

# Probiotics and Probiotic Supplements: Things to Know Before Use

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The word 'bacteria' often connotes a substance that causes illness or infections. However, our intestines harbor trillions of 'good' or 'friendly' bacteria commonly referred to as probiotics. These bacteria grow and flourish in the alimentary track, form an ecosystem which promotes immunity, and aid in the process of digestion. They are naturally present in fermented foods such as yogurt, kefir, added to some beverages such as herbal tea, and are widely available as dietary supplements. There are approximately 500 different kinds of these bacteria that constitute approximately 3 lbs. of our body weight. After birth, the microbiota naturally populates the alimentary track through food and environmental exposure. The composition of the 'gut' microbiota depends on genes, age, diet, socioeconomic factors, and the use of antibiotics.

Probiotics play an important role in maintaining a balance of good and bad bacteria and are crucial to our survival against pathogenic bacteria. They play a vital role in the production of important nutrients and vitamins, as well as in maintaining growth and integrity of intestinal cells. Imbalance in the gut flora or 'dysbiosis' may result in gastrointestinal disturbances such as constipation, diarrhea, and bloating. It is also suggested as a driving force in the onset of obesity. Dysbiosis may arise due to:

- dietary changes that include higher intake of protein, sugar, or food additives
- accidental chemical consumption such as lingering pesticides on unwashed fruit
- drinking two or more alcoholic beverages per day
- new medications, such as antibiotics, that affect your intestinal flora
- poor dental hygiene which allows bacteria to grow out of balance in the mouth
- high levels of stress or anxiety which can weaken the immune system
- unprotected sex which can expose the body to harmful bacteria.

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**'Probiotics are live microorganisms which when administered in adequate amounts confer a health benefit on the host.'**

Some probiotics may be used in the effective management of many chronic health conditions such as lactose intolerance, irritable bowel syndrome, pouchitis, antibiotic or radiotherapy-induced diarrhea, immunomodulation, and in reducing blood cholesterol. In addition to being effective in preventing viral infections, they are also useful in prevention of cancers due to their antimutagenic and anticarcinogenic properties. Various studies show encouraging results on the use of probiotics in management of conditions such as diverticulitis, traveler's diarrhea, stomach ulcers, vaginal infections, cold, flu, obesity, and anxiety; however, there is lack of sufficient scientific evidence. The most common probiotics used as therapeutic options and in dietary supplements include members of the *Lactobacillus* and *Bifidobacterium* species.

## Names of Probiotics

Probiotics mainly consist members of *Lactobacillus*, *Bifidobacterium* or *Streptococcus* genera. The genera consist of a variety of species such as *Lactobacillus acidophilus* where in '*Lactobacillus*' is the genus and '*acidophilus*' is the species that belongs to this genus. Often, the product label will shorten '*Lactobacillus*' to '*L.*' and '*Bifidobacterium*' to '*B.*'

## What should I know about Probiotic supplements?

Different probiotic supplements have different combinations of bacteria in varying numbers. Probiotic supplements are "Generally Recognized as Safe" (GRAS). The US Food and Drug Administration does not regulate supplements and several of these supplements have not been studied exhaustively. Thus, the acclaimed health benefits of supplements may not be factual. It is important to read fact labels on probiotic supplements which usually contain a list of live bacteria along with their total amounts. This is also called colony forming units (CFU) per serving at the time of manufacture. A higher CFU count does not indicate that the supplement will offer greater health benefits. The health benefits are specific to the type of bacteria present in the supplement and not necessarily the CFU count.

## How to choose and use?

There are no official recommendations for use of probiotics for healthy adults. It is best to consult your physician for advice to select a probiotic supplement, its dosage, and to determine the duration of use. Always check the expiration date and store the product as instructed on the label.

## Should I take probiotic supplements?

No, unless recommended by your physician, gastroenterologists or other healthcare professional. Despite their GRAS status, current studies have not proven the efficacies claimed by manufacturers. Some research has indicated a discrepancy between the number of viable cells claimed on the label and actual number of viable cells. Storage and handling conditions may also influence this difference. Further, the immunocompromised, such as the elderly or critically ill individuals, should not take probiotic supplements, due to associated risks such as endocarditis, sepsis, and fungemia. Premature infants should not be given probiotics without a physician's recommendation.



## Some commonly studied and widely used probiotics include:

- *Lactobacillus acidophilus*
- *Lactobacillus ramnosus*
- *Lactobacillus paracasei*
- *Lactobacillus plantarum*
- *Lactobacillus bulgaricus*
- *Bifidobacterium infantis*
- *Bifidobacterium longum*
- *Bifidobacterium breve*
- *Streptococcus*

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**Did you know? Just like our fingerprint, composition of the gut microbiota can be unique to every individual.**

The International Scientific Association for Probiotics and Prebiotics recommends the consumers to avoid using supplements that list the number of CFUs as ‘at the time of manufacture’ as this information does not take into consideration the decline in CFUs over the supplement’s shelf life.

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## Probiotics in Diet

Fermented foods such as yogurt which is produced from milk using live cultures such as *L. bulgarius*, *L. acidophilus*, and *S. thermophilus*, are rich sources of live and beneficial microbes. In addition, these products are good sources of vitamins such as vitamin D, vitamin B12, potassium, protein, and calcium.

Most live bacteria survive well in food products throughout the shelf life. However, they may not survive the highly acidic environment in the stomach, and consequently, fail to colonize in the alimentary track. On the contrary, certain fermented foods such as yogurt, buttermilk, cottage cheese, and sour cream, contain the beneficial probiotic strains that survive in the intestinal tract.

Other fermented foods such as sourdough bread and commercial pickles do not contain live probiotic cultures because they do not survive the processing step after fermentation. Many cheeses, kimchi, kombucha, sauerkraut, miso, pickles, and raw unfiltered apple cider vinegar contain live cultures.

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**Tip:** Incorporate food that contains probiotics into a healthy, well balanced diet to maintain a healthy microbiota and obtain benefits from nutrients present in the food.

## How can I incorporate probiotics in my daily diet?

There are several probiotic products available in the market. Yogurt, kefir, traditional buttermilk and cottage cheese are good sources of probiotics. In addition to probiotics, these products are good sources of vitamins and minerals such as vitamin B12, vitamin D, phosphorus, selenium, and protein. Here is a quick, nutritious, and tasty alternative to ranch dipping that also includes a probiotic serving to our diets.

## RECIPE

### LOW FAT YOGURT DIP

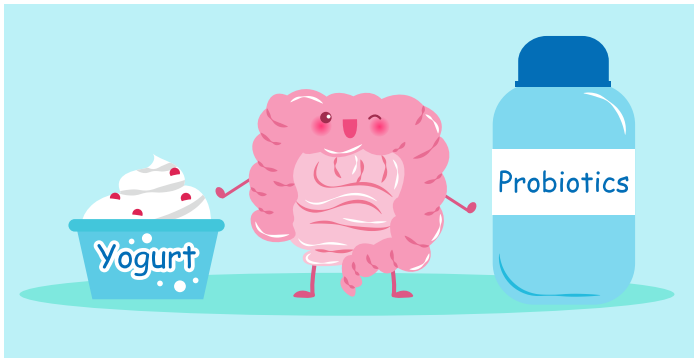
#### Ingredients:

- 1-cup low fat yogurt
- 1 tsp lemon juice and zest
- 1 tbsp herbs of choice (Dill, Chives, mint, basil etc.)
- 1 tsp salt

#### Recipe:

Mix all the ingredients very well in a bowl and the dip is ready. This can be served with carrot, celery or cucumber sticks, and colored peppers, cauliflower or broccoli florets etc.





## Take Away

There is evidence that probiotics may be helpful in the management of acute diarrhea, antibiotic-associated diarrhea, and atopic eczema.

Although some probiotic formulations have shown promise in research, strong scientific evidence to support other claimed benefits for most conditions is lacking.

Studies suggest that probiotic supplements usually have few side effects. However, the data on safety, particularly long-term safety, are limited, and the risk of serious side effects may be greater in people who have underlying health conditions.

Probiotic products may contain different types of probiotic bacteria and have different effects in the human body. The effects may also vary from person to person.

If you are considering a probiotic dietary supplement, talk to your health care provider first. Do not replace scientifically proven treatments with unproven products or practices.

Stay away from products that make claims for complex health-related conditions, use testimonials or a single study for evidence. If it is too good to be true and promises quick weight loss and miracle cure, it is suggested to stay away.

## Where can I find out more about probiotics?

For more information on probiotics click on the sources below:

- Office of Dietary Supplements Health Professional Fact Sheet on Probiotics
- National Center for Complementary and Integrative Health, Probiotics
- World Gastroenterology Organization Global Guidelines, Probiotics and Prebiotics
- Office of Dietary Supplements Probiotic Factsheet for Consumers

## Additional Sources:

- Adams, I. (2011). Probiotics Friendly Bacteria. Retrieved May 5, 2020, from <http://www2.ca.uky.edu/agcomm/pubs/fcs3/fcs3555/fcs3555.pdf>

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*This fact sheet by Kentucky State University 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 KSU of that product, service, or expert advice.*