

Functional foods in the USA: emphasis on probiotic foods

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Abstract

The role that functional foods might play in enhancing human health is continuing to develop. Comprehensive approaches, which will enable scientists both to understand the total human physiological response to diet (through application of human genomics and metabolomics) and evaluate health maintenance rather than disease incidence, will advance this field greatly. In the United States, functional foods remain of interest to consumers, although there is currently no legal definition of a functional food. One functional ingredient, probiotics, shows much promise as a health-promoting addition to foods, or as a basis for dietary supplements. A growth industry in the United States, the probiotics industry must develop a proactive policy in order to bolster consumer confidence in commercial probiotic products. Many publications suggest that commercial probiotic products do not comply with label claims. This article seeks to examine probiotics as functional food ingredients and the regulatory framework for labelling and describing the benefits of functional foods, as well as dietary supplements.

Keywords: probiotic, functional food, regulatory, dietary supplement, *Lactobacillus*, *Bifidobacterium*

1. Introduction

Quit worrying about your health. It'll go away.

American humorist, Robert Orben.

There is a fundamental awareness among all cultures that what we eat matters. Unfortunately, the dietary advice received by modern Americans is anything but clear, since emerging science is reported in the media as established fact and public health policy is frequently influenced by politics (Taubes 2001). 'A consistent feature of news about food...has been a lack of context in the reporting of food news, an absence of perspective necessary for consumers to actually make use of the information', states a report by the International Food Information Council (IFIC) regarding US food news coverage (IFIC 2003).

In all fairness, however, making general dietary recommendations to the public today is a difficult undertaking, with the focus for nutrition having shifted from concentration on single nutrient deficiency diseases to sustaining health and preventing chronic disease. German *et al.* (2003) state that 'the importance of diet to health has become even more obvious with the realization that many of life's modern diseases are the results of subtle but chronic metabolic imbalances related in part to diet'. The question of optimal diet is complicated by

matters such as food consumption patterns, food synergy, interactions between food components, and the impact of sustaining dietary patterns over the long term. The effect of interventions for all metabolic functions, and not for just a single physiological parameter, is rarely understood. Finally, of paramount importance is the genetic and physiological status of the individual. These issues converge when attempting to assist the public on decisions regarding healthy food choices.

The value of understanding an individual's response to a particular dietary intervention can be clearly illustrated with diets that are low in saturated fat. Such diets have been recommended as part of US public health policy in order (HHS 2004) to reduce the risk of cardiovascular disease (CVD). However, studies have shown that for a significant portion of the public, such a diet can lead to worsening of serum lipid profiles and hence increasing the risk of CVD (Krauss 2001a, 2001b).

Embedded in the discussion of diet and health is the concept of *functional foods*, frequently defined as foods that offer health benefits beyond basic nutrition. Although the term functional foods has no legal definition in the US, it has not deterred the public's interest in the topic. For

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Food Science and Technology Bulletin IFIS. Publishing, 2005 Food Science and Technology Bulletin Functional Foods is an online minireview journal that delivers concise and relevant peer reviewed minireviews of developments in selected areas of functional foods Newly published minireviews are compiled to form an annual printed volume Food Science and Technology Bulletin R. G Prof. Gibson, Glenn R. Gibson, 2005 Food science and technology bulletin Functional foods is designed to meet the current awareness needs of busy food professionals working in food science and technology

Biomass Miodrag Darko Matovic, 2011-09-09 Biomass has been an intimate companion of humans from the dawn of civilization to the present Its use as food energy source body cover and as construction material established the key areas of biomass usage that extend to this day Given the complexities of biomass as a source of multiple end products this volume sheds new light to the whole spectrum of biomass related topics by highlighting the new and reviewing the existing methods of its detection production and usage We hope that the readers will find valuable information and exciting new material in its chapters Food Science & Technology Bulletin Glenn Gibson, 2011 Food Science and Technology Bulletin Functional Foods is an online review journal that delivers concise and relevant peer reviewed minireviews of developments in selected areas of functional foods Newly published minireviews are compiled to form an annual printed volume Contents for Volume 7 of the Bulletin include minireviews on Dietary prebiotics current status and new definition Microalgae source of natural bioactive molecules as functional ingredients Functional foods the Chinese point of view Shaping the human microbiome with prebiotic foods current perspectives for continued *The Oxford Handbook of Food Fermentations* Charles W. Bamforth, Robert Edwin Ward, 2014 Fermentation as a chemical and biological process is everywhere Countless societies throughout history have used it to form a vast array of foods and drinks many of which were integral and essential to those cultures it could be argued that the production of beer and bread formed the basis of many agriculture based civilizations Today nearly every person on the planet consumes fermented products from beer and wine to bread and dairy products to certain types of meat and fish Fermentation is a nearly ubiquitous process in today s food science and an aspect of chemistry truly worth understanding more fully In *The Oxford Handbook of Food Fermentations* Charles W Bamforth and Robert E Ward have collected and edited contributions from many of the world s experts on food fermentation each focused on a different fermentation product The volume contains authoritative accounts on fermented beverages distilled beverages and a diverse set of foods as well as chapters on relevant biotechnology Each chapter embraces the nature of the product its production and its final composition The text also touches on the raw materials and processes involved in producing packaged foodstuff and the likely future trends in each area In the conclusion Bamforth and Ward present a comparison between the various products and the diverse technologies employed to produce them Fermentation is a multifaceted process that affects a wide variety of products we consume and *The Oxford Handbook of Food Fermentations* is the definitive resource that captures the

science behind fermentation as well as its diverse applications *Food Science and Technology Bulletin* Glenn R. Gibson,2009 This book is a journal that delivers concise and relevant peer reviewed minireviews of developments in selected areas of functional foods **Food Science and Technology Bulletin** Glenn Gibson,2011-01 This book delivers concise and relevant peer reviewed minireviews of developments in selected areas of functional foods *Functional Foods* Maria Saarela,2011-04-30 The first edition of Functional foods Concept to product quickly established itself as an authoritative and wide ranging guide to the functional foods area There has been a remarkable amount of research into health promoting foods in recent years and the market for these types of products has also developed Thoroughly revised and updated this major new edition contains over ten additional chapters on significant topics including omega 3 polyunsaturated fatty acids consumers and health claims and functional foods for obesity prevention Part one provides an overview of key general issues including definitions of functional foods and legislation in the EU the US and Asia Part two focuses on functional foods and health investigating conditions such as cardiovascular disease diabetes cancer obesity and infectious diseases as well as and the impact of functional foods on cognition and bone health Part three looks at the development of functional food products Topics covered include maximising the functional benefits of plant foods dietary fibre functional dairy and soy products probiotics and omega 3 polyunsaturated fatty acids PUFAs With its distinguished editors and international team of expert contributors Functional foods Concept to product is a valuable reference tool for health professionals and scientists in the functional foods industry and to students and researchers interested in functional foods Provides an overview of key general issues including definitions of functional foods and legislation in the EU the US and Asia Focuses on functional foods and health investigating conditions such as cardiovascular disease diabetes cancer obesity and infectious diseases Examines the development of functional food products featuring maximising the functional benefits of plant foods dietary fibre functional dairy and soy products **Functional Foods** Giuseppe Mazza,1998-06-19 This reference provides a comprehensive treatment of the physiological effects of foods and food components capable of promoting good health and preventing or alleviating diseases It assembles extensive information on the nature and physiological effects of biologically active components of major plant foods Internationally renowned specialists discuss how to manufacture and evaluate food products with health enhancing effects using both traditional and novel processing methods This comprehensive volume serves the information needs of food scientists and technologists food process engineers biochemists nutritionists and public health professionals **The Functional Foods Revolution** Julian Mellentin,Michael Heasman,2014-05-14 Foods that promote human health functional foods or nutraceuticals have caught the imagination of the global food industry All the household name companies are developing them as a key driver in their global strategies They see the prospect of new markets and bigger margins but the issues presented are fraught with complexity and difficulties Distinguishing hype from real hope the authors of this handbook explain the dilemmas and contradictions the industry faces They present a wealth of

detailed marketing food policy and regulatory material from the leading markets world wide and show how the hopes of the industry and the consumer may be dashed The solution they offer is radical nothing less than a new business model of what they term a healthful company **Probiotics** Everlon Rigobelo,2012-10-03 Over the last few decades the prevalence of studies about probiotics strains has dramatically grown in most regions of the world Probiotics are specific strains of microorganisms which when served to human or animals in proper amount have a beneficial effect improving health or reducing risk of getting sick and the probiotics are used in production of functional foods and pharmaceutical products This book provides the maximum of information approaching issues as probiotics in food health biotechnological aspects and the use of probiotics in aquaculture for all that need them trying with this to help many people at worldwide **Food Science and Technology Bulletin** Glenn Gibson,2007 Food Science and Technology Bulletin Functional Foods is an online minireview journal that delivers concise and relevant peer reviewed minireviews of developments in selected areas of functional foods Newly published minireviews are compiled to form an annual printed volume Contents for Volume 3 of the Bulletin include minireviews on Nutrigenomics new frontiers in antioxidant research Dietary fat composition and cardiovascular disease Phytochemicals a future in functional foods Inulin a prebiotic functional food ingredient Assessment of the efficacy of probiotics prebiotics and synbiotics in swine nutrition Lactitol an emerging prebiotic Guidelines for an evidence based review system for the scientific justification of diet and health relationships under Article 13 of the new European legislation on nutrition and health claims **Food Science & Technology Bulletin** Glenn Gibson,2010 Food Science and Technology Bulletin Functional Foods is an online review journal that delivers concise and relevant peerreviewed minireviews of developments in selected areas of functional foods Newly published minireviews are compiled to form an annual printed volume Contents for Volume 6 of the Bulletin include minireviews on An introduction to probiotics for dental health The nutritional and health benefits of almonds a healthy food choice Probiotics for the elderly Flax lignans new opportunities for functional foods The application of probiotics prebiotics and synbiotics in com Natural Health Sciences Rasit Dinc,2025-02-25 Natural Health Sciences A Comprehensive Guide serves as a valuable resource for both healthcare practitioners and business professionals supporting ongoing professional development by bridging the gap between proponents of traditional or natural health systems and those who follow scientific or medical perspectives The book synthesizes existing literature and fosters a more nuanced understanding of the benefits and limitations of natural health practices By presenting academic and scientific evidence in an accessible format it offers evidence based insights into a broad spectrum of natural health approaches These include herbal remedies nutritional strategies lifestyle interventions and alternative therapies covering key areas such as Ayurveda bioenergetic therapy music therapy Traditional Chinese Medicine TCM and aromatherapy It also addresses criticisms ethical and regulatory concerns and the future of natural health sciences With the increasing awareness of the limitations and side effects of conventional medicine people are seeking natural

preventive and personalized approaches to maintain and improve their health Natural Health Sciences A Comprehensive Guide provides a comprehensive overview of natural health sciences and its various sub disciplines allowing readers to gain a deeper understanding of these practices and make informed decisions about their health **Bioactive Proteins and**

Peptides as Functional Foods and Nutraceuticals Yoshinori Mine,Eunice Li-Chan,Bo Jiang,2011-06-09 Bioactive Proteins and Peptides as Functional Foods and Nutraceuticals highlights recent developments of nutraceutical proteins and peptides for the promotion of human health The book considers fundamental concepts and structure activity relations for the major classes of nutraceutical proteins and peptides Coverage includes functional proteins and peptides from numerous sources including soy Pacific hake bovine muscle peas wheat fermented milk eggs casein fish collagen bovine lactoferrin and rice The international panel of experts from industry and academia also reviews current applications and future opportunities within the nutraceutical proteins and peptides sector *The Nutrition Handbook for Food Processors* C J K Henry,C

Chapman,2002-08-16 Since Arnold Bender s classic Food processing and nutrition in 1978 there has been no single volume survey of the impact of processing on the nutritional quality of food With its distinguished editors and international team of contributors The nutrition handbook for food processors fills that gap It summarises the wealth of research in an area as important to the food industry as it is to health conscious consumers Part one provides the foundation for the rest of the book looking at consumers and nutrition After a discussion of surveys on what consumers eat there are two reviews of research on the contribution of vitamins and minerals to health Three further chapters discuss how nutrient intake is measured and at how nutrition information is presented to and interpreted by consumers Part two looks at processing and nutritional quality Two introductory chapters look at raw materials discussing the nutritional enhancement of plant foods and meat respectively The remaining chapters review the impact of processing beginning with a general discussion of the stability of vitamins during processing There are chapters on processes such as thermal processing frying freezing packaging and irradiation The book also covers newer processes such as microwave processing ohmic heating and high pressure processing Given the unprecedented attention on the impact of processing on the nutritional quality of food The nutrition handbook for food processors is a standard work in its field Summarises key findings on diet and nutrient intake the impact of nutrients on health and how food processing operations affect the nutritional quality of foods Examines consumers and nutrition processing and nutritional quality and nutritional enhancement of plant foods and meat among other topics Reviews the wealth of recent research in an area as important to the food industry as it is to health conscious consumers **Flavors for**

Nutraceutical and Functional Foods M. Selvamuthukumaran,Yashwant Pathak,2018-08-06 Flavors are an integral part of nutraceutical formulations Flavors offer significant advantage to Nutraceuticals when it comes to palatability and get an edge over other products in an extremely competitive nutraceutical market Flavors for Nutraceuticals and Functional Foods addresses different natural ingredients botanicals used in various functional foods and nutraceutical products The techniques

of incorporating flavors in Nutraceutical products can be classified as conventional and using recently developed modern techniques such as nanotechnology are also covered in different chapters These techniques are mainly used for masking the taste of nutraceutical and functional food products The book discusses the basics of flavors and the significance of the flavor industry in relation to Nutraceuticals This book covers various processes involved in incorporating flavor and improving product acceptability It provides an overview on the potential applications of the main terpene based flavors as part of nutraceuticals formulations This book will serve as a reference to academicians and industry people who are involved in Nutraceutical formulations and marketing **Handbook of Fermented Functional Foods** Edward R.(Ted)

Farnworth,2008-05-28 For centuries people around the world have used fermentation to preserve and enhance the flavor of a wide variety of foods Today complex interactions of microbiota in the digestive tract are found to influence proper digestion metabolism and disease resistance With greater emphasis on natural products and the role of food in health and wellbe

Handbook of Research on Food Processing and Preservation Technologies Megh R. Goyal,Preeti Birwal,Monika Sharma,2021-11-25 Handbook of Research on Food Processing and Preservation Technologies will be a 5 volume collection that attempts to illustrate various design development and applications of novel and innovative strategies for food processing and preservation The role and applications of minimal processing techniques such as ozone treatment vacuum drying osmotic dehydration dense phase carbon dioxide treatment pulsed electric field and high pressure assisted freezing are also discussed along with a wide range of applications The handbook also explores some exciting computer aided techniques emerging in the food processing sector such as robotics radio frequency identification RFID three dimensional food printing artificial intelligence etc Some emphasis has also been given on nondestructive quality evaluation techniques such as image processing terahertz spectroscopy imaging technique near infrared Fourier transform infrared spectroscopy technique etc for food quality and safety evaluation The significant roles of food properties in the design of specific foods and edible films have been elucidated as well The first volume in this set Nonthermal and Innovative Food Processing Methods provides a detailed discussion of many nonthermal food process techniques These include high pressure processing ultraviolet light technology microwave assisted extraction high pressure assisted freezing microencapsulation dense phase carbon dioxide aided preservation to name a few The volume is a treasure house of valuable information and will be an excellent reference for researchers scientists students growers traders processors industries and others **Food Processing Technology** P.J. Fellows,2009-06-22 The first edition of Food processing technology was quickly adopted as the standard text by many food science and technology courses This completely revised and updated third edition consolidates the position of this textbook as the best single volume introduction to food manufacturing technologies available This edition has been updated and extended to include the many developments that have taken place since the second edition was published In particular advances in microprocessor control of equipment minimal processing technologies functional foods developments in active or

intelligent packaging and storage and distribution logistics are described Technologies that relate to cost savings environmental improvement or enhanced product quality are highlighted Additionally sections in each chapter on the impact of processing on food borne micro organisms are included for the first time Introduces a range of processing techniques that are used in food manufacturing Explains the key principles of each process including the equipment used and the effects of processing on micro organisms that contaminate foods Describes post processing operations including packaging and distribution logistics

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