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Product Review: *Probiotics (for Adults, Children and Pets) and Kefirs*

Initial Posting: 11/1/15 Last Update: 5/26/17

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Photo: ConsumerLab.com



Summary

Probiotic Supplements

There is such a variety of probiotic products available for purchase that choosing one can be difficult. To help, we suggest the following 3 steps:

- *Choose a product that contains the type(s) of probiotic organism(s) shown to work for your condition.* See the "What It Does" section as well as the summary table "Uses of Probiotics in People" below for the type of probiotic that suits your needs and then check the [Results](#) table for products which contain that/those organism(s).
- *Make sure the product provides an adequate number of cells per daily dose, i.e., an amount that has been shown to work.* There can be huge variation from product to product. Among products tested, the total number of cells per daily serving ranged from just 2.5 million to 900 billion!! Typically, an adult probiotic should provide at least 1 billion cells daily — although, as discussed in the "What It Does" section, some probiotics have been shown to work at a lower dose.
- *Compare prices.* The last column in the [Results](#) table below shows the daily cost based on suggested serving sizes. The most expensive products per daily dose tended to provide larger amounts of organisms (50 to 900 billion per day), while lower cost products tended to provide smaller amounts — but this isn't always the case.
- *Cautions.* If you have a milk allergy, be aware that trace amounts of milk proteins may occur in some probiotics (See [Concerns and Cautions](#)).
- *Specialty products:* Some probiotics are designed specifically for [oral health](#), [women](#), [children](#), or [pets](#). Check those sections for details.

Kefirs

Three kefir (cultured milk) products (*Evolve*, *Lifeway*, and *Latta*) were found to contained enormous numbers (150 to 950 billion) of live cells per cup. People with lactose intolerance are often advised to consumer kefir instead of milk; interestingly, all the kefirs contained lactose, ranging from 8.2 to 12.7 grams per cup, nearly as much as in milk. However, enzymes from the bacteria in kefir may help breakdown lactose in the digestive tract. (See the [Kefir](#) section).

Update:

Lifeway Lowfat Kefir:

(4/28/17): ConsumerLab.com received a letter from Lifeway Foods's General Counsel this week expressing Lifeway's concern over "Consumer Lab's misleading representation of Lifeway products as not being 99% lactose free" as indicated on the label and demanding that CL publish a retraction

and correction "that confirms that Lifeway's products are, in fact, 99% lactose free."

ConsumerLab.com has no reason to believe that the test result it published (below) for *Lifeway Lowfat Kefir* is incorrect. Lifeway claims that CL's review "does not disclose the methodology used" or "the actual results of your testing." This is false. There is clearly a "How Products Were Evaluated" link at the top of the review (as there is in every CL Review) to a page which explains that lactose was tested by "High Performance Liquid Chromatography (HPLC) (AACC or AOAC methods)". These methods are validated HPLC methods specific for the quantification of lactose. Furthermore, the page notes that "Any product not passing any initial testing criteria was sent to a second independent laboratory for repeat analysis using similar methodologies." This was the case with *Lifeway Lowfat Kefir* since the first lab, using the AOAC method, showed the product to contain 4.13% lactose and not under 1% as expected from the "99% lactose free" claim on its label. A second bottle of the Lifeway kefir was, therefore, sent to a second laboratory (using the HPLC method validated by AACC), which found slightly less lactose (3.65%) and this amount was reported in this Review since the product contained at least this much lactose based on results from both laboratories using two different, validated methods.

Lifeway indicates that, under a nondisclosure agreement, it is willing to share its own test results from an independent, internationally recognized third-party laboratory which "using HPLC and the correct AOAC Official Method, has consistently found that our products are in fact 99% lactose free." If those results pertain to *Lifeway Lowfat Kefir* produced in 2015 and Lifeway is willing to disclose the results publicly, CL is willing to publish them here.

Lifeway also claims that it was misleading for CL to cite a study (below) by Ohio State University which was funded by Lifeway and published in 2003 and found 4% lactose in Lifeway plain kefir. According to the letter received by CL from Lifeway, "Lifeway did not make 99% lactose free claims about its products in 2003" and its manufacturing methods and kefir cultures used have since changed. This may be the case and, if so, one should not assume they substantiate CL's findings, although they are essentially the same as what CL found in *Lifeway Lowfat Kefir* and very similar to what CL found in two other kefirs tested for this Review (below). It should be noted that CL also referenced the study to point out its finding that, despite the significant amount of lactose present found, Lifeway kefir was still better tolerated by lactose-intolerant people than milk containing the same amount of lactose.

What They Are:

Probiotic products consist of viable (live) bacteria and/or yeasts that confer a health benefit. Probiotics are available in varied forms such as yogurt and other cultured milk foods, capsules, tablets, beverages, and powders. Probiotics should not be confused with *prebiotics*, which are complex sugars (such as inulin and other fructo-oligosaccharides) that are ingested as fuel for bacteria already present in the gastrointestinal tract. Prebiotics and probiotics are sometimes combined in the same product and termed *synbiotics*.

What They Do:

The normal human gastrointestinal tract contains hundreds of different species of bacteria, referred to as intestinal flora. When the normal balance of these bacteria is disturbed by illness or antibiotic treatment, the most common effect is diarrhea. Probiotics were originally thought to work by re-colonizing the small intestine and crowding out disease-causing bacteria, thereby restoring balance to the intestinal flora. However, research is showing that probiotics are more likely to act in other ways, such as producing substances that inhibit disease-causing bacteria, competing for nutrients with them, stimulating the body's own immune system and interacting with nervous system present in the gut. For example, a U.S. government-funded study with *Lactobacillus* GG (*Culturelle*), showed that giving older, healthy individuals a capsule with 10 billion cells twice a day for 28 days caused no significant change in the composition of the intestinal flora but appeared to modulate bacterial activity in ways which could promote interactions with the gut lining and anti-inflammatory pathways. When retested a month after treatment ceased, the effects were no longer present — indicating that the probiotic was only effective during and/or shortly after administration (*Eloe-Fadrosh, Mbio 2015*). An analysis which looked at this and seven other studies of probiotics concluded that there is "a lack of evidence" as to "whether or not there is an effect of probiotics on the fecal microbiota composition in healthy adults" (*Kristensen, Genome Medicine, 2016*). It is important to note that this analysis (funded in-part by an unrestricted grant from the controlling entity of the pharmaceutical company Novo Nordisk A/S) assessed only the bacterial composition of feces and not the effects of probiotics in the treatment or prevention of disease, i.e., it is not a commentary on the clinical effects of probiotics.

A variety of probiotic organisms (alone or in combination) have been tested in clinical trials for a range of conditions. Here are some of the most notable findings by condition:

Symptoms of irritable bowel syndrome (IBS)

In adults:

As noted below, certain probiotics have been shown to improve symptoms of IBS in adults, but the appropriate probiotic may depend on whether the IBS is predominantly causing diarrhea or constipation.

Bifidobacterium infantis 35624 (used in Proctor & Gamble's *Align*) was found to improve symptoms (e.g., bloating, straining, gas) of **irritable bowel syndrome (IBS)** in women, although it did not change the frequency of stools (*Whorwell 2006*). An eight-strain combination of *Lactobacillus*, *Bifidobacterium* and *Streptococcus* (known as VSL#3) (see [Results](#) table) reduced abdominal bloating in patients with *diarrhea-predominant* IBS but had no effect on other symptoms such as abdominal pain, gas and urgency (*Kim 2003*). A multi-strain probiotic drink was found, in a 12-week study, to modestly reduce IBS symptoms in adult women and men (*Sisson Aliment Pharmacol Ther 2014*). Based on a 500-point symptom severity scale, there was a 63.3 point decline among those taking the probiotic compared to a 28.3 point decrease among those getting a placebo. The decline with the probiotic was largely due to decreases in pain and improvement in bowel habit satisfaction. There was no significant improvement in bloating or with overall quality of life. The probiotic (sold as *Symprove* in England) is a combination of *Lactobacillus rhamnosus* NCIMB30174, *Lactobacillus plantarum* NCIMB 30173, *Lactobacillus acidophilus* NCIMB 30175, and *Enterococcus faecium* NCIMB 30176 in a water-based suspension of barley extract with 10 billion live organisms per 50 mL dose which was kept refrigerated and taken each morning on an empty stomach 20 minutes before breakfast.

Capsules of a strain of *Saccharomyces cerevisiae* (commonly known as [Brewer's yeast](#)) were shown, in an 8-week, placebo-controlled trial in adults with IBS,

to significantly improve abdominal pain/discomfort during the last 4 weeks of treatment. Sixty-three percent of those receiving the probiotic reported improvement versus 47% of the placebo group. There was also a trend of improvement in other symptoms (bloating/distension, bowel movement difficulty), but these were not statistically significant. There was no effect on stool frequency and consistency. People in the study took a single capsule each day with water at breakfast: one capsule contained 4 billion cells of *Saccharomyces cerevisiae* CNCM I-3856 (*Lynside Pro GI+*, Lesaffre International – sold in France and in some U.S. products) ([de Chambrun, Digestiv and Liver Dis 2014](#)). A larger study in which adults with IBS took two capsules daily of the same probiotic strain (providing a total of 8 billion cells of *Saccharomyces cerevisiae* CNCM I-3856) for 3 months also found abdominal pain and bloating were significantly reduced (by approximately 11% and 13%, respectively) compared to placebo, but only among those with *constipation-predominant* IBS. Those with *diarrhea-predominant* or "*mixed*" IBS did not have significant improvements compared those receiving placebo ([Spiller, United European Gastroenterol J 2015](#)). Previous research with this strain demonstrated an analgesic effect in the gut of animals 15 days after beginning administration, with the effect disappearing 3 days after the last administration ([Rousseaux, Gastroenterology 2010](#)).

Among people with *diarrhea-predominant* IBS, a tablet containing 2 billion spores of *B. coagulans* MTCC 5856 (sold as *LactoSpore* from Sabinsa Corporation) decreased bloating, vomiting, diarrhea, abdominal pain, and stool frequency compared to placebo over 90 days in a small study in India. Self-reported disease severity also decreased and quality of life increased. The improvements began during the first month and generally increased during 90 days. The tablet was taken once daily at least 30 minutes before a meal –typically breakfast, while patients also received standard medical treatment. ([Majeed, Nutr J 2016](#)) [Although no *LactoSpore* products were tested in this Review, *Digestive Advantage* (Schiff) was tested and Approved and provides 2 billion spores of another strain of *B. coagulans* per capsule].

Some yogurts are now fortified with additional probiotic strains and have been marketed as promoting "digestive health," although it is not clear if they can help with IBS. *Bifidobacterium lactis* (BB-12) is added to *YoPlus* yogurt (also in USANA Probiotic – see [Results](#) table) and *Bifidobacterium animalis* DN-173 010 (trade named "*Bifidus regularis*") is in Dannon's *Activia* yogurt. Clinical trials on both probiotic strains have shown that they shorten the transit time of food in the bowel; speeding up the time for food to pass through the bowel may benefit people with constipation, but it is not necessarily beneficial for people who complain of frequent or loose stools. A dosing study with BB-12 showed looser stools with increasing probiotic dose (which ranged from 100 million to 100 billion cells per day) ([Larsen 2006](#)).

A study of yogurt containing *Bifidobacterium animalis* DN-173 010 (as in *Activia*) including yogurt starter cultures *S. thermophilus* and *L. bulgaricus* found that after 4 weeks of eating two cups (each 125 grams, non-flavored) daily, 57% of people with IBS involving constipation reported adequate symptom relief. However, among those in a control group eating a similar yogurt product which had been heated to kill the probiotic organisms, an almost equal amount of people (54%) reported relief, indicating no significant benefit of the probiotic over the non-probiotic. After eating the products for 8 weeks, 68% of those in the non-probiotic group reported adequate relief compared to just 46% of those who had taken the probiotic; and at 12 weeks this increased to 76% for the non-probiotic eaters and remained at 46% for the probiotic eaters. The researchers concluded that people with IBS may benefit from regular consumption of a fermented dairy product, like yogurt, but the addition of this particular probiotic would not be expected to provide further benefit ([Roberts, BMC Gastroent 2013](#)).

Advertising claims on *Activia* (as well as related *DanActive* drinks) indicating them to be "clinically proven" and "scientifically proven" to aid digestion have been (or are being) modified to read "clinical studies show..." as a result of [lawsuits in the U.S. and Canada](#).

Some clinical studies suggest that *pre*biotics may improve symptoms of IBS, but results have been mixed. For more information about fructo-oligosaccharides and other [Prebiotics](#) see the article in the Encyclopedia on this website.

In children:

A study of **children** (aged 5 to 14) with IBS showed that taking *Lactobacillus* GG (a strain of *Lactobacillus casei* which is used in *Culturelle* — see [Results](#) table) (3 billion cells twice per day for 8 weeks) significantly reduced the frequency and severity of **abdominal pain** ([Ruggiero 2010](#)). The number of episodes of pain per week decreased from 3.4 to 1.6 during treatment (a decrease of 4.0 to 3.2 was seen in the placebo-treated group). Episodes of pain fell even further during the follow-up period (8 weeks after therapy) to 0.9 per week in the probiotic group (1.6 in the placebo group). The treatment was well tolerated and no adverse effects were reported.

For additional information, see the Encyclopedia article on this site about [IBS](#).

Constipation and infrequent bowel movements without IBS

A study in healthy adults without IBS but who reported a **low frequency of bowel movements** (2 - 4 days per week) and abdominal discomfort, such as pain or bloating, found that a dose of 1 billion cells of *Bifidobacterium animalis* subsp. *Lactis* (BB-12®. Chr. Hansen A/S) taken for one month (one capsule daily with breakfast) significantly increased the frequency of bowel movements, but did not improve abdominal pain or bloating, compared to placebo. A third group, who took a higher dose (10 billion cells of BB-12®) daily had similar results. The study was funded by the maker of the probiotic ([Eskesen, Br J Nutr 2015](#)). BB-12® is found in the *USANA Probiotic* (see [Results](#) table).

As noted above, probiotics tend to speed up movement of food through the bowel and may, therefore, help people with **constipation**. A study in adults in Italy with chronic constipation found that taking a tablet providing 100 million cells of *Lactobacillus reuteri* DSM 17938 (sold as *Protectis* from BioGaia — see [Results](#) table) 30 minutes after eating, twice per day for 4 weeks, significantly increased the number of bowel movements per week from a mean of 2.68 to 5.28. This was a statistically significant increase compared to the placebo group, which experienced a smaller increase, going from 2.89 to 3.89 bowel movements per week. Both groups reported an increase in softer stools, but there was no statistically significant difference between the groups. None of the patients reported adverse experiences (causing discomfort and/or interrupting usual activity) ([Ojetti, J Gastrointest Liv Dis, 2014](#)).

Bloating and abdominal pain without IBS

A clinical study compared the effects of a daily probiotic to that of placebo in several hundred adults who had regularly experienced abdominal discomfort and bloating for at least three months but who did not have IBS or other gastrointestinal disease. After four weeks of treatment, both groups showed significant but roughly equivalent decreases in the severity of abdominal discomfort and of bloating. The probiotic group had more days free of bloating, but not days free of abdominal discomfort ([Ringel-Kulka, Am J Gastroent 2016](#)). The probiotic given was 1 billion cells daily of *B. infantis* 35624 (Align). The study was

designed and sponsored, Proctor & Gamble, with the hope that Align would be as effective in reducing the severity of abdominal discomfort and bloating in people without IBS as it had been shown to be in patients with IBS (see Whorwell 2006 above), but this was not the case.

Some (but not all) studies suggest that **proton-pump inhibitor drugs** (PPIs), such as Prilosec (omeprazole), which reduce stomach acid, can cause people to experience bloating and other unpleasant bowel symptoms. A potential explanation is that the lowered acidity in the gut results in an overgrowth of bacteria in the small intestine. A placebo-controlled study in people who began taking the PPI pantoprazole (Protonix) (40 mg per day) to treat gastroesophageal reflux showed that taking a probiotic twice daily appeared to prevent the onset of bowel symptoms. After about 3 months on the PPI, approximately 45 to 50% of patients taking the placebo (rather than the actual probiotic) reported bloating and flatulence, while these symptoms were reported by only about 10% of those taking the probiotic. The differences were statistically significant. There was, however, no statistically significant difference between the groups in terms of reported abdominal pain. ([Compare, Digestive and Liver Dis 2015](#)). The probiotic consisted of 12 billion cells of *Lactobacillus paracasei* F19 (Gene-filus F19, Sifra, Italy) from a sachet dissolved in water, twice a day, 3 days a week. The study was funded by the company, Sifra.

Lactose intolerance

Lactose intolerance is a form of lactose maldigestion in which individuals who produce lower amounts of lactase enzyme develop gas, abdominal bloating and pain, and even diarrhea and nausea, after consuming milk or dairy products. As noted below, fermented milk products, such as yogurt and kefir, produce fewer symptoms of lactose intolerance than milk containing the same amount of lactose, likely due to the organisms in their cultures which contain lactase enzyme. However, it has not been well demonstrated that taking a probiotic supplement, or adding probiotics to milk products, improves lactose digestion ([Levri, J Fam Pract 2005](#)).

A small, 4-week study sponsored by the makers of the probiotic DDS-1 (a strain of *Lactobacillus acidophilus*) found that taking a capsule with 10 billion cells at breakfast daily reduced abdominal symptoms such as diarrhea, cramping and vomiting compared to placebo in people with reported symptoms of lactose intolerance (although they were not clinically diagnosed). However, it failed to reduce gas (flatulence) and bowel sounds and did not improve lactose digestion (based hydrogen breath tests). ([Pakdaman, Nutr J 2016](#))

(Also see ConsumerLab.com's review of [Products for Lactose Intolerance — Lactase Enzymes and Lactose-free Milks](#))

Functional abdominal pain in children

A study of children (ages 6 to 16) with functional abdominal pain given *Lactobacillus reuteri* DSM 17938 (see *Protectis* in the [Results](#) table) (200 million cells per day) for 4 weeks showed reduced intensity of abdominal pain in the treated children compared to those given placebo ([Romano 2010](#)).

Colic in infants

Lactobacillus reuteri DSM 17938 has also shown benefit in reducing **colic in some infants**. A 3-month study of healthy newborns given 100 million cells per day (from 5 drops of an oil formulation sold as [Gerber Soothe Colic Drops](#)) found that, compared to placebo, infants receiving the probiotic drops had a significant decrease in crying time (38 minutes vs. 71 minutes per day), regurgitation (2.9 vs. 4.6 times per day) and an increase in frequency of stools (4.2 vs. 3.6 times per day). The declines in crying time and regurgitation were significant within the first month of treatment. Treated infants also had significantly fewer visits to emergency rooms for colic, fewer lost working days among parents, and lower use of other treatments for abdominal discomfort ([Indrio, JAMA Pediatr 2014](#)). While this study showed benefit in *preventing* colic in newborns, a study in infants with colic severe enough for parents to seek emergency care found that the same probiotic, given for one month, provided no more benefit than placebo. Although crying and fussing time decreased in both the probiotic- and placebo-treated groups, among formula-fed infants "fussing" decreased more among those given placebo than among those given the probiotic ([Sung, BMJ 2014](#)). Additional studies are underway that may help determine which subgroups of infants are most likely to benefit from probiotics.

Diverticular disease

A study in 210 people with symptomatic uncomplicated diverticular disease (SUDD) found that treatment with a probiotic (*Lactobacillus casei* subsp. DG, 24 billion organisms) was nearly as effective as treatment with the drug mesalazine (1.6 grams) in reducing recurrence of symptoms, and combined treatment was more effective than either alone. The treatments were given for 10 consecutive days each month for one year. Over the year, the percentage of patients with recurrence of symptoms (abdominal pain lasting at least 24 hours) was 46% among patients who received only placebo, 14.5% among those who received the probiotic, 13.7% among those who received mesalazine only, and 0% for those receiving combination treatment ([Tursi, Aliment Pharm Ther 2013](#)). Mesalazine is believed to work by controlling inflammation while the probiotic may restore organisms in the colon.

Diarrhea caused by antibiotics, viral infection, or chemotherapy

Antibiotic-associated diarrhea:

Many studies, although not all, have shown a benefit from taking probiotics to reduce the risk of diarrhea associated with antibiotic treatment, including Clostridium difficile-associated diarrhea. As discussed below, better results have been achieved from products containing multiple strains of probiotics including yeast (Saccharomyces) as well as Lactobacillus and Bifidobacterium. Higher doses (close to ten billion or more cells daily) may be preferable. It appears best to begin probiotic treatment around the time of starting antibiotics (although take probiotics at least 2 hours after the antibiotic) and continue the probiotic for at least one week after antibiotic therapy ends.

Antibiotics can disturb gastrointestinal organisms, and symptoms, such as diarrhea, may occur in as many as 30% of patients, particularly among older individuals. A 2012 review of over 60 published studies concluded that probiotic use was associated with an overall 42% lower risk of developing diarrhea due to antibiotic treatment ([Hempel, JAMA 2012](#)). There was a 36% lower risk of diarrhea across studies specifically using forms of *Lactobacillus* and a 52% lower risk of diarrhea across studies using the probiotic yeast *Saccharomyces*.

A subsequent review of 20 studies later in 2012 found a protective effect of probiotics in preventing *Clostridium difficile*-associated diarrhea, which is typically caused by exposure to broad-spectrum antibiotics and accounts for approximately one third of cases of antibiotic-associated diarrhea. The condition can be life-threatening and is most common in older, hospitalized individuals. Products with multiple species of probiotic organisms showed larger effects (75% risk reduction) than those using single species (50% risk reduction). People treated with probiotics reported fewer adverse events (e.g., cramping) than those who received placebo or no treatment, highlighting the safety of probiotics for this use. The review found a 66% reduction in the risk of developing this condition when probiotics were given as opposed to when they were not ([Johnston, Ann Int Med 2012](#)). The results were similar in trials of adults and children. Each of the trials used at least 10 billion organisms daily. A review published in 2017 of 19 studies similarly found giving probiotics reduces the risk of *Clostridium*

difficile-associated diarrhea by more than 50% in hospitalized adults. Most importantly, the study showed the importance of starting probiotic therapy early: Starting probiotics within the first 2 days of antibiotic initiation resulted in a 68% reduction in risk of *C. difficile* infection as compared to 30% reduction if started after the first 2 days of antibiotic initiation (Shen, *Gastroenterology* 2017).

A major, well-controlled study of hospitalized patients age 65 and older in the U.K. who were receiving oral or parenteral antibiotics did *not* find probiotics helpful in preventing antibiotic-associated diarrhea or *Clostridium difficile* diarrhea. However, the study had a *major weakness*: probiotic therapy was not started at the initiation of antibiotic treatment, but 7 days later. The study used a probiotic containing a blend of *Lactobacillus acidophilus* CUL60 (NCIMB 30157) and two strains of *Bifidobacterium bifidum* CUL20 (NCIMB 30153) (a total of 60 billion bacteria per day) given daily for 21 days (Allen, *Lancet* 2013).

Looking at specific strains, the probiotic yeast *Saccharomyces boulardii* (a strain found in *FloraStor* and *FloraStor Kids* (see [Results](#) table)) has been shown helpful in preventing antibiotic-induced diarrhea (Cremonini 2002). A probiotic drink (*Actimel* -- also sold as *DanActive*) containing *Lactobacillus casei*, *Lactobacillus bulgaricus*, and *Streptococcus thermophilus* consumed twice daily during antibiotic treatment and for a week thereafter, significantly decreased the risk of developing diarrhea, including *Clostridium difficile*-related diarrhea (Hickson, 2007). A study in China among hospitalized adults (aged 50 to 70) showed that capsules containing large doses of proprietary strains of *Lactobacillus acidophilus* and *Lactobacillus casei* significantly reduced antibiotic-associated diarrhea, including *Clostridium difficile*-related diarrhea (Gao, 2010).

Another study in China showed greater overall efficacy with a higher dose of a probiotic than a lower dose. In this study of hospitalized adults aged 30 to 70, the incidence of antibiotic-associated diarrhea was reduced from 24.6% among those who received placebo to about half that amount (12.5%) among those receiving 17 billion probiotic bacteria per day. A group receiving only 4 billion bacteria per day had a non-significant decrease to 19.6%. The incidence specifically of *C. difficile*-associated diarrhea decreased from 4.8% in the placebo group to 1.8% in both treated groups. The higher dose probiotic treatment also significantly reduced the incidence of symptoms, particularly abdominal pain (19.2% placebo vs. 2.5% high-dose) (Ouwehand, *Vaccine* 2013). A capsule containing the probiotic was taken 2 hours after breakfast (the antibiotic was taken with breakfast) on each day of antibiotic treatment and for 7 additional days. The probiotic used in the study consists of a combination of four bacteria in equal parts marketed as *HOWARU Restore* (found in *Active D'Lites* foods in the U.S. -- not yet tested by ConsumerLab.com). See [What to Consider When Using -- Dosage](#) for more about this probiotic.

A study among healthy adults in Canada given the antibiotic amoxicillin-clavulanic acid for one week evaluated the effect of giving a probiotic vs. placebo during the time of antibiotic therapy and for one week after the antibiotic. Both groups experienced significant increases in looseness and frequency of bowel movements -- however, among those who experienced diarrhea (25% and 33% of the probiotic and placebo groups, respectively), the duration of diarrhea was one day shorter in the probiotic group compared to the placebo group (2.7 days vs. 3.7 days, respectively), which is similar to findings from other studies. The beneficial effect of the probiotic was most evident during the week after antibiotic therapy. The probiotic was Lacidofil® Strong (made by Lallimand; sold in U.S. by *Xymogen*, with each dose consisting of 3.8 billion cells of *Lactobacillus rhamnosus* R0011 and 200 million cells of *Lactobacillus helveticus* R0052. This was taken twice a day with breakfast and dinner, while the antibiotic was taken 30 minutes before those meals. (Evans, *Br J Nutr* 2016). A similar study using the same probiotic but at half the dose did not find a benefit (Song, *J Korean Med Sci* 2010).

Diarrhea from infections:

Lactobacillus GG (see *Culturelle* in the [Results](#) table) and *Lactobacillus reuteri* have been shown to reduce the duration of diarrhea due to certain infections in infants and young children, but not adults. In children, *Lactobacillus GG* (5.2 billion cells/day) has also been effective in reducing antibiotic-associated diarrhea in combination with *Bifidobacterium lactis* (Bb-12) [see *USANA Probiotic* in the [Results](#) table] (5.9 billion cells), and *Lactobacillus acidophilus* (La-5) (8.3 billion cells), given in yogurt. An Australian study investigated the effects of this probiotic yogurt (sold in Australia as *Vaalia* from Parmalat) in children being treated with antibiotics for ear and throat infections. They were given the yogurt twice a day starting with commencement of antibiotic therapy and for one week after therapy. Only one of the 36 children experienced mild diarrhea, in contrast to 21 of 34 children given regular yogurt. None of the children in the probiotic group experienced severe diarrhea, in contrast to 6 out of 34 children given regular yogurt (Fox, *BMJ Open* 2015). [Note: Although *Vaalia* is not sold in the U.S., other products containing all or some of the species (although at different doses) are *Culturelle*, *Solgar Dophilus*, *TruBiotics*, and *USANA ProBiotic*.]

Diarrhea associated with chemotherapy:

Lactobacillus GG has also been shown to reduce the risk of chemotherapy-induced diarrhea (Osterlund 2007).

A dosing study (Saxelin 1991) using the bacteria in *Culturelle* (*Lactobacillus GG*) found that a daily dose of 1.5 billion cells was not able to colonize the gut, but a much larger dose, 15 billion cells, was. (*Culturelle* tested by ConsumerLab.com in this Review provides 10 billion cells in its suggested daily serving of one capsule.)

Feeding intolerance and enterocolitis in infants:

Lactobacillus reuteri DSM 17938 (0.1 billion cells daily) given shortly after birth to preterm infants resulted in decreases in feeding intolerance and the duration of hospitalization compared to placebo, as well as a 40% (but not statistically significant) decrease in necrotizing enterocolitis (Rojas, *Pediatrics* 2012).

Traveler's diarrhea

Studies using oral probiotics have yielded both positive and negative results. *Lactobacillus GG* reduced the risk of traveler's diarrhea by 47% in a study involving 245 people who traveled to 14 world-wide geographic regions (Hilton, 1997). *Saccharomyces boulardii* reduced the likelihood of traveler's diarrhea by 13% (using 250 mg per day) to 26% (using 1 gram per day) in a study of 3,000 Austrian tourists who traveled in northern Africa, the Middle East and Far East. This study had a high drop-out rate of 34% (Kollaritsch, 1993). Three weeks of *Lactobacillus fermentum* KLD or *Lactobacillus acidophilus* failed to prevent traveler's diarrhea in a study of 282 British soldiers deployed to Belize (Katelaris, 1995). A combination of *Lactobacillus acidophilus* and *Lactobacillus bulgaricus* failed to prevent traveler's diarrhea in 50 travelers to Mexico (de dios Pozo-Olano, 1978). The effectiveness of individual probiotic species for traveler's diarrhea may vary depending on the probiotic species used and the travel destination.

Helicobacter pylori (H. pylori) infection

Successful clinical trials have also been conducted using *Lactobacillus* alone or in combination with *Bifidobacterium* and *Saccharomyces* species to treat symptoms of *H. pylori* infection (a causative agent of stomach ulcers), but probiotics do not seem to eradicate the infection.

Colds and acute respiratory infections

Among healthy adults given 1 billion viable cells daily of a combination of *Lactobacillus plantarum* HEAL 9 (DSM 15312) and *Lactobacillus paracasei* 8700:2 (DSM 13434) for 12 weeks, 55% experienced colds compared to 67% of those who received placebo (Berggren, 2011). The number of days with cold symptoms was also lower (6.2 days vs. 8.6 days for the placebo). These probiotic strains can be found in *Metagenics UltraFlora® Immune Booster* (not tested by ConsumerLab.com).

Giving children (aged 3 to 5) in China a combination of *Lactobacillus acidophilus* NCFM (5 billion cells per day) and *Bifidobacterium animalis* subsp lactis Bi-007 (5 billion cells per day) versus placebo for 6 months (November to May) was shown to reduce the incidence of fever by 73%, coughing by 62%, runny nose by 59%, and also reduced the duration of these symptoms by 48% (Leyer, 2009). *Lactobacillus acidophilus* alone (10 billion cells per day) was also effective but not as effective as the combination product.

Short-term use of probiotics may also help. In a study in Ukraine, children ages 3 to 12 were started on a daily dose of *Lactobacillus acidophilus* DDS-1 (1 billion cells) and *Bifidobacterium lactis* UABLA-12 (4 billion cells) given as a powder (mixed with water or juice) which included a fructooligosaccharide prebiotic (50 mg) on the first day that a household member appeared to be sick. (The powder is sold in capsules as UP4 Probiotics with DDS-1, UAS Laboratories — see [Results](#) table). Treatment continued for two weeks or until the end of any infection the child developed. In all, 57% of children in the probiotic group and 65% of those in the placebo group developed acute respiratory infections. Although this was not a statistically significant difference, the duration of infection was significantly shorter (median duration 5 days vs. 7 days) and the severity of infection was significantly less in the treated vs. placebo group (Gerasimov, *Eur J Clin Nutr* 2015).

Throat infection

There is evidence that certain probiotic strains may protect against some types of bacterial and viral throat infections. One small study found that children taking a daily probiotic lozenge containing 1 billion colony-forming units of *S. salivarius* K12 (Bactoblis®, now known as [BLIS K12®](#)) for 3 months had significantly fewer episodes of throat infection than children who were not given the lozenge. Incidence of viral oropharyngeal infections in treated children was reduced by 80%, and streptococcal infections by 96% (Pierro *Drug Healthc Patient Saf* 2014). A gum containing [BLIS K12®](#) ([CulturedCare® Probiotic Gum](#) by Prairie Naturals) has been approved and licensed to be sold in Canada with the allowable claim that it promotes oral health through recolonization of the oral cavity. Additionally, following oral antimicrobial rinsing, it helps reduce halitosis (bad breath) by reducing volatile sulfur compound levels. In 2015, a lozenge containing [BLIS K12®](#) received approval in Canada to use these same health claims, as well as the claim that it can help reduce the incidence of *Streptococcal* pharyngitis and/or tonsillitis (Health Canada 2015). [CulturedCare® Probiotic Gum](#) and supplements containing [BLIS K12®](#) are also available for sale in the U.S. In 2015, the U.S. FDA informed the maker of [BLIS K12](#) that it does not object to the company's self-affirmation that the product be Generally Recognized as Safe.

Periodontitis

A lozenge containing probiotics may be helpful in treating chronic periodontitis - inflammation around the teeth caused by microbial infection, which can result in pockets between the teeth and gums. In a 12-week study in Turkey, 30 otherwise healthy individuals with adult chronic periodontitis dissolved a probiotic lozenge in their mouth twice a day following an initial dental scaling and disinfection with chlorhexidine solution. All patients, including those given placebo, experienced improvements, but those using the probiotic had significantly greater reduction in the depth of pockets around affected teeth and gain in tooth attachment to ligaments in moderate and deep pockets. The probiotic-treated group also had a greater reduction in several parts of the mouth of *Porphyromonas gingivalis*, a bacteria considered a keystone in the onset of chronic periodontitis. The probiotic treatment was most effective in patients with moderate to severe periodontitis. The lozenge contained 100 million cells of each of two strains of *Lactobacillus reuteri* DSM17938 and ATCC PTA5289 ([Prodentis](#) from BioGaia, Sweden, sold in the U.S. and Canada as [GUM PerioBalance](#) (see [Results](#) table) (Teughels, *J Clin Periodont* 2013).

Vaginal bacterial infections

A daily dose of at least 1 billion cells each of *L. rhamnosus* GR-1 and *L. fermentum* RC-14 (now called *Lactobacillus reuteri*, RC-14) (found in the following women's products in this review: *Jarrow Formulas Women's Fem Dophilus* and *RepHresh Pro-B* — see [Results table](#)) taken orally has been shown to reduce colonization of the vagina by potential pathogenic bacteria and yeast in women with asymptomatic bacterial vaginosis (BV) (Reid *FEMS Immunol Med Microbiol* 2003). Vaginal suppositories (which are inserted and not considered supplements in the U.S.) containing *Lactobacillus* organisms (including *L. rhamnosus*, *L. gasseri*, *L. fermentum* LF10 and *L. acidophilus* LA02) have also shown therapeutic benefit (Vicariotto, *J Clin Gastroenterol* 2012; Pendharkar, *BMC Infect Dis* 2015). However, a study in women taking either an oral probiotic (*Lactobacillus rhamnosus* and *Bifidobacterium longum*), a probiotic inserted vaginally (containing *L. rhamnosus*, *L. delbrueckii*, *L. acidophilus*, and *Streptococcus thermophilus*), or a combination of both, during and after a short term course of antibiotics found did not reduce the incidence of yeast infections (Pirodda, *BMJ* 2004).

For more information, see the Encyclopedia article about [Vaginal Infections](#).

Prostatitis

[Prostatitis](#) is an inflammation of the prostate gland. It is sometimes caused by bacterial infection which can either be acute -- typically cured with antibiotics, or chronic -- which is more difficult to treat and occurs more frequently in men with gastrointestinal disturbances, such as irritable bowel syndrome (IBS). A study among men in Italy with chronic prostatitis and IBS found that taking a probiotic along with antibacterial treatment helped reduce the risk of recurrent infection and the progression of inflammation to other glands. At the beginning of the study all the men had antibiotic therapy which temporarily eradicated bacterial infection in the prostate. For the next 12 months the men continued to receive antibiotic treatment (rifaxamin) for 7 consecutive days every month as well as one of the following every day 1) a probiotic, 2) a placebo, 3) a probiotic for the first 6 months and then a placebo for 6 months, 4) a placebo for 6 months and then a probiotic for 6 months. VSL#3 (450 billion cells daily) was the probiotic used (see [Results table below](#)) as it has been shown to reduce some (but not all) symptoms of IBS (discussed above). After 12 months, the percentage of men found to have infections detected in a sperm sample was (by treatment group) 13.6% (probiotic), 66.7% (placebo), 38.5% (probiotic/placebo), and 56.5% (placebo/probiotic) (Vicari, *Asian J Androl* 2014).

For more information, see the Encyclopedia article about [Prostatitis](#).

Mastitis

Certain probiotic strains have been found to be helpful in the treatment of mastitis, a bacterial infection which can cause painful breast inflammation and redness in nursing mothers, and a common cause of premature weaning. A study of 352 breastfeeding mothers with mastitis found that those who took a daily probiotic (a capsule containing 90 billion cells of either *Lactobacillus fermentum* CECT5716 or *Lactobacillus salivarius* CECT5713 — both being strains found in breast milk) for 21 days had significantly less breast pain, lower total bacterial counts and greater rates of complete recovery (88% and 85%, respectively) than women taking an antibiotic (29%) (Arroyo Clin Infect Dis 2010). Women taking either strain of probiotic also had lower rates of recurrence of infection (10.5% and 7.1%, respectively) compared to women who took an antibiotic (30.7%).

Weight and fat loss

Several preliminary studies suggest that probiotics (alone or along with a restricted diet) can sometimes help with fat loss or fat redistribution. The effect of probiotics may be greater in women than in men. However, better studies are required to determine if there is a real benefit.

In a preliminary study of overweight Japanese adults with large amounts of abdominal fat, giving 100 billion cells of *Lactobacillus gasseri* SBT2055 (LG2055) in a fermented milk product daily for 12 weeks significantly reduced abdominal visceral fat by 4.6% and abdominal subcutaneous fat by 3.3% at the end of the study. Body mass index was also significantly decreased by 1.5% and waist size decreased by 1.8% at the end of the study (Kadooka, Eur J Clin Nutr 2010). In a similar study using the same product, but giving lower doses of about 1.4 billion or 16 billion viable cells daily, abdominal visceral fat was significantly reduced by about 8% with both doses after 12-weeks. Body mass index was also reduced by 1.6% and 1.1%, respectively and waist circumference reduced by 1.2% to 1.4% respectively at the end of the study. However, subcutaneous visceral fat was not significantly reduced with these lower doses (Kadooka, Br J Nutr 2013). In both studies, no significant improvements occurred in the placebo group, which was given regular fermented milk. (Note: The product used in these studies is not currently available in the U.S. Several products in this Review, however, contain *L. gasseri*, although the strain of *L. gasseri* may be different from that in the study and the products contain additional organisms.)

A study in Canada found a greater decrease in body weight and fat mass among women taking a probiotic than among those taking placebo during a 12-week diet (500 Calorie reduction in daily intake). Women taking the probiotic lost an average 9.7 lbs, while those taking the placebo lost just 5.7 lbs. Women taking the probiotic continued to lose more weight (another 1.3 lbs) during a subsequent 12-week period of normal caloric intake, but those taking placebo had little further change in weight. The probiotic provided 162 million cells (which, for a probiotic, is a relatively small dose) of *Lactobacillus rhamnosus* CGMCC1.3724 (also called LPR) along with 300 mg of a prebiotic mix of oligofructose and inulin per capsule. One capsule was taken 30 minutes before breakfast and another was taken 30 minutes before dinner. The study included men, but those taking the probiotic lost no more weight than those who received placebo, with both groups losing 9 to 10 lbs, on average, during the calorie reduction phase and another 2 lbs over the subsequent 12 weeks. The researchers note that men tend to lose weight more easily than women and the findings suggest that this probiotic formulation helps obese women achieve sustainable weight loss (Sanchez, Br J Nutr 2013). The study was funded by Nestle, which does not yet market this formula in North America.

A small, 12-week, placebo-controlled study in overweight adults in Japan found that daily supplementation with a capsule containing 50 billion cells of *Bifidobacterium breve* B-3 resulted in a slight (1.5 lb), but statistically significant, reduction in fat, although no change in weight (apparently due to a simultaneous, small increase in muscle mass). Improvements were also observed on certain measures of liver function suggesting potential metabolic benefit (Minami, J Nutr Sci 2015). (Many probiotics in this Review include *B. breve*, although not specifically the B-3 strain).

Another study in Japan found that giving overweight and obese men and women (ages 20 to 70 years old) 100 billion cells of the probiotic strain *Pediococcus pentosaceus* LP28 which had been heat-killed, for three months resulted in average decreases in body fat mass of 2.6 lbs and in waist circumference of 1.1 inches compared to placebo (Higashikawa, Eur J Clin Nutr 2016). Interestingly, and contrary to the researchers' expectation, these beneficial effects did not occur to the same degree among subgroup of participants given live versions of the same probiotic. The researchers (some of whom have a commercial interest in the probiotic) note that both the heat-killed and live bacteria possess polysaccharides, which may play a role in the anti-obesity effect. The probiotic used does not appear to be available in supplements sold in the U.S.

A small, 8-week study of overweight and obese women in Brazil found that giving a probiotic along with a prescribed diet (providing only the required amount of calories) resulted in greater reduction in waist circumference than the diet alone (-5.5% vs -3.4%), but did not have a significant effect on body weight or total body fat. Although the study included a control (diet alone without probiotic) and was double-blinded, there was no placebo treatment — a significant weakness of the study. The probiotic treatment consisted of consuming, before breakfast, powder from packets providing 5 billion cells of each of the following: *Lactobacillus acidophilus* LA-14, *Lactobacillus casei* LC-11, *Lactococcus lactis* LL-23, *Bifidobacterium bifidum* BB-06, and *Bifidobacterium lactis* BL-4 (Gomes, Obesity 2017).

Hypertension

Probiotics may modestly lower diastolic and systolic blood pressure, especially when multiple strains are taken. A review of nine clinical trials found that among 534 adults, those who consumed 100 billion colony-forming units of probiotics (various strains from milk, cheese, yogurt or probiotic capsules) daily for two months had a significant reduction in systolic blood pressure (-3.56 mm Hg) and diastolic blood pressure (-2.38 mm Hg) compared to those who did not consume probiotics. The effect was greater in those who consumed multiple probiotic strains, and diastolic blood pressure was more improved in those who had elevated blood pressure (>130/85) before the treatment (Khaesi, Hypertension 2014). Blood pressure was not significantly improved in those who consumed fewer than 100 billion colony-forming units of probiotics per day, or who consumed probiotics for less than two months.

Cholesterol-lowering

Probiotics may be helpful in modestly lowering cholesterol, particularly by lowering LDL cholesterol. The evidence is mixed on whether probiotics can help also lower triglycerides. Probiotics don't seem to raise levels of HDL "good" cholesterol.

A study with *Lactobacillus reuteri* NCIMB 30242 (sold as CardioViva (see Results table)) in men and women with high cholesterol showed that those who took a capsule containing 2 billion cells with breakfast and another with dinner for nine weeks had average reductions in both LDL and total cholesterol of about 6% while these levels increased by a few percent among people taking placebo. There was no effect on HDL cholesterol nor triglycerides. (Jones, Eur J Clin Nutr 2012). A longer study (56 weeks) using a different probiotic, *E. faecium* M-74, found that giving 2 billion cells once daily lead to a 12% reduction in total cholesterol, with a 20% drop in LDL cholesterol — although total cholesterol and LDL levels also fell in the placebo group by 5.5% and 8.3%, respectively, perhaps due to the fact that participants in both groups began eating healthier during the study (Hlivak, Bratisl Lek Listy 2005). *Lactobacillus reuteri* NCIMB

30242 may be the safer of the two probiotics as it is generally recognized as safe by the FDA, while *E. faecium* has not gained this status and some strains of this species are human pathogens (DiRienzo, [Nutrition Reviews 2013](#)).

LDL cholesterol and total cholesterol were also reduced by 6.92% and 4.1% among adults with **nonalcoholic fatty liver disease (NAFLD)** consuming a probiotic yogurt compared to those consuming the same yogurt without probiotic organisms. NAFLD affects approximately 20 to 30% of the population, is often associated with elevated cholesterol levels, and can lead to cirrhosis of the liver. Among those taking the probiotic yogurt, LDL and total cholesterol levels fell by a mean of 16 mg/dL and 11 mg/dL, respectively, over an 8 week period, and body weight also decreased by nearly 4 lbs — significantly more than in the group eating regular yogurt. As in other studies with probiotics, there were no significant changes in levels of HDL cholesterol or triglycerides, but there were significant improvements in levels of liver enzymes ALT and AST, which are indicators of liver injury. Subjects ate 300 grams (slightly more than 1 cup) per day of yogurt providing an average of about 1.2 billion cells each of *Lactobacillus acidophilus* La5 and *Bifidobacterium lactis* Bb12 (Nabavi, [J DairySci 2014](#)). (These probiotic organisms are found in several of the products tested in the [Results](#) table.)

Although other studies (above) have not shown probiotics to lower triglyceride levels, a study in non-diabetic men and women with borderline to moderately high triglyceride levels found that those who took 2 grams of probiotic powder (Korea Yakult Co), providing 5 billion cells each of *Lactobacillus curvatus* HY7601 and *Lactobacillus plantarum* KY1032, daily for 3 months had a **significant reduction in triglyceride levels** (about 18%) compared to those given a placebo (Ahn, [Atherosclerosis 2015](#)). Also unusual is that those taking the probiotic also had a significant increase in apo A-V levels, a molecule that plays an important role in lipid metabolism and low levels of which are associated with an increased risk of cardiovascular disease.

Another study showing a reduction in triglycerides, as well LDL levels, involved the probiotic *L. fermentum* ME-3. People with borderline-high lipid profiles drank kefir (200 mL per day — a little less than 1 cup) daily to which this probiotic (8 billion cells) had been added. Over a period of 8 weeks, subjects experienced a 17% reduction in triglycerides and reductions of 5% and 6%, respectively, in two forms of LDL — LDL-C and ox-LDL. Those who drank the same kefir without the probiotic did not experience these reductions (Mikelsaar, [BMC Nutrition 2015](#)). Three of the researchers are owners of the patent on this probiotic.

Anxiety and depression

Chronic gut disorders are associated with higher rates of anxiety and depression, and probiotics may be of some help. A well-publicized study in mice suggested a possible role for probiotics in reducing anxiety associated with gut inflammation (Bercik, [Neurogastroenterol Motil 2011](#)). Mice in the study had a chemically-induced inflammation of their gut and exhibited anxiety-like behavior. Giving 1 billion cells of *Bifidobacterium longum* NCC3001 for 1 week normalized their behavior. The probiotic did not reduce inflammation in the gut but appeared to act by reducing the excitability of nerves in the gut which connect, through the vagus nerve, with the central nervous system. **This same probiotic was given to men and women with diarrhea-predominant or "mixed" IBS who also had mild to moderate anxiety or depression. Clinically significant improvements in depression occurred in twice as many people given the probiotic (14 of 22 patients) than among those given a placebo (7 of 22). However, here were no significant improvements in anxiety, nor in physical symptoms of IBS. The probiotic consisted of 10 billion cells of *Bifidobacterium longum* NCC3001 from a sachet dissolved in a drink once a day for six weeks (Pinto-Sanchez, [Gastroenterology 2017](#)). The study was funded by Nestle, which appears to be involved in developing the probiotic. This probiotic is also known as BB536 from Morinaga (Japan) and is found in various marketed products under that name.**

Similarly, French researchers evaluated a combination of *Bifidobacterium longum* R0175 and *Lactobacillus helveticus* R0052 (3 billion organisms total — sold in the U.S. and Canada by Jamieson as *Probiotic Sticks* with 1 billion cells per stick) taken during or just after breakfast for 30 days in healthy individuals, finding significant improvements in day-to-day depression, anger, anxiety, as well as lower levels of the stress hormone cortisol in those taking the probiotic compared to those taking placebo — although some improvement also occurred in the placebo group (Messaoudi, [Br J Nutr 2011](#)). In Holland, researchers found that giving healthy young women and men a combination probiotic for 4 weeks reduced self-reported negative thoughts in response to sad mood. This suggests that the probiotic may help prevent depression. Specifically, the probiotic reduced thoughts which were aggressive (wanting to hurt others or oneself) and ruminative (dwelling on possible causes and consequences of one's distress). The probiotic, or a placebo, was taken before bed as a powder mixed with water or lukewarm milk and provided a total of 5 billion cells of two forms of *Bifidobacterium* (*bifidum* W23 and *lactis* W52) and five forms of *Lactobacillus* (*acidophilus* W37, *brevis* W63, *casei* 56, *salivarius* W24, and *lactis* W19 and W58) supplied by Winclove (Amsterdam) — although the company was not involved in the study or its funding (Steenbergen, [Brain Behav Immun 2015](#)).

A placebo-controlled study found that giving a prebiotic for 3 weeks (5.5 grams per day with breakfast) also reduced cortisol levels and improved responses in one test associated with anxiety and depression (measuring attention to positive and negative stimuli). These effects occurred with the use of a galactooligosaccharide prebiotic (*Bimuno*®-GOS) but not with a fructo-oligosaccharide prebiotic. However, neither prebiotic affected other aspects of stress or anxiety, nor improved working memory and executive functioning (Schmidt, [Psychopharmacology 2014](#)).

Consumption of fermented foods that contain probiotic organisms may have a protective effect against symptoms of social anxiety, according to a study of young adults. The study compared foods reported to have been consumed to scores on personality tests. Those who most frequently consumed the most fermented foods tended to also have lower levels of social anxiety. This relationship was strongest in those who had higher levels of neuroticism. Those who exercised most frequently tended to also have lower levels of social anxiety. Fermented food items included yogurt, kefir, fermented soy milk, miso soup, sauerkraut, some dark chocolates, microalgae juices, pickles, tempeh and kimchi (Hilimire, [Psychiatry Research 2015](#)).

Allergy

A study in adults with grass pollen allergy who were taking a daily antihistamine (loratadine 10 mg), found that adding a daily probiotic to the regimen for 5 weeks resulted in a small, but statistically significant reduction in the impact of allergy symptoms on the quality of their lives. Without any medication, the subjects rated the impact of allergy symptoms on their lives a 3.25 (mean score) on scale of 0 to 6, with 6 being extreme. This fell to 1.65 with antihistamine treatment and to 1.40 when the probiotic was added. Ocular symptoms improved with the added probiotic but nasal symptoms did not (Costa, [Eur J Clin Nutr 2014](#)). The probiotic consisted of a capsule with 2 billion cells of *Lactobacillus paracasei* LP-33 which was taken with a meal. The study, which was company-sponsored, included a later phase during which only the probiotic was given, but results of this phase were not reported. Interestingly, a submission to make an allergy health claim for this probiotic in Europe [was retracted without explanation](#).

Somewhat similar to the findings above, a study in young adults with self-reported seasonal allergy found that taking a probiotic for 8 weeks during spring

allergy season slightly reduced the impact of allergy symptoms on the quality of life. Symptom scores (0 to 6, with 6 being extreme) were fairly low to start: 1.71 in the probiotic group and 1.93 in the placebo group. At the time of predicted peak pollen, scores fell slightly (by 0.68) in the probiotic group and, surprisingly, also by a tiny amount (0.19) in the placebo group. The probiotic was taken as a capsule twice daily and each capsule contained 1.2 billion cells of *L. gasseri* KS-13 and 150 million cells each of *B. bifidum* G9-1 and *B. longum* MM-2. The study was sponsored by the manufacturer, Wakunaga of America, and the USDA. (Dennis-Wall, *Am J Clin Nutr* 2017).

Childhood eczema/allergy:

The World Allergy Organization concluded there is a likely benefit in giving probiotics to infants and pregnant or breastfeeding women to help prevent eczema developing in children at high risk for developing allergy (Fiocchi, *WAO Journal* 2015). Children at "high risk for developing allergy" are those with a biological parent or sibling with existing or history of allergic rhinitis, asthma, eczema, or food allergy — factors which raise the risk of developing allergy to 20% to 30%. However, the organization did not find sufficient evidence for probiotic use by these groups to reduce the risk of other types of allergy in children. It also did not specify the probiotic type or dosage regimen to be used.

Preventing ADHD and Asperger syndrome in children

A small study in Finland used as the basis for the WHO probiotic recommendation to prevent childhood eczema (above) also suggests probiotics may reduce the risk of neuropsychiatric disorders. In the study, 10 billion cells of *Lactobacillus GG* (*Culturelle*) were given daily to pregnant mothers for 4 weeks before expected delivery and then for 6 months after delivery to each infant — or the mother if breast-feeding. Follow up after 13 years found that *none* of the 40 children who received the probiotic developed attention deficit hyperactivity disorder (ADHD) or Asperger syndrome, while among 35 who received placebo 6 children (17%) developed these conditions: ADHD (3), Asperger syndrome (1), and both (2) (Party, *Ped Res* 2015). Although statistically significant, the researchers noted that the results should be considered preliminary. They did not comment on the unusually high incidence in the placebo group of Asperger syndrome, which is usually less than 1% but was 8.6%; the percentage with ADHD was also slightly high.

Gestational (Pregnancy-related) Diabetes

Taking a probiotic during pregnancy may reduce women's risk of women developing gestational (pregnancy-related) diabetes, according to a study in New Zealand. In the study, pregnant women were given 6 billion cells of *Lactobacillus rhamnosus* HN001 (also sold in the U.S. as *HOWARU® Rhamnosus*) daily or placebo beginning in the third or fourth month of pregnancy and continuing up to six months after giving birth. Among the women given the placebo, 6.5% developed diabetes (defined in New Zealand as fasting blood sugar ≥ 99.1 mg/dL, or ≥ 162 mg/dL 2 hours after drinking glucose solution), compared to only 2.1% of those given the probiotic. There were no adverse effects on babies' size, weight or Apgar score (Wickens, *Br J Nutr* 2017).

Bone fractures

A study of Japanese men and women (average age 64) with fractured forearms found that taking a daily probiotic beginning the first day after fracture significantly increased the speed of recovery during the first four months as well improving pain scores and the ability to perform daily tasks, compared to those given placebo (Lei, *Benef Microbes* 2016). However, by six months improvements were similar in both groups and the study did not include imaging to document the actual rate of fracture healing. The probiotic used was 6 billion cells of *Lactobacillus casei* Shirota taken twice daily with skim milk. This is sold in the U.S. as *Yakult*. Laboratory studies suggest that probiotics can form certain peptides during the fermentation process in the gut and these peptides may benefit bone healing (Narva, *Life Sci* 2004; Parvaneh, *Biomed Res Int* 2015).

Other conditions

Although the evidence is not clear-cut, probiotics have been studied as a treatment for many other conditions and their symptoms including: lactose intolerance, respiratory and GI problems resulting from cystic fibrosis, HIV-related diarrhea, Crohn's disease, ulcerative colitis, pouchitis, cancer prevention, high blood cholesterol, tuberculosis, eczema, acne, canker sores, dental cavities, milk allergies, hay fever, and the prevention of respiratory infections in children. See [ConsumerTips: What to Consider When Using](#) for dosage information and, for more information, see the article about [Probiotics](#) in the Natural Product Encyclopedia on this website.

Summary of Evidence for Probiotics:

To help you chose an appropriate probiotic, the clinical importance of each type of probiotic is summarized below. In general, *Lactobacillus* strains have the widest range of applications, while *Streptococcus* strains have the most limited positive evidence for diarrhea when combined with other probiotics. Examples of products that contain certain probiotic organisms are included in parentheses.

Uses of Probiotics in People — The Current Evidence (✓ = Effective; ½✓ = Partially Effective; X = Not effective; ? = No definitive results)

	Abdominal Pain, Bloating, & Constipation	Diarrhea from Antibiotics, Viral Infection, or Chemotherapy	Traveler's Diarrhea	Weight Loss/Management	H. pylori Infection	Colds and Respiratory Infections	Cholesterol-lowerers	Anxiety/Depression	Mouth and Throat Infections	Allergy	Other Infections
Bacillus	✓ - In adults with IBS - <i>B. coagulans</i>	? - <i>B. coagulans</i>					? - <i>B. coagulans</i>				
Bifido-bacterium	In adults with IBS: ½✓ - <i>B. infantis</i>	✓ - <i>B. lactis</i> Bi-07 and <i>B. lactis</i> BI-04 in combination	?	✓ - <i>B. breve</i> B-3	✓ - With <i>Lactobacillus</i> and	✓ - <i>B. lactis</i> UABLA12 with <i>L. acid-</i>	✓ - <i>B. lactis</i> Bb12 with <i>L. acid-</i>	✓ - <i>B. longum</i> R0175 with <i>Lactobacillus</i>	-	-	-

	35624 (Align) ½√ - Combination (VSL#3) ? - <i>B. lactis</i> BB-12 (YoPlus, USANA Probiotic); <i>B. animalis</i> ("regularis" Activia)	with 2 strains of <i>Lactobacillus</i> (HOWARU Restore)			<i>Saccharomyces</i>	<i>ophilus</i> DDS-1 (UAS UP4 Junior)	<i>ophilus</i> La5	<i>helveticus</i> R0052; also other strains			
Lacto-bacillus	<p>✓ In children - <i>L. GG</i> (Culturelle)</p> <p>✓ In infants and children - <i>L. reuteri</i> DSM 17938</p> <p>✓ In adults with diverticular disease - <i>L. casei</i> DG</p> <p>χ - In adults with IBS - <i>L. rhamnosus</i> NCIMB 30174, <i>L. plantarum</i> NCIMB 30173, <i>L. acidophilus</i> NCIMB 30175, with <i>Enterococcus faecium</i> NCIMB 30176</p>	<p>✓ In children - <i>L. GG</i> (Culturelle) alone and with <i>B. lactis</i> Bb-12 and <i>L. acidophilus</i> La-5; <i>L. reuteri</i></p> <p>✓ <i>L. casei</i> with <i>L. bulgaricus</i>, and <i>S. thermophilus</i> (Actimel)</p> <p>✓ - <i>L. acidophilus</i> with <i>L. casei</i></p> <p>✓ - <i>L. acidophilus</i> NCFM and <i>L. paracasei</i> Lpc-37 with 2 strains of <i>B. lactis</i> (HOWARU Restore)</p> <p>✓ - <i>L. acidophilus paracasei</i> F19 (for bloating from PPI use)</p> <p>✓ - <i>L. rhamnosus</i> R0011 with <i>L. helveticus</i> R0052</p>	<p>✓ - <i>L. GG</i> (Culturelle)</p> <p>χ - <i>L. acidophilus</i>, <i>L. bulgaricus</i>, <i>L. fermentum</i></p>	<p>✓ - <i>L. gasseri</i> SBT2055 (LG2055)</p> <p>✓ - In women - <i>L. rhamnosus</i> CGMCC 1.3724</p>	<p>✓ - Alone or with <i>Bifidobacterium</i> and <i>Saccharomyces</i></p>	<p>✓ - <i>L. plantarum</i> HEAL 9 (DSM 15312) and <i>L. paracasei</i> 8700:2 (DSM 13434)</p> <p>✓ - <i>L. acidophilus</i> NCFM alone or, preferably, with <i>B. animalis</i> subsp <i>lactis</i> Bi-007 (Metagenic Ultra Flora Plus DF)</p> <p>✓ - <i>L. acidophilus</i> DDS-1 with <i>B. lactis</i> UABLA12 (UAS UP4 Junior)</p>	<p>✓ - <i>L. reuteri</i> NCIMB 30242 (Cardioviva™) and <i>E. faecium</i> M-74 (an Enterococcus)</p> <p>✓ - <i>L. acidophilus</i> La5 with <i>B. lactis</i> Bb12</p> <p>✓ - <i>L. fermentum</i> M-3</p>	<p>✓ - <i>L. helveticus</i> R0052 with <i>B. longum</i> R0175; also other strains</p>	<p>✓ - For periodontitis: <i>L. reuteri</i> DSM-17938 and ATCC PTA 5289 (Pro-dentis/Perio-Balance) along with dental scaling/cleaning</p>	<p>½√ - <i>L. paracasei</i> LP-33 with anti-histamine</p>	<p>✓ - For vaginal infection: <i>L. rhamnosus</i> GR-1 and <i>L. fermentum</i> RC-14 (Jarrow Fem-dophilus and RepHresh Pro-B)</p> <p>✓ - For mastitis: either <i>L. fermentum</i> CECT5716 or <i>L. salivarius</i> CECT5713</p>
Streptococcus	-	✓ <i>S. thermophilus</i> with, <i>L. casei</i> and, <i>L. bulgaricus</i> (Actimel)	?	-	-	-	-	-	?- For throat infection: <i>S. salivarius</i> K12	-	-
Saccharomyces (yeast)	✓ In adults with IBS - <i>S. cerevisiae</i> CNCM I-3856	✓ <i>S. boulardii</i> (FloraStor)	✓ <i>S. boulardii</i> (FloraStor)	-	✓ With <i>Bifidobacterium</i> and <i>Lactobacillus</i>	-	-	-	-	-	-

For pets (small animals)

Studies in dogs and cats have shown that the addition of probiotics to the diet can stimulate measures of immune function, although the significance of this in preventing or treating specific diseases has not been demonstrated. *Enterococcus faecium* (SF68) has been shown to stimulate immune function in puppies fed 0.5 billion cells per day (Benyacoub 2003) and immune stimulation has also been seen in cats fed 0.2 billion cells per day of *Lactobacillus acidophilus* DSM13241 (Marshall-Jones 2006).

Quality Concerns and What CL Tested for:

Neither the FDA nor any other federal or state agency routinely tests probiotics for quality prior to sale. However, quality issues for probiotic supplements can include the following:

- The viability of organisms in the product: How many organisms are alive (in the case of active cultures) or can "come alive" from their inactive and often freeze-dried state when purchased and used? Some products make no claim at all and others only claim the amount at the time of manufacture.
- Lack of contaminating organisms: The product should contain the bacteria and/or yeast strains that it claims on the label while potentially pathogenic microorganisms and other microbial contaminants should not be present. (This is of particular concern with enteric-coated products, as the coating may protect contaminating pathogens from being naturally destroyed in your stomach.)
- Ability of pill to break apart properly: Tablets and caplets which are not chewable must be able to properly break apart to release their ingredients.
- Protection of organisms from stomach: Some types of bacteria cannot survive as they pass through stomach acid and into the small and large intestines where the bacteria would grow (see [ConsumerTips: What to Consider When Buying](#) for more information). Ideally a product should contain bacteria that research shows can survive passage through the stomach or, if its bacteria cannot survive stomach acid, it should be enteric coated or use some other protective formula (e.g., microencapsulation).
- Gluten-free: Products claiming to be gluten-free were tested to determine if they met the FDA requirement that products produced since August 5, 2014 claiming to be gluten-free may not contain more than 20 ppm of gluten.
- Lactose: Products claiming a percentage lactose-free, such as "99% lactose free" were tested for lactose to determine if they met the claim.

ConsumerLab.com, as part of its mission to independently evaluate products that affect health, wellness, and nutrition, purchased many leading probiotic products sold in the U.S. and tested them to determine whether they 1) possessed the claimed amount of viable bacteria listed on the label and at least 1 billion live organisms per suggested daily adult serving, 2) were free of contamination from mold or types of bacteria with disease-causing potential, and 3) disintegrated properly (if in tablet form) so that their contents would be released, or if enteric-coated or delayed release, their contents would be released, respectively, after passing through the stomach. (See [Testing Methods and Passing Score](#) for more information).

When purchasing products labeled as requiring refrigeration (not just after opening), ConsumerLab.com had them shipped in refrigerated packaging and they were maintained under refrigerated conditions throughout testing. ConsumerLab.com tested all products prior their "best by" date.

What CL Found:

Probiotic Supplements

Products for human use:

ConsumerLab.com selected eighteen probiotic products for people sold in the U.S. Sixteen of these passed ConsumerLab.com's tests -- providing the amounts of probiotics listed on the labels and being free of contamination from common "bad" bacteria and mold. An additional twenty-two products passed the same testing in CL's [Quality Certification Program](#).

Among the products selected by CL for testing, two did not contain the number of cells (also referred to as "colony forming units (CFUs)" or "live organisms") listed on their labels:

- *Essential Formulas Dr. Ohhira's Probiotics* contained only 880 million cells per 2 capsule daily serving, just 48.9% of its listed amount of 1.8 billion cells. Although it listed the amount of cells to be "At the time of manufacture," this type of disclaimer is not recognized by the FDA and can mislead consumers when a diminished amount is actually in the product. All dietary supplements, including probiotics, must meet their label claims throughout their shelf-life. In addition, the actual amount of cells found was below 1 billion cells, a threshold for approval of an adult's probiotic by CL unless the product has been shown to be effective at a lower dose in a clinical trial.
- *Jamieson Probiotic* contained only 14 billion cells per 1 capsule serving, just 46.7% of its listed 30 billion cells. This is still a substantial dose, but CL requires that products contain what they claim.

Interestingly, previous tests of probiotics by ConsumerLab.com (2009 — 2013) found a larger percentage of the reviewed products did not contain their claimed amounts, suggesting that many manufacturers have improved their products and/or improved the conditions under which the products are shipped and stored prior to purchase.

The two **oral health products** included in this review, *PerioBalance® - Fresh Mint lozenges* and *TwinLab® Triple Action Oral Health Dots* each contain clinically meaningful amounts of probiotic strains shown to decrease colonization of infection-causing bacteria in the mouth. *PerioBalance7® - Fresh Mint lozenges* contain *Lactobacillus reuteri* DSM 17938 and ATCC PTA5289, which have been shown to improve chronic gum disease. *TwinLab® Triple Action Oral Health Dots* contain *BLIS K12®*, which has been shown to reduce bad breath, as well as the incidence of throat infections (such as strep throat). (See [What it Does](#) for more information). They each cost around 60 cents per daily serving.

Among **women's products** in this review, *Jarrow Formulas Women's Fem Dophilus* and *RepHresh® Pro-B* each provide a combination of probiotic strains (*L. rhamnosus GR-1* and *L. reuteri RC-14*) shown to reduce the colonization of infection-causing bacteria and yeast in the vagina (See [What It Does](#) for more information). *Jarrow*, however, is half the price of *RepHresh* for the same dose.

If you are looking for a **probiotic for a child**, note that, in addition to the three products listed in the Children's section of the table below, *Phillips Colon*

Health also provides serving suggestions for children.

All tablet products disintegrated properly so that their organisms could be released in the body. None of the products were enteric-coated. (For some types of probiotic organisms, enteric coatings may not be necessary – see [Withstanding Stomach Acid](#) below).

Pet probiotics

ConsumerLab.com selected three probiotic products for dogs and cats. Each contained the number of probiotic organisms listed on each label. Although it is difficult to know what amount and type of probiotics are best for animals, *the amount in one of these products was exceptionally low* and it is questionable whether it would have much effect. This product is *Only Natural Pet Probiotic Blend*, which listed and contained only 2.5 million cells per capsule (suggested serving for dogs up to 40 lbs)

The other two products for pets contained more substantial numbers of probiotic organisms: *Nusentia Probiotic Miracle Premium Probiotic Blend for Pets* contained 1 to 2 billion per ½ to ¼ teaspoon serving (the labeled daily servings for animals under 50 lbs and over 50 lbs, respectively). *VetriScience Vetri Probiotic Everyday* contained the listed amounts of cells, 500 million to 2 billion in 1/2 to 2 chews).

Nusentia is a more expensive product (\$39.99 per bottle) than *VetriScience* (\$19.99 per bag), but *Nusentia* provides many more servings and has a lower cost per billion cells (11 cents vs. 33 cents). Both provide a mix of probiotics, although *VetriScience* includes a wider range of *Bifidobacteria* as well as prebiotic fructooligosaccharides.

Kefir

These cultured milk beverages have become increasingly popular in the U.S. and can be a major source of probiotic organisms if added to the cultures. Like milk, they are rich in calcium and protein and are often fortified with vitamin D. They are also promoted for being easier to tolerate than milk for people with lactose intolerance.

Probiotics in kefir:

ConsumerLab.com tested products from three major brands: *Lifeway Lowfat Kefir* — Plain unsweetened, *Latta Russian Kefir* 2% fat — Acidophilus Plain, and *Evolve Kefir* 1% Lowfat — Plain Probiotic Smoothie. Testing showed that all were teeming with probiotic organisms, but some had much higher levels than others. *Evolve*, which listed 11 probiotic species also had the greatest amount of organisms per cup — nearly 1 trillion cells (CFUs)! *Lifeway*, which listed 12 species, contained 250 billion cells, and *Latta*, which simply listed acidophilus and "probiotic kefir cultures" contained 150 billion cells.

Each of the products was found negative for disease-causing organisms *E. coli*, mold, staph, pseudomonas, and salmonella.

Lactose in kefir:

Lifeway was the only kefir to offer information about its lactose content, claiming to be "99% lactose free." ConsumerLab.com found, however, that it contained about 8 grams of lactose per cup, which means it is actually 3.7% lactose – making it 96% lactose free, not the claimed "99%." In fact, most of its listed 12 grams of sugar is lactose. Due to this apparently false claim, it is listed below as "Not Approved." [Note: See response from Lifeway in [Update](#) above.]

The basis for *Lifeway's* claim of 99% lactose free seems unclear. In fact, a study at The Ohio State University funded by Lifeway disclosed that Lifeway plain kefir was 4% lactose (reporting 20 grams of lactose in 508 grams of the kefir), consistent with ConsumerLab.com's finding of 3.7% [Note: Lifeway has informed CL that the product tested at Ohio State did not claim to be 99% lactose free – see [Update](#) above]. The study also showed that this concentration of lactose is only slightly lower than that in 2% reduced-fat milk (4.9% lactose) and low-fat plain yogurt (5.4% lactose) (Hertzler, *J Am Dietetic Assoc* 2003). However, this study also found that people with lactose-intolerance were still better able to tolerate lactose from kefir and yogurt than from milk when given the same amount of lactose from each. The researchers theorized that enzymes from bacteria in kefir and yogurt are active in the digestive system, breaking down lactose to more digestible glucose and galactose — similar to taking a lactase (beta-galactosidase) enzyme supplement (see our [Review of Products for Lactose Intolerance — Lactase Enzymes and Lactose-free Milks](#)).

ConsumerLab.com tested the lactose content of the other two kefirs. It found *Evolve* and *Latta* to contain 4.4% and 4.7% lactose, respectively. Factoring in the densities of the products (*Latta* was significantly more dense than the others), *Evolve* and *Latta* provided, respectively, 10.3 grams and 12.7 grams of lactose per cup. So, although *Lifeway* is not really 99% lactose-free, it does contain less lactose than the other kefirs.

Choosing a kefir product:

All three products will provide a large number of probiotic organisms. If you want the greatest concentration probiotics per cup, go with *Evolve*. Pricewise, all three kefirs cost about the same per cup — 75 cents to 88 cents. Of course, in terms of cost to obtain probiotic organisms, *Evolve* is the most economical — just one-tenth of one cent per billion organisms!

In terms of other nutrients and ingredients, *Evolve*, like *Lifeway*, has been fortified with vitamin D (100 IU or 25% of the Daily Value) and about 3 grams more protein than *Latta*. *Evolve* and *Lifeway* also provide less fat (by 2 grams) and 10 fewer Calories than *Latta*.

If you are lactose-intolerant, a cup of *Lifeway* provides a little less lactose than *Evolve*, and significantly substantially less than *Latta*. But, if real benefit with lactose intolerance is due a release in the gut of lactose-digesting enzymes from its probiotics organisms, the very large concentration of organisms in *Evolve*, may be more important than its lactose content.

Pricewise, all three kefirs cost about the same per cup — 75 cents (*Latta*) to 88 cents (*Lifeway*). Of course, in terms of cost per billion probiotic cell, *Evolve* is the most economical – 0.1 cent per billion compared to 0.5 cents per billion for the others.




You may have to look a little harder to find *Evolve* and *Latta* than *Lifeway*, as *Lifeway* is the dominant brand on the market and, apparently, is also the private label provider for stores like Trade Joe's.

Test Results by Product:

Listed in the first table below are the test results for 43 probiotic supplements -- forty marketed for human use and three for use by pets. These are arranged by type (adult, oral health, women's, children's, and pet). Listed in the second table are test results for 3 kefir products.

ConsumerLab.com selected twenty-one of the probiotic products and all three of the kefirs. Twenty-two other probiotics (each indicated with a CL flask icon) were tested at the request of their manufacturers/distributors through CL's voluntary [Quality Certification Program](#) and are included for having passed testing. Also listed are two probiotic supplements which are very similar to one which passed testing.

Shown for each product are the labeled types of probiotic organisms per unit (such as a capsule) and the labeled amount of viable organisms per suggested daily serving. If a product did not list an amount of viable organisms, the amount found is shown. Cost comparisons are provided in the last column. The full list of ingredients is available for each product by clicking on the word "Ingredients" in the first column. Be sure to check refrigeration requirements (if any), which appear in the fourth column and in detail in the "Ingredients" list for each product.


RESULTS OF CONSUMERLAB.COM TESTING OF PROBIOTIC SUPPLEMENTS							
Click on \$ Price Check beneath a product name to find a vendor that sells it.							
To find retailers that sell some of the listed products click here .							
Product Name, Serving Size, and Suggested Daily Serving on Label Click on "Ingredients" for Full Listing	Listed Amount and Types of Probiotic Organisms in Suggested Daily Serving ❄ = Refrigeration Suggested on Label	--TEST RESULTS--					Cost for Daily Suggested Serving on Label [Cost Per 1 Billion Organisms Found] Other Notable Features ³ Price Paid
		OVERALL RESULTS: APPROVED or NOT APPROVED	Contained Listed Amount of Probiotic Organisms in the Suggested Daily Serving	Provided At Least 1 Billion Organisms Per Daily Serving (or Less if Clinically Proven Effective)	Free of Microbial Contamination Met Gluten-free Claim ⁴	Disintegrated Properly (NA= Not Applicable)	
Adult Products:							
21st Century® High Potency Acidophilus Probiotic Blend (1 capsule, once daily)  Mfd. by 21st Century HealthCare, Inc. Ingredients \$ Price Check	"over 1 billion viable cells" ⁴ <i>Lactobacillus acidophilus</i> , <i>Lactobacillus salivarium</i> , <i>Bifidobacterium bifidum</i> , <i>Streptococcus thermophilus</i>	APPROVED	Found 2.6 billion CFUs per daily serving	✓	✓ ✓	NA	\$0.05 [\$0.02 based on amount found] Contains milk Gluten free \$7.71/150 capsules
21st Century® Ultra Potency Advanced Probiotic (2 capsules, once daily)  Mfd. by 21st Century HealthCare, Inc. Ingredients	20 billion ⁴ <i>Lactobacillus acidophilus</i> , <i>Lactobacillus casei</i> , <i>Lactobacillus rhamnosus</i> , <i>Bifidobacterium longum</i> , <i>Bifidobacterium lactis</i> , <i>Lactobacillus delbrueckii</i>	APPROVED	✓	✓	✓ NA	NA	\$0.57 [\$0.03] Yeast free \$16.99/60 capsules
365™ Everyday Value Probiotic Complex (1 vegetarian tablet, twice daily)  Dist. by Whole Foods Market Ingredients	8 billion ⁴ <i>Lactobacillus acidophilus</i> 6.4 billion CFU, <i>Lactobacillus bulgaricus</i> 800 million CFU, <i>Bifidobacterium bifidum</i> 400 million CFU, <i>Streptococcus thermophilus</i> 400 million CFU ❄ ⁵	APPROVED	✓	✓	✓ NA	✓	\$0.18 [\$0.02] Contains milk Vegetarian \$21.99/250 vegetarian tablets
Align® (1 capsule, once daily) Dist. by Procter & Gamble	1 billion ^{4,6} <i>Bifidobacterium infantis</i> 35624	APPROVED	✓	✓	✓ NA	NA	\$1.02 [\$1.02]

<p>Ingredients \$ Price Check</p>								<p>\$42.99/42 capsules</p>
<p>Bayer Phillips® Colon Health® Probiotic Caps (1 capsule, once daily) Dist. by Bayer HealthCare LLC Ingredients \$ Price Check</p>		<p>1.5 billion <i>Lactobacillus gasseri</i> <i>KS-13, Bifidobacterium bifidum</i> G9-1, <i>Bifidobacterium longum</i> MM-2</p>	<p>APPROVED</p>	<p>✓</p>	<p>✓</p>	<p>✓ NA</p>	<p>NA</p>	<p>\$0.47 [\$0.31] \$27.99/60 capsules</p>
<p>BioGaia® ProTectis - Lemon-Lemon Flavored (1 chewable tablet, once daily) Dist. by Everdis® Health Sciences Ingredients \$ Price Check</p>		<p>100 million <i>Lactobacillus reuteri</i> DSM 17938</p>	<p>APPROVED</p>	<p>✓</p>	<p>No¹⁰</p>	<p>✓ NA</p>	<p>NA</p>	<p>\$0.90 [\$9.00] Contains milk \$26.99/30 chewable tablets</p>
<p>Cardioiva™ Natural Health Probiotic (1 vegetable capsule, twice daily)★ Dist. by The Winning-Combination Inc. Ingredients \$ Price Check</p>		<p>5 billion <i>Lactobacillus reuteri</i> (NCIMB 30242)</p>	<p>APPROVED</p>	<p>✓</p>	<p>✓</p>	<p>✓ NA</p>	<p>NA</p>	<p>\$1.00 [\$0.20] \$29.99/60 vegetable capsules</p>
<p>Culturelle (1 capsule, once or twice daily) Dist. by i-Health, Inc. Ingredients \$ Price Check</p>		<p>10 billion to 20 billion <i>Lactobacillus</i> GG</p>	<p>APPROVED</p>	<p>✓</p>	<p>✓</p>	<p>✓ ✓</p>	<p>NA</p>	<p>\$0.28-\$0.57 [\$0.03] Vitamin C, inulin <i>Contains no milk, contains no wheat, gluten free, yeast free</i> \$22.66/80 capsule</p>
<p>CVS/pharmacy™ Acidophilus (1 tablet, once daily) ⚠️ Dist. by CVS Pharmacy, Inc. Ingredients</p>		<p>1 billion⁴ <i>Lactobacillus acidophilus</i> ⚠️⁵</p>	<p>APPROVED</p>	<p>✓</p>	<p>✓</p>	<p>✓ ✓</p>	<p>✓</p>	<p>\$0.10 [\$0.10] <i>Contains no milk, contains no wheat, gluten free</i> \$9.99/100 tablets</p>
<p>Dr. David Williams Probiotic Advantage® Bifido Beadlet 50+™ (1 beadlet, once daily) ⚠️ Dist. by Healthy Directions Ingredients</p>		<p>2 billion <i>B. longum</i> BB-536, <i>L. acidophilus</i> NCFM®, <i>B. lactis</i> BI-04, <i>L. plantarum</i> Lp-115, <i>B. infantis</i> M-63, <i>L. rhamnosus</i> Lr-32</p>	<p>APPROVED</p>	<p>✓</p>	<p>✓</p>	<p>✓ NA</p>	<p>NA</p>	<p>\$0.75 [\$0.37] Contains milk \$22.49/30 beadlets</p>
<p>Dr. Mercola® Complete Probiotics (2 capsules, once daily)</p>		<p>70 billion⁴ <i>Lactobacillus acidophilus</i> DDS-1,</p>	<p>APPROVED</p>	<p>✓</p>	<p>✓</p>	<p>✓ NA</p>	<p>NA</p>	<p>\$1.00 [\$0.01]</p>

<p>Dist. by Mercola Health Resources, LLC Ingredients \$ Price Check</p> 	<p><i>Bifidobacterium lactis</i>, <i>Lactobacillus plantarum</i>, <i>Lactobacillus casei</i>, <i>Lactobacillus rhamnosus</i>, <i>Lactobacillus brevis</i>, <i>Bifidobacterium longum</i>, <i>Lactobacillus salivarius</i>, <i>Streptococcus thermophilus</i>, <i>Bifidobacterium bifidum</i></p> <p>7</p>						<p>\$29.97/60 capsules</p>
<p>Essential Formulas® Dr. Ohhira's Probiotics® (1 capsule, twice daily) Dist. by Essential Formulas Incorporated Ingredients</p> 	<p>1.8 billion⁴</p> <p><i>Bifidobacterium breve ssp. breve</i>, <i>Bifidobacterium infantis ssp. infantis</i>, <i>Bifidobacterium longum</i>, <i>Enterococcus faecalis TH10</i>, <i>Lactobacillus acidophilus</i>, <i>Lactobacillus brevis</i>, <i>Lactobacillus bulgaricus</i>, <i>Lactobacillus casei ssp. casei</i>, <i>Lactobacillus fermentum</i>, <i>Lactobacillus helveticus ssp. jugurti</i>, <i>Lactobacillus plantarum</i>, and <i>Streptococcus thermophilus</i></p>	<p>NOT APPROVED</p>	<p>Found only 880 million CFUs per daily serving (48.9% of listed amount)</p>	<p>No</p>	<p>✓¹ NA</p>	<p>NA</p>	<p>\$1.93 [\$1.07] Proprietary fermented culture, proprietary organic acid blend Suitable for vegetarians, non-GMO, contains no milk, contains no wheat, gluten free \$29.00/30 capsules</p>
<p>Garden of Life® Primal Defense® Ultra (1 vegetarian capsule, once to three times daily)  Dist. by Garden of Life LLC Ingredients \$ Price Check</p>	<p>5 to 15 billion⁴</p> <p><i>Saccharomyces boulardii</i>, <i>Lactobacillus plantarum</i>, <i>Bacillus subtilis</i>, <i>Lactobacillus paracasei</i>, <i>Bifidobacterium longum</i>, <i>Lactobacillus brevis</i>, <i>Bifidobacterium bifidum</i>, <i>Bifidobacterium breve</i>, <i>Bifidobacterium lactis</i>, <i>Lactobacillus acidophilus</i>, <i>Lactobacillus salivarius</i>, <i>Lactobacillus rhamnosus</i>, <i>Lactobacillus casei</i></p>	<p>APPROVED</p>	<p>✓</p>	<p>✓</p>	<p>✓¹ ✓</p>	<p>NA</p>	<p>\$0.32-\$0.97 [\$0.06] Iron, ionic plant based minerals Contains milk Suitable for vegetarians, gluten free \$28.99/90 vegetarian capsules</p>
<p>GNC Ultra 25 Probiotic Complex (1 vegetarian capsule, once daily)  Dist. by General Nutrition Corporation Ingredients \$ Price Check</p>	<p>25 billion</p> <p><i>Lactobacillus acidophilus (CUL60)</i>, <i>Lactobacillus acidophilus (CUL 21)</i>, <i>Bifidobacterium bifidum (CUL 20)</i>, <i>Bifidobacterium animalis subsp. lactis (CUL 34)</i></p>	<p>APPROVED</p>	<p>✓</p>	<p>✓</p>	<p>✓ NA</p>	<p>NA</p>	<p>\$1.17 [\$0.05] Fructooligosaccharides \$34.99/30 vegetarian capsules</p>
<p>GNC Ultra 50 Probiotic Complex (1 vegetarian capsule, once daily)  Dist. by General Nutrition Corporation Ingredients</p>	<p>50 billion</p> <p><i>Lactobacillus acidophilus (CUL60)</i>, <i>Lactobacillus acidophilus (CUL 21)</i>, <i>Bifidobacterium bifidum (CUL 20)</i>, <i>Bifidobacterium</i></p>	<p>APPROVED</p>	<p>✓</p>	<p>✓</p>	<p>✓ ✓</p>	<p>NA</p>	<p>\$1.57 [\$0.03] Fructooligosaccharides Gluten free \$46.99/30 vegetarian capsules</p>

		<i>animalis</i> subsp. <i>lactis</i> (CUL 34)						
Jamieson™ Probiotic (1 vegetable capsule, once daily)  *	30 billion	NOT APPROVED	Found only 14 billion CFUs per daily serving (46.7% of listed amount)	✓	✓	✓	NA	\$0.83 [\$0.03] Gluten free \$24.99/30 capsules
Dist. by Jamieson Laboratories Ingredients	<i>Bifidobacterium bifidum</i> HA-132, <i>Bifidobacterium</i> <i>breve</i> HA-129, <i>Bifidobacterium longum</i> HA-135, <i>Lactobacillus</i> <i>acidophilus</i> HA-122, <i>Lactobacillus paracasei</i> HA-196, <i>Lactobacillus</i> <i>rhamnosus</i> HA-111, <i>Lactobacillus</i> <i>rhamnosus</i> (B) HA-114, <i>Lactobacillus salivarius</i> HA-118							
Nature Made® Digestive Probiotics Daily Balance (1 capsule, once daily)  	10 billion	APPROVED	✓	✓	✓	✓	NA	\$0.70 [\$0.70] Suitable for vegetarians, gluten free, yeast free \$20.99/30 capsules
Dist. by Nature Made Nutritional Products Ingredients	<i>Lactobacillus plantarum</i> 299v							
Nature's Bounty Ultra Strength Probiotic 10 (2 capsules, once daily)  	20 billion ⁴	APPROVED	✓	✓	✓	✓	NA	\$0.63 [\$0.03] Inulin Contains milk Contains no wheat, gluten free \$18.99/60 capsules
Mfd. by Nature's Bounty, Inc. Ingredients \$ Price Check	<i>Lactobacillus plantarum</i> , <i>Bifidobacterium bifidum</i> , <i>Lactobacillus</i> <i>rhamnosus</i> , <i>Lactobacillus</i> <i>bulgaricus</i> , <i>Lactobacillus salivarius</i> , <i>Lactobacillus brevis</i> , <i>Lactobacillus</i> <i>acidophilus</i> , <i>Bifidobacterium lactis</i> , <i>Lactobacillus paracasei</i> , <i>Lactobacillus casei</i>							
								
Nutrition Now® PB8® (2 capsules, once daily) 	14 billion ⁴	APPROVED	✓	✓	✓	✓	NA	\$0.20 [\$0.01] Inulin Contains no milk, contains no wheat, gluten free \$11.99/120 capsule
Dist. by Nutrition Now® Inc. Ingredients \$ Price Check	<i>Lactobacillus</i> <i>acidophilus</i> , <i>Bifidobacterium lactis</i> , <i>Lactobacillus plantarum</i> , <i>Lactobacillus salivarius</i> , <i>Bifidobacterium bifidum</i> , <i>Bifidobacterium longum</i> , <i>Lactobacillus</i> <i>rhamnosus</i> , <i>Lactobacillus casei</i>							
								
Schiff® Digestive Advantage® (1 capsule, once daily) 	2 billion ⁴	APPROVED	✓	✓	✓	✓	NA	\$0.40 [\$0.20] Calcium Contains no wheat, gluten free, yeast free \$11.99/30 capsules
Dist. by Schiff Nutrition Group, Inc. Ingredients \$ Price Check	<i>Bacillus coagulans</i> GBI- 30, 6086							
Simply Right™ [Sam's Club] Acidophilus (1 caplet, once to three time daily) 	2 to 6 billion ⁴	APPROVED	✓	✓	✓	✓	✓	\$0.10-\$0.30 [\$0.05]
	<i>Lactobacillus</i>							

Dist. by SAM's West, Inc. Ingredients 	<i>acidophilus</i> 5						<i>Contains no milk, contains no wheat, gluten free</i> \$14.98/150 caplets
Solgar® Probi® 30 Billion (1 vegetable capsule, once daily)  Mfd. by Solgar, Inc. Ingredients Price Check	30 billion <i>Lactobacillus plantarum LP299v™</i>	APPROVED	✓	✓	✓	NA	\$1.07 [\$0.04] <i>Contains no milk, contains no wheat, gluten free</i> \$31.98/30 vegetable capsules
Spring Valley™ [Walmart] Acidophilus (1 caplet, once daily)  Dist. by Wal-Mart Stores, Inc. Ingredients	2 billion ⁴ <i>Lactobacillus acidophilus</i> 5	APPROVED	✓	✓	✓	✓	\$0.13 [\$0.07] <i>Contains no milk, contains no wheat, gluten free</i> \$13.44/100 caplets
UP4™ Probiotics with DDS®-1 (1 vegetable capsule, once daily)  Dist. by UAS LifeSciences Ingredients Price Check	5 billion <i>L. acidophilus DDS®-1, B. longum</i> 5	APPROVED	✓	✓	✓	NA	\$0.26 [\$0.05] <i>Kosher, suitable for vegans, non-GMO, contains no milk, gluten free</i> \$15.52/60 vegetable capsules
USANA® Probiotic (one stick pack, half to once daily) ⁹  Dist. by USANA Associates Ingredients	6 to 12 billion ⁴ <i>Lactobacillus rhamnosus LLG®, Bifidobacterium BB-12®</i>	APPROVED	✓	✓	✓	NA	\$0.93-\$1.85 [\$0.15] <i>Contains no milk, gluten free</i> \$25.95/14 stick packs
The Vitamin Shoppe® Ultimate 10 Probiotic™ 13 Billion (1 veggie capsule, once to twice daily)  Dist. by Vitamin Shoppe, Inc. Ingredients	13 to 26 billion <i>Lactobacillus rhamnosus, L. casei, L. acidophilus, L. plantarum, L. bulgaricus, L. salivarius, D. bifidum, S. thermophilus, B. longum, B. breve</i>	APPROVED	✓	✓	✓	NA	\$0.20-\$0.40 [\$0.02] Fructo-oligosaccharides Target release \$19.99/100 veggie capsules
VSL #3® The Living Shield® (1 capsule, twice to eight times daily)  Dist. by Sigma-tau Pharmaceuticals, Inc. Ingredients	225 to 900 billion <i>Streptococcus thermophilus, Bifidobacterium breve, Bifidobacterium longum, Bifidobacterium infantis, Lactobacillus acidophilus, Lactobacillus plantarum, Lactobacillus paracasei, Lactobacillus delbrueckii subsp. bulgaricus</i> 11	APPROVED	✓	✓	✓	NA	\$1.73-\$6.93 [\$0.01] ¹² \$51.99/60 capsules
Well at Walgreens Super	20 billion ⁴	APPROVED	✓	✓	✓	NA	\$0.35


Probiotics (1 capsule, once daily) Dist. by Walgreen Co. Ingredients		<i>Lactobacillus acidophilus,</i> <i>Bifidobacterium lactis</i>				✓		[\$0.02] Gluten free \$20.99/60 capsules
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Similar to Approved Products*:

Puritan's Pride Probiotic 10 (2 capsules, once daily) Mfd. by Puritan's Pride, Inc. Ingredients	Similar to Nature's Bounty Ultra Strength Probiotic 10.	\$0.25 [\$0.01] Inulin Contains milk Contains no wheat, gluten free \$29.99 ¹⁹ /120 capsules
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Vitamin World® Probiotic 10 (2 capsules, once daily) Mfd. by Vitamin World, Inc. Ingredients	Similar to Nature's Bounty Ultra Strength Probiotic 10.	\$0.40 [\$0.02] Inulin Contains milk Contains no wheat, gluten free \$5.99 ²⁰ /30 capsules
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





Adult Oral Health Products:


GUM® PerioBalance® - Fresh Mint (1 lozenge, once daily) Dist. by Sunstar Americas, Inc. Ingredients DISCONTINUED ²³		200 million APPROVED <i>Lactobacillus reuteri</i> DSM 17938, <i>Lactobacillus reuteri</i> PTA 5289	✓	No ¹⁰	✓ NA	NA	\$0.56 [\$2.78]	\$16.69/30 lozenges
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TwinLab® Triple Action Oral Health Dots™ - All-Natural Peppermint Flavor (2 tablets, once daily)  Dist. by TwinLab Corporation Ingredients DISCONTINUED ²⁴		5 billion ⁴ APPROVED <i>Streptococcus salivarius</i> (BLIS K12®) 	✓	✓	✓ ✓	✓	\$0.67 [\$0.13]	Vitamin C, xylitol; NSF Certified Gluten-Free Contains milk Kosher, non-GMO, gluten free \$10.08/30 tablets
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Women's Products:


Garden of Life® Dr. Formulated Probiotics Once Daily Women's (1 vegetarian capsule, once daily) ²²  Dist. by Garden of Life LLC Ingredients Price Check		50 billion APPROVED <i>Lactobacillus acidophilus,</i> <i>Lactobacillus plantarum,</i> <i>Lactobacillus casei,</i> <i>Lactobacillus paracasei,</i> <i>Lactobacillus bulgaricus,</i> <i>Lactobacillus brevis,</i> <i>Lactobacillus reuteri,</i> <i>Lactobacillus salivarius,</i>	✓	✓	✓ ¹ ✓	NA	\$0.93 [\$0.02]	Organic potato, organic acacia fiber Suitable for vegetarians, gluten free \$27.95/30 vegetarian capsules
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		<i>Lactobacillus fermentum</i> , <i>Lactobacillus gasseri</i> , <i>Lactobacillus rhamnosus</i> , <i>Bifidobacterium lactis</i> , <i>Bifidobacterium infantis</i> , <i>Bifidobacterium bifidum</i> , <i>Bifidobacterium breve</i> , <i>Bifidobacterium longum</i>					
Garden of Life® RAW Probiotics™ Women (3 vegetarian capsules, once daily)  Dist. by Garden of Life LLC Ingredients \$ Price Check		85 billion <i>Lactobacillus plantarum</i> , <i>Lactobacillus reuteri</i> , <i>Lactobacillus rhamnosus</i> , <i>Bifidobacterium bifidum</i> , <i>Bifidobacterium lactis</i> , <i>Bifidobacterium longum</i> , <i>Lactobacillus acidophilus</i> , <i>Lactobacillus bulgaricus</i> , <i>Lactobacillus casei</i> , <i>Lactobacillus gasseri</i> , <i>Lactobacillus helveticus</i> , <i>Lactobacillus kefirifaciens</i> , <i>Lactobacillus kefirianum</i> , <i>Lactococcus lactis</i> , <i>Lactococcus cremoris</i> , <i>Streptococcus thermophilus</i> , <i>Lactobacillus kefir</i> , <i>Lactobacillus parakefir</i> , <i>Lactobacillus brevis</i> , <i>Lactococcus lactis biovar diacetylactis</i> , <i>Leuconostoc lactis</i> , <i>Leuconostoc mesenteroides</i> , <i>Leuconostoc cremoris</i> , <i>Leuconostoc dextranicum</i> , <i>Kluyveromyces marzianus</i> , <i>Brettanomyces anomalus</i> , <i>Debaryomyces hansenii</i> , <i>Saccharomyces unisporus</i> , <i>Saccharomyces turicensis</i> , <i>Saccharomyces cerevisiae</i> , <i>Saccharomyces exiguus</i> , <i>Totulaspoa delbrueckii</i> 	APPROVED			 ¹ 	NA \$1.23-\$3.70 [\$0.01] Vitamins B6, B12, C, D & E, thiamin, riboflavin, folate, pantothenic acid, calcium, iodine, magnesium, selenium, copper, manganese, chromium, molybdenum, eastern European RAW fruit & veggies blend, dairy-digesting enzyme blend <i>Gluten free</i> \$36.99/vegetarian capsules
Nature's Way Primadophilus® Fortify™ Women's Probiotic (1 vegetarian capsule, once daily) ²¹  Dist. by Nature's Way Brands, LLC		30 billion <i>Lactobacillus acidophilus</i> (La-14), <i>Lactobacillus plantarum</i> (Lp-115), <i>Lactobacillus acidophilus</i> (NCFM®), <i>Lactobacillus rhamnosus</i> (Lr-32), <i>Lactobacillus gasseri</i> (Lg-36), <i>Lactobacillus casei</i> (Lc-11),	APPROVED			 	NA \$0.67 [\$0.02] <i>Gluten free</i> \$19.99/30 vegetarian capsules

pack, once daily) Dist. by Costco Wholesale Corporation Ingredients DISCONTINUED ²⁵		<i>Lactobacillus rhamnosus</i> , <i>Lactobacillus acidophilus</i>				✓		[\$0.04] Contains no milk, gluten free \$16.99/90 stick packs
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Pet Products:

Nusentia™ Probiotic Miracle™ Premium Probiotic Blend for Pets (2 scoops [approx. 1/4 tsp.], half to once daily ¹⁵) Dist. by Nusentia Ingredients		1 to 2 billion <i>B. animalis</i> , <i>L. acidophilus</i> , <i>L. rhamnosus</i> , <i>L. fermentum</i> , <i>L. reuteri</i> , <i>L. salivarius</i>  ¹⁶	APPROVED	✓	NA	✓ NA	NA	\$0.11-0.22 [\$0.11] \$39.99/132 g container (approx. 360 servings)
Only Natural Pet® Probiotic Blend (1 capsule, half to twice daily ¹⁷) Dist. by Only Natural Pet Ingredients		1.25 to 5 million A very small amount <i>Lactobacillus acidophilus</i> , <i>Bifidobacterium bifidum</i> , <i>Bifidobacterium infantis</i> , <i>Bifidobacterium longum</i> , <i>Lactobacillus bulgaricus</i> , <i>Lactobacillus casei</i> , <i>Lactobacillus salivarius</i> , <i>Streptococcus thermophilus</i>	APPROVED	✓	NA	✓ NA	NA	\$0.11-\$0.44 [\$0.09] Fructooligosaccharides \$19.99/90 capsules
VetriScience® Vetri Probiotic Everyday (1 chew, half to twice daily ¹⁸) Dist. by VetriScience® Laboratories Ingredients		500 million to 2 billion <i>Bacillus subtilis</i> , <i>Bacillus coagulans</i> , <i>Lactobacillus acidophilus</i> , <i>Bifidobacterium thermophilum</i> , <i>Bifidobacterium longum</i> , <i>Lactobacillus fermentum</i> , <i>Lactobacillus casei</i> , <i>Bifidobacterium bifidum</i> , <i>Enterococcus faecium</i>	APPROVED	✓	NA	✓ NA	NA	\$0.17-\$0.67 [\$0.33] Fructooligosaccharides; National Animal Supplement Counsel (NASC) Quality Seal \$19.99/60 chews

 Tested through CL's [Quality Certification Program](#) prior to, or after initial posting of this Product Review.

NA — Not applicable

 - Canadian product.

* Product identical in formulation and manufacture to a product that has passed testing but sold under a different brand. For more information see CL's [Multi-Label Testing Program](#).

¹ Also passed testing for lack of unacceptable contamination with heavy metals (lead, arsenic, and cadmium). Only products listing whole herb(s) and/or more than 250 mg of minerals daily were tested heavy metals.

² Gluten testing was only conducted on products with a "Gluten Free" claim.

³ Not tested but claimed on label.

⁴ Listed amount of probiotics is based on "at time of manufacture." Note: ConsumerLab.com requires products to contain listed amount regardless of "at time of manufacture" claim, as the FDA does not appear to make a distinction for such disclaimer.

⁵ Refrigeration recommended after opening.

⁶ Label states "... provides an effective level of bacteria (1 x 10⁷) [70 million] until at least the "best by" date." Product tested prior to this date.

⁷ Refrigeration recommended, but not required.

⁸ Best if refrigerated.

⁹ Label states "Take one stick pack every 1-2 days, or as needed to promote digestive health."

¹⁰ Product did not claim to contain over 1 billion per daily serving.



¹¹ Store at 39-46°F (4-8°C).


¹² Cost for 1 billion is under \$0.01.

- 13 Keep refrigerated.
- 14 Label states "Children under 2 years of age give ½ teaspoon (1.5 grams) daily between meals. Children 2 years of age and older give 1 teaspoon (3 grams) daily between meals."
- 15 Label states "Under 50 lbs 1 scoop (approx ? tsp); Over 50 lbs 2 scoops (approx ¼ tsp)".
- 16 For extended life, store in the refrigerator or freezer.
- 17 Label states "Dogs: Give 1 capsule daily to dogs up to 40 lbs and 2 capsules daily to dogs over 40 lbs, preferably mixed with food. Cats: Give ½ capsule daily mixed with food."
- 18 Label states "Give a ½ chew to cats & dogs up to 20 lbs. Give 1 chew daily to dogs up to 40 lbs and 2 chew daily to dogs over 40 lbs, preferably after a meal."
- 19 Based on price listed on puritan.com.
- 20 Based on price listed on vitaminworld.com.
- 21 Product added on 12/8/2015.
- 22 Product added on 5/16/2015.
- 23 Product discontinued, as verified on July 5, 2016.
- 24 Product discontinued, as verified on December 9, 2016.
- 25 Product identified as discontinued on 2/28/2017.

##TABLE_UNLESS_TEXT##

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RESULTS OF CONSUMERLAB.COM TESTING OF KEFIR PRODUCTS Click on \$ Price Check beneath a product name to find a vendor that sells it. To find retailers that sell some of the listed products click here .					
Product Name and Serving Size on Label Listed Nutrients (Per Cup — 8 oz) Click on "Ingredients" for Full Listing	Listed Amount of Probiotic Organisms (Per Cup — 8 oz)	--TEST RESULTS-- (See How Products Were Evaluated)			Cost per Serving on Label
		OVERALL RESULTS: APPROVED or NOT APPROVED	Contained Listed Amount of Probiotic Organisms	Free of Microbial Contamination Did not contain Gluten ¹ Did not contain Lactose	[Cost Per 1 Billion Organisms] Other Notable Features ² Texture/Taste Price Paid
Evolve® Kefir 1% Lowfat Cultured Milk - Plain Probiotic Smoothie (8 oz.)  Dist. by Mountainside Farms Calcium: 40% DV Vit. D: 25% DV Fat: 2.5 g Sodium: 160 mg Sugars: 12 g Protein: 11 g Calories: 110 Ingredients	20 billion <i>L. acidophilus NCFM®, B. bacterium lactis, L. lactis subsp. Lactis, L. lactis subsp. Cremoris, L. lactis subsp. lacti biovar. Diacetylactis, L. mesenteroides subsp. Cremoris, L. delbrueckii subsp. Bulgaricus, L. delbrueckii subsp. Lactis, L. rhamnosus, L. casei, S. thermophilus</i>	APPROVED	✓ Found 950 billion CFUs per cup ⁵	✓ ✓ Found 10.3 grams of lactose per cup. (4.4% lactose) ⁵	\$0.87 [\$0.001 based on amount found] Vitamins A & C, calcium Gluten free Thick but creamy; slightly sour \$3.49/1 quart bottle (approx. 4 servings)
Latta® Russian Kefir 2% Fat - Plain (8 oz.)  Dist. by Best of Farms	"Billions of CFUs" ⁴ Acidophilus, Probiotic Kefir Cultures (genus not listed)	APPROVED	✓ Found 140 billion CFUs per cup ⁵	✓ ✓ Found 12.7 grams of lactose	\$0.75 [\$0.005 based on amount found] Vitamins A &

Calcium: 30% DV Vit. D: Not listed Fat: 5 g Sodium: 115 mg Sugars: 12 g Protein: 8 g Calories: 120 Ingredients				per cup. (4.7% lactose) ⁵	D, calcium <i>Kosher, gluten free</i> Very thick and slightly lumpy; slightly bitter \$3.00/1 quart bottle (approx. 4 servings)
Lifeway® Lowfat Kefir - Plain unsweetened (8 oz.)  Dist. by Lifeway Foods Inc. Calcium: 30% DV Vit. D: 25% DV Fat: 2 g Sodium: 125 mg Sugars: 12 g Protein: 11 g Calories: 110 Ingredients	7 to 10 billion	NOT APPROVED	✓ Found 250 billion CFUs per cup ⁵	✓ ✓ Found 8.2 grams of lactose per cup. Claims to be "99% lactose free", but actually contains 3.7% lactose. ^{3,5} (See reponse from Lifeway in Update above)	\$0.88 [\$0.004 based on amount found] Vitamins A & D, calcium <i>Non-GMO, gluten free</i> Creamy, mild \$3.50/1 quart bottle (approx. 4 servings)
<p>¹ Gluten testing was only conducted on products with a "Gluten Free" claim.</p> <p>² Not tested but claimed on label.</p> <p>³ Claims to be "99% lactose free".</p> <p>⁴ Level of probiotic claim is based on "at time of manufacture". Note: ConsumerLab.com requires products to contain listed amount, regardless of "at time of manufacture" claim, as the FDA does not appear to make a distinction for such disclaimers.</p> <p>⁵ All calculations performed based on a conversion of 236.59 ml per cup (8 fl oz), although label may have indicated another conversion, such as the rounded number of 240 ml.</p>					
##TABLE_UNLESS_TEXT##					
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ConsumerTips:

What to Consider When Buying:

Properly labeled probiotic supplements will list the types of bacteria and/or yeast that are present. Names of the organisms should be listed in italics, with the genus name capitalized and listed first. The genus name may also be abbreviated with its first letter (e.g., *Lactobacillus acidophilus* or *L. acidophilus*). Some products will include the specific sub-strain (e.g. *Bifidobacterium lactis* BB-12, *Lactobacillus rhamnosus* GR-1). There are slight differences between sub-strains of bacteria, and much of the research has been done on these specific sub-strains. Keep in mind that products using more general strains may not have the same intended benefit as products with specific, researched strains.

Some research suggests that it may be more effective to take a probiotic supplement that contains a mixture of bacterial strains rather than a single bacterial species. Conversely, it is possible that some combinations of strains may not work well together, affecting the ability of the organisms to remain viable. Many products on the market contain untested combinations.

Claimed amounts of cells — Don't get misled by the numbers

It is not uncommon for the amount of active ingredient in a supplement to decrease over time. Typically manufacturers factor in the expected loss and display the amount you should expect at the "Best by" date, i.e., the expiration date. For example, it is not unusual for companies to produce probiotics which, at the time of manufacture, contain double the amount listed as of the "Best by" date on the assumption that 50% of the cells die before the product reaches that date – particularly if the product is not maintained under ideal conditions.

Due to this potentially large loss, some products display the number of cells "at the time of manufacture" which may be very different from what you'll actually get. ConsumerLab.com frowns upon this practice as it is against FDA regulations, often exaggerates what is in a product, and does not guarantee what the product provides. It also makes it difficult for a consumer to make a fair comparison among products or to gauge the dose that works best. It is best for products to label the amount of viable organisms expected to be present through an expiration or "Best By" date. Consumers should try to purchase products that are well within their expiration date to ensure a higher number of viable cells.

To gain probiotic benefits from yogurt or other dairy foods, check that it contains organisms known to be probiotic and not just starter cultures such as

Lactobacillus bulgaricus and *Streptococcus thermophilus*. Look for products which list specific types and amounts of probiotic organisms (such as those listed in the table of [Evidence](#) above). To the extent that starter cultures themselves may provide some benefit, check to see if a product "contains live cultures" or "active cultures" rather than "made with live/active cultures," which may signal that cultures have been subsequently destroyed with heat-treatment to eliminate disease-causing organisms.

Withstanding stomach acid

Some products have an enteric coating or use a protective formulation because certain probiotic organisms are unable to survive exposure to stomach acid. In general, most *Lactobacillus*, *Bifidobacterium*, and *Streptococcus* species do not need enteric coating as they can survive passage through the stomach, although the percentage which survive may be, according to one study, only 10 to 20% of the original amount when taken without food, while several times more will survive when enterically coated ([Del Piano, Gut Microbes 2011](#); [Del Piano, J Clin Gastroenterol 2010](#)). A study in a digestive tract model suggested that survival of non-enterically-coated *Lactobacillus* and *Bifidobacterium* in stomach acid can be improved by taking with a meal containing some fat, or shortly before such a meal, as opposed to after a meal ([Tompkins, Benef Microbes 2011](#)).

A potential downside to an enteric coating is that if the product happens to be contaminated with unwanted bacteria, yeast, or mold, these are also protected from your natural defenses. This is another reason why ConsumerLab.com tests all probiotics for microbial contaminants, which can occur if a product is not properly made.

Some bacteria naturally sporulate ("hibernate" within a protective coating) when they are exposed to harsh conditions, and some researchers postulate that sporulated bacteria are more resistant to the harsh conditions found in the GI tract. Consequently, another delivery method is to manufacture probiotics in the form of bacterial spores. This is most often used for bacteria of the genus *Bacillus* including *B. coagulans* (previously called *Lactobacillus sporogenes*), although clinical evidence supporting *B. coagulans* remains preliminary. A tablet containing 360 million cells of *L. sporogenes* taken daily for three months significantly reduced total and LDL cholesterol in a small study of men with high cholesterol ([Mohan, Indian J Med Res 1990](#)), but this study was neither blinded nor placebo controlled. One clinical study *did not* find improvement in diarrhea in children when given a daily dose of 240 million cells of *L. sporogenes* ([Dutta, Trop Med Int Health 2011](#)). A branded version of *B. coagulans* is sold as LactoSpore by Sabinsa Corp. The LactoSpore.com website notes studies suggesting that a daily dose of 75 to 600 million cells of this strain may improve diarrhea and 300 to 750 million cells may improve constipation in adults, although this does not appear to have been published in a peer-reviewed journal.

L. bulgaricus and *S. thermophilus*, as well as *Leuconostoc* and *Lactococcus* species are commonly found in yogurt because they are used as starters for dairy products. It was once believed that these microorganisms could not survive passage through the stomach, though new research suggests otherwise ([Mater, 2005](#); [Elli 2006](#)). In addition to surviving gastrointestinal transit, these strains produce large quantities of lactic acid which may limit the growth of unfriendly bacteria and help in the prevention and treatment of diarrhea. In addition, by converting the lactose in dairy products into lactic acid (which may occur more in the gut than in the product), *S. thermophilus* and *L. bulgaricus* help make dairy food more tolerable for people with lactose intolerance. As noted earlier, yogurts and other dairy products specifically marketed as probiotics are often fortified with additional species to provide additional benefit.

Different names for the same strain

Occasionally, bacteria strains may be re-classified, or companies may create a trademarked name for a particular strain for marketing purposes. For example, there has been some confusion over the name of the probiotic bacteria found in *Activia* yogurt (Dannon), once listed as *Bifidobacterium animalis* DN-173 010. Currently, it is listed on *Activia* labels in the U.S. as *Bifidobacterium lactis*. This is because *Bifidobacterium animalis* and *Bifidobacterium lactis* were once considered to be two separate species of bacteria, but *Bifidobacterium lactis* is now re-classified as a subspecies of *Bifidobacterium animalis* ([Masco, Int J Syst Evol Micro 2004](#)). So while the same bacteria is being used, it is now officially known as *Bifidobacterium animalis*, subsp. *Lactis*, strain DN-173 010 — sometimes shortened to *Bifidobacterium lactis*. Dannon has trademarked the name Bifidus Regularis® for this strain, so you may also see it listed this way on the label.

Interestingly, *Bifidobacterium animalis*, subsp. *Lactis*, strain DN-173 010 has a different name when listed on *Activia* labels in other parts of the world. In Canada, for instance, the same strain is trademarked as BL Regularis™ and was assigned a new name, "*Bifidobacterium lactis* CNCM I-2494" in the European registry for microorganisms ([Institute Pasteur in Paris, France](#)), while in England, the strain is called Bifidus ActiRegularis™.

See the [What They Do](#) section for more on the evidence for this strain.

Color of probiotics

Most probiotic material in powders, capsules, and tablets, is white or off-white. A pink color can be seen in some *lactobacillus*-containing probiotics, likely due to a chemical reaction with a preservative, such as sodium ascorbate ([Kurtmann, Cryobio 2008](#)). This is not harmful and may be seen in products like *TruBiotics* and *Solgar Advanced Multi-Billion Acidophilus*, both of which contain *L. acidophilus* LA-5 with which this coloration has been described.

Prebiotics

As mentioned in the [What They Are](#) section of this review, prebiotics are plant-based complex sugars that promote the growth of probiotic bacteria in the gastrointestinal tract. They are not fully digested by the human body but are used as "food" by the bacteria in the colon. The most common prebiotic ingredients you will see listed on supplements are inulin and fructo-oligosaccharides (FOS or oligofructose). Inulin is not one molecule but a blend of molecules, many of which can be hydrolyzed to yield FOS. Both FOS and inulin have similar effects in the body. (See the [Encyclopedia article](#) for more information about inulin and FOS.)

Although inulin and FOS are sometimes promoted for improving cholesterol levels, the evidence is mixed. Several short term studies using high doses (10 — 20 grams) found a modest reduction in total and LDL-cholesterol; however, other studies, including a longer-term, 6-month study, have not found a cholesterol-lowering effect ([Williams, Br J Nutr 2002](#); [Forcheron, Metabolism 2007](#)).

A small study among prediabetic men and women who participated in calorie-restricted diet found those who took 30 grams of inulin (10 grams taken with food or water 3 times per day) for approximately 4 months lost significantly more weight than those who took a placebo, with an average loss of about 17 lbs versus 11 lbs, respectively. Those who took inulin also experienced significantly greater reductions liver fat (higher levels of which are associated with insulin

resistance); however, there were no significant improvements in blood sugar levels or insulin resistance ([Guess, Nutri and Metabol 2015](#)). The inulin (Orafti® Synergy1, Beneo-Orafti Inc.) can be found in *Jarrow Formulas Inulin FOS*. To avoid gastrointestinal discomfort, participants began with a dose of 10 grams per day and increased the daily dose by 10 grams every two weeks until reaching 30 grams per day.

The same prebiotic was given at a dose of 8 grams daily (mixed in water and consumed before dinner) in a small study among overweight and obese children. Sixteen weeks of treatment resulted in modest reductions in trunk body fat, waist circumference, body mass index, and fasting insulin – however the effects were not statistically significant compared to placebo ([Nicolucci, FASEB J 2015](#)). During the final week of the study, 11- and 12-year olds treated with the prebiotic chose a lower calorie buffet breakfast than those who had received the placebo — although this did not occur among younger children ([Hume, Am J Clin Nutr 2017](#)). To minimize possible flatulence and bloating, only half the dose was taken during the first two weeks of the study.

There is some evidence that a daily dose of 10 grams of inulin can improve measures of glycemic control in women with type 2 diabetes ([Gargari, Diabetes Metab J 2013](#)).

A small study in men and women with **constipation** (defined as having 2 to 3 bowel movements per week for six months or more) found that 4 grams of chicory inulin (Orafti, Beneo) added to a hot or room temperature beverage and consumed three times per day (providing a total of 12 grams of inulin daily) modestly increased the frequency of bowel movements compared to a placebo drink (4 vs. 3 per week, respectively). Self-reported symptoms of bloating and abdominal discomfort were similar for both groups; however, those consuming inulin reported having more gas ([Micka, Int J Food Sci Nutr 2016](#)). The study was funded by the makers of Orafti.

Prebiotics are sold in powder, tablet and capsule form, typically providing 2 to 4 grams of inulin or FOS per daily serving — the amount shown to support the growth of healthy bacteria in the gastrointestinal tract ([Bouhnik, Nutr Res 2007](#); [Dehghan, Health Promot Perspect 2013](#)). However, because this is more ingredient than can fit in a single pill, it is necessary to take several pills to get this amount of inulin or FOS. Prebiotics are sometimes added as ingredients in *probiotic* supplements, but usually in low doses (less than a quarter of a gram per pill), or as part of a "blend" in which the exact amount of prebiotic is not even listed.

Be aware that doses of 10 grams or more of inulin or FOS can produce gastrointestinal discomfort, gas and bloating. To help avoid, try starting with a smaller dose and increasing it over a period of a few weeks ([Guess, Nutri and Metabol 2015](#)).

(See the [Results](#) section of this review for tests of probiotic products that also contain prebiotics — this is usually listed in the last column, Other Notable Ingredients).

The prebiotic ingredient found in supplements is usually derived from chicory root, which is extremely rich in inulin. A variety of foods, in addition to chicory, can provide good amounts of FOS, or more broadly, inulin. For example, as shown in the chart below, 100 grams of banana (a small banana) provides 500 mg of inulin (all of which is FOS). Similar sized servings (100 grams) of some other foods, like wheat flour or wheat bran, can provide several times that amount. Inulin and FOS are sometimes also added to processed foods to improve taste (they are slightly sweet) and texture. In all, the average American diet provides about 2.6 g of inulin (2.5 g of FOS) daily -- most of which comes from wheat (70%) and onions (25%), so the foods you eat may already provide all the prebiotics you need ([Moshfegh, J Nutr 99](#)).

Food sources of prebiotics: amounts of inulin* and oligofructose (in grams) per 100 grams serving.

Food Source	Inulin* g/100 g	Oligofructose (FOS) g/100 g
Banana (raw)	0.5	0.5
Asparagus (boiled)	1.7	1.7
Chicory root	41.6	22.9
Dandelion greens	13.5	10.8
Garlic (raw)	12.5	5.0
Garlic (dried)	28.2	11.3
Jerusalem artichoke	18.0	13.5
Leeks (raw)	6.5	5.2
Onions (raw)	4.3	4.3
Onions (cooked)	3.0	3.0
Wheat (bran — raw)	2.5	2.5
Wheat (flour — baked)	2.4	2.4

*Inulin amounts include oligofructose (FOS) and other prebiotic compounds

Source: [Presence of Inulin and Oligofructose in the Diets of Americans, Ju Nutr 1999](#)

Another type of prebiotic is galactooligosaccharide (GOS), which is commercially produced through the enzymatic conversion of lactose, from milk. Several forms of GOS are sold, primarily in Asia and Europe. One form, marketed as *Bimuno®-GOS*, is produced with an enzyme from bifidobacteria and, perhaps not surprisingly, seems to be particularly effective at increasing the gut population of *Bifidobacterium*, which is thought to be beneficial to the immune system. Levels of *Bifidobacterium* in the colon tend to decline with age. A clinical study in adults age 65 to 80 found those who consumed 5.5 grams of *Bimuno®-GOS* powder mixed with a glass of water daily for 10 weeks had significant increases in *Bifidobacterium* compared to when they were given placebo for 10 weeks ([Vulevic, B J Nutr 2015](#)). The prebiotic also lead to significant increases in several anti-inflammatory immune system markers

(interleukin-8 and -10) and natural killer cell activity, as well as decreases in certain markers of inflammation. The study was funded by the maker of this product (Classado BioSciences).

What to Consider When Using:

Probiotics are measured in terms of the number of viable (i.e., living or hibernating) organisms per dose and stated as "units" or "colony forming units" (CFU). The recommended intake for probiotic supplements varies by strain and use, but tends to be about 1 billion to 10 billion cells (or CFUs) per day. These amounts may be written on the label as 1×10^9 or 10^9 for one billion units, and 1×10^{10} or 10^{10} for ten billion units. Although less common, some strains are effective at as little as 50 million viable cells per day, while you may need more than 1 trillion cells of other strains to receive clinical benefit (O'Mahony 2005).

In general, probiotics will only survive a few days to about 3 weeks in your system after you stop taking them (Raish, *Appl Environ Microbiol* 2006; Martin, *J Nutr* 1997), and so should be taken on an ongoing basis for general benefits, or for the period of time indicated by clinical studies for a specific use (see dosage information below).

Dosage The types and number of organisms taken as probiotics depend on the use for which they are intended:

- **For irritable bowel syndrome (IBS) and functional abdominal pain**

In adult women, one hundred million to 1 billion cells daily of *Bifidobacterium infantis* 35624 has been shown to reduce abdominal pain, bloating, and bowel movement difficulty, but it does not reduce the frequency of bowel movements (Whorwell 2006). In adult men and women, a 4-strain combination product (sold as *Symprove* in England) of *Lactobacillus rhamnosus* NCIMB30174, *Lactobacillus plantarum* NCIMB 30173, *Lactobacillus acidophilus* NCIMB 30175, and *Enterococcus faecium* NCIMB 30176 in a water-based suspension of barley extract with 10 billion live organisms per 50 mL daily reduced pain and improved bowel habits but not bloating or overall quality of life (Sisson *Aliment Pharmacol Ther* 2014). An 8-strain combination product of 450 billion live organisms from *Bifidobacterium*, *Lactobacillus*, and *Streptococcus* genera has also helped with IBS (Kim 2003) but this medical food provided 450 billion cells daily – much more than products tested in this Review. Four billion cells daily of *Saccharomyces cerevisiae* CNCM I-3856 reduced abdominal pain and discomfort after 4 weeks (de Chambrun, *Digestiv and Liver Dis* 2014). A tablet containing 2 billion spores of *B. coagulans* MTCC 5856 taken once daily at least 30 minutes before a meal (typically breakfast) decreased many symptoms in people with diarrhea-predominant IBS also receiving standard medical treatment (Majeed, *Nutr J* 2016).

In children, 3 billion cells of *Lactobacillus GG* twice per day reduced frequency and severity of pain (Ruggiero 2010). Intensity of pain in children with functional abdominal pain was reduced with 200 million cells daily of *Lactobacillus reuteri* DSM 17938 (Romano 2010). Frequency of colic in some infants was also reduced with drops containing 100 million cells daily of the same strain (sold as *Gerber Soothe Colic Drops*) (Indrio, *JAMA Pediatr* 2014), Sung, *BMJ* 2014).

- **For the treatment of antibiotic-related diarrhea**

Although it has been recommended to start taking probiotic supplements as soon as symptoms appear, more recent studies show that probiotics can be taken starting the first day of oral antibiotic treatment and continued for 1 to 2 weeks after the completion of antibiotic therapy. It may be advisable to take probiotics and antibiotics at least 2 hours apart to reduce the possibility of the antibiotic killing the probiotic organisms. Ten to 20 billion cells of *Lactobacillus GG* (*Culturelle*) daily (Osterlund 2007), and 50 to 100 billion cells of a combination of *Lactobacillus acidophilus* CL1285 and *Lactobacillus casei* LBC80R (Gao, 2010) have been shown to reduce the incidence of antibiotic-related diarrhea, as have 17 billion cells daily of a combination of *L. acidophilus* NCFM, *L. paracasei* Lpc-37, *B. lactis* Bi-07 and *B. lactis* Bi-04 in equal parts (HOWARU Restore, sold as *Active D'Lites*) (Ouweland, *Vaccine* 2013). *Lacidofil*® Strong (Lallimand; sold in U.S. by Xymogen) taken twice a day has shortened the duration of diarrhea in adults, with each dose consisting of 3.8 billion cells of *Lactobacillus rhamnosus* R0011 and 200 million cells of *Lactobacillus helveticus* R0052, (Evans, *Br J Nutr* 2016). A combination of *Lactobacillus GG* (5.2 billion cells daily) with *Bifidobacterium lactis* (Bb-12) (5.9 billion cells), and *Lactobacillus acidophilus* (La-5) (8.3 billion cells), in a yogurt has been effective in children (Fox, *BMJ Open* 2015). Products containing *multiple species* of organisms may be somewhat more effective than those with a single species (Johnston, *Ann Int Med* 2012). If diarrhea symptoms persist for several days, see a physician.

- **For rotaviral diarrhea in infants and children up to age 3**

Doses of up to 10 billion cells of *Lactobacillus GG* and *Lactobacillus reuteri* may significantly reduce the diarrheal phase of infection.

- **For chemotherapy-induced diarrhea**

Ten to twenty billion cells of *Lactobacillus GG* (*Culturelle*) daily has shown to be effective (Osterlund 2007).

- **For traveler's diarrhea**

Two billion viable cells of *Lactobacillus GG* taken by mouth daily starting 2 days before travel and continuing throughout the trip may reduce the likelihood of traveler's diarrhea (Hilton 1997). *Saccharomyces boulardii* 250 mg (as in *FloraStor* and *FloraStor Kids*) to 1 gram by mouth daily begun 5 days before travel and continued for the duration may reduce traveler's diarrhea, with the larger dose possibly more effective (Kollaritsch 1993).

- **For proton pump inhibitor (PPI) induced bloating**

12 billion cells of *L. paracasei* F19 taken twice daily three times a week has been shown to prevent bloating and flatulence occurring with continued PPI use (Compare, *Digestive and Live Dis*, 2015).

- **For reducing cold and flu symptoms**

- Adults: One billion viable cells of a combination of *Lactobacillus plantarum* HEAL 9 (DSM 15312) and *Lactobacillus paracasei* 8700:2 (DSM 13434) by mouth daily for 12 weeks during cold season (Berggren 2011).

- Children: A combination of *Lactobacillus acidophilus* NCFM (2.5 billion cells and *Bifidobacterium animalis* subsp *lactis* Bi-007 (2.5 billion cells) taken as a powder mixed with milk twice a day during colder months (Leyer 2009). Also, taken as soon as a household member is sick, to reduce severity

acute respiratory infections caught by children, a daily dose of *Lactobacillus acidophilus* DDS-1 (1 billion cells) and *Bifidobacterium lactis* UABLA-12 (4 billion cells) with a fructooligosaccharide prebiotic (50 mg) (Sold as UP4 Junior, UAS Laboratories)(Gerasimov, Eur J Clin Nutr 2015).

- For throat infection

In children, a lozenge containing 1 billion cells of *S. salivarius* K12 taken daily for three months has been shown to significantly reduce the occurrence of streptococcal and viral throat infections (Piero Drug Healthc Patient Saf 2014).

- For treating periodontitis

A lozenge containing 100 million cells of each of two strains of *Lactobacillus reuteri*, DSM17938 and ATCC PTA5289 (*Prodentis* from BioGaia, Sweden, sold in the U.S. and Canada as GUM *PerioBalance*) taken twice daily after a dental scaling and disinfection may be helpful in patients with moderate to severe periodontitis (Teughels, J Clin Periodont 2013).

- For vaginal bacterial infections

One capsule daily containing over one billion viable cells of both *L. rhamnosus* GR-1 and *L. fermentum* RC-14, respectively, (as in *Jarrow Formulas femdophilus*) has been taken orally and shown to reduce colonization of the vagina by potential pathogenic bacteria and yeast (Reid 2003). Vaginal suppositories (which are not considered supplements in the U.S.) containing approximately 1 billion *Lactobacillus* organisms have also shown therapeutic benefit.

- For mastitis

90 billion cells of either *Lactobacillus fermentum* CECT5716 or *Lactobacillus salivarius* CECT57132 taken daily for 21 days has been shown to reduce breast pain and resolve infection in nursing mothers with mastitis, as well as reduce the rate of recurrence (Arroyo Clin Infect Dis 2010).

- For cholesterol-lowering

LDL-lowering: *Lactobacillus reuteri* NCIMB 30242 (2 billion cells with breakfast and dinner) (Jones, Eur J Clin Nutr 2012), or *E. faecium* M-74 (2 billion cells daily), or *Lactobacillus acidophilus* La5 and *Bifidobacterium lactis* Bb12 (1.2 billion cells each) (Nabavi, J DairySci 2014); LDL- and triglyceride-lowering: *Lactobacillus curvatus* HY7601 and *Lactobacillus plantarum* KY1032 (5 billion cells each) (Ahn, Atherosclerosis 2015) or *L. fermentum* ME-3. (8 billion cells) (Mikelsaar, BMC Nutrition 2015).

- For reducing anxiety

3 billion cells of *B. longum* R0175 with *Lactobacillus helveticus* R0052 taken daily with breakfast has been shown effective in a 30-day study (Messaoudi, Br J Nutr 2011).

- For reducing risk of depression

A total of 5 billion cells from two forms of *Bifidobacterium* (*bifidum* W23 and *lactis* W52) and five forms of *Lactobacillus* (*acidophilus* W37, *brevis* W63, *casei* 56, *salivarius* W24, and *lactis* W19 and W58) taken as a powder mixed with water or lukewarm milk before bed reduced negative thoughts associated with sadness (Steenbergen, Brain Behav Immun 2015).

- For weight and fat loss

Doses of 1.4, 16, or 100 billion cells daily of *Lactobacillus gasseri* SBT2055 (LG2055) in a fermented milk product have been used in preliminary research. These doses appear to have similar effects, except that the lower doses of 1.4 or 16 billion cells do not appear to provide the same subcutaneous fat loss as the higher dose (Kadooka, Eur J Clin Nutr 2010; Kadooka, Br J Nutr 2013). In obese women, a probiotic providing 162 million cells daily of *Lactobacillus rhamnosus* CGMCC1.3724 (also called LPR) along with 300 mg of a prebiotic mix of oligofructose and inulin divided into two capsules has been successfully used (Sanchez, Br J Nutr 2013). A probiotic yogurt given for 8 weeks (300 grams per day providing about 1.2 billion cells each of *Lactobacillus acidophilus* La5 and *Bifidobacterium lactis* Bb12) appeared to reduce weight by nearly 4 lbs as well as slightly reduce LDL and total cholesterol (Nabavi, J DairySci 2014). 50 billion cells of *Bifidobacterium brevis* B-3 given as a capsule daily appeared to cause a small reduction in fat in overweight adults in Japan (Minami, J Nutr Sci, 2015)

- For treating allergy

2 billion cells of *Lactobacillus paracasei* LP-33 daily may further reduce the impact of allergy symptoms on the quality of life in people with grass pollen allergy already taking an antihistamine (loratadine 10 mg) (Costa, Eur J Clin Nutr 2014).

- For reducing risk of eczema and, possibly, neuropsychiatric disorders (ADHD and Asperger Syndrome) in children

10 billion cells daily of *Lactobacillus GG* (*Culturelle*) to pregnant mother for 4 weeks before expected delivery and to infant for 6 months after delivery or mother if breast-feeding (Party, Ped Res 2015).

- For small pets (dogs and cats)

Probiotics may help stimulate immune function. Typical amounts shown in studies for immune stimulation in cats and puppies tend to range in the hundreds of millions. To colonize the gut with a probiotic, or when treating bigger dogs, larger doses may be appropriate.

Storage

It is advisable to keep probiotics out of heat and light. After being opened, they should also be kept away from moisture to prevent organisms from becoming activated and then dying. Although not always a requirement, labels on some probiotic products suggest that they be refrigerated to prolong their shelf life. These requirements depend on the organism, the formulation and pill type, and the packaging, such as bottled capsules as opposed to blister packs. Check the specific storage recommendations on each product, (shown in the [Ingredients](#) listings) as they may vary.

Concerns and Cautions:

There are no known safety issues with most probiotic bacteria at appropriate doses in healthy people but some people occasionally notice a temporary increase in digestive gas and, as described below, there can be allergic reactions. However, *Bacillus subtilis* and *Enterococcus faecium* are potentially pathogenic in humans.

Allergic reactions

Individuals with milk allergies should be aware that probiotics which contain lactose fermenting bacteria (e.g., *Lactobacilli* and *Bifidobacterium*) are typically grown on media containing milk-derived nutrients. Such products may potentially contain residual milk proteins, even if they claim to be free of milk or dairy.

Some, but not all, products note this on their labels. It may be prudent to assume that any lactose fermenting probiotic can potentially contain residual milk proteins and be allergenic.

Saccharomyces cerevisiae (Brewer's yeast) and *Saccharomyces boulardii* should not be taken by people with an allergy to these yeasts. At least one case of allergic rash from *Saccharomyces boulardii* has been reported (Kartal, *Clin Trans Allergy* 2014; Airola, *Ann Allergy Asthma Immunol* 2006). A rare gastrointestinal allergic reaction has been reported in an infant with a prior diagnosis of food protein-induced enterocolitis syndrome who was given *S. boulardii* (Kelesidis, *Therap Adv Gastroenterol* 2012). [Note: *Saccharomyces cerevisiae* should not be taken with the drug Demerol (meperidine) or with drugs which are MAO inhibitors as it may cause dangerously high blood pressure – see the Interactions section of the [Brewer's Yeast](#) article.]

Undesirable yeasts and molds may also occur in contaminated probiotics, representing other potential allergens. *ConsumerLab.com checks all probiotics which it reviews for these and other microbial contaminants and will not Approve those which test positive.*

In 2013, an individual reported to ConsumerLab.com developing hives and itching for over a month after taking *MD PureBiotic*, which are vegetarian capsules sold in a bottle.

Rarely, allergic reactions, including anaphylaxis, have been reported due to the prebiotic inulin, including anaphylaxis, have been reported; people with a history of allergy to artichoke may be more likely to have an allergic reaction to inulin (Gay-Crosier, *N Eng J Med* 2000; Franck *Int Arch Allergy Immunol* 2005).

Some research has suggested that that fermented dairy products — particularly cheeses — may trigger migraine headaches due to the compounds tyramine and histamine which occur in such products due to the fermentation process. However, the connection between these compounds and migraine has not been well established (Pascual, *Cephalgia* 2010). Kefir and yogurt have been reported to contain much smaller concentrations of these compounds relative to certain cheeses (Linares, *Front Microbiol* 2012) — although amounts could add up due to typically larger serving sizes of kefir and yogurt than cheese. Some people have reported a decrease in migraines when eliminating dairy or fermented foods from their diet (Finocchi, *Neurol Sci* 2012). The National Headache Foundation recommends that people with migraine avoid fermented foods, and limit consumption of yogurt to ½ cup per day (National Headache Foundation 2007). Interestingly, some very preliminary studies have investigated the effects of certain probiotic strains to help reduce migraine, although no double-blind, placebo-controlled studies have been conducted to date (Dai, *Pain Physician* 2017).

Bacterial/fungal infections

In a relatively small number of cases (mainly among individuals who were severely ill, immunocompromised, enterically fed and/or with central venous lines) probiotic use has caused bacteremia or fungemia (presence of bacteria or fungi in the blood) or pathological infections resulting in severe illness. There have been at least 60 reports, for example, of fungemia associated with the use of probiotic capsules containing the yeast *Saccharomyces cerevisiae* (*S. cerevisiae*) (Munoz 2005). Cases have also been reported with *S. boulardii* (a member of the species *S. cerevisiae*) (Herbrecht 2005). Capsules or packets containing these probiotics should not be opened in the vicinity of patients with central lines, and healthcare workers should change gloves after handling these products. In 2014, a premature infant given a probiotic powder died from a fungal infection (mucormycosis) resulting from a contaminating mold (*Rhizopus oryzae*) in the probiotic, prompting the U.S. FDA to issue a [general warning about the risk of fungal infection from probiotics](#) given to people with weakened immune systems. However, HIV-positive adults have taken probiotics for up to 3 weeks without side effects.

Eosinophilic syndrome

In 2012, two cases of severe eosinophilic syndrome (an autoimmune disease) occurring in the same month and city were associated with the use of a probiotic supplement between two and four weeks prior to symptom onset (Mendoza, *Case Reports Rheum* 2012). The patients did not remember the name of the product, but both recalled use of a "new brand of probiotics described as an 'extra strength concentration' in a boxed blister pack, purchased over-the-counter in a Philadelphia metropolitan area pharmacy." In both cases, symptoms were sudden in onset and included malaise, weakness in the arms or legs, and numbness. Both patients required treatment with IV corticosteroids followed by immunosuppressive therapy for several months. Although general symptoms abated, both patients suffered permanent motor and sensory deficits in the lower extremities.

After ConsumerLab.com mentioned the above cases in its newsletter (January 20, 2013), it received a report from a woman who developed eosinophilic esophagitis in April 2012, several weeks after beginning to take the enteric-coated probiotic *Pearls IC* (a "triple-strength formula" sold in a boxed blister pack). Although there is not enough information to know the exact cause of this case and this reaction appear to be uncommon, it may be wise to use probiotics with some caution, watching for potential allergic or other immune reactions.

If you have a reaction to a probiotic, let us know — and please provide details.

To further assist consumers, ConsumerLab.com is licensing its flask-shaped CL Seal of Approved Quality (see [The CL Seal](#)) to manufacturers for use on labels of products that have passed its testing. ConsumerLab.com will periodically re-evaluate these products to ensure their compliance with ConsumerLab.com's standards.

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