



## Understanding **PROBIOTICS**

### *What are probiotics?*

Probiotics are generally defined as live microbes (extremely small living things that can only be seen with a microscope) which, when taken in adequate amounts, confer a health benefit to the person taking them. In plain language, probiotics are “good microbes.” These friendly microbes help us digest food, maintain health and fight disease.

While many people use probiotics for their general health benefits, many others are looking to use probiotics to treat digestive disorders and other ailments.

Scientific research in probiotics has exploded in the past 20 years. Research has shown these friendly microbes can be used to prevent and treat disease – particularly in our gut.

Even ostensibly healthy people may benefit from probiotics which can improve the health of your digestive system and reduce the frequency of occasional digestive discomfort such as bloating, gas, cramps, diarrhea and constipation.

Scientists are discovering new probiotics every day. The two most common groups of microbes used to make probiotics for human use are Lactobacillus and Bifidobacterium. Yeast, *Saccharomyces boulardii*, and some *E. coli* strains are used as probiotics as well.

Probiotics are available for our use in dietary supplements (capsules, tablets, powders or drops) and in some foods including fortified yogurts and fermented milk products. One advantage of properly formulated, freeze-dried probiotic supplements is that they don't need to be refrigerated to remain effective and have longer shelf lives than probiotics in either yogurt or fermented milk.

It is important to note that not all probiotics are the same. There are variations in probiotic strains and how they work. The formulation, or manufacturing process, of the probiotic product is critical. There needs to be a high enough concentration of the probiotic to have a beneficial health effect and the product must be tested to confirm that the bacteria remain effective through its shelf life.

In addition, different strains of probiotics have different effects, so it is important to choose the right type of probiotic in the right dose and duration recommended for the specific ailment or symptoms you want to relieve.

If you want to find a probiotic to treat a specific ailment, you need to consult a health care professional to be sure the probiotic you chose has been proven to be effective for the condition they wish to treat.

Approved probiotics ingested through food or supplements have been generally determined to be very safe. However, probiotics are not medicine. Considered foods or natural health products rather than drugs, probiotics aren't subject to the same regulations that govern prescription medications.

Having a more **diverse, healthy composition** of bacteria, **including probiotics**, in the digestive tract is **beneficial** to our overall health.

### *How do probiotics work?*

Probiotics work mainly by stimulating the body's intestinal and immune system and by displacing harmful bacteria that might otherwise cause disease. We now know that probiotics can indeed provide health benefits. Specific digestive benefits of probiotics may include:

- Reducing the severity and duration of some types of diarrhea (including travellers' diarrhea and antibiotic-associated diarrhea)
- Treating constipation and abdominal bloating
- Improving the symptoms of irritable bowel syndrome (IBS)
- Preventing and treating pouchitis (inflammation of the internal pouch in patients who have part of their colon removed)
- Improving symptoms of colic in breastfed infants

The above digestive disorders have been proven to respond

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to some, but not all, probiotics. Remember, many of the Internet claims about probiotics are not proven or are simply false. Ask your healthcare professional which probiotics might be good for you.

Not all probiotics have the same effect. Depending on the condition, you may want to tailor the choice of probiotics. Below are examples of three different ways in which probiotics are thought to work:

- Preventing bad bacteria from growing and replicating in the intestinal tract, attaching to the lining of the intestine and causing disease
- Blocking the uptake of bad bacteria by improving the ability of the intestinal mucosal barrier to resist infection
- Enhancing the ability of the immune system in the intestinal tract and in the body as a whole to fight off any invasion of bad bacteria that might occur

### *The differences between probiotics, prebiotics and synbiotics*

*Probiotics* contain friendly living microbes, whereas *prebiotics* do not. *Prebiotics* (sometimes called fermentable fibre) contain non-digestible food particles that support the growth of friendly microbes already living in your intestines. Good sources of prebiotics include bananas, berries, flax, onion, garlic, artichokes, leeks, legumes, and whole grains. *Synbiotics* combine both a probiotic and a prebiotic.

### *Probiotics, diversity and the human microbiome*

The human microbiome is the collection of microbes that live in and on the human body. We are made up of many more bacterial cells than human cells. Incredibly, the microbes in our bodies outnumber our own cells by a ratio of about 10 to 1. Many of these microbes live in the gastrointestinal tract, which contains about 100,000 billion bacteria from more than 400 different species and 60 percent of the body's immune cells.

The digestive tract is sterile, with relatively few microbes, until after birth. The initial colonization of the intestines by bacteria is affected by how a baby is delivered, diet, hygiene, infections and medications, such as antibiotics. Microbial diversity is important for the development of the infant's digestive tract and maturing of the immune system.

By diversity we mean many different types of microbes. After 1 year, the gut microbiome is relatively stable in healthy children but it can be altered later in life by what we eat, infections, antibiotics, stress, travel and various disease conditions.

The diverse composition of the human microbiome is very important in maintaining the health of the intestinal tract throughout our lives. The multitude of microbes that comprise the microbiome include probiotics. These essential microbes are sensitive to things such as diet, stress, changes in routine, travel, and their change or depletion can disrupt your digestive system's natural balance of good bacteria. Reduced diversity results in a decreased ability to fight pathogens, or bad microbes.

An alteration in the composition or numbers of microbes in the human gut is called dysbiosis. Dysbiosis results when the mix of natural microbes in the gut is thrown out of balance. Once there is dysbiosis, there is usually less diversity in the composition of microbes and this sets the stage for potential digestive (and other) illness. Scientists have recently discovered evidence that an alteration in the composition of the gut microbiome is a risk factor for infections, obesity, diabetes, constipation, irritable bowel syndrome (IBS), inflammatory bowel diseases (IBD), necrotizing enterocolitis (NEC) in premature babies, and even gastric and colon cancers.

**Dysbiosis** results when the mix of **natural microbes** in the gut is thrown **out of balance**.

The emerging theme for all of these conditions is that reduced intestinal microbe diversity is harmful to the digestive system, and having a more diverse, healthy composition of bacteria, including probiotics, in the digestive tract is beneficial to our overall health. The concept of probiotic therapy is to help us restore microbial diversity and bring the composition of the intestinal microbes back to a healthy, balanced state. Researchers are now testing the benefits of using probiotics to restore health and prevent disease.

Note: The safety of probiotics is not known in people with impaired immune systems, pregnant women, and the elderly.

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## How can probiotics help treat digestive conditions?

### Diarrhea

Many studies have shown that probiotics may help prevent or treat antibiotic-associated diarrhea. Probiotics can also reduce the severity and duration of acute infectious diarrhea in children and adults, and may help prevent it. Unfortunately, a recent large randomized-controlled trial showed that probiotics did not reduce the risk of antibiotic-associated diarrhea or *Clostridium difficile* in elderly patients.

### Constipation

Taking probiotic supplements, or eating food with probiotics can help treat constipation symptoms in adults by helping to soften the stool and ease its passage through the colon. Probiotics can help with regularity and control of intestinal transit time, and may help increase the frequency of bowel movements. Some studies also provide evidence that probiotics can help relieve constipation symptoms in children, increasing the frequency of bowel movements and decreasing abdominal pain.

### Irritable bowel syndrome (IBS)

More and more scientific evidence is showing that probiotics may provide ongoing relief from IBS symptoms, including abdominal discomfort, gas and bloating. Randomized clinical trials in Canada have shown that certain probiotic products may be effective for treating IBS symptoms in adults and have been approved for use by Health Canada. There is also evidence showing that certain probiotic products may improve IBS symptoms in children.

### Inflammatory bowel disease (IBD)

There is good evidence that some probiotics may be beneficial to those with ulcerative colitis when given in addition to standard therapy. However, the use of probiotics alone is not recommended.

There is good evidence for the usefulness of probiotics in preventing an initial attack of pouchitis and preventing relapse after remission with antibiotics. Probiotics may also be recommended for treatment of mild symptoms of pouchitis and as a maintenance therapy for those in remission.

There is currently no strong evidence to support the use of probiotics in the treatment of Crohn's disease.

## Partnering for best health

Working collaboratively with your health care professional will help you protect your body from digestive diseases and maximize your digestive health. When you report your health status completely, concisely and accurately, your physician can provide you with the best care and treatment plan.

## Learning more about probiotics

The Canadian Digestive Health Foundation provides information, tools and support to help you take control of your digestive health with confidence and optimism. Visit [www.CDHF.ca](http://www.CDHF.ca) to learn more.

CDHF on-line can help you learn even more about probiotics. Please watch:

- **Your Microbiome - Good or Bad Gut Bacteria?**

Listen to a fascinating presentation by Dr. Richard Fedorak who introduces you to the marvellous world of our gut microbiota and the role probiotics play in our health.

<http://www.cdhf.ca/en/videos/video/92>

- **Understanding and Harnessing the Power of Probiotics**

Dr. Phil Sherman discusses how probiotics stimulate the immune system, displace harmful bacteria and to benefit our health. He looks at the role probiotics play in reducing the severity and duration of diarrhea, treating constipation, supporting relapse of ulcerative colitis, counteracting lactose intolerance and more. <http://www.cdhf.ca/en/videos/video/79>

**Please note:** The information contained in this digestive disorder guide is not a substitute for medical care and the advice of your physician. There may be variations in treatment that your physician may recommend based on your individual facts and circumstances. Always consult with your physician when you have concerns about your health.



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- Please send me information about protecting and improving my digestive health.

Over 20 million Canadians suffer from digestive disorders every year. The Canadian Digestive Health Foundation believes this is unnecessary and unacceptable.

We reduce suffering and improve quality of life by empowering Canadians with trusted, up to date, science-based information about digestive health and disease.

As the Foundation of the Canadian Association of Gastroenterology, we work directly with leading physicians, scientists, and other health care professionals to help you understand and take control of your digestive health with confidence and optimism.

Through research and public education, we aim to:

 **REDUCE**  
the incidence and prevalence of digestive disorders

 **IMPROVE**  
understanding of digestive health issues

 **SUPPORT**  
those suffering from digestive disorders

 **ENHANCE**  
quality of life for those living with digestive disorders

## Request for support

The Canadian Digestive Health Foundation is a national charity governed by a volunteer board of directors. We rely on donations from the public and the generosity of our partners to develop and deliver our programs. Please consider including our Foundation as one of your chosen charities.

## Contact us/Donate to

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