

The background of the entire page is a dark, almost black, field filled with various microscopic organisms. These include elongated, rod-shaped bacteria, some with flagella, and spherical cells. The organisms are rendered in a semi-transparent, glowing style, with a fine, granular texture that gives them a three-dimensional appearance. The lighting is soft, highlighting the contours and internal structures of the cells against the dark background.

PROBIOTICS

BEYOND
THE
MYTHS

A GUIDE TO PROBIOTICS
WITHOUT GIMMICKS

ebstee

WHY

Why is there so much talk about probiotics?

The popularity of probiotics keeps getting bigger every year, especially with the hundreds of advertising campaigns that promote their benefits.

Today, millions of people around the world take probiotic supplements to promote their digestion and reduce the risk of disease.

The primary reason that led to this massive popularity goes back to the scientific studies that supported the benefits of probiotics and recommended their use in individuals with imbalanced microbiomes.

Probiotics are meant to provide beneficial bacteria that help your body's microbiome. Now, why is the body's microbiome important for our health? Trillions of Bacteria that make up the body's microbiome provide 3 key functions:

- Breaking down food and providing key Nutrients like short-chain fatty acids and vitamins
- Secreting metabolites necessary for normal cellular function
- Keeping out / controlling the harmful and Pathogenic bacteria thus being the frontline of our immune system.

There are 3 times more bacteria than cells in a healthy adult. They account for 15 times more genes than the human genome. That is why the microbiome is also referred to as our second genome.

In the next sections, we will cover some basic concepts about probiotics to help you choose whether it's the right option for you to consume these products.

NATURAL SOURCES

Natural sources of probiotics

Contrary to popular belief, you can get plenty of probiotics from natural sources, such as:



Yogurt is one of the richest sources of probiotics.

This substance is the result of milk fermentation with friendly bacteria, such as Bifidobacteria. (1) According to studies, consuming yogurt in moderate quantities leads to several health benefits, including the optimization of bone health and the lowering of blood pressure. (2) (3)

Additionally, antibiotic-associated colitis, which is a common condition seen in children after intake of antibiotics, quickly resolves after consuming probiotics.

Note that antibiotic-associated colitis manifests with abdominal cramping, diarrhea, vomiting, and other digestive symptoms.

Interestingly, researchers also found that irritable bowel syndrome (IBS) symptoms improve after consuming yogurt (4).

NATURAL SOURCES

However, keep in mind that not all yogurt contains live probiotics, as in some cases, the live bacteria have been killed during processing. You can do a simple experiment at home. Try to use a purchased yogurt as the starting culture added to boiled and cooled milk and incubated at warm room temperature overnight. If you can get homemade yogurt from this then your starting culture had live bacteria that you need for its health benefits.



Kefir is a substance that is similar to thin yogurt; the basic component of this drink is fermented milk. It was originally used in eastern Europe and Russia. In recent years, interest in kefir has grown substantially, which is because of the beneficial effects of kefir on general health, and especially, gastrointestinal health. Because kefir is a fermented version of milk, people with lactose intolerance can drink it without any problem, which further contributed to its positive reputation. (5)

Most importantly, kefir is very rich in probiotics, even more than yogurt. (6)

NATURAL SOURCES

As a result, it improves digestion and helps with gastrointestinal diseases, such as irritable bowel syndrome, ulcerative colitis, and Crohn's disease. *Lactobacillus kefir* is a type of probiotic found uniquely in kefir. This particular type contributes to the protection against harmful bacteria, such as *Helicobacter pylori*, *E. coli*, *Salmonella*, and *Shigella*.



Sauerkraut results from a fermentation process led by lactic acid-producing bacteria. It is a traditional food that's especially popular around Europe.

Similar to other foods on this list, sauerkraut is quite rich in probiotics. However, it also has considerable amounts of fiber, vitamins (e.g., B, C, K), sodium, iron, and manganese. (7)

When buying this product, make sure to opt for the unpasteurized form since other types of sauerkraut kill the healthy bacteria.

NATURAL SOURCES



Tempeh originally comes from Indonesia but has recently become popular in the entire world due to its rich content in protein. In fact, many vegans consume tempeh to prevent protein deficiency.

Tempeh is also compacted with probiotics, as it undergoes a fermentation process during production. (8)



Kimchi is a fermented Korean side dish that has many vegetables, including cabbage.

The primary probiotic found in this food is the lactic acid type (e.g., *Lactobacillus kimchi*). These bacteria help the body in many different ways, including the optimization of digestion. (9)

SUPPLEMENTS

When should you take probiotic supplements?

There is a common belief that supplements are always good for your health even if you have sufficient amounts of nutrients in your body.

Unfortunately, this statement is not true.

At best, supplementing your body when it doesn't need it will offer you no benefits and make you lose some money. At worst, you may develop adverse effects of toxicity to that product, especially when you exceed your body's tolerable limit.

This rule also applies to probiotics, so here are the scenarios where taking probiotics is reasonable:

Experiencing signs and symptoms due to poor digestion

Most people associate probiotics with digestive problems. However, research keeps revealing that a healthy gastrointestinal tract impacts several organ systems and physiological functions. For instance, if you are having sleep abnormalities, immune dysfunction, poor energy, or lack of concentration, they may all be signs of microbiome dysbiosis

Taking antibiotics irrationally

Antibiotics consist of molecules with the ability to stop the growth of bacteria or destroy their structural integrity. These molecules have revolutionized the field of medicine and allowed us to eradicate some debilitating infectious diseases, such as the bubonic plague. However, when you take antibiotics irrationally, you'll endanger the healthy bacteria found in your gut. Unfortunately, researchers found that the imbalance created by antibiotics abuse can take up to 3 years before fully resolving. In this scenario, taking probiotic supplements will help you accelerate the process of restoring the balance to your microbiome.

SUPPLEMENTS

Processed Food and chemicals and Pesticides in fruits and vegetable

Today processed food contain lot of chemicals as additives and preservatives, which are detrimental to a healthy microbiome. Even healthy food like vegetables and fruits contain pesticides that destroy many of the essential gut bacteria. This is why, today's lifestyle warrants some form of probiotic supplements to nurture and nourish your body's microbiome.

For specific pathologies

Aside from optimizing your gastrointestinal health, probiotics improve the symptoms of numerous conditions by increasing the number of circulating antioxidants and producing crucial fatty acids. For instance, researchers found that patients with increased intestinal permeability (i.e., leaky gut syndrome) can significantly benefit from probiotics. (10)

To boost immunity and fight infection

In a healthy gut microbiome, many of the beneficial bacteria produce short-chain fatty acids. These short-chain fatty acids have been shown to be involved in the biology of immunity factors like memory T cells. When the body encounters an unwanted foreign substance like bacteria and virus, it first produces antibodies to bind to that unwanted foreign substance (Antigen). This Antibody-Antigen complex is then attached by the next level of immune response, where T-cells destroy the complex and also memorize the encounter so that in the future, if the same Antigen enters the body, its immune system can mount a faster and stronger attack. (11)

By introducing and promoting beneficial bacteria in the gut, one can also fight pathogenic bacteria by out-colonizing the bad bacteria.

Additionally, probiotics improve liver, bone, and skin health.

FACTS

! When shouldn't you take probiotic supplements?

In the list above, we covered the causes that may warrant taking probiotics. However, and as mentioned at the beginning of this article, not all people need these supplements.

For instance, if you're following a balanced diet that contains all the essential macronutrients (e.g., carbs, fat, protein), fiber, and probiotic-rich foods, taking probiotics might not serve any purpose.

! What to look for in probiotic supplements

When you are buying a probiotic supplement, you need to check these features first:

The product can survive the enzymatic environment of the stomach

Probiotics are taken orally and they need to pass through harsh acidic conditions and digestive enzymes in the stomach. These digestive enzymes would typically destroy most of the bacteria in your probiotic capsule. Although, often mistakenly highlighted, acidity of the stomach is not the biggest problem. Many of the bacteria are stable in acidic conditions and may probiotic manufactures include acids like Vitamin C to stabilize the product.

Logically, the next question you would ask is how probiotics (a type of bacteria) will survive this harsh environment to reach the intestines.

The answer to this question varies depending on the species involved. For instance, studies showed that *Lactobacillus acidophilus* and *Bifidobacterium infantis* are excellent at surviving through the harsh passage of gastric acidity. Other strains showed conflicting results.

FACTS

With that being said, many companies started using enteric coating and time-releasing technologies to protect the bacteria from the acidity.

The product has scientific data to support it

The product that you're purchasing should be compatible with the scientific rationale set by regional governments.

Additionally, you should look for a third-party verification stamp on the cover of the supplement.



Pitfalls while buying probiotic supplements

If you're not familiar with probiotics, you could easily get overwhelmed with the amount of information written on the label.

To make it easier for you, here are the parameters you should be on the look for when purchasing probiotics:

Colony-forming unit (CFU) – is the number of bacteria found in the product. Contrary to popular belief, a high CFU number does not equal more benefits. Instead, choosing the right number depends on how your body will react. In other words, it is a trial-and-error approach. An overload of bacteria, even the good ones, can be a burden on the body and is limited by the tolerance and acceptance limit of the body. When buying a Probiotic look for the bacterial count in CFU at the end of shelf-life (Expiry Date) supported by stability data. Products claiming CFU at the time of manufacturing is misleading and meaningless as the CFU count reduces differently for each bacteria over a short period of time.

Strain diversity – while it might be tempting to buy the probiotic supplement with the highest number of strains, this is not always the right thing to do. Instead, opt for a product that has 1–3 strains for optimal results with specific well-elucidated effect of the combination

FACTS

Combining numerous strains without studying the safety and efficacy of such a combination of bacteria can be dangerous. For example, a product with 10 strains would need an understanding of 109 possible combinatorial effects

Encapsulation – as we mentioned above, not all bacteria can survive the harsh environment of the stomach. Therefore, products containing bacteria coated to survive stomach conditions and facilitate maximum deposit to the gut are more efficacious and value for money. These also don't require a high CFU count, and typically 1-2Billion CFU per dose is sufficient. Having said that, there are a specific types of bacteria that based on actual human studies, require a high CFU count to be effective. Such bacteria like *Pediococcus acidilactici* and *Streptococcus thermophilus* are required in >100Billion CFU per dose.

Dosage – many companies promote the idea of taking 3–4 tablets of probiotics per day to make frequent sales. Unfortunately, this can easily disrupt your gut microbiome and precipitate digestive problems.

How long do you have to take probiotics?

The scientific community does not have a consensus when it comes to the exact duration of using probiotics.

According to Harvard Health, taking a daily dose of probiotics for 1–2 weeks improves antibiotic-induced digestive issues. (12)

However, and depending on the specific condition you're trying to address, the duration of taking probiotics will vary. A good probiotic should be taken only once a day and can be taken with or without food.

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