

Approaching the Definition of: Probiotics, Prebiotics, Synbiotics and Postbiotics

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ARTICLE ID: 086

The term probiotic, denotation “for life,” is derived from the Greek language. Probiotic are the gut microflora, which lives in the intestine of human and animals that contribute in their digestive health. Food and Agriculture Organization (FAO) defined probiotics as the live microorganisms that, when administered in adequate amounts, confer health benefit on the host. Most commonly studied probiotics are largely species of the genera Bifidobacterium and Lactobacillus. These probiotic bacteria can alleviate lactose intolerance, inhibit the growth of harmful bacteria, decrease cholesterol levels, improve digestion, and stimulate the immune system.

The term **prebiotic** was given by Gibson and Roberfroid in 1995 who exchange ‘pro’ for ‘pre’ that means ‘before/for’. A prebiotic is defined as non-digestible carbohydrates (NDOs) that are very stable towards the low pH of the stomach and digestive enzymes so they can be delivered to the intestine without being hydrolyzed. According to FAO, prebiotic is a non-viable food component that confers health benefit on the host associated with modulation of microbiota. A more refined definition for prebiotic is a selectively fermented ingredient that allow specific changes, both in composition and activity in the gastrointestinal microflora that confer benefits. Prebiotics can serve as the fuel for probiotics, nourish them and encourage them to function more efficiently. Fructooligosaccharide (FOS), Galactooligosaccharide (GOS), inulin, dietary 30 carbohydrates, and XOS are the most studied prebiotics in human as well as in aquaculture. Prebiotics are found as natural components in milk, honey, fruits, and vegetables like as onion, chicory, leek, garlic, artichoke, banana, rye and barley. Concentrations of prebiotics in these sources range between 0.3% and 6% of fresh weight.

The term synbiotic should be reserved for the compound in which prebiotic specifically favors the probiotic. Any nutritional supplement that shows the combination of both prebiotic

and probiotic in the form of synergetic effect is termed as synbiotic. A synbiotic (for example Bifidobacteria combined with FOS) is expected to provide improved health benefits to consumer. A nutritional supplement was considered as synbiotic when it positively affects the host life by improving the survival and also by implementation of live beneficial microbial dietary supplements in the digestive tract by selectively triggering the growth and metabolism of one or few number of health-promoting bacteria.

Postbiotics strictly sense to the secreted probiotic-derived factors which can be considered as the sign of beneficial impact of probiotics. Postbiotics refer to the by-products of microbial origin like enzymes, peptides, teichoic acid, cell surface and secreted proteins, bacteriocins and organic acids accumulated by probiotic microorganisms. These have been studied for many probiotic strain but the more part of the literature leads to Lactobacilli. A brief diagrammatic representation of all the above mentioned biotic which confer the health benefits is given in figure 1.

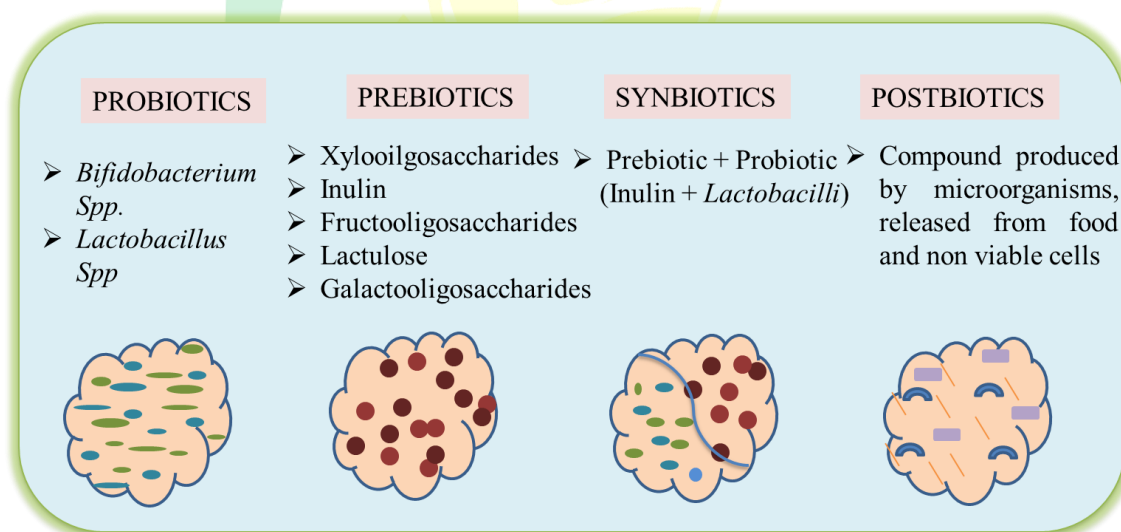


Figure 1: Concerning to the definition of probiotics, prebiotic, synbiotics and postbiotics.

Conclusion



In recent years, probiotics, prebiotics, synbiotics as well as postbiotics have become essential parts of various industrial practices for improving the growth performance and disease resistance. The use of synbiotic leads to greater benefits as compare to the application of individual probionts. Probiotic, prebiotic and synbiotic characteristics mainly include antimicrobial, anticarcinogenic, and antiallergenic qualities, reduction in serum fats and blood sugars, and immune stimulation. As all these biotics concenered to gastrointestinal area, research is in progress in various nongastrointestinal areas also.

