

Probiotics

Foods containing probiotics have been consumed for centuries. The concept of live microbial ingredients associated with gastrointestinal physiology and function and a positive effect on human health has been recognized during the entire past century. During recent decades, probiotics have become more recognized as consumers search for natural products that contribute to both nutrition and health. Publications about their attributed support of intestinal health, lactose digestion, cholesterol reduction, yeast infection reduction, and even immune stimulation and control of cancer have made probiotics of greater interest to Americans.

According to Mintel's Global New Products Database (GNPD), 136 new probiotic products were launched in 2007. This represented a 131 percent increase between 2006 and 2007 – the highest global growth.

The global retail market for probiotic dietary supplements was valued by Euromonitor International at just over US\$1bn in 2005, and was seen to have experienced 46.9 per cent growth between 2002 and 2005. Growth of 32.6 per cent is predicted through 2010.

Scientific research confirms that probiotics are a vital necessity in the support of overall human health, specifically digestive health. The presence of probiotics vastly improves digestion and nutrient absorption and provides protection against the invasion of foreign pathogens, infectious agents, accumulated endotoxins (within the body) and carcinogenic substances. In addition, probiotics produce short chain fatty acids that are converted into energy.

Probiotics are living microorganisms that, when added to foods or dietary supplements in sufficient numbers, can benefit the consumer in one or more ways. Healthy animals and humans benefit every day from trillions of natural intestinal bacteria. These friendly bacteria help keep "bad" bacteria from gaining a foothold that could lead to illness or disease.

Because of their inability to survive passage through the stomach, the basic yogurt starter cultures, *Streptococcus thermophilus* and *Lactobacillus bulgaricus*, are not considered probiotics in the strict sense. However, these cultures contribute to lactose digestion and some strains of these species have been reported to provide health-promoting benefits in humans.

Probiotics have become a household term, largely thanks to the marketing efforts of big brands like Yakult and Actimel, which are credited with creating the category. But behind the consumer brands, considerable research has been going on into the specific health benefits of probiotics. Given that *Bifidobacteria* are present in human breast milk, it follows that pediatric health has been one of the foci of this research.

Measures intended to improve public health, such as food pasteurization and sterilization and use of antibiotics means that there is a decreased exposure to microorganisms - leading to a gap in colonization and weaker defenses against disease. It is believed that probiotics could act as surrogate colonizers in such cases. Martin Martin, MD, a pediatrics professor at David Geffen University in Los Angeles (University of California) drew attention to the rise in allergies and autoimmune diseases in children, and said that studying the role of microflora is crucial in efforts to combat this trend.

Animal studies showed that 59 per cent of animal subjects did not develop rotaviral diarrhea when probiotic was administered before infection with rotavirus. A meta-analysis published in *The Lancet* (Volume 369, Issue 9573, Pages 1614-1620) said that the risk of necrotizing enterocolitis, one of the most common gastrointestinal problems in premature babies, may be cut by 74 per cent by probiotic supplementation, suggests a meta-analysis from Australia. This looked at studies involving a variety of different probiotics and a total of 1393 premature infants. In addition to a reduced risk of necrotizing enterocolitis, they also observed a 53 per cent reduction in the risk of mortality.

Probiotics are being intensively studied for potential benefits relating to gut health. A recent study by researchers from Imperial College, London, reported a 22 per cent drop in the number of cases of diarrhea if probiotic drinks were consumed by hospital-bound elderly patients receiving antibiotics (*British Medical Journal*, doi:10.1136/bmj.39231.599815.55).

Preliminary science has suggested the potential of probiotic bacteria to protect the gut against the Irritable Bowel Syndrome (IBS), although there are only a handful of probiotic products on the market claiming to target the condition. IBS is a long-term condition that usually involves cramping, diarrhea and constipation. It affects between 10 and 15 per cent of the population. A series of probiotic studies on mice have presented positive results in protecting newborns from intestinal infections and reducing inflammatory bowel disease. Probiotics may boost the number of bowel movements and relieve constipation, suggests a new pilot study from the Netherlands.

Some pre- and probiotics may suppress the activity of certain enzymes in the colon, possibly reducing the production of toxic and carcinogenic metabolites (*Eur J Clin Nutr*, ePub Feb. 28, 2007, DOI: 10.1038/sj.ejcn.1602706).

A study published in the British Medical Journal showed that children who drink probiotic milks have lower incidences of respiratory illnesses than those who do not drink the milks. The study was conducted on 571 Finnish school children and showed a 17% reduction in the occurrences, as well as a reduction in the number of antibiotic prescriptions.

Supplementation of probiotics can reduce the duration of the common cold by nearly a quarter, research has suggested. The study compared the effects of probiotic supplements with standard vitamins and minerals and found that the probiotic bacteria shortened episodes of the common cold and reduced the severity of symptoms. The findings were published in *Clinical Nutrition*.

Workers who take probiotics daily are less likely to be off work with common illnesses, such as colds and gastroenteritis, than workers who don't. An exploratory study published in the open access journal Environmental Health shows that workers who took a daily dose of probiotic bacteria were 2.5 times less likely to take sick leave than workers who took a placebo.

Probiotic bacteria could not only help fight viruses but they may also protect against autoimmune diseases like diabetes. Results from a clinical trial that showed higher numbers of different types of white blood cells after subjects had consumed probiotics. Increased white blood cells have previously been linked to the protection against type 1 diabetes.

Researchers from Ben-Gurion University of the Negev, and The Burn Unit and the Skin Bank of Soroka University Medical Center studied the effects of probiotic supplementation on 28 patients with second and third degree burns on less than 70 per cent of their body. They found probiotic supplement may help reduce sepsis and cut mortality from acute burns.