

Probiotics, Prebiotics and Digestive Health

Research on digestive health and its influence on overall human health is growing. It is estimated that up to 20% of the population suffers from significant gut symptoms, including problems with stool and abdominal pain and discomfort.¹ Current research supports a number of health benefits of probiotics and fiber for improved gastrointestinal (GI) health, as well as for helping with immune function.²⁻⁴

Importance of Intestinal Bacteria

The human body contains more bacterial cells than human cells. Over 1,000 different types of bacteria may be present in the human colon at concentrations reaching 100 billion to one trillion (10^{11} – 10^{12}) per gram.⁵ This complex ecosystem of bacteria makes a significant contribution to health and immunity. Strains of bifidobacteria and lactobacilli, as well as other beneficial bacteria help digest food. They also help prevent infection by crowding out the potentially harmful pathogenic bacteria which also reside in the gut. The inner lining of the intestine, called the mucosa, also provides a layer of protection against potentially harmful agents and is where nutrients cross over from the gut to the bloodstream.

Probiotics

The World Health Organization describes probiotics as live microorganisms which, when administered in adequate amounts, confers a health benefit on the host.² Probiotics that are helpful to digestive health can survive passage through the gastric and bile acid environment of the GI tract and interact with other bacteria and the intestines.

The types of bacteria we now call probiotic have been used safely in fermented dairy foods such as yogurt for hundreds of years—with no known toxicity or virulence. Research has identified these bacteria as lactobacilli and bifidobacteria, and from these two families, certain strains have been selected for use as probiotics, for example *Lactobacillus Acidophilus* NCFM, *Lactobacillus Reuteri RC-14*, *Lactobacillus rhamnosus* GG (LGG), *Lactobacillus casei* Shirota, *Bifidobacterium lactis* Bb-12.

Food Sources of Probiotics

The types of bacteria used as probiotics have been a natural component of fermented dairy foods for centuries. Yogurt and dairy beverages such as kefir remain the most common probiotic-containing foods, though infant formulas and some cheeses as well as cereal bars and juice-drink probiotic products are growing in number. These products do not become probiotic unless specific strains are added and shown to provide benefits in addition to basic nutrition.

Some probiotic bacterial strains have recently been added to digestive health products—mostly in the dairy category—because they thrive naturally in the acid environment of these foods. Probiotic organisms must be alive when the food is consumed, have undergone controlled evaluation documenting a health benefit, be a defined microbe by genus, species and strain, and be safe for intended use.⁶ Probiotic organisms should be named properly on food packages if they are present.

Regular yogurts may not be considered to be probiotic, however, the two bacteria strains used to make yogurt (*L. bulgaricus* and *S. thermophilus*), can help lessen the symptoms of lactose intolerance and ease digestion of dairy products.

Potential Health Benefits of Probiotics

Many factors including antibiotics, certain drugs, various diseases, stress, and some dietary components can disrupt the balance of beneficial bacteria normally found in the human intestine. Consumption of probiotics provides microorganisms to help populate the GI tract and confer benefits during their limited stay.

Numerous studies have demonstrated the benefits of probiotics on both GI function and immunity, and the evidence continues to grow (*Figure 1*).²⁻¹⁰ It is important to note that the health benefits of probiotics are specific to the bacterial strain. Emerging research is also suggesting that the bacteria already inside us (often called indigenous or commensal) can influence obesity,

cancer, heart disease and other conditions, therefore probiotics could potentially be used to correct the imbalance. (Figure 1).

Daily Probiotic Consumption for Health Benefit

The amount of probiotics required for a health benefit is strain specific. Since beneficial effects of probiotics only last for a few days, probiotics should be consumed on a daily basis to constantly replenish the supply. Because it takes time for individual GI microflora to adjust, it may be several days or weeks of consistent use to feel any effect from regular probiotic intake.

Benefits and Safety of *Bifidobacterium lactis* Bb-12

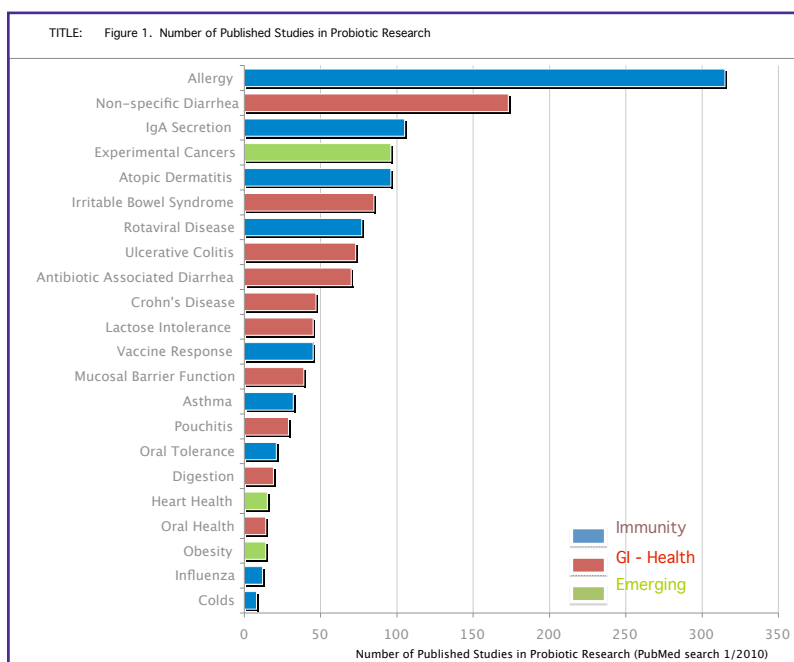
Bifidobacterium lactis Bb-12 (Bb-12) is one of the most widely studied probiotic strains of bifidobacteria—the most common intestinal organisms in healthy babies—making Bb-12 a natural choice for children. As we grow older, the numbers of bifidobacteria decline, and it is believed that replenishment can offer health benefits. Bb-12 survives passage through the gastrointestinal tract and appears to reduce the duration of diarrhea and help to alleviate constipation, potentially by different mechanisms.¹¹⁻²² Bb-12 has also been shown to improve the intestinal environment by increasing populations of beneficial bacteria, decreasing mutagenic compounds and producing anti-inflammatory cytokines.^{13,19,20,23-28}

Research has also shown an impact of Bb-12 consumption on transit time. In a study of 60 U.S. adult subjects with functional bowel symptoms, half received a yogurt drink containing one billion (10⁹) probiotic Bb-12 plus 1 gram of inulin while the other half received an acidified dairy placebo for 6 weeks.²⁹ The yogurt drink group showed a significant decrease in transit time in the gut, as well as significant improvement in overall well being compared to baseline values.²⁹

Research on Bb-12 has shown that it is safe across the lifespan. Bb-12 has been shown to be well tolerated and does not adversely affect infant growth, stool texture or behavior.^{13,15-22,25,29-31} More than 100 human studies have been completed with Bb-12 and over 20 of these were in children, including pre-term infants.³⁰⁻³¹

Fiber and Prebiotics

Fiber is an important component of the diet, yet fewer than 10% of Americans consume the recommended amount of fiber each day.³² Adequate Intake for total fiber for adults established by the Institute of Medicine (IOM) ranges from 21 to 38 grams of total fiber daily from both soluble and insoluble sources—depending upon gender, age, and caloric requirements.³³ The Nutrition Facts labels on food packages state 25 grams of fiber as the Daily Value—as an estimate of daily fiber needs for most Americans.



Some fibers, such as inulin, are prebiotic. Prebiotics are non-digestible food ingredients that affect health by selectively stimulating the growth and activity of beneficial bacteria in the gut.² Inulin is one of the best characterized prebiotics—occurring naturally in over 36,000 plants—including chicory, asparagus, leeks, onions, garlic and bananas.³⁵⁻⁴¹ Inulin is recognized by the IOM as a functional fiber which can provide digestive health benefits.^{4,33,34} A level of 5 grams of inulin per day has been shown to promote digestive health by stimulating growth of bifidobacteria.³³⁻⁴⁰ This bifidogenic activity contributes to an increase in fecal bulk, a marker of digestive health.^{33,34}

Yoplait® YoPlus® ProActive Nutrition Yogurt

YoPlus ProActive Nutrition Yogurt contains a blend of probiotic Bb-12 plus inulin fiber.

A serving of YoPlus provides at least one billion (10⁹) live and stable Bb-12 bacteria through the end of the product shelf life. YoPlus also provides a good source of fiber; 3 grams per serving of inulin from chicory root extract. Available nationwide in the yogurt aisle of most grocery stores, YoPlus yogurt, as with other probiotic products, should be eaten on a daily basis for a digestive health benefit.

YoPlus ProActive Nutrition Yogurt provides:

- Inulin fiber and probiotics for digestive health
- Calcium (15% Daily Value) and vitamin D (10% Daily Value) for bone health
- Antioxidant vitamins A and E (20% Daily Value each)
- Plus the live and active cultures used to make yogurt *S. thermophilus* and *L. bulgaricus*

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