



DaVinci[®] *Laboratories
of Vermont*

Innovative by nature

PROBIOTICS

Key to a Healthy GI Tract and Body

Be Strong[™]



Dear Practitioner,

Holidays are out. Probiotics are in.

After a string of holidays rife with sugary confections and buttery concoctions, it's time to clean the microbial house.

Microbial balance issues affect all types of people, often appearing as symptoms other than gastrointestinal discomfort that can be difficult to identify. A lack of information on the physiological mechanisms and benefits of probiotics can steer patients down a road of fruitless searches for natural solutions.

It is fitting for all practitioners to be the end to this road. Through uncovering and helping to address this endemic set of problems that causes a variety of discomforts, you can help improve patients' quality of life.

Natural solutions

The human gastrointestinal tract contains 400 different microbes. A diverse environment such as this requires diverse solutions—Probiotic 50+ provides them. Featuring nine non-dairy strains of beneficial bacteria and added prebiotics, Probiotic 50+ includes a complex of 52.5 billion CFU per serving to cover a broad spectrum of flora activity.

So there you have it. Why not end those fruitless searches and add a probiotic supplement to your patients' diets? It's just one small way to help them keep their New Year's resolution to get and stay healthy in 2012.

To your patients' and your practices' good health,

Dom Orlandi

President

DaVinci® Laboratories of Vermont



GI Health with Probiotics: The Facts from DaVinci Laboratories

The human body is a walking fermentation laboratory being home to trillions of live microorganisms that live inside us in our GI tract. While most of these microorganisms are harmless or play a positive role in maintaining good health of the body, some few are pathological and do contribute to disease if the opportunity arises. Probiotics include species or strains of beneficial bacteria normally present in the intestinal tract, which, according to the World Health Organization, Food and Agriculture and Food Organization, confer a health benefit to the host when administered in adequate levels. Probiotics are vital to optimum digestion and perform many positive functions in the gut including helping protect the body against the overgrowth of unwanted yeast and other pathogens (called dysbiosis). The probiotics commonly used in dietary supplements are lactic acid producing bacteria (LAB) such as *Lactobacillus acidophilus* and bifidobacteria like *Bifidobacterium bifidum*. Cultured or fermented foods such as buttermilk, cheese, kefir, miso, sauerkraut, tempeh, and yogurt can be rich sources of these beneficial bacteria.



The term “probiotic” was first used in 1953 by Werner Kollath and was defined as microbially derived factors that stimulate the growth of other microorganisms and beneficial cofactors. In 1989, Roy Fuller provided a widely used definition: “A live microbial feed supplement which beneficially affects the host animal by improving its intestinal balance.” Probiotics have been extensively used in the livestock industry to improve intestinal microbial balance. A healthy functioning GI tract results in better food conversion and health of the animal.

The flora in a healthy GI tract should consist of at least 85% lactobacillus and bifidobacterium and 15% coliform bacteria. In many people the typical colon count is reversed. Potential consequences of such an imbalance include excessive gas, bloating, intestinal and systemic toxicity, constipation, diarrhea, poor nutrient absorption, and overgrowth of *Candida albicans*. Probiotic supplementation has been found to be effective in supporting patients with many of these GI issues and restoring the GI tract to a healthier balance.

The balance of healthy microorganisms can be upset or diminished by the following conditions:

- Trauma or injury
- Environmental and/or food toxins
- Antibiotics and other medications
- Chronic disease
- Stress -- emotional and physical
- Chronic diarrhea

What are the Health Benefits of Using Probiotics?

Maintaining a thriving population of friendly bacteria throughout the GI tract is required for proper assimilation of food and nourishment of the cells. This complex ecosystem aids digestion, promotes regularity, helps to remove toxins, and supports the immune system. Probiotics produce beneficial effects by producing important factors in the GI tract including lactic acid, hydrogen peroxide, enzymes, B vitamins, vitamin K, and natural antibiotic substances that inhibit pathogenic organisms.

Specific areas where supplemental probiotics provide benefits include:

- **Vitamin Production:** Probiotics are capable of producing B vitamins including niacin, pantothenic acid, biotin, B6, B12, and folic acid. These vitamins are required cofactors for many metabolic reactions that are important for energy production, growth, reproduction, and digestion and synthesis of proteins and fats in the body.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.



- **Digestive Enzymes:** Probiotics produce needed enzymes such as lactase, needed to digest lactose. Deficiency of lactase can lead to inefficient digestion of milk sugar, or lactose, a condition known as lactose intolerance. Probiotics also produce enzymes to help breakdown proteins and fats for better absorption of amino acids and fatty acids.
- **Cholesterol:** Probiotics contain factors that help the body keep cholesterol in normal range. Animal studies have demonstrated the efficacy of some strains of LAB to impact cholesterol levels presumably by breaking down bile in the gut, thus interfering with its reabsorption as cholesterol. (Sinha 1978)
- **Natural Microbial Support:** Probiotics are known to produce acidophilin, which has been shown to possess (in-vitro) a wide range of microbiological activity against common food borne pathogens such as Streptococcus, E. coli, and Salmonella. (Shahani, 1977) Stressed rats that were fed probiotics had little occurrence of harmful bacteria latching to their intestinal walls as compared to controls. (Hitti, 2006)
- **Immune Function:** Probiotics promote balanced bacterial and yeast flora in the GI tract through support of the immune system. It is well known that 60-70% of our immune response begins in the GI tract. The ability of lactic acid bacteria (LAB) to support the body's ability to inhibit activity by microbial pathogens and to support the immune system has been documented in several studies. L. acidophilus helps the body keep the common yeast Candida albicans within normal limits, as well as support the deactivation of various viruses. There is evidence to support that probiotics may support immune function by competitive inhibition, supporting the number of antibodies including IgA, supporting phagocytosis, and optimizing the number of T lymphocytes and natural killer cells. (Gills, 2000; Perdigon, 1988)
- **Inflammation:** Probiotics can help support a healthy inflammatory response in the GI tract and modulate hypersensitivity response. This ability is thought to be due at least in part to the regulation of cytokine function. It has been found that probiotics can help promote abdominal comfort and support a healthy inflammatory response, addressing gastrointestinal symptoms such as excessive gas production. (Niedzielin, 2001)
- **Blood Pressure:** A preliminary study has indicated that consumption of strains of LAB may help the body maintain healthy blood pressure, an effect possibly related to peptides produced during the fermentation process.
- **Urologic Support:** Probiotics have been found to help maintain urinary tract health. LAB appear to help the body metabolize and flush out uremic toxins that migrate into the bowels. Probiotics can support kidney health by supporting the body's ability to slow the accumulation of toxins in the bloodstream. L. acidophilus inhibits the growth and adhesion of unwanted microorganisms at the vaginal and urethral mucosa and renders positive effects in maintaining urinary tract health. (Gerasimov, 2004)

Individuals striving to maintain optimum health will want to include a high yield, multi-strain probiotic product as part of their nutritional supplement regimen.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.



What are some of the Applications for Probiotics?

There is a growing body of scientific and clinical evidence that probiotics have useful properties especially when it comes to disorders of the GI tract. Today, specific health effects are being investigated and documented including supporting patients with chronic intestinal inflammatory disorders such as colitis and irritable bowel syndrome, pathogenic-induced diarrhea, and atopic skin conditions.

Diarrhea

Recent studies have shown that probiotics may be effective in reducing the symptoms of various forms of gastroenteritis. Probiotics might reduce both the duration of illness and the frequency of stools. Diarrhea is usually the result of inflammation and an overgrowth of unwanted microorganisms. Excessive antibiotic use can lead to what is known as Antibiotic-Associated Diarrhea (AAD). Probiotic use was shown to reduce the risk of AAD, improve stool consistency during antibiotic therapy and support immune response after vaccination.

Intestinal epithelial cells line our gastrointestinal tract and are the first line of cell to come in contact with pathogens and the probiotics that may be present. During intestinal infections, pathogens can attach themselves to the epithelial cells resulting in diarrhea and inflammation. It has been found that probiotics may support the epithelial cells' production of mucin, a protective substance that coats the intestines and deters the attachment of the pathogen. In addition, research has shown that probiotics can both support the production of epithelial cells and cytokines, which are the body's tool to counter the effects of the pathogens.

In one study, *L. acidophilus* in combination with *L. casei* significantly reduced diarrheal duration and vomiting in children ages 6-24 months suffering from persistent diarrhea. (Gaon, 2003) In another study, *L. acidophilus* provided substantial protection against traveler's diarrhea. (Senhert, 1989)

Irritable Bowel Syndrome and Colitis

Probiotics use in individuals with severe GI disturbances have been found to produce significant results. In two published studies patients with irritable bowel syndrome using probiotics showed significant improvement in symptoms including abdominal comfort. (Whorwell, 2006; Niedzielin, 2001).

Another study demonstrated an improvement in abdominal comfort and bloating and a reduction in stool frequency in individuals with constipation-predominant IBS. (Guyonnet, 2007) It is thought that probiotics primarily work by repopulating beneficial microorganisms in the colon and supporting a healthy inflammatory response. Probiotics have been shown to help support the structure and function of the lining of the GI tract as well as help normalize a healthy flora population.

A study reported that the combination of *L. acidophilus*, *B. lactis*, *B. bifidum* and *B. longum* in a dose of 12 billion CFU daily reduced the symptoms of IBS. The most significant improvement occurred after two months of treatment with 84% improvement in abdominal comfort, 74% improvement in bloating, 92% improvement in belching, 88% improvement in flatulence, 91% in diarrhea and 87% in regularity. No clinically evident side effects were seen during the study. (Nagala, 2010)

Candidiasis

Candidiasis results when there is an overgrowth of the single cell fungus *Candida albicans*, and is generally known as a yeast infection in the body. It can affect various parts of the body including the mouth, ears, nose, gastrointestinal tract, and vagina, and can result in a wide range of symptoms including, but not limited to constipation, diarrhea, colitis, abdominal pain, mood swings, extreme fatigue, and vaginitis. Clinical studies have confirmed that probiotics with *L. Acidophilus* and *B. bifidum* are effective in supporting the body's ability to inhibit the growth of *Candida albicans*. Research has shown that *L. acidophilus* produced hydrogen peroxide helps in the inhibition of *Candida albicans*. (Senhert, 1989)

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.



The use of a high yield probiotic formula for patients with Candida is highly recommended as it will help the body clear the unwanted fungus from the GI tract and repopulate the lining of the GI tract with friendly microorganisms. It can improve bowel function by aiding peristalsis, helping the body keep harmful bacteria in check and eliminating toxic waste from the body.

What makes Probiotic 50+ Unique?

Not All Probiotics are Created Equal

According to the guidelines listed in "Probiotics: A Consumer Guide for making Smart Choices" as unveiled by the International Scientific Association for Probiotics (ISAPP), the five criteria that consumers should look for when selecting a probiotic are: "Beneficial probiotic strains used in the product, product stability, protective packaging, product quality, and high probiotic activity in CFU per capsule." Probiotic 50 + meets these criteria to bring the consumer a product of exceptional ability to help the body build and maintain a healthy digestive system.

Because the human gastrointestinal tract contains over 400 different microbes, it make sense that such a diverse GI environment would benefit from a multi-strain probiotic product rather than from a product with only one or two strains. Research has shown that different strains of probiotics populate different regions of the GI tract and are linked to specific health benefits. For that reason Probiotic 50 + is produced using nine different active strains to cover a wider spectrum of flora activity. These nine strains are:

L. acidophilus, *L. rhamnosus*, *B. longum*, *B. bifidum*, *B. lactis*, *B. breve*, *S. thermophilus*, *L. salivaris*, and *L. casei*. These multiple strains are combined with the important prebiotic agent Fructooligosaccharides (FOS), a soluble fiber that selectively promotes the proliferation of the intestinal probiotics.

More than Fifty Billion CFU per Capsule

Probiotic 50 + provides 52.5 billion CFU per capsule-- one of the highest activities of any probiotic on the market. This quality is important because this high activity of probiotics will deliver the maximum number of active friendly bacteria for optimum colonization of the lining of the digestive tract. Optimal colonization is critical for individuals who have an unbalanced distribution of unwanted flora in their GI tract and need this highly active product to help clear the colon of unwanted material.

Non-Dairy Source of Probiotics

The strains used in Probiotic 50+ are cultured to produce a highly purified product that is highly acceptable for people sensitive to dairy. Because the product is derived from a human source, the activity in the human GI tract is optimized.

Prebiotics

Q. What are prebiotics?

A. Unlike probiotics, which are living bacteria strains, prebiotics are non-living substances (like fructooligosaccharides) that interact with microorganisms. They provide an environment for fermentation wherein naturally present beneficial microflora can grow and metabolically thrive. Prebiotics are indicated to support those with symptoms of an unbalanced microbiological environment such as:

- Upset Stomach
- Colitis
- Diarrhea
- Candidiasis

Q. What are Fructooligosaccharides?

A. Fructooligosaccharides are a source of soluble fiber. Carbohydrates that stimulate growth/activity in intestinal microflora upon contact, FOS are said to act selectively, assisting in calcium absorption and the development of beneficial bacteria. Inulin and oligofructose are colonic foods, escaping digestion in the gut and acting as substrates to fit the preference of such bacteria as *Bifidobacterium* and *Lactobacillus*.

Q. How are they beneficial?

A. Because prebiotics are non-digestible, they act within the colon to produce byproducts like short-chain fatty acids, and help the body lower intestinal pH. The prebiotics' location allows them to exert beneficial effects such as:

- Supporting a fermentation environment where beneficial microflora can grow
- Helping the body prevent the invasion of harmful microorganisms through protection of the bowel lining
- Supporting calcium absorption

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.



Safety and Stability

The probiotic strains used in Probiotic 50 + have long been considered safe and suitable for human consumption. Many of the Lactobacillus and Bifidobacterium strains have been added to human food for many years and multiple studies have addressed their safety.

The nine strains employed in the product have demonstrated high gastrointestinal compatibility. Testing has shown that the product has a high tolerance and stability to low acid pH and bile salts, as well as good resistance to pepsin and pancreatin enzymes. The product is formulated using a very large overage at time of manufacture to guarantee that the product will meet label claim up to its time of expiration, 24 months.

Summary Information on the Probiotic Strains in PROBIOTIC 50+

Lactobacillus acidophilus

- Well-suited for intestinal survival
- Contributes to a good balance of intestinal flora*
- Creates an unfavorable environment for unwanted microorganisms*
- Promotes a balanced immune defense system*
- Strong lactic acid producer*
- Supports individuals experiencing irregularity (diarrhea and constipation)*

Lactobacillus rhamnosus

- Well-suited for intestinal survival
- High tolerance to acid and bile as present in the intestines
- Provides strong adhesion to the intestinal cell wall
- Gives beneficial modulation of immune function*
- Helps support a healthy inflammatory response*

Bifidobacterium longum

- Well-suited for intestinal survival
- Tolerant to acid and bile
- Provides strong adherence to intestinal mucosa
- Lactic acid producer
- Creates an unfavorable environment for unwanted microorganisms*

Bifidobacterium bifidum

- Strong lactic acid producer
- Promotes regularity*
- Creates an unfavorable environment for unwanted microorganisms*
- Helps the body remove intestinal toxins*
- Promotes favorable flora environment*

Bifidobacterium lactis

- Well-suited for intestinal survival and functionality
- Strong adhesion to the intestinal cell wall
- Promotes restoration of beneficial intestinal flora*
- Provides beneficial modification of immune response and regulation*
- Helps support a healthy inflammatory response*

Bifidobacterium breve

- Lactic acid producer
- Creates an unfavorable environment for unwanted microorganisms*
- Beneficial to a immune response*
- Promotes a healthy balance of intestinal flora*
- Supports digestive health*
- Strong adhesion to intestinal cell wall

Streptococcus thermophilus

- Well-suited for intestinal survival
- Good balance to acid and bile as present in the intestines
- Strong adhesion to mucosal cell walls of the intestines
- Provides beneficial modification and regulation of the immune response*
- Creates an unfavorable environment for unwanted microorganisms*

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.



Lactobacillus salivarius

- Well-suited for intestinal survival
- Strong adhesion to the intestinal cell wall
- High tolerance for acid and bile found in the intestines
- Supports the immune system*
- Helps support a healthy inflammatory response*

Lactobacillus casei

- Strong lactic acid producer
- Strong adhesion to the intestinal cell wall
- Supports the immune function and regulation*
- Creates an unfavorable environment for unwanted microorganisms*
- Supports patients with diarrhea*

Natural Support for many GI Issues

Probiotic 50+ from DaVinci® represents the first line of defense for GI health and maintenance, and the solution to many GI issues facing your patients. This comprehensive and high yield probiotic is backed by extensive research and years of clinical practice. It has been formulated to provide professional levels of beneficial micro flora to the GI tract, which will promote a healthy tract lining, regularity, and microbial balance, and support immune function. Benefits for PROBIOTIC 50+ include:

- Helps the body eliminate unwanted microorganisms from the GI tract*
- Helps restore healthy balance of micro flora*
- Aids digestion*
- Supports regularity*
- Stabilizes lining of the GI tract*
- Supports immune function*
- Helps produce key vitamins and enzymes*
- Helps the body reduce toxins in the colon*
- Supports individuals experiencing bloating, gas and diarrhea*
- Supports a healthy inflammatory response*

When is the best time to take Probiotic 50+?

Because the Probiotic 50 + product is acid and bile resistant, the product can be taken anytime and still be effective. The best time for consumption, according to the manufacturer, would be between meals or 15 minutes before breakfast when stomach acid levels are lowest.

Who should not take Probiotic 50+

Individuals who are on antibiotics or other drugs which may not be compatible with probiotics should not take this product. Women who are pregnant should also avoid taking Probiotic 50 +. It is advisable for patients discuss their regimen with their doctor if on medications for other health issues.

Supplement Facts

Amount Per Serving

Probiotic Bacteria Complex 52.5 Billion CFU
Containing: Lactobacillus acidophilus,
Lactobacillus rhamnosus, Bifidobacterium
longum, Bifidobacterium bifidum,
Bifidobacterium lactis, Lactobacillus casei,
Bifidobacterium breve, Streptococcus
thermophilus, Lactobacillus salivarius
Fructooligosaccharides (FOS) 25 mg

Other ingredients: vegetable cellulose (capsule), rice maltodextrin, vegetable stearate

Suggested Use

As a dietary supplement, take 1 capsule once or twice daily between meals, or as directed by your healthcare practitioner.

Warning: If you are pregnant do not take this product.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.



About DaVinci Laboratories

For 39 years, DaVinci® Laboratories has developed and produced leading edge, high quality supplements exclusively for health care professionals. DaVinci® Laboratories is a division of FoodScience® Corporation which provides the highest quality formulations in the nutritional supplement industry for both human and animal needs.

More than 100 FoodScience® Corporation employees are dedicated to an unmatched commitment of quality and service for every product produced. World-class facilities allow the company to reach the diverse needs of our unique customer base quickly and efficiently. An on-staff Ph.D. Biochemist ensures that a high level of supervision goes into the production process of nearly 200 products that meet rigorous worldwide standards. The flexible facilities also allow for custom formulations and private labeling for those customers who wish to market their own brand of natural products.

DaVinci Research

DaVinci's research focuses on the complex relationships that exist among nutrients and the latest advancements in nutrition therapies to develop and produce some of the most significant products available to holistic practitioners. DaVinci® Laboratories' extensive research into the exciting properties of N,N-Dimethylglycine (DMG) has been unparalleled. The company has been awarded four patents for DMG's beneficial effect in the areas of immune response and cell support. DaVinci® Laboratories' Research and Development Department is under the direction of a Ph.D. nutritional biochemist.

DaVinci® supports research at the following institutions: University of Southern California Medical School, Los Angeles; Medical University of South Carolina, Charleston; Institute For Child Behavior Research, San Diego; San Diego State University; Northern Kentucky University, Highland Heights; Florida Medical School, Tampa; University of Bridgeport, Bridgeport, Connecticut; Clemson University College of Sciences, Clemson, South Carolina.

DaVinci Specialty Formulations

Ongoing research and development at DaVinci Laboratories has resulted in the most exclusive line of specialty products, some of which include: pure N,N-Dimethylglycine (Gluconic® DMG); the most complete high potency multiple vitamin/mineral formulas available (Daily Best™, Kid's Mighty Vites™, Omni™, Omni Jr™, Spectra™, Spectra™ Man, Spectra™ Senior, Spectra™ Woman, Spectra™ Multi Age, Ultimate Prenatal™); and unique glycosaminoglycan products (Cartilage+™, Disc-Discovery®, Perna® and Perna® Plus). DaVinci was also the first nutritional supplement company in the United States to introduce Evening Primrose Oil (Gamma-Lin™) to health practitioners in 1980 as well as the first company to offer doctors an efficient and accurate protocol for evaluating the quality of Oil of Evening Primrose.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.