The role of probiotics, prebiotics and synbiotic on human health and disease - A review

Vinuth Chikkamath¹, Sucharitha Kummari¹, Vaishnavi Naik² and Anantha Naik Nagappa*

Email: anantha1232000@gmail.com

Abstract

Irregular food habits and indiscipline in life style result in chronic diseases. Consumption of junk food, rich in saturated fats and carbohydrates, for long, has a profound influence on microbiota of gut flora. Gut flora composition is dependent on the type and nature of food. Fibrous and nutritious diet positively changes gut health. Inulin, fructose-derived oligosaccharides, and resistant starch are natural dietary fibers useful for prophylaxis and therapy. Probiotics contribute to gut health replacing harmful bacteria in the gut flora. In addition, Probiotics continuously synthesize various vital vitamins which are useful in health management. The genera Bifidobacterium and Lactobacillus, and yeast, Saccharomyces, are well established Probiotics. Prebiotics are not microorganisms but vital raw materials that are utilized by Probiotics to form useful molecules like oligosaccharides. Synbiotic are mixtures of pre and Probiotics which are administered to maximize the Probiotics efficacy.

Key words: Probiotics, Prebiotics, Bifidobacterium, Lactobacillus, Oligosaccharides

Introduction

Humans have been consuming fermented foods and drinks for their nutritive value and energizing properties. South Indian foods like Idly, Dosa etc. are prepared from overnight fermented batter and are nutritionally rich. Curd and Butter Milk are fermented from fresh milk and are consumed daily for their health benefits. Food fermentation enhances nutritive value of food. L. acidophilus and bifidobacteria in fermented food removes pathogenic bacteria from the intestine. Live yeast is used in restoring the suprainfection resulting from the prolonged use of antibiotics. Prolonged usage of antibiotics removes natural intestinal flora and increase fungal colony growth, that is detrimental to health. Probiotics like live yeast remove suprainfections of fungus and restore natural gut flora. Yeast and other microorganisms Synbiotically synthesize B complex vitamins, essential for good health. Beneficial effects of L. acidophilus and bifidobacteria have attracted attention of many nutritionists. These microorganisms’ ability to ferment food and produce vitamins has led them to be named as Probiotics. Bifidobacteria colonize the gastrointestinal tract (GIT) and continuously utilize undigested food in the form of oligosaccharides like fructose and galactose found in chicory, soybean etc. Bifidobacteria prevent pathogenic growth of microorganisms in the GIT by producing short chain fatty acids like acetic and lactic acids. Hence, these are known as Prebiotics. Prebiotics are added in dairy products, beverages, breakfast cereals and desserts along with Probiotics like L. acidophilus and bifidobacteri. The combination of Prebiotics and Probiotics are called as Synbiotics. Refer Box 1 for definitions of Probiotics, Prebiotics and Synbiotics. L. acidophilus and bifidobacteria are known to stimulate the immune system to fight against the pathogenic microorganisms. Antibiotic resistant bacteria are controlled by oral ingestion of Probiotics. In addition,