

Raquel Pinho Ferreira Guiné
Editor

FOOD, DIET AND HEALTH

Past, Present and Future Tendencies



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RAQUEL PINHO FERREIRA GUINE
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PREFACE

Health professionals presently recognize that the foods called functional can have a major role in health enhancement. Recently, many developments have been arising in this area. Researchers, food technologists and industrialists are aimed at identifying new functional foods and nutraceuticals, which can be included in diets with the general purpose of improving health or with a specific objective of helping to treat some diseases. The list of potential health substances is continuously growing, and includes a wide variety of substances that are recognized to have a positive role in the pathogenesis of many diseases. In recent years, many studies have been conducted by researchers all around the world to investigate the effects of these substances on human health, either with in vitro tests or with clinical trials. The amount of publications in this field is very extensive and an updated revision of the results obtained is of great interest to help identifying the real benefits, and to confirm or contradict some myths that might be installed. The present book gives an updated contribution to the knowledge regarding foods which may play a role in maintaining human health or fighting disease, showing their benefits, and evidencing in what way human diet can be manipulated to achieve certain objectives. The updated information that is provided here will certainly help people in general and professionals in particular, to make appropriate choices concerning what to eat.

Chapter 1- The present chapter brings together the principal aspects of Public Health Nutrition and includes the analysis of public policies oriented towards the field of nutrition, which constitutes one of the central areas of work for nutritionists. An introduction to the contextual framework is described, with special mention of food security and the evolution of nutritional research that sustains the evidence base for Public Health Nutrition. The relevance of the current situation that nutrition and public health finds itself is also mentioned, not so much in terms of professional development but rather and more importantly, for the need to develop effective policies in the complex scenario of global nutrition, where obesity and undernutrition converge in a transition without rhyme or reason. The Mediterranean Diet is illustrated as an ideal dietary model, which however is not exempt from problems linked to the inequity and inequality of accessing the foods that it comprises. Finally, the evolution of nutritional epidemiology is described along with the future of nutrition research, which is at a critical moment for the development of Public Health Nutrition. The first World Congress on Public Health Nutrition held in Barcelona last September 2006 perfectly illustrated this scenario.

Chapter 2- The important changes observed in dietary patterns throughout human evolution brought us to the modern diet, which reflects a complex panorama involving a transition comprising nutritional, epidemiological and demographical aspects. These changes explain the increasing worldwide epidemic of obesity and other noncommunicable diseases such as cardiovascular disease, cancer, and diabetes. There is an enormous socioeconomic burden from these diseases, which affects all countries, but is particularly serious in developing countries, in which infectious and chronic diseases exist. The most cost-effective and sustainable strategy to cope with the global problem is to invest in integrated public health approaches of primary prevention. Nutritional changes associated with a more active lifestyle are essential strategies to guarantee quality of life to a population who will have a longer life expectancy. Furthermore, the advancing knowledge in nutrigenomics, biotechnology and the development of foods with specific health ingredients will allow personalized nutrition strategies in the future.

Chapter 3- Presently, the role of food largely surpasses the providing of basic nutrients for body functioning. In fact, it has been widely accepted that a certain combination of macro with micronutrients, associated to a proper lifestyle, strongly influences both mental and physical health.

The term functional food derives from some health-promoting dietary components, which, beyond traditional nutrients, play an important role in enhancing human health. Functional foods can be conceptualized as having two primary effects on health: the enhancement of physiological function and the reduction of disease risk and therapy.

Functional food components are, therefore, any potentially beneficial components found naturally in foods or added to them as functional ingredients. The groups of functional components include carotenoids, dietary fiber, fatty acids, flavonoids, isothiocyanates, phenolic acids, plant stanols and sterols, polyols, prebiotics and probiotics, phytoestrogens, soy protein, vitamins and minerals.

These substances are presently recognized to have a positive role in the pathogenesis of many diseases. Its list is continuously growing, and new food components are considered to have special and specific beneficial effects for human health, thus leading to an increasing worldwide attention to these components and, consequently, to many studies regarding their effects. Much scientific research has been published in the past decades, with the purpose of demonstrating the clinical and potential bioavailability and absorption of these compounds.

In the present work, the study and repercussions of these “bioactive molecules” and an extensive examination of the characteristics of these compounds allied to their ability to

Chapter 4- The nature of the relation between diet and disease is the subject of great controversy. Mixed messages have emerged either from the scientific community or from the media concerning the potential benefits of a number of foods and nutrients in the prevention and treatment of disease. One of the recent phenomena in contemporary discussion of eating is ‘*Functional Foods*’. Functional Foods (F²) are foods or dietary components that may provide a health benefit or a reduction of the disease risk beyond basic nutrition. We can take greater control of our health through food choices, knowing that some can provide specific health benefits. Examples can include fruits and vegetables, whole grains, fortified or enhanced foods and beverages, and some dietary supplements. Biologically active components in functional foods may impart health benefits or desirable physiological effects.

cosmonauts or body-building people of a diet with high energy content and nutritional value is also analyzed in this chapter, just like the rule of food supplements as well. Not only benefits but also health hazards of above mentioned special diets are discussed by the author.

Chapter 8- The literature and international organizations such as FAO and WHO have established over the decades the effectiveness of the enrichment of food for the health of populations worldwide. Furthermore, the increase in diversity and the consumption of fortified products imposes new challenges to public health with regard guidance and control on the intake. Forward to this debate, this chapter aims to discuss the strategy for the enrichment of food with respect to the interaction and bioavailability of nutrients, the contribution of fortified foods in the consumption of vitamins and minerals and the impact of excessive consumption of these micronutrients to the health of populations. The intent is to raise questions and point out ways to best use these products at present. The effective actions intend to promote studies to evaluate the consumption of food in the current scenario, i.e. with the presence of fortified foods and supplements in use by the population. Another aspect is to evaluate the world, ages and social classes in different manner, since the type of food purchased is very different. In this way, it is believed that food enrichment may ensure better health for the population.

Chapter 9- Future trends and perspectives regarding nutrition are derived from processes that have been carried along the time. Several future situations related to diet and nutrition will be associated with the demographical, epidemiological and nutritional transition processes as well as the environmental changes. This chapter intends to discuss the prospects and trends related to diet and nutrition. The approach to this subject is important to establish preventive measures in order to reduce negative impacts associated with nutritional problems. Even in developing countries, there is a significant risk of diet-related non-communicable disorders, mostly linked to the exposure to Western culture. It is expected that the occurrence of chronic diseases will be a concerning issue in the future. Sedentary lifestyles combined with the increased accessibility and intake of manufactured have led to the burden of overweight and obesity. This double burden of undernutrition and infectious diseases, and of overweight and non-communicable diseases represents a threat to the unprepared health care services in developing countries. Considering that many developing countries present difficulties to guarantee a proper diet for the population, the trend is that the problems derived from this scenario will remain unsolved in major parts of the world. The processes involved with globalization modify the human environment producing positive, but also negative effects. The human interference on the climate of the planet affect the world agricultural production, threatens food safety and the use of natural resources. Over the next decades, population growth will continue to contribute to increased demand for food and the urbanization process will lead to changes in the types of food demanded. Prospects for global economic growth appear to be favorable, but poverty will remain unsolved in many countries, and may increase even more in some. Prospects for improving the food and nutrition situation in developing countries will depend on the potential of those countries for raising incomes, reducing poverty and improving social and economic conditions. In most developed countries, and for many middle and upper-income people in developing countries, the major nutrition problems are related to overconsumption of food and unhealthy dietary patterns. In these countries, improving better nutritional status and preventing diet-related non-communicable diseases will require the promotion of changes in dietary habits and lifestyles.

The population's growing interest in diet and nutrition will probably encourage the development of researches to produce healthier foods and promote early diagnosis and more effective treatment for diseases.

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