



NEWS YOU CAN USE

Volume 23

Spring 2009

PROBIOTICS—NEW RESPECT FOR AN OLD SOLUTION

HEALTH BENEFITS OF INTESTINAL BACTERIA

Since the beginning of time, the human body has benefited from health promoting bacteria naturally present in our intestines. With increasing scientific evidence supporting the health impact of these living microorganisms—probiotics—there has been a corresponding increase in consumer awareness and demand for foods and supplements that promise to deliver them. The recognition of the importance of colonizing microbes by the scientific community is reflected in the top priorities of the US National Institutes of Health (NIH)-funded medical research in 2008 (Human Microbiome Project).¹ The importance to consumers is demonstrated by the fact that probiotics have become one of the fastest growing supplement segments with double-digit growth globally,² and 21.3% growth reported by the *Nutrition Business Journal* for the US in 2007.³

WHAT ARE PROBIOTICS?

The word probiotic literally means “for life.” Probiotics are living microorganisms that, when consumed in adequate quantities, provide health benefits such as supporting gastrointestinal health, improving regularity, strengthening immunity, and even helping synthesize certain vitamins in the body.

In 2001, the World Health Organization (WHO) defined probiotics as, “cultures of live microorganisms that when ingested in adequate amounts, confer health benefits on the host.”

While the thought of having live microbes in the body may be disconcerting to some, the fact is there are trillions of bacteria—over 500 varieties—that naturally occur in our intestine. There are more bacteria in our intestines than cells in our body! Awareness about beneficial bacteria and their positive impact on health is relatively new, but it is continuing to gain understanding and acceptance among the general public.

The gastrointestinal tract is home to a diverse and complex bacterial ecosystem called the intestinal microflora, which can contain both “good” and “bad” bacteria. Most are harmless, but when the intestinal microflora is out of balance, it can affect overall health. Probiotics are “good” bacteria that in addition to providing health benefits, keep the “bad” bacteria in check—thereby helping restore the natural, healthy intestinal microflora balance.



DAVID SHEPHERD, Ph.D.
Microbial Biochemist
GNLD Scientific
Advisory Board Member



As a biologist I spent a considerable amount of time researching the effects of microorganisms on different food ingredients, especially how they can be used to make fermented food products. Naturally, this stimulated my interest in the beneficial bacteria and how they could be developed to become effective providers of good intestinal health. I have been interested in these bacteria for over 40 years. When I joined GNLD as a member of the SAB, whose goal has always been to develop products that are at the leading edge of science, we set about developing the product which is known today as **Acidophilus Plus**. This product contains several very special bacterial varieties that have been specifically chosen to support a healthy balance of intestinal microflora and therefore balance health. As the saying goes, if the intestines are healthy then the body is healthy. I am a great believer in using these very special bacteria to help promote good health and help with optimal utilization of nutrients provided in other GNLD products, as well.

PROBIOTICS—WHEN GOOD “BUGS” HELP!

More and more research tells us that good bacteria incorporated in the diet can have beneficial effects on gut microflora, balancing good bacteria with bad, promoting colon health, and even supporting our immune system!

WHAT PROBIOTICS DO FOR YOU:

REGULATE INTESTINAL FUNCTION

Aid in digestion: Probiotics help restore normal intestinal functions and even support the production of some digestive enzymes.

Improve lactose intolerance: By secreting lactase, an enzyme that helps digest lactose found in dairy products, probiotics benefit those who are prone to indigestion resulting from insufficient lactase.^{4,5,6,7}

Inhibit the growth of pathogenic bacteria: Probiotics produce lactic acid, thereby increasing the acidity of the intestines and inhibiting growth of disease-causing bacteria such as *Clostridium*, *Salmonella*, *Shigella*, and *E. coli*.

Aid the absorption of minerals: Probiotics enhance the absorption of minerals such as calcium due to increased intestinal acidity.

Prevent diarrhea: A meta-analysis of 39 published randomized, controlled clinical trials showed that probiotics offer a safe and effective method to prevent and treat acute pediatric diarrhea.^{8,9,10} Probiotics may also prevent diarrhea associated with traveling and antibiotic use.^{11,12}

PROMOTE COLON HEALTH

Support healthy colon cells: In addition to reducing the levels of toxic/mutagenic compounds, good bacteria such as Lactobacilli and Bifidobacteria also actively support healthy colon cells.¹³ When beneficial microflora ferment fiber in the colon, short-chain fatty acids are formed. The tissues of the colon preferentially utilize these for energy. Therefore, increasing the levels of these short-chain fatty acids may help control chronic conditions of the colon.

Detoxify the colon: Healthy populations of beneficial microflora also play a crucial role in detoxifying the colon of harmful chemicals. They decrease the production of a variety of toxic or carcinogenic metabolites. For instance, Lactobacillus acidophilus can suppress the formation of cancer-causing amines and cancer-promoting enzymes in the intestines.

SUPPORT IMMUNITY

Develop immunity: Immune development and function is enhanced by strengthening innate immunity. Evidence suggests that probiotic consumption enables people to stay healthy by reducing the incidence of common infections and diseases.^{14,15}

Prevent infection naturally: Probiotics have been associated with the production of a wide range of antibiotic substances (including acidophilin and bacteriocin) which help control the level of pathogenic bacteria and yeast such as Candida. New research has shown that probiotics may boost immune health in children, and may prevent many viral and bacterial infections.^{16, 17}

Alleviate food allergies in infants: Studies have also suggested that probiotics reduce the incidence of atopic dermatitis when given to babies born to families at risk for allergic disorders.

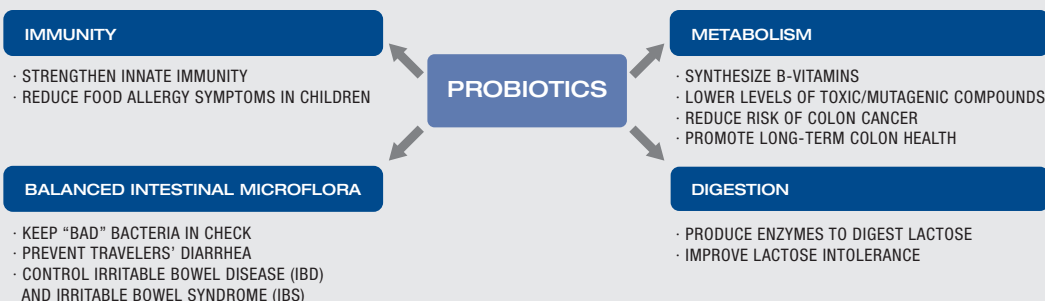
WHY A SUPPLEMENT?

Due to our diet and lifestyle there are many challenges to healthy intestinal microflora balance that increase the need for supplementation with probiotics. These challenges include diet and alcohol consumption, use of prescribed antibiotics, and age.

A typical modern diet includes processed foods and is deficient in the natural fiber that is crucial for the growth of good bacteria. Additionally, alcohol consumption and exposure to toxic substances reduces the number of good bacteria, allowing the balance to shift in favor of bad bacteria. And while prescribed antibiotics of course play a critical role in combating infection, along with the bad bacteria they are intended to destroy, antibiotics eliminate good bacteria, as well.

While foods such as dairy products contain probiotics, they may not contain the necessary live probiotics or the strains that they contain may not be able to survive the acidic conditions in the stomach. The use of probiotic supplements can ensure that you are getting an adequate number of the right type of active probiotic cultures.

HOW PROBIOTICS WORK FOR YOU



THE RIGHT PROBIOTIC SUPPLEMENT

WHAT TO LOOK FOR:

Many products are available today that claim to be effective probiotic supplements. While these products may contain different bacterial genera, species, or even strains of the same species, not all microbes sold as probiotics have been tested for health effects in human studies. Therefore, not all products should be expected to work the same. Additionally, the presence of live cultures is crucial for efficacy. A study published in the *British Medical Journal*¹⁸ showed that many of the probiotic supplements sold on store shelves contain little to no active bacteria. Here are a few things to look for when choosing the right probiotic supplement:

- **Presence of *live cultures*:** In order for probiotics to confer their health benefits, they must be live and active at consumption and stay active until they reach the intestines.
- **Whole food derived:** Lactic acid bacteria found in dairy products have been used for thousands of years to produce yogurt, cheese, and fermented milk. Beneficial bacteria isolated from cultured dairy foods have been shown to support a healthful balance of microorganisms in the gastrointestinal tract.
- **Broad spectrum of clinically tested bacterial strains:** Each strain of beneficial bacteria is unique. Each produces special enzymes, detoxifies different substances, and colonizes

distinct territories in the intestine. For this reason, a broad spectrum of organisms with clinically proven benefits is recommended. Recent research shows that a combination of different probiotic strains—as opposed to single strains—reduces the ability of potentially pathogenic bacteria—bad bacteria—to colonize the gut.¹⁹

- **Concentrated:** Concentrated supplements of active probiotics are valuable since they provide many more beneficial bacteria than traditional food sources—such as yogurt and acidophilus milk—and are more convenient to consume daily.
- **Potent, with Guaranteed Delivery:** In order to provide full benefit, a supplement must be potent—with an adequate number of live microorganisms—and provide these good bacteria with protection against the stomach acid which can inactivate them. This protection ensures delivery into the intestine where the probiotics deliver their benefits.

GNLD'S ACIDOPHILUS PLUS™

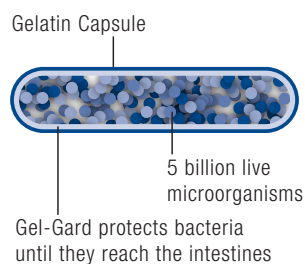
GNLD's supplement of beneficial bacteria, Acidophilus Plus, combines potency with technology to guarantee that live microorganisms survive the stomach acid and reach the intestine to deliver viable organisms to support optimal digestive and colon health.

- Each capsule is filled with **five billion live microorganisms**—as many as in 10 servings of yogurt—all in one daily serving!
- You receive beneficial bacteria isolated **from cultured dairy foods**, so you get the benefits without the extra calories from these foods.

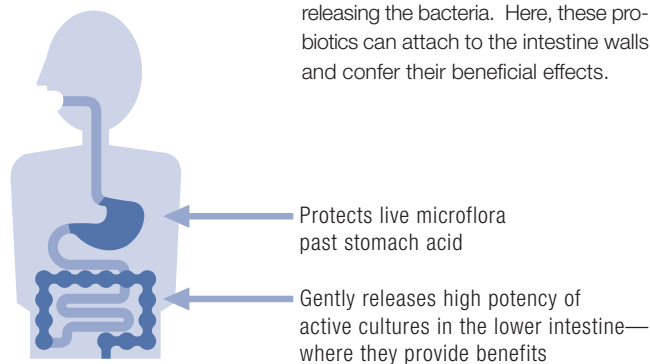
- **Acidophilus Plus provides an exclusive blend of five types of clinically proven lactic acid-producing bacteria:** *Lactobacillus acidophilus*, *Lactobacillus bulgaricus*, *Lactobacillus casei*, *Bifidobacterium bifidum*, and *Streptococcus thermophilus*.^{20,21,22,23,24,25,26}
- **The exclusive Gel-Gard enteric protection system guarantees delivery** by protecting against harsh stomach acid and ensuring that maximum numbers of live bacteria are delivered in the intestine.

GEL-GARD PROTECTION

Exclusive Gel-Gard Enteric Protection System Guarantees Delivery of Beneficial Cultures



This technology involves wrapping the bacteria in a special gel-forming polysaccharide, which is insoluble in acidic conditions of the stomach. This is then enclosed in a gelatin capsule. When the capsule reaches the stomach, it dissolves and the contents of the capsule form an insoluble matrix called Gel-Gard. The Gel-Gard matrix holds and protects the bacteria until they reach the intestine, where it then dissolves, releasing the bacteria. Here, these probiotics can attach to the intestine walls and confer their beneficial effects.



FREQUENTLY ASKED QUESTIONS

Q: CAN I TAKE ACIDOPHILUS PLUS™ IF I AM LACTOSE INTOLERANT?

A: Yes. Probiotics in Acidophilus Plus, though derived from cultured dairy foods, are purified so that the amount of lactose remaining is insignificant to create any undesirable effects in lactose intolerant individuals. In fact, lactobacilli are capable of producing lactase, an enzyme that helps break down lactose and helps the digestion of these foods.

Q: DO I NEED TO TAKE ACIDOPHILUS PLUS IF I CONSUME DAIRY PRODUCTS?

A: Some, but not all, dairy products contain live, active cultures and many are sold suggesting that they are beneficial for our health. Most of these are fresh products requiring refrigeration, and there is considerable doubt as to how many of the live bacteria actually survive in the stomach acid. Taking Acidophilus Plus guarantees that a significant number of live beneficial bacteria are delivered to the intestine.

Q: THE PRODUCT LABEL SAYS ACIDOPHILUS PLUS CONTAINS STREPTOCOCCUS. ISN'T THAT THE HARMFUL BACTERIA RESPONSIBLE FOR CAUSING STREP THROAT?

A: No. Some good bacteria have names that sound like bad bacteria. *Streptococcus* refers only on the shape of the bacterium, and has nothing to do with its ability to promote health or cause disease. (*Strept* means “twisted” and *coccus* means “round.”) *Streptococcus thermophilus*—the species included in Acidophilus Plus—has been safely used for centuries to produce cultured dairy products. The bacterial species associated with causing strep throat is *Streptococcus pyogenes*.

Q: DOES ACIDOPHILUS PLUS NEED TO BE REFRIGERATED PRIOR TO OPENING THE BOTTLE?

A: Although not necessary, keeping Acidophilus Plus refrigerated prior to opening the bottle may further increase the shelf life of the product. It must be refrigerated *after* opening the bottle to ensure the potency of the beneficial cultures.

Q: CAN CHILDREN USE ACIDOPHILUS PLUS?

A: Yes. Anyone who can safely swallow the Acidophilus Plus capsule can take the product and enjoy its benefits.

References:

- 2009 Feb. Human Microbiome Project [Internet]. National Institutes of Health, Bethesda, MD: US Dept of Health and Human Resources. [cited 2009 Feb]. Available from: www.nihroadmap.nih.gov/hmp/
- 2009 Feb. Probiotics. Euromonitor International. [cited 2009 Feb]. Available from: <http://nutritionbusinessjournal.com/>
- Mast C, ed. As Digestive Problems Bloom, So Do Sales of Probiotics and Other Gut Supplements. *Nutr Bus J*. 2008 Aug;XII (8): 19-21
- Virta P, et al. 1993. The Effect of a Preparation Containing Freeze-Dried Lactic Acid Bacteria [*L. acidophilus* LA-5 (LA-1) and *Bifidobacterium* TB-12] on Lactose Intolerance. External Report, Pharmacia, Finland.
- Saltzman JR, et al. A randomized trial of *Lactobacillus acidophilus* BG2F04 to treat lactose intolerance. *Am J Clin Nutr*. 1999;69: 140-146.
- Pelletier X, Laure-Boussuge S, Donazzolo Y. Hydrogen excretion upon ingestion of dairy products in lactose-intolerant male subjects: importance of the live flora. *Eur J Clin Nutr*. 2001;55:509-512.
- deVrese M, et al. Probiotics—Compensation for Lactase Insufficiency. *Am J Clin Nutr*. 2001;421S-429S
- McFarland LV, Elmer GW and McFarland M. Meta-analysis of Probiotics for the Prevention and Treatment of Acute Pediatric Diarrhea. *Intern J Probiotics Prebiotics*. 2006; 1: 63-76
- Plummer S, et al. Clostridium difficile pilot study: effects of probiotic supplementation on the incidence of *C. difficile* diarrhoea. *Int Microbiol*. 2004;7:59-62.
- Boudraa G, et al. Effect of feeding yogurt versus milk in children with acute diarrhea and carbohydrate malabsorption. *J Pediatr Gastroenterol Nutr*. 2001;33:307-313.
- Hickson M, et al. Use of probiotic lactobacillus preparation to prevent diarrhea associated with antibiotics: randomized double blind placebo controlled trial. *BMJ*. 2007 Jul 14;335(7610): 80
- Bradsoliel M, et al. Effects of fermented milk containing *Lactobacillus acidophilus* C11285 and *Lactobacillus casei* in the prevention of antibiotic-associated diarrhea: a randomized, double blind, placebo-controlled trial. *Can J Gastroenterol*. 2007 Nov; 21 (11):732-6
- Saikali J. Fermented milks, probiotic cultures, and colon cancer. *Nutr and Cancer*. 2004; 49:14-24.
- Gill HS, et al. Enhancement of immunity in the elderly by dietary supplementation with the probiotic *Bifidobacterium lactis*. *Am J Clin Nutr*. 2001; 74:833-836
- Salminen SJ, Gueimonde M, Isolauri E. Probiotics that modify disease risk. *J of Nutr*. 2005;135(5):1294–1298.
- Alvarez-Olmos MI, Oberhelman RA. Probiotic agents and infectious diseases: a modern perspective on a traditional therapy. *Clin Infect Diseases*. 2001;32(11):1567–1576.
- Lin JS, et al. Different effects of probiotic species/strains on infections in preschool children: A double-blind, randomized, controlled study. *Vaccine*. 2009 Feb 11;27(7):1073-9
- Hamilton-Miller JM, Shah S, and Smith CT. “Probiotic” remedies are not what they seem. *BMJ*. 1996 January 6; 312(7022): 55–56.
- Collado MC, Meriluoto J, and Selamien S. In vitro analysis of probiotic strain combinations to inhibit pathogen adhesion to human intestinal mucus. *Food Rsrch Intl*. 2007 June; 40(5): 629-636
- Black FT, Anderson PL, Orskov J, Gaarslev K, Laulund S. Prophylactic efficacy of Lactobacilli on traveller’s diarrhoea. *Travel Med*. 1989; 7: 333-335.
- Lidbeck A and Nord C E. Lactobacilli in relation to human ecology and antimicrobial therapy. *Intl J Tissue Reac*. 1991;13(2):115-22.
- D’Souza AL, et al. Probiotics in prevention of antibiotic associated diarrhoea: meta-analysis. *BMJ*. 2002;324:1361
- Hove H, Nordgaard-Andersen I, and Mortensen PB. Effect of lactic acid bacteria on the intestinal production of lactate and short-chain fatty acids, and the absorption of lactose. *Am J Clin Nutr*. 1994;59: 74-79
- Nord CE, et al. Oral supplementation with lactic acid bacteria during intake of clindamycin. *Clin Microbio & Infect*. 1997;3(1): 124-132
- Lewis SJ and Freedman AR. Review article: The use of biotherapeutic agents in the prevention and treatment of gastrointestinal disease. *Aliment Pharmacol Ther*. 1998 Sep;12(9):807-22.
- Salminen S, et al. Demonstration of safety of probiotics—a review. *Int J Food Microbiol*. 1998 Oct 20;44(1-2):93-106.

For more information:

- www.usprobiotics.org
- <http://nccam.nih.gov/health/probiotics/> “Get the facts. An introduction to Probiotics.” National Center for Complementary and Alternative Medicine, National Institutes of Health.