance in foods, from consumption to their use as bioactive components.

The Science of Flavonoids Erich Grotewold 2007-12-07 This is the only book of its kind to provide an overview of the science of flavonoids in plants.

Polyphenols in Human Health and Disease Ronald Ross Watson 2018-08-06 Polyphenols: Mechanisms of Action in Human Health and Disease, Second Edition describes the mechanisms of polyphenol antioxidant activities and their use in disease prevention. Chapters highlight the anti-inflammatory activity of polyphenols on key dendritic cells, how they modulate and suppress inflammation, and how they are inactivated or activated by metabolism in the gut and circulating blood. Polyphenols have proven effective for key health benefits, including bone health, organ health, cardiac and vascular conditions, absorption and metabolism, and cancer and diseases of the immune system. They are a unique group of phytochemicals that are present in all fruits, vegetables and other plant products. This very diverse and multi-functional group of active plant compounds contain powerful antioxidant properties and exhibit remarkable chemical, biological and physiological properties, including cancer prevention and cardio-protective activities. Expands coverage on green tea, cocoa,

wine, cumin and herbs Outlines their chemical properties, bioavailability and metabolomics Provides a self-teaching guide to learn the mechanisms of action and health benefits of polyphenols

Biotechnological Production of Bioactive Compounds Madan L. Verma 2019-07-20 Biotechnological Production of Bioactive Compounds provides insights on the most recent innovations, trends, concerns, solutions and practical challenges encountered in the fields of enzyme technology and nanobiotechnology for the production of bioactive materials with extra health benefits. As nanobiotechnology has improved the bioactive extraction process significantly, many bioactives, including bioflavonoids, omega-3 fatty acids, biopigments and low calorie sugar substitutes are a pivotal part of the food industry. The book highlights the production of extra health benefits “bioactives’’ from plants and microbes and explains how the extraction efficiency of bioactives molecules improves significantly with the recent advances in nanobiotechnology. Researchers in the fields of biochemical engineering, biotechnology, bioremediation, environmental sustainability and those in pharma industries will find the information in this book very helpful and illuminating. Outlines technological advances in bioactives extraction Covers bioflavonoids, biopigments, omega-3-fatty acids and low sugar substitutes Explains the mechanisms of Green cargo (biogenic nanoparticles) for the delivery of bioactive molecules

Plant Physiological Aspects of Phenolic Compounds Marcos Soto-Hernández 2019-09-04 Phenolic compounds are considered secondary metabolites within the physiology of a plant. They have different functions, such as pollination systems, sun protection, protection against pathogens and diseases, etc.Research on these compounds has increased due to the number of molecules they can include and the different biological activities they demonstrate. It is important to know the methods of extracting molecules, the biosynthesis routes, and their relationship with activities that can benefit from their consumption. Therefore, the book includes chapters that provide information on extraction and optimization techniques, biosynthetic pathways, and the identification and characterization of miRNAs involved in the regulation of their biosynthesis.

Cranberry Flavonoids Yifei Wang 2016 American cranberry (Vaccinium macrocarpon), a North American native species, possesses various secondary metabolites with important implications for human health. Flavonoid compounds, as major cranberry secondary metabolites, also occur widely across other different plant species, and have important functions for plant growth, reproduction and survival. Major cranberry flavonoids consist of anthocyanins, flavonols and flavan-3-ols (proanthocyanidins, PACs). Varied in their structures, the three flavonoid subgroups have been associated with various human health benefits both in vitro and in vivo. The aim of the dissertation is to characterize and illustrate the natural occurrence of these flavonoid compounds in cranberry, and to discuss their bioactivity against cancer disease as well as bioavailability in human body. The objectives of the dissertation were to: (1) quantify and characterize flavonoids across fruit development in cranberry, (2) better define quantification of PACs using the 4-dimethylaminocinamaldehyde (DMAC) spectrophotometric assay, (3) evaluate cytotoxicity and molecular basis of activity of specific flavonoid compounds toward ovarian cancer cell lines, and (4) evaluate the bioavailability of cranberry flavonoids. The dissertation will first focus on the natural occurrence and analysis of different cranberry flavonoids in cranberry. Both variety and harvest date significantly affect the levels of PACs and anthocyanins in cranberry cultivars. PACs occur as the most abundant flavonoids, with

levels of decreasing during fruit development and early ripening, and slightly increasing at late fruit maturation. Anthocyanins increase sharply during fruit maturation, while flavonol concentrations remain consistent over entire season. Quantification of PACs in plant and food materials often utilizes DMAC spectrophotometric assay which has been considered to offer ease, high sensitivity and selectivity. However, in the course of research for this dissertation it was found that individual PAC monomers and oligomers with various structural variations exhibited differential molar absorption coefficients (MACs); the value of MAC is affected by both degree-of-polymerization (DP) and inter-flavan linkage type and position. Individual cranberry PACs and flavonols showed differential cytotoxicity against two ovarian cancer cell lines. The two most active cranberry flavonoids, quercetin aglycone and PAC DP-9 (nonamer), exhibited promising in vitro cytotoxic and anti-proliferative properties. They induced cell apoptosis, cell cycle arrest, cellular caspase-3 activation and PARP deactivation; in addition, they increased cancer cells' sensitivity to cisplatin. Urine clearance of cranberry flavonol glycosides and PACs were determined in female subjects following cranberry juice consumption. While PACs were not detected, five flavonol glycosides common in cranberry were identified. Quercetin-3-galactoside, the most abundant cranberry flavonol, exhibited highest peak urine concentration, followed by quercetin-3-rhamnoside, quercetin-3-arabinoside, myricetin-3-arabinoside and myricetin-3-galactoside. Quercetin-3-arabinoside showed delayed clearance compared to other flavonols. These observations suggest that both aglycone and conjugated sugar moiety structures mediate the flavonol's bioavailability.

Bioactive Molecules in Food Jean-Michel Mérillon 2019-04-01 This reference work provides comprehensive information about the bioactive molecules presented in our daily food and their effect on the physical and mental state of our body. Although the concept of functional food is new, the consumption of selected food to attain a specific effect existed already in ancient civilizations, namely of China and India. Consumers are now more attentive to food quality, safety and health benefits, and the food industry is led to develop processed- and packaged-food, particularly in terms of calories, quality, nutritional value and bioactive molecules. This book covers the entire range of bioactive molecules presented in daily food, such as carbohydrates, proteins, lipids, isoflavonoids, carotenoids, vitamin C, polyphenols, bioactive molecules presented in wine, beer and cider. Concepts like French paradox, Mediterranean diet, healthy diet of eating fruits and vegetables, vegan and vegetarian diet, functional foods are described with suitable case studies. Readers will also discover a very timely compilation of methods for bioactive molecules analysis. Written by highly renowned scientists of the field, this reference work appeals to a wide readership, from graduate students, scholars, researchers in the field of botany, agriculture, pharmacy, biotechnology and food industry to those involved in manufacturing, processing and marketing of value-added food products.

Phenolic Compounds Marcos Soto-Hernández 2017-03-08 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.

Plant Phenolics and Human Health IUBMB 2009-10-22 A collection of current knowledge of phytochemicals and health Interest in phenolic phytochemicals has increased as scientific studies indicate these compounds exhibit potential health benefits. With contributions from world leaders in this research area, Plant Phenolics and Human Health: Biochemistry, Nutrition, and Pharmacology offers an essential survey of the current knowledge on the capacity of specific micronutrients present in ordinary diets to fight disease. The coverage in this resource: Explains the presence and biochemical properties of phenolics present in fruits and vegetables, as well as in foods derived from their plant sources Provides biochemical explanations on how certain plant phenolics fight cardiovascular and neurodegenerative diseases, cancer, and other widespread pathologies Focuses on certain phenolics, e.g., flavonoids, stilbenes, and curcuminoids, and provides insights on the biochemical bases used to define their significance in the diet as well as their recommended consumption requirements and toxicity Appropriate for graduate and upper-level undergraduate courses in human and animal nutrition, basic nutritional biology, physiology, pharmacology, and other health-related disciplines, Plant Phenolics and Human Health: Biochemistry, Nutrition, and Pharmacology serves as both an invaluable supplementary classroom text and a self-teaching guide for professionals interested in defining the association between diet and health from classical, alternative, and complementary biomedical perspectives.