



Academic Walk – Duquesne University



PIC QUESTION OF THE WEEK: 5/26/08

Q: What is the relationship between the terms probiotics, prebiotics, and synbiotics?

A: A popular topic of discussion has been the use products that modify bacteria in the gastrointestinal tract. There is, however, frequent confusion regarding the terminology used to describe these supplements.

Probiotics are defined as *live microorganisms* that confer a health benefit when administered in adequate amounts. They were first identified in the 19th century by Elie Metchnikoff, a Russian immunologist. Today they are widely used in a variety of disease states including gastrointestinal disorders such as antibiotic-associated *Clostridium difficile* colitis, lactose intolerance, and infection with *Helicobacter pylori*. Probiotics can also be used to treat and prevent diarrhea secondary to the use of broad spectrum antibiotics. They are beneficial in the management of food allergies, periodontal disease, pouchitis, vaginal infections, and eczema as well. Probiotics possess antimicrobial activity, provide resistance to colonization, influence enzyme activity and delivery, produce direct immune effects, and are anti-mutagenic and anti-genotoxic. The main microbes used as probiotics in the United States are species of *Lactobacillus*, *Bifidobacterium*, *Bacillus*, and *Saccharomyces*. Dietary sources of probiotics are fermented dairy foods such as yogurt and cheese. They are also available as functional foods and supplements under such brands as Activia, Align, Culturelle, DanActive, and Florastor. **Prebiotics** are non-digestible food ingredients that provide health benefits by selectively stimulating the growth activity of desirable microorganisms in the colon, such as *Lactobacillus* and *Bifidobacterium* species. Prebiotics are used in the treatment of antibiotic-associated diarrhea and colitis, as well as for general bowel maintenance. They may also be incorporated into enteral feedings. Fructans and resistant starches are the primary groups of compounds included in prebiotics. Onions, bananas, wheat, artichokes, and garlic are major dietary sources of fructans while resistant starches are found in potatoes, unripe bananas, breads, and cereals. Additionally, many commercial food producers distribute products that are good sources of prebiotics. Stonyfield Farms, Kashi Company, South Beach Diet, Skinny Cow, and Cliff Bar are a few such manufacturers. **Synbiotics** are foods or supplements which contain both probiotics and prebiotics. The name is derived from the word *synergy* which implies that combining pre- and probiotics is of greater benefit than the sum of their individual administration. There is currently a great deal of interest in the use of synbiotics.

References:

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