Functional Food: Probiotic as Health Booster

Priyanka Roy* and Vijay Kumar

Department of Basic and Applied Sciences, National Institute of Food Technology Entrepreneurship and Management, Sonipat, India

*Corresponding author: Priyanka Roy

proy@niftem.ac.in

Department of Basic and Applied Sciences, National Institute of Food Technology Entrepreneurship and Management, Sonipat, India.


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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

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. lactic, 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 probiotic 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-κB 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 its possible
link to the control obesity [19], diabetes [20], neural disorders
[21,22], brain development [23] and insulin resistance (Figure 1).

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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