



## Probiotics

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There are 400-500 different species of bacteria inhabiting the human intestinal tract. Most have neither harmful nor beneficial effects. Some however, are associated with illnesses when present in large quantities and some are beneficial. The number of bacteria can reach as high as 100 trillion, much more than the total number of cells in the body. The role of probiotic supplements is to increase the number of beneficial bacteria while decreasing the harmful bacteria.



Probiotics are live microorganisms which when administered in adequate amounts confer a health benefit. Lactobacillus and bifidobacteria are the most common types of microbes used as probiotics. Etymologically, the term appears to be a composite of the Latin preposition pro ("for") and the Greek adjective for biotic, the latter deriving from the noun for bios, "life".

In early 20th century Russian scientist and Nobel laureate Eli Metchnikoff first introduced his observation of the positive roles played by certain bacteria. Metchnikoff, at that time a professor at the Pasteur Institute in Paris, produced the notion that the aging process results from the activity of putrefactive (proteolytic) microbes producing toxic substances from the digestion of proteins in the large bowel. Metchnikoff had also observed that certain rural populations in Europe, for example in Bulgaria and the Russian steppes that lived largely on milk fermented by lactic-acid bacteria were exceptionally long lived.

A 2010 study suggests that there is justification behind the reports of probiotic therapies as beneficial for preventing secondary infections, a common complication of antibiotic therapy. It is thought that keeping the immune system primed with "good" bacteria might help counteract the negative effects of sickness and antibiotics. It is theorized that antibiotics turn the immune system "off" while probiotics turn it back on "idle", and thereby it is more able to quickly react to new infections.

Some benefits attributed to the use of certain strains of bacteria in probiotics:

- Managing lactose intolerance
- Prevention of colon cancer
- Lowering cholesterol

- Lowering blood pressure
- Improving immune function and preventing infections
- Antibiotic-associated diarrhea
- Reducing inflammation
- Improving mineral absorption
- Preventing harmful bacterial growth under stress
- Irritable bowel syndrome
- Managing urogenital health
- Vitamin Synthesis
- Improved Immunity and Digestion
- Alcoholic Liver Restoration
- Diarrhea Treatment
- Cancer Prevention

Research is emerging on the potential health benefits of multiple probiotic strains as a health supplement as opposed to a single strain. It is thought that this diverse environment may



benefit from multiple probiotic strains; different strains populate different areas of the digestive tract, and studies are beginning to link different probiotic strains to specific health benefits.

Lactobacillus organisms are normal inhabitants of the human intestine and vagina. They are the main ones that produce lactic acid in the digestive tract, which is important for overall health. Some nutritional benefits gained from lactic acid include an improved nutritional value of food, control of intestinal infections, improved digestion of lactose, control of some types of cancer, and control of serum cholesterol levels. To date,

some 56 species of Lactobacillus have been identified.

Bifidobacterium strains are common in the natural flora of human and animal digestive systems. Some strains show a tendency to inhibit the growth of such harmful bacteria as Salmonella. As probiotics, they stimulate the immune system, aid in digestion, and assist in the absorption of food ingredients and nutrients. They are also capable of synthesizing some vitamins. To date, about 30 species have been isolated. Breastfed newborns begin to colonize bifidobacteria within days of birth. However, populations begin to decline with advancing age unless they are supplemented in the diet. Bifidobacteria are influenced by a number of factors, including diet, antibiotics, and stress.

Some benefits of certain strains and species are:

### **Lactobacillus**

- L. acidophilus is the most commonly known probiotic bacterium. It is found primarily in the small intestine where it produces natural antibiotics. These increase immune resistance against such harmful bacteria and fungi as Candida albicans, Salmonella, E. coli, and Staphylococcus aureus. L. acidophilus helps control intestinal infections. It also inhibits some types of cancer and helps to control serum cholesterol levels.

- *L. brevis* is a lactic acid-producing organism important in the synthesis of vitamins D and K. Research studies have shown that *L. brevis* decreases intestinal permeability (leaky gut syndrome), improves intestinal micro flora, and has a positive effect on the intestinal immune system.
- *L. bulgaricus* helps produce lactic acid, thereby providing a good environment for other beneficial bacteria to grow. Stimulates the production of “interferon” and “tumor necrosis factor”, regulators of the immune system. *L. bulgaricus* assists in the metabolism of lipids (fats) and may help control cholesterol levels. It also produces natural antibiotic substances.
- *L. caseii* supports the natural defences of the body and stimulates immune responses in the intestinal tract. Inhibits the growth of pathogenic bacteria in the small intestine. It has a positive effect on lessening winter infections in the elderly.
- *L. plantarum* has been studied for the treatment of recurrent *Clostridium difficile*-associated diarrhea and for *Candida* yeast infections. The adherence of this bacterium reinforces the barrier function of the intestinal mucosa, thus preventing the attachment of the pathogenic bacteria. *L. plantarum* has many significant effects.
- *L. rhamnosus* easily colonizes in the lining of the intestines and in the vaginal tract. It is very prolific and has a high tolerance for bile salts and digestive enzymes, meaning it survives the digestive process. Provides many and varied benefits.
- *L. salivarius* is important in helping to normalize the flora of the gut, especially in those with chronic bowel conditions and helps digest proteins and their undesirable by-products left in the gut which can cause putrefaction. *L. salivarius* is a very resilient bacterium, which doubles its population every twenty minutes.

### **Bifidobacterium**

- *B. bifidum* resides mainly in the lining of the large intestine and the vaginal tract. Strains of this species have been used in therapeutic preparations for the treatment of the following: digestive disorders in infants, enterocolitis, constipation, cirrhosis of the liver, imbalance of intestinal flora following antibiotic therapy, and for promotion of intestinal peristalsis.
- *B. infantis* is found mainly in the large intestines of infants but it can also be found in adults and in the vaginal tract of women. This bacterium is important because it has proven to stimulate the production of immune agents. Like other bifidobacteria species, this one can produce acids that may retard the colonization in the colon by certain foreign or harmful bacteria including *Clostridia*, *Salmonella*, and *Shigella*.
- *B. longum* is found in high concentrations in the large intestine. It helps prevent the colonization of invading pathogenic bacteria by attaching to the intestinal wall and crowding out unfriendly bacteria and yeast. It may reduce the frequency gastrointestinal disorders during antibiotic use. It also increases calcium absorption. *B. longum* has a strong antitumor activity by regulating markers and reducing incidence of colon tumors.

In some specific situations (such as critically ill patients with predicted severe acute pancreatitis) they could be harmful. Some hospitals have reported treating lactobacillus septicaemia, which is a potentially fatal disease caused by the consumption of probiotics by people with lowered immune systems or who are already very ill.



Be sure to try NSP's Probiotic Eleven® (90 caps), Bifidophilus Flora Force® (90 caps), or Sunshine Heroes Probiotic Power (90 Chewable Tablets) for children.

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**Yours in Good Health!**

Sincerely,

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The Back to Herbs Team

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