



# Probiotics (Part 1)

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Although people tend to think that bacteria are harmful germs that make you ill or spoil your food, many bacteria are necessary for good health. We cannot survive without them.

Just consider the number of cells in the human body: We are 90% bacteria and 10% human! Our gut contains 100 trillion bacteria that are important for keeping us healthy. With a combined weight of over 3 pounds, they comprise over 400 known species. New data indicate there may be over 1,000 different species in the gut. The intestinal microflora promotes normal gastrointestinal function, provides protection from infection and controls much of the metabolism of the body. It thrives in a gut that is anaerobic (without oxygen) and rich in nutrients from our food.

A healthy gut should contain a ratio of at least 85% good bacteria to no more than 15% other, bad bacteria and microorganisms. An imbalance in our gut microflora can sometimes occur during times of stress, when we take antibiotics or else when the gut becomes inflamed, as in the case of irritable bowel syndrome, gluten intolerance or the use of various drugs such as over-the-counter medicines and NSAIDS (ibuprofen, Tylenol, etc.).

## What are probiotics

Probiotics are beneficial bacteria found in food products or supplements that can promote health by improving the balance of microorganisms in our gut.

In the early 1900's, Nobel laureate Metchnikoff reported on the beneficial effects, increased disease resistance and increased longevity when people consumed fermented milk products.

We now know that a balanced microflora in the gut protects against infection, promotes normal bowel function, provides us with energy and nutrition and maintains normal immune function. Microflora "talk" to each other and communicate directly to the brain, nervous system and immune system. Recent studies have noted a direct communication between the gut microflora and both the immune system throughout the body and directly with the brain and nervous system. **The bacteria in your gut are in constant conversation with the entire body!** If the gut is imbalanced and functioning poorly, the effects are felt in every other system in our body. Gut health is indicative of overall health. An unhealthy gut is linked to depression, fatigue, fibromyalgia, thyroid and adrenal problems and many other disease processes.

## Health benefits from a balanced microflora

The beneficial supplementation of probiotics is helpful in preventing and relieving many disease conditions. When my patients go abroad for vacation, I have them supplement with *S. boulardi*, and *Lactobacillus GG* to prevent diarrhea associated with tainted food and water. These and other probiotics help decrease the incidence of *Clostridium difficile* associated with widespread hospital-borne and food-borne infection.

It has recently been confirmed that hypochlorhydria (low stomach acid) is a significant risk factor for the overgrowth of harmful intestinal bacteria and yeast. It has also been shown that the long-term use of proton pump inhibitors represents a significant risk for bacterial overgrowth, especially *H. pylori*, which contributes to gastric ulcers.

**Acne:** One recent study noted that 54% of acne patients had marked alterations of gut microflora. Supplemented *L. acidophilus* and *B. bifidum* helped restore both gut integrity and acne-free skin.

**Antibiotic recovery:** Certain probiotics seem better than others at colonizing the antibiotic-associated gut syndrome. When we take antibiotics - as necessary as they may be for fighting the disease-causing bacteria - good colonies of bacteria may also be killed, leaving the gut vulnerable to other non-beneficial bacteria, yeast and pathogens which may be harmful to digestion and to the immune system.

**Fighting pathogenic bacteria:** Other probiotics seem more effective and possibly more specific in fighting different species of unwanted gut bacteria. For instance, Dr. Ohira's 12+ professional brand of probiotic has been shown to be a great colonizing group of bacteria, and aid in fighting staph and strep infection.



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**Enhancing immunity:** Some probiotics help promote immunity by stimulating the growth of certain antibody secretions, as well as the growth and proliferation of different immune cells.

**Digestion support:** Most lactic acid bacteria are capable of breaking down and metabolizing a variety of carbohydrates, including lactose. Lactose-intolerant people lack the enzyme to digest lactose. By supplementing these bacteria, some individuals are better able to break down and use lactose products, especially yoghurt.

**Ulcerative colitis, Crohn's and irritable bowel syndrome (IBS):** Many different species protect and heal the gut lining. *L. casei* and *L. lactis* have been shown to modulate the gut immune response (IgA), causing a reduction in inflammation. Many times, different combinations of probiotics seem more effective than choosing any single species.

**\*\*Reduction of cholesterol:** Studies have shown that certain probiotics can lower serum cholesterol and LDLs. *L. casei* and *L. acidophilus* show great promise in lowering cholesterol.

**Thyroid hormones:** Up to 20% of thyroid hormone is converted to a more active form by enzymes and reactions coordinated by beneficial gut microbes. The remaining 80% is completed in the liver.

**Vitamin production:** Some lactic acid bacteria produce small amounts of B vitamins. And they synthesize vitamin K, too. Bifidobacteria also aid in the production of vitamin K.

**Enhancement of mineral digestion:** Mineral absorption requires an acid medium. Stomach acid is usually enough to accomplish this. However, changed stomach pH due to antacid intake, stress and other factors may decrease mineral absorption. The good bacteria form micro-environments close to the gut wall which are more acidic than the center of the gut, promoting mineral absorption within the gut itself. This is enhanced when inulin (a prebiotic used for feeding the probiotics) is also introduced, providing stimulation for growth of colonies.

**Food allergy:** Since probiotics are anti-inflammatory for the gut, they improve clinical symptoms of food allergy in the body. Probiotics also help prevent and decrease carcinogenic (**cancer-forming**) inflammation in the gut.

## Common Questions

1. **When should I take probiotics?** Health care professionals are divided on this. Advocates of taking them *with* meals reason that this will protect the probiotics from being destroyed by stomach acid. By contrast, others advocate taking them on an empty stomach with a large glass of water. They feel that the water dilutes the stomach acid and therefore protects the fragile bacteria. The best method is up to you. I believe that many studies show probiotics are beneficial when taken with meals. I hedge my bets by taking one probiotic at night before bed with a glass of water and one in the morning with my breakfast!
2. **How much do I take?** In general, a dose of probiotics should have the very minimum of 1 billion CFUs (colony-forming units) to deliver a significant amount of probiotics to the gut. Several billion per dose is most beneficial in my view.
3. **Can I take too much?** No negative effects have been documented unless you have an allergy to a certain probiotic. Avoid those made from bacteria raised on milk if you are sensitive to milk products. Many probiotics can be purchased that are allergy-free.
4. **How can we get them in food?** Cultured food products such as yoghurt contain naturally occurring probiotics. Fermented foods, including pickles, sauerkraut and kefir, also offer different varieties of probiotics. It is always beneficial to add these foods to your diet.



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5. **Side effects:** Beneficial bacteria sometimes cause a Herximer reaction. This is the die-off of pathogenic bacteria and/or candida. For instance, when yeast are killed, they break down, releasing chemicals into the gut, which may cause distress in the form of fatigue and flu-like symptoms. These reactions are usually short-lived and are alleviated by promoting good bowel movements with the use of added fiber. Drinking a lot of pure water each day is often all that is needed to prevent this reaction. If these reactions occur, using lower doses of probiotics or switching to a different species of probiotic may alleviate the symptoms by causing less die-off reaction.

## Prebiotics

Prebiotics are indigestible carbohydrates that stimulate the growth of good bacteria in the gut. Examples include inulin (from different sources), chicory, asparagus, leeks and onions, garlic and soybeans. They are also found in human breast milk. Although some people find that prebiotics cause the production of excess gas, most people do not.

**Synbiotics** are probiotics combined with prebiotics. These are a good choice for supplementation.

## The Appendix - Did You Know?

*Researchers have recently discovered the use of the appendix! It seems that the 'lowly' appendix is a storage container for the various species of good bacteria in the gut. If the gut microflora is destroyed by antibiotics or disease, it is the job of the appendix to re-populate the gut with the normal flora.*

## Probiotics for infants and children

The immune system of an infant is greatly determined by the types and amount of good microflora in the digestive system. An infant's gut is sterile before birth and begins to get colonized in a progression that starts at birth. As the infant passes through the birth canal, it begins to gather bacteria and other microflora from the baby's mother. An infant's gastrointestinal microflora may be disrupted by cesarean birth and formula feeding.

An infant born by cesarean section may have poor colonization by good bacteria, leading to an increased risk of disease.

Breastfed babies have large colonies of certain good microflora of the Bifidobacterium species, which helps provide a healthy and balanced immune system. Mothers taking probiotic supplements pass the beneficial probiotics to the baby through the milk. Formula-fed babies have very low amounts of these bacteria. Breastfeeding reduces food allergies, asthma, obesity, diabetes and inflammatory bowel disease in part by the establishment of a healthy microflora.

**It is well established that probiotics consumed by pregnant women will colonize the digestive tract of the newborn.** For instance, women who consume the probiotic *L. rhamnosis* before birth and give it to their babies for 6 months after birth may significantly decrease the risk of eczema and immune dysfunction, especially allergies.