

# Probiotics Fact Sheet for Consumers



Yogurt may be a good source of probiotics.

## What are probiotics and what do they do?

Probiotics are live microorganisms (such as bacteria and yeasts) that provide health benefits when you consume them. They are naturally present in some fermented foods, added to some food products, and available as dietary supplements. However, not all foods and dietary supplements labeled as “probiotics” have proven health benefits.

Probiotics act mainly in the gastrointestinal (GI) tract, where they can affect your gut microbiome. This microbiome is made up of many microorganisms (mostly bacteria) that live primarily in your large intestine. When you eat or drink enough probiotics, they help protect your GI tract from harmful microorganisms, improve your digestion and gut function, and might provide other health benefits as well.

Common probiotics include *Lactobacillus*, *Bifidobacterium*, *Saccharomyces*, *Streptococcus*, *Enterococcus*, *Escherichia*, and *Bacillus*. Probiotic microorganisms are named by their genus, species, and strain. An example is *Lactobacillus rhamnosus* GG. In this example, *Lactobacillus* is the genus, *rhamnosus* is the species, and GG is the strain. This microorganism is also known by its abbreviation, LGG.

## What foods provide probiotics?

Fermented foods have added microbial cultures. Manufacturers make yogurt, for example, by adding live microorganisms (such as *Lactobacillus* or *Streptococcus*) to milk. But whether the microorganisms provide probiotic benefits depends on the types and amounts added.

Some fermented foods (such as sourdough bread and most pickles) are processed after fermentation, which kills the microorganisms. Microorganisms that are not alive do not provide the same benefits as living microorganisms and are not considered to be probiotics. Other fermented foods contain microorganisms that have not been studied, so whether they have any probiotic benefits is not known. Examples of these include apple cider vinegar, cheese, kimchi, kombucha, miso, and sauerkraut.

Some unfermented foods have added microorganisms. These foods include some cereals, juices, milks, nutrition bars, smoothies, and infant and toddler formulas. Whether these foods provide probiotic benefits depends on the types and amounts of microorganisms they contain.

## What kinds of probiotic dietary supplements are available?

Dietary supplements labeled as probiotics contain a wide variety of microorganisms and amounts. Many of these supplements have not been studied, so their health effects, if any, are not known.

The Supplement Facts label on a dietary supplement that contains probiotics lists the total weight of the microorganisms in the product. Many product labels also list the number of colony forming units (CFUs) in a serving. CFUs are a better indicator than total weight of the number of live microorganisms. Examples of CFUs that you might see on a label are  $1 \times 10^9$  (1 billion) CFUs and  $1 \times 10^{10}$  (10 billion) CFUs. However, higher CFU counts do not necessarily mean that the product has greater health benefits. A product's health benefits, if any, depend more on the specific microorganisms it contains than it does on the number of microorganisms it contains.

### What are some possible effects of probiotics on health?

Scientists are studying probiotics to understand how they affect health. Here are some examples of what this research has shown.

#### Atopic dermatitis

Atopic dermatitis (eczema) is a skin condition that affects mostly children. When a person has atopic dermatitis, the skin is dry and itchy, oozes when scratched, and has red rashes that come and go. Some studies have shown that taking probiotics during pregnancy and infancy might reduce the risk of developing atopic dermatitis and lower the severity of dermatitis symptoms. But the effects vary depending on the probiotic strain used and whether it is taken during pregnancy, during infancy, or both.

#### Pediatric acute infectious diarrhea

Acute infectious diarrhea in infants and children causes loose or liquid stools and three or more bowel movements within 24 hours. This condition is often caused by a viral infection and can last for up to a week. Some infants and children also develop fever and vomiting. Some studies have shown that probiotics shorten bouts of acute diarrhea by about 1 day. LGG and *Saccharomyces boulardii* show the most promise for treating pediatric acute infectious diarrhea. Other studies, however, have not shown that probiotics are effective—most episodes of diarrhea are successfully treated by drinking plenty of fluids.

#### Antibiotic-associated diarrhea

Antibiotics, such as erythromycin and penicillin, can kill beneficial microorganisms that live in the GI tract, resulting in diarrhea. Some probiotic strains, such as LGG and *Saccharomyces boulardii*, might help reduce the risk of antibiotic-associated diarrhea in people younger than 65, but not in older

people. This is especially true when people start taking these products within 2 days of the first antibiotic dose.

#### Irritable bowel syndrome (IBS)

IBS is a common disorder that causes frequent stomach pain and discomfort, bloating, changes in bowel movement frequency, and diarrhea or constipation. The causes are unclear, but people with IBS might have too many “bad” microorganisms and too few “good” ones in their gut. Taking probiotics might reduce IBS symptoms. But the effects vary depending on the probiotic strain used, how long it's used, and the symptom being treated.

#### Hypercholesterolemia

Very high blood levels of cholesterol (a condition known as hypercholesterolemia) and build-up of cholesterol in blood vessel walls can block the flow of blood to the heart and increase the risk of heart disease. Some studies have shown that probiotics, such as *Lactobacillus acidophilus*, slightly lower total cholesterol and low-density lipoprotein (LDL or “bad” cholesterol) levels. But other studies have found no benefits. More research is needed to understand the effect of probiotics on blood cholesterol.

#### Obesity

Researchers are studying the effects of probiotics on body weight and obesity. Some studies have shown that probiotics might slightly reduce body weight or body fat. Other studies have shown that probiotics have no effect or might even increase body weight. More research is needed to understand the effect of probiotics on body weight and body fat.

### Can probiotics be harmful?

People have used many of the microorganisms in probiotics to ferment food for thousands of years. In healthy people, probiotics may cause gas, but they rarely cause infections or other health problems. Probiotics are most likely to cause problems, such as bacterial infections, in people who are already seriously ill or have weak immune systems.

### Probiotic choice and use

There are no official recommendations for probiotic use by healthy people. If you want to try probiotics, ask your healthcare provider for advice about which probiotic to choose, what dose to take, and how long to use the product. Check product labels for the expiration or “use by” date and follow the storage instructions. Some probiotics need to be kept in the refrigerator, but others can be stored at room temperature.

## Where can I find out more about probiotics?

### For more information on probiotics:

- Office of Dietary Supplements Health Professional Fact Sheet on Probiotics
- National Center for Complementary and Integrative Health, Probiotics

### For more advice on buying dietary supplements:

- Office of Dietary Supplements Frequently Asked Questions: Which brand(s) of dietary supplements should I purchase?

### For information on the government's food guidance system:

- MyPlate
- *Dietary Guidelines for Americans*

### Disclaimer

This fact sheet by the Office of Dietary Supplements (ODS) provides information that should not take the place of medical advice. We encourage you to talk to your healthcare providers (doctor, registered dietitian, pharmacist, etc.) about your interest in, questions about, or use of dietary supplements and what may be best for your overall health. Any mention in this publication of a specific product or service, or recommendation from an organization or professional society, does not represent an endorsement by ODS of that product, service, or expert advice.



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