

# PROBIOTICS

PENNINGTON BIOMEDICAL RESEARCH CENTER

## SPECIAL POINTS OF INTEREST :

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- > **Types of Probiotic bacteria**
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## WHAT ARE PROBIOTICS?

Probiotics are living micro-organisms or bacteria that we consume in foods or beverages. Probiotic bacteria are friendly bacteria that live in our bodies and offer many benefits. There are many different varieties of friendly bacteria that exist naturally in foods or drinks, or can be added to foods or beverages to enhance health and well being. When friendly bacteria are added into foods or beverages they are known as functional foods.

Probiotic bacteria are also available in supplement form. Most supplements contain mixtures of several bacteria. Supplements and foods high in probiotic bacteria may be useful after antibiotic therapy to re-colonize the intestinal track with healthy bacteria.



**Yogurt has friendly probiotic bacteria.**

## TYPES OF PROBIOTIC BACTERIA

Some of the most common types of probiotic bacteria are the Lactic acid bacteria. These bacteria are found in yogurt. *Lactobacillus acidophilus*, *Lactobacillus bulgaricus* and *Streptococcus thermophilus* are some common bacteria in different varieties of yogurt. Other bacteria that are used as probiotics are non-lactic acid bacteria and non-pathogenic yeast.



**INTESTINAL MICROFLORA**

The intestines are a unique and vital organ. The intestines are metabolically very active. During and after a meal, digestion and absorption break down the food with a myriad of reactions happening simultaneously to take care of our energy and nutrient needs, as well as letting our brains know that we have eaten.

We have many organisms that live within our intestinal track to assure a normal health. The weight of all the bacteria within our intestines is about 1.5 kg, or a little over 3 pounds, with a total over 100 trillion. Each section of the intestinal track has specific bacteria that live in it. Even within the stomach,

where the conditions are very acidic, there are living bacteria. Normal microflora can be enhanced by ingesting products that have friendly bacteria, or substances that support bacterial growth. Under normal conditions, the bacteria thrive, but they can be killed by antibiotic therapy.

**Probiotic bacteria offer protection against harmful bacteria and enhance our immune system.**

**FUNCTIONS OF PROBIOTICS**

Probiotics have been used for various conditions. They have been found to modulate immunity, particularly in infants. The presence of the friendly bacteria in the intestinal track activates the immune system and boosts important immune components. They are important as a

treatment for various intestinal conditions such as lactose intolerance, Crohn's disease, ulcerative colitis, Irritable Bowel Syndrome (IBS), diarrhea, and constipation. Probiotics have been successful in lowering cholesterol. They have also been used as a

treatment for rheumatoid arthritis. Other conditions that have improved due to probiotic treatment are atopic dermatitis, candidiasis and urinary tract infections. Probiotics are also thought to be helpful in preventing cancer, particularly intestinal cancers.

**IMPROVED IMMUNITY THROUGH PROBIOTICS**



**Lymphocytes are important cells for helping our immune system cope with infection.**

About 80 percent of our immune system function is within the intestinal track. Within the intestinal track we have what is called gut associated lymphoid tissue or GALT. GALT is very important when it comes to body immunity and protec-

tion against invasive species. The GALT has cells such as T and B lymphocytes that actively defend us against pathogens. The beneficial bacteria activate these lymphocytes and cause a release of several cellular chemicals that

either build tolerance against antigens or alter cell chemistry and its response to an allergen. The friendly bacteria help reduce inflammation and stabilize the intestinal track.

## PROBIOTICS AND INTESTINAL HEALTH

Probiotics have been used to treat several intestinal conditions. It is thought that when the intestinal track is colonized with healthy and friendly bacteria, the gut is healthier and therefore it functions better. Pediatric diarrhea is a very common occurrence and can have serious effects such as dehydration. Using

probiotic bacteria as part of the treatment can reduce the severity and length of the bouts and can help the infant recover faster. The same is true for traveler's diarrhea. Studies show that there is a reduction in days affected by traveler's diarrhea when probiotic treatment is administered. Other conditions improved

with probiotic treatment are Crohn's disease, ulcerative colitis, IBS and constipation. The probiotic bacteria normalize the walls of the intestinal tract and help in the healing process. Probiotics are also responsible for synthesizing nutrients in the intestinal tract such as folic acid, niacin, riboflavin, vitamins B6 and B12.



**Probiotic bacteria**

## OTHER HEALTH CONDITIONS

The probiotic bacteria have many functions and they are very metabolically active. In young infants they offer help with intestinal tract maturation. They also contribute to enhanced immunity in the young infant. Probiotics can also help with skin disorders such as atopic eczema.

Probiotic bacteria help in enhancing the immune system and for that reason is thought to offer help in conditions such as rheumatoid arthritis and atopic dermatitis. Probiotics have also been found to benefit children that have autism spectrum disorders. The disorder

is multifaceted and very difficult to treat and there is no one solution. One of the facets of the disorder is intestinal malfunction which can be augmented by treatment with probiotic bacteria.

**Probiotic bacteria have varied functions and help against many conditions.**

## SOURCES OF PROBIOTICS

The most common sources of friendly bacteria are yogurt, cultured buttermilk, and cheeses. Make sure that the yogurt packaging states 'live bacteria.' Cultured buttermilk is made with bacteria that produces lactic acid, which

makes the product sour. Some cultured cheeses use bacteria to finish the maturation of the cheese. Another fermented dairy product is kefir. Traditionally yogurt has only one or two bacteria whereas kefir tends to have several friendly

bacteria. Other foods that that are either produced by bacterial fermentation, or process are Japanese Miso, Tempeh, sauerkraut, beer, sourdough bread, chocolate, kimchi, olives, and pickles.



**Many aged cheeses are fermented products and contain friendly bacteria.**



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**References**

Symposium: Clinical Applications of Probiotics in Human Health. September 14-15, 2007, Las Vegas, Nevada.

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