



Functional Foods, Food and Medicine



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Editorial

Food is a group of basic nutrients element which consists of proteins, fats, carbohydrates, minerals, salts, vitamins, fiber and enzymes, in addition to water. Most of these elements present in groups complement each other. Complementarity of these elements forms proper food. The beneficial effects of food with added live health promoting microorganisms (probiotics) on human health, and in particular of milk products on children and other high-risk populations, are being increasingly promoted by health specialists [1]. Foods that promote human health over and above the provision of basic nutrition are called 'functional foods' [2]. A working definition which was recently proposed describes functional foods as 'foods that can be satisfactorily demonstrated to beneficially affect one or more target functions in the body, beyond adequate nutritional effects, so as to lead to an improved state of health and well-being and /or a reduction of risk of disease' [3]. The concept has also been directed towards food additives that may exert a positive effect on the gut microbiota composition-probiotics and prebiotics [4].

Functional foods may improve the general conditions of the body (eg. prebiotic and probiotics), decrease the risk of some diseases (e.g. cholesterol-lowering products), and could even be used for curing some illnesses. It was recognized that there is a demand for these products as different demographical studies revealed that the medical service of the aging population is rather expensive [5]. A probiotic is defined as a live microbe that protects its host and prevents disease. Therefore, a probiotic is a living microorganism that when administered in sufficient numbers is beneficial to the host and exerts health benefits beyond inherent basic nutrition. The best-known probiotic is *Lactobacillus acidophilus*, found in yoghurt. Probiotics are present in foods, medicines and dietary supplements. They may be added to dairy products as a culture concentrate, or are available as a dietary supplement. The species of *Lactobacillus* and *Bifidobacterium* are most commonly used as probiotics [the *acidophilus-bifidus* (AB) products are the most widely consumed probiotics intended for humans]. Lactic acid bacteria (LAB), including species of *Lactobacillus* which have been used for

preservation of food by fermentation for thousands of years, can serve a dual function by acting as agents of food fermentation, and in addition, potentially imparting health benefits. However, strictly speaking the term "probiotic" should be reserved for live microbes that have been shown to impart a health benefit in controlled human studies [6].

The main health benefits of regular intake of probiotic foods as follows:

- A. Production of antimicrobial substances (pathogen inactivation).
- B. Antibacterial activity against invading pathogens (*Bacillus cereus*, *Salmonella typhosa*, *Shigella dysenteries*, *E.coli*, *Micrococcus flavous*, *clostridia*, *Vibrio parahaemolyticus*, *Enterococcus faecalis* var. I, *Staph. Aureus* and *Pseudomonas fluorescens*).
- C. Modifying the intestinal flora of leukemia patients.
- D. Enhancement intestinal motility.
- E. Inhibition absorption of ammonia and amines through the intestinal walls of host animals.
- F. Reduce duration or incidence of diarrhea.
- G. Improvement of lactose digestion, thus it is beneficial in alleviating symptoms of lactose intolerance.
- H. Lowering serum cholesterol levels.
- I. Reduction of blood pressure in hypertensive.
- J. Enhancement of immune system.
- K. Eliminate fecal carcinogen and mutagen.
- L. Aid in treatment of food allergies
- M. Synthesizes of vitamins in foods, especially vitamin B complex.
- N. Increasing calcium bioavailability.
- O. Predigests of the proteins and thus improves nutritional

value of foods.

P. Inactivation of harmful substances present in foods [7].

On the other side, throughout the world, milk and dairy products have always been used in human nutrition. Milk is a food with high nutritional benefits and is therefore considered as an important natural product that comprises a healthy, balanced diet for all age groups. Proteins, minerals and vitamins are an integral part of milk nutritional profile. Consuming milk and dairy products is a quick and convenient way of obtaining significant amounts of proteins and most micronutrients including B-group vitamins [8,9]. Fermentation has been used in foods for thousands of years according to archaeological evidence. From time to time fermentation started to be used for longer shelf life, and higher nutritional values. Today this technique is commonly used in vegetables, fruits, cereals, meat, milk and fish and the fermented products are consumed around the world [10].

Historically, products derived from fermentation of the milk of various domesticated animals resulted in conservation of valuable nutrients which would otherwise deteriorate rapidly under the high ambient temperatures prevailing in South Asia and the Middle East. Thus the process permitted consumption of milk constituents over a period significantly longer than was possible for milk itself. Concomitantly, conversion of milk to fermented milks resulted in the generation of a distinctive viscous consistency, smooth texture and unmistakable flavor. Furthermore, fermentation provided food safety, portability and novelty for the consumer. Accordingly, fermented dairy foods evolved into the cultural and dietary ethos of the people residing in the regions of the world where they owe their origin [11].

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