Medical and functional foods are getting increased momentum in the health and allied sector. Medical foods are specially formulated for the dietary management of a disease that demands distinctive nutritional support, which cannot be met or supplemented by normal diet alone; while apart from nutritional value, a functional food provides *additional or supplementary function* for the human health management (often one related to health-promotion or disease prevention) by adding new ingredients or more of existing ingredients. Functional food is a *natural or processed food* that contains known biologically-active compounds - which when in defined qualitative and quantitative amounts - provides a clinically proven and documented health benefit; and thus, it serves as an important source in the prevention, management and treatment of chronic diseases (especially of lifestyle) of the modern age.

The principal objective of this endeavor is to bring together the knowledge accumulated on the fundamental and applied aspects of scientific research on functional foods into a handy module as *Examining the Development, Regulation, and Consumption of Functional Foods*. This book looks to discuss and address the *Functional foods* with the perspectives of dietary supplements, phytonutrients, micronutrients, vitamins, minerals, probiotics, *etc*. It covers the crucial issues related to the efficacy and safety of bioactive compounds and other functional food constituents and characterization of functional foods with reference to product development; preparation of natural and synthetic ingredients for use in foods, supplements or premixes and improvement of ingredient quality; effects of processing (including packaging, storage, *etc.*) on functionality and improvement of product quality; verification, quality control and traceability of natural and synthetic functional food ingredients and products; improvement of the quality of foods with inherent health benefits; development and commercialization of specific functional food products, and the regulatory aspects of functional foods and related issues, *e.g.*, labeling, substantiation of health claims.
Regarding contents, this book embodies ten chapters dedicated to different aspects of functional foods. It starts with “biosynthesis of conjugated linoleic acids”; followed by “dietary fibers and their role as functional food for human health: food fibers and human health”; “phytonutrients of nutraceutical importance”; “millets as an integral part of nutritional diet in India”; “analysis of bioactive compounds in Coriandrum sativum L. against microbial keratitis”; “breeding for improving human nutrition and grain quality through biofortification of traditional land races and improved cultivars of rice (Oryza sativa)”; “antioxidants as functional foods in metabolic syndrome”; “exploring the potentials of antioxidants in retarding ageing”; “food allergy and food poisoning: toxicology on culinary science”; and finally “development of functional foods and antimicrobial packaging containing essential oils”.

“Biosynthesis of conjugated linoleic acids” critically evaluates the knowledge accumulated during the past four decades on the precursor of conjugated linoleic acids, micro-organisms involved in the production of conjugated linoleic acid, the mechanism of biohydrogenation mechanism, and chemical synthesis of conjugated linoleic acid, coupled with the rationale for biohydrogenation and factors affecting the production of conjugated linoleic acid. “Dietary fibers and their role as functional food for human health: food fibers and human health” summarizes the sources of dietary fibers and how they act as functional food for benefiting the human health by alleviating cardiovascular diseases, digestive disorders, diabetes, obesity and colonic cancer; coupled with the effect of dietary fibers in food processing practices on the physiochemical and functional properties. “Phytonutrients of nutraceutical importance” addresses recent evidence on chemical and pharmacological features of the main phytonutrients explored in nutraceutical formulations, focusing antimicrobial, antioxidant and antiproliferative potentials along with drug-phytonutrients interactions will be discussed. The chapter “millets as an integral part of nutritional diet in India” discusses the higher nutritive value of millets comparable and even superior to major cereals with respect to protein, energy, vitamins and minerals. “Analysis of bioactive compounds in Coriandrum sativum L. against microbial keratitis” evaluates the antibacterial, antifungal, antioxidant and anti-inflammatory activities of the leaves and seeds of Coriandrum sativum L using various organic solvent against keratitis. “Breeding for improving human nutrition and grain quality through biofortification of traditional land races and improved cultivars of rice (Oryza sativa)” deals with quality breeding of rice for improved iron and zinc contents - their deficiency would lead to hidden hunger.

“Antioxidants as functional foods in metabolic syndrome” provides an overview on the efficacy of functional foods in reducing free radical-mediated damage in metabolic syndrome. “Exploring the potentials of antioxidants in retarding ageing” gives an overview of the process of ageing, generation and enhancement of reactive
oxygen species, damages incurred by oxidative stress, its amelioration strategies, therapeutic and biotechnological potentials of antioxidants and various sources of bioactive compounds significant in retarding the aging process. “Food allergy and food poisoning: toxicology on culinary science” provides clear explanation on the differences and relationships between food allergy and food poisoning, main allergens in food and main toxics; in addition to providing different origins of toxins and allergens (from foods, additives, pollutants and food processing). “Development of functional foods and antimicrobial packaging containing essential oils” deals with importance of essential oils as natural additives, in improving the shelf life of functional food.

Thus, it is expected that policy makers, academicians, researchers, medical practitioners, advanced-level students, technology developers, and government officials would find this text useful in furthering their research exposure to pertinent topics in electronic government and assisting in furthering their own research efforts in this field.

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