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Functional Foods: Bridging Health and Food

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Abstract

The primary task of a healthy diet is to meet metabolic needs and provide enough energy and nutrients for the body to work. However, consumers who have changed their production and consumption motifs in recent years. They have begun to take preventive measures against diseases as well as seek solutions to health problems with the aim of having a healthy and quality life. Functional food consumption also emerges as one of the measures taken by today's more conscious consumers. Various food and food ingredients are known to have beneficial effects on our health, but they have begun to focus more on their biological regulatory roles through the macro- and micro-components they contain. We reviewed the factors that have driven the functional food development. Morever, lots of research is required to further understand the molecular benefits of food additives and ingredients that are used for food itself or for food enrichment. New strategies become imperative to improve the health and nutritional profile of functional foods and reducing the effects on the environment

Keywords: Functional Food; Health; Bioavailability

Introduction

Food is a term which is basically related to the component necessary for several life sustaining functions like production of energy, supply of nutrients, support of various metabolic activities besides growth and maintenance of the body [1]. In the early 20th century, nutrition science was engrossed with preventing deficiencies and supporting body growth [2]. During the last two decades the knowledge of the dietary influence on health and well-being has been highly increased leading to design new and healthier foods reducing the risk of several chronic diseases [3].

Discussion

The foods thus designed are called functional foods, which are traditional foods modified in such a way that they have health benefits compared to the non-modified products. While all foods inherently have beneficial effects on physiological function, functional foods must contain specific ingredients which improve health or reduce the risk of disease. These ingredients either be an intrinsic part of the food or may be added (or removed) during manufacture [4].

Several reasons like transitional health, urbanization and its effect, changing demography with an aging population, food security, loss of traditional food culture, and awareness of deterioration in personal health led by busy lifestyles with poor choices of convenience foods and competitive food market have converged and propelled for development of functional foods [5]. Other factors which have also influenced are insufficient exercise, increased incidence of self-medication, increased level of information from health authorities, media on nutrition, the link between

diet and health, and scientific developments in nutrition research [1]. Advances in science and technology have enabled the functional food market to grow in recent years and as a result, the landscape of the food and nutrition field continues to develop. Using food to provide health benefits beyond preventing deficiencies is a reasonable progression of traditional nutrition intervention [6-10].

The wide application of natural and bioactive compounds has become a central issue in recent years. On the other hand, to further strengthen the position of food as the vehicle for functional bioactive compounds, research has shown that some compounds can reach a point of saturation or toxic levels within the body, which limits any potential benefit. For example, under conditions of excessive intake, bioactive compounds with antioxidant properties can shift the antioxidant-oxidant balance within the body such that antioxidants can behave as pro-oxidants and contribute to oxidative stress [11]. For this reasons, functional food research must aid in establishing appropriate intake levels for these potentially beneficial compounds.

Moreover, the nutritional evaluation of the relationship between diet and health has traditionally focused on individual food constituents such as proteins, fats, carbohydrates, and micronutrients separately [8]. This reductionist approach, which links one nutrient to one health effect, may partly explain some of the discrepancies between a food's predicted health effect on based on its nutrient content and its actual health effect when consumed as whole food. A diet does not consist of single nutrients but of whole foods, either alone or alongside many other foods as part of a meal [9]. Foods have physical and nutritional complex structures affecting digestion and absorption and may generate interactions within the food matrix, thereby altering the bioactive properties of nutrients in ways that are not predictable from the nutrition-label information [10].

The assessment of the bioavailability of health-associated compounds is another crucial issue for the understanding of the relationship between food and nutrition. The rate and extent of absorption can vary widely between individuals. The inter-individual variability in bioavailability depends on several critical factors including diet, genetic background, gut microbiota composition and activity [12]. Some bioactive food compounds such as polyphenols are relatively poorly absorbed, the absorption ranging from 0.3% to 43%, and the circulating plasma concentrations of their metabolites can be low [13]. Only by understanding the mechanisms of absorption of food-derived compounds can their bioavailability be enhanced, and thus the potential for significant health benefits be realized. That is to say; it is not enough to know how much of a nutrient is present in a dietary compound; the more crucial issue is how much of that present is bioavailable [14].

Due to the complexity of food compounds, the many factors affecting their transition during digestion, and also the different mechanisms of absorption of water- soluble and lipid -soluble molecules, unravelling the bioavailability of food constituents is challenging, in addition, understanding, for example, the food compounds–gut microbiota interactions and gut microbial bioconversion capability will facilitate studies on the bioavailability of bioactive food compounds in the host and provide more insight into the health effects of these molecules [11]. Williamson & Clifford [15] reported that since microbial metabolites could be present in very high concentrations, colonic metabolites could be considered the missing link between the consumption of certain polyphenols and their biological activity.

Conclusion

In conclusion, functional food science is still at an early stage in its development. As knowledge about the practical effects of foods increases and the functionality of particular foods and food components is more extensively recognized, technology will have a continuing role to play in making those foods and food components more widely available and accessible. Basic education in nutrition will also have a continuing role in ensuring that the benefits of functional foods are understood by all stakeholders to ensure that the benefits are enjoyed to the full [16]. These aspects of future development are a continuation of activities already underway.

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