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Functional Food: Probiotic as Health Booster

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Abstract

A healthy lifestyle always comprises of good food habits. To immunize various lifestyle disorders, consumers switched to the functional food that helps is fulfil the nutritional requirement of the human body additionally protects from multiple diseases. Probiotic microorganisms that are generally known as the friendly microorganism play an essential role in this regard. It establishes a symbiotic association with the human host. This mini-review includes the name of various probiotic microorganisms and their focus on human health benefits as well as in reducing the risk associated with pathogenic diseases.

Keywords: Probiotic microorganism; Functional food; Lifestyle disorders; Health benefits; Nutrition

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Introduction

The awareness for health and nutrition become more popular among consumer nowadays. The knowledge about the advantageous effects of the probiotic microorganisms and the foods that contain it gains recognition with the increase in lifestyle-related diseases [1]. Probiotic microorganism plays an essential role in functional food by incorporating friendly living bacteria in the food. This directly or indirectly leads to human health benefits. Fermented dairy and non-diary product were popular among consumers for their health benefits, and value-added components of food diets. Elie Metchnikoff discovered the concept of probiotics at the beginning of 20th century. He believed that microbes present in intestine produce toxic compounds; hence, these bad microbes should be replaced with beneficial microbes like lactic acid bacteria. Probiotics food products can be obtained in different forms like tablets, capsules, powder sachets, etc., but nowadays their consumption via functional food products like yogurt, curd, buttermilk, etc. is generally favoured and more popular among consumers. In India, consumption of traditional dairy products (e.g., curd, buttermilk, shrikhand) is prevalent among rural masses. However, with increasing awareness among consumers, several companies have also launched many probiotic products like yogurt, buttermilk, ice cream, etc.

Probiotic Microorganism

The traditional definition of probiotic is “live microorganisms which when administered in adequate amounts confer health benefits to the host” [2]. This is also called as the friendly microorganism. Generally the bacteria of genus *Bifidobacterium*, *Lactobacillus,* and *Streptococcus* regarded as probiotic bacteria, never the less yeast such as *Saccharomyces boulardii* also showed probiotic potential [3,4]. Most of the commercial probiotic strains are:

Bifidobacterium animalis subsp. lactis, *B. breve* strain are commonly used in Yakult, *B. Lactis, B. longum.* Bacteria of Lactobacillus genus were widely used as probiotic strain by various companies for production of verities of functional food products. Some of them are: *Lactobacillus acidophilus, L. brevis, L. casei, L. crispatus, L. curvatus, L. delbrueckii, L. fermentum, L. gasseri, L. helveticus, L. rhamnosus, L. johnsonii, L. plantarum , L. paracasei, L. reuteri, L. rhamnosus and L. salivarius.* Other species of genus Enterococcus also commercially used as prbiotic strain, this includes *Enterococcus faecalis* and *Enterococcus faecium.* Few species of Streptococcus such as *Streptococcus cremoris, S. diacetylactis, S. intermedius, S. salivarius* and *S. thermophilus* also being in used. Among fungi *Saccharomyces boulardii* was popularly used as probiotic strain.

Probiotics as Immunity Enhancer

Probiotic microorganism exert an immune modulatory effect, as these microorganisms have the enormous potential to interact

with the intestinal epithelial cell as well as with immune cell such as dendritic cells (DCs), monocytes/macrophages and lymphocytes [5]. Probiotics microorganism containing functional food gained vital importance in the prevention of various gut-associated disorders, urogenital, and respiratory infections [6]. The probiotic food is mostly used for the treatment of acute and antibiotic-associated diarrhoea [7]. Probiotic also alleviate lactose intolerance [8] and postoperative complications [9], exhibit antimicrobial [10] and anti-colorectal cancer activities [11,12]. Probiotic microorganisms show an excellent result for the treatment and prevention of irritable and inflammatory bowel disease [13,14]. The actual mechanisms behind probiotic microorganism that infer host immunity not clearly elucidated. However, it has been reported that probiotic showed antagonistic effects on various microorganisms by modification of the gut micro biota, competitive adherence to the mucosa and epithelium, strengthening of the gut epithelial barrier [5]. Probiotics also cause qualitative alterations in intestinal mucus that prevent pathogen binding [15]. It was demonstrated that probiotics communicate with the host by pattern recognition receptors, such as toll-like receptors and nucleotide binding oligomerization domain-containing protein-like receptors, which modulate key signalling pathways, like nuclear factor- kB and mitogen-activated protein kinase, to enhance the activation also influence downstream pathways. This recognition is crucial for eliciting measured antimicrobial responses with minimal inflammatory tissue [5].

Probiotics Health Benefits

The word probiotic derived from the Greek phrase 'pro bios' which means 'for life'. It was traditionally associated with fermentation based foods derived from dairy products, vegetables and fruits [1]. Probiotic plays as a potential source of antioxidant that helps in reduce oxidative stress. That helps the body to minimize the leading cause of various chronic human diseases [16]. Probiotic also plays a vital role in host metabolic processes, thus improving the health conditions in metabolic disorders that reduce the risk of various metabolic disorders, such as cardiovascular diseases, hypertension, obesity, arteriosclerosis, cancer as well as slow down the aging process. Intestinal bacteria such as bifidobacteria and lactobacilli have been shown to produce conjugated linoleic acid (CLA), a potent anti-carcinogenic agent [17,18]**.** It is already be reported that probiotic microorganism has their possible link to the control obesity [19], diabetes [20], neural disorders [21,22], brain development [23] and insulin resistance **(Figure 1).**

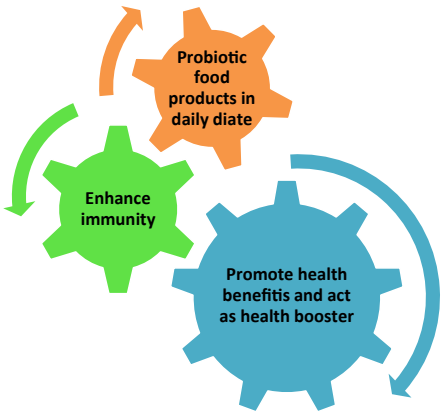

Figure 1 The process of promoting health benefits from probiotic food products.

Conclusion

Routine healthy food habits that include consumption of probiotic food product enhance immunity of the consumer. Thus the consumer gets the potential for prevention of various disorders and diseases. Food industries have become increasingly interested in probiotic function food that confers health benefits to consumers. Future study on the learning of the mechanisms of probiotic action may help to improve the quality of the probiotic food products and also develop the awareness among public for its daily consumption.

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