NATURAL CHOICES
INFORMED DECISIONS

By HealthTrust Alliance

The Human Intestinal Microflora
Antibiotics and Probiotics

The human **intestinal microflora is a complex microbial ecosystem that plays a critical role in the overall health of an individual**. This issue will examine the benefits of the "friendly bacteria" that colonize the gastrointestinal tract, various factors that can disturb the normal GI environment, and the wide variety of health problems that can develop when the intestinal microflora is upset. An important method of preventing these problems will also be discussed to provide information and advice that will help healthcare professionals counsel customers who use antibiotics.

In 1994, an astounding **234,531,000 prescriptions for antibiotics were filled** in the United States. While the discovery and use of antibiotics have been crucial developments in the health and longevity of those living in the twentieth century, this widespread usage has not been without serious health consequences. One of the main problems associated with antibiotic use is the disruption of the normal bowel terrain.

A key factor to be repeatedly emphasized throughout this newsletter is the fact that bowel terrain affects much more than the localized gastrointestinal environment. The relative balance of organisms in the gastrointestinal ecology influences the functioning of our **endocrine system, digestion and absorption of nutrients, vitamin production, hormonal activity, detoxification and ultimately, the strength and functioning of our entire immune system.**

DYSBIOSIS

The human intestinal microflora is an enormous microcosm that is estimated to contain **over 100 trillion living bacteria, comprising from 100 to 400 different species of bacteria** (1). These organisms perform important functions in our system and when the balance between "good" or "friendly" bacteria and "bad" bacteria in this microbial population is upset, a condition called dysbiosis develops. Dysbiosis refers to a state of pathogenic, disordered or dysfunctional intestinal microflora that causes ill health, which can produce symptoms ranging from mere discomfort to outright disease. Dysbiosis can develop in the oral cavity, gastrointestinal tract or vaginal cavity. The following list shows that dysbiosis can cause a wide range of symptoms. It is a serious condition that must be addressed if optimum health is to be achieved. Some common symptoms sometimes include:

Symptoms of Dysbiosis

ADD/Autism	Cardiovascular Disease	Eczema
Aggressive Behavior	Chronic Fatigue Syndrome	Menopausal & PMS symptoms
Arrhythmia/Palpitations	Confusion	Periodontal Disease
Arthritis	Constipation/Diarrhea	Poor Concentration
Asthma	Cystitis/Urethritis	Poor Learning
Belching/Bloating	Dental Caries	Respiratory Disturbance
Blurred Vision	Depression	Sinusitis/Allergies
Brain Fog	Dry Eyes	Tinnitus
Cardiac Problems	Dry Mouth (especially during sleep)	Vertigo/Dizziness

A primary cause of dysbiosis is the use of antibiotics. When an individual takes a course of antibiotics, the **drug not only kills off the bad bacteria, it also kills off a majority of the beneficial bacteria**. Therefore, antibiotics cause dysbiosis by destroying, and thus creating a deficiency of "friendly" bacteria. For example, in addition to attacking the pathogenic bacteria, antibiotics such as **tetracycline, erythromycin and cephalosporin also kill over 99 percent of "friendly" bacteria**. (2).

Gastric acidity is the body's first line of defense against intestinal infection. Killing off the acid-producing "friendly" bacteria causes a shift towards a **more alkaline intestinal pH**, creating an environment that is favorable for yeast and pathogenic bacteria to proliferate.

Other conditions that can cause dysbiosis include stress (psychological and/or physical), use of **oral contraceptives, regular use of antacids**, consumption of refined or processed foods, excessive alcohol, some **cortisone-type medications**, chemotherapy and radiation, fluoridated and/or chlorinated water, toxic metals and other forms of environmental pollution.

High consumption of sugar is a dietary factor that deserves special attention. In most cases, a diet high in sugar means the individual is taking in a large amount of calories with very few nutrients. This situation **creates nutritional starvation for the "friendly" bacteria**. On the other hand, sugar promotes the growth of **yeasts such as Candida albicans**. Thus, high sugar diets increase the likelihood of developing a yeast-overgrowth form of dysbiosis called candidiasis.

The use of **anti-ulcer medications** (both H-2 blockers and proton pump inhibitors), which purposefully alter gut pH, also sets the stage for dysbiosis. This situation is even more alarming now that the FDA has allowed free access to these products by classifying them as over-the-counter drugs.

Hypochlorhydria and achlorhydria are also conditions that promote the development of dysbiosis. Although a deficiency of gastric hydrochloric acid can occur in people of all ages, the condition is far more prevalent in the elderly. As people age, the parietal cells in the lining of the stomach become less efficient at producing hydrochloric acid. This contributes to dysbiosis in two important ways. First, it compromises the body's ability to properly digest protein. When this happens, incompletely digested protein is dumped into the small intestine where it undergoes the toxin-producing process of putrefaction. Secondly, when adequate hydrochloric acid is produced, it provides a defensive barrier by killing most pathological organisms before they enter the gastrointestinal tract. So, hypochlorhydric individuals allow both undigested protein and unwanted organisms to enter the small intestine.

When dysbiosis develops, toxin-producing intestinal bacteria can cause a wide variety of symptoms. Digestive complaints are most common, including flatulence, bloating, intestinal pain and inflammation, cramping and constipation and/or diarrhea. Unfortunately, the cause of these symptoms is frequently misunderstood and misdiagnosed. When the symptoms are treated, but the cause of the problem is not corrected, as is often the case, more serious systemic disorders can develop. In fact, intestinal dysbiosis should be considered as a possible cause, or a contributing factor in patients with **asthma, bronchitis, allergies, autoimmune disorders, breast and colon cancer, unexplained fatigue or neuropsychiatric symptoms**.

Chronic Fatigue Syndrome (CFS) is now recognized as a serious health condition characterized by toxic overload and a breakdown of the individual's immune system. Many medical authorities now concur that a **high percentage of patients with chronic fatigue have dysbiosis as a result of recurrent antibiotic treatment**. (3)

PUTREFACTION

When the diet changes, the makeup of the intestinal microflora also changes. The type and **amount of carbohydrates, fat, protein and fiber have a major influence** on the trillions of organisms that populate our gastrointestinal tracts.

Putrefaction is a form of dysbiosis that results from diets that are high in fat and meat products and low in fiber (the diet of many Americans). It is important to realize that fiber is the preferred food and source of energy for the "friendly" bacteria in the large bowel and colon. High fat/low fiber diets cause a pathological alteration of this microbial population by encouraging **the growth and proliferation of a species of anaerobic bacteria called Bacteroides**. The proliferation of Bacteroides causes a decrease in the concentration of bifidobacteria, which is the type of bacteria that normally predominates in a healthy colon. (4)

When the intestinal microflora is healthy, it is a remarkable ecosystem that promotes the host's health. On the other hand, many health professionals have used the phrase "death begins in the colon." The ensuing discussion will review some of the health problems that develop when a high fat/low fiber diet alters our intestinal microflora.

Colon Cancer: The Bacteroides produce the enzyme urease, which hydrolyzes the urea in animal protein to ammonia resulting in higher colonic pH. An elevated **colonic pH is associated with a higher incidence of colon cancer**. (5) This is one of the scientific explanations why a diet low in fiber and high in fat and animal protein results in a greater risk of cancer.

"Unfriendly" bacteria proliferating in a high fat/low fiber diet also produce an enzyme called beta-glucoronidase that hydrolyzes or deconjugates bile acids. Under normal conditions, bile acids are bound into an insoluble form (conjugated) for excretion. Deconjugation frees up bile acids; in this state they are toxic to the epithelial cells that line the colon. Deconjugated bile acids are associated with a greater incidence of colon cancer.(4)

Breast Cancer: A dysbiotic colon also represents an increased risk of breast cancer. Normally, estrogens are conjugated in the liver for excretion in bile, via the colon. However, the beta-glucuronidase enzymes from "unfriendly" bacteria are also capable of deconjugating estrogens, which frees them up to be reabsorbed back into the body. It is well accepted that higher lifetime exposure to estrogen creates a significant increased risk of breast cancer. Thus, we have a situation in which unhealthy diets cause the proliferation of **unhealthy intestinal bacteria that produce enzymes, which, in turn, deconjugate estrogens**. This results in female hormones being reabsorbed instead of excreted, increasing breast cancer risks.(4)

"FRIENDLY" BACTERIA

The way to correct dysbiosis is to recolonize the intestinal tract with probiotics, the "friendly" bacteria. The two most important species of beneficial intestinal bacteria are Lactobacillus acidophilus and Bifidobacterium bifidum (Bifidus). Lactobacillus bacteria primarily colonize the upper GI tract (small intestine), while bifidobacteria are anaerobic bacteria that predominate in the lower GI tract (large intestine). In a healthy intestinal environment, these bacteria attach themselves to the surfaces of the intestinal tract where they multiply rapidly and become an important part of our immune system.

LACTOBACILLUS

Lactobacillus bacteria provide a number of important health-related benefits that affect not only **the health of the small intestine, but also the general health of the whole being**. Lactobacilli work in several ways to prevent pathological bacteria, yeasts, molds and fungi from proliferating in our GI tract. When lactobacillus bacteria feed on carbohydrates in our intestines, lactic acid is an important byproduct of their metabolism. By producing **lactic acid, lactobacilli are able to maintain an acidic intestinal pH balance**. This inhibits the growth of pathogenic acid-sensitive bacteria, which are only able to proliferate and produce their toxic metabolites in a more alkaline environment.(6) Lactobacilli also produce **hydrogen peroxide, which inhibits the growth of yeasts**, such as Candida albicans, in our gastrointestinal tract.

Lactobacillus bacteria also produce the **enzyme lactase**, which aids in the digestion of lactose, or milk sugar. When lactose-intolerant people consume a meal containing milk or dairy products many benefit by taking acidophilus.

Another important feature of lactobacilli is their ability to produce a variety **of natural antibiotics such as lactocidin, lactobacillin, lactobreven and acidolin**.(7). These substances are unstable in oxygen and are difficult to isolate outside the GI tract. However, we gain maximum benefit from these natural antibiotics by ingesting "friendly" bacteria that are known to produce these agents in our gastrointestinal tract as part of their metabolic processes.

These lactobacilli-produced antibiotics are reportedly capable of **inhibiting the growth of 23 different toxic-producing organisms**. By suppressing the growth of harmful bacteria, lactobacilli are able to enhance their own proliferation and survival. This is just one aspect of how lactobacilli enhance the immune system.

Lactobacilli also play an important role in **regulating cholesterol** levels in the human body. These "friendly" bacteria convert cholesterol to a less soluble substance called coprostanol, which is excreted. When individuals do not have adequate lactobacilli, more cholesterol is absorbed back into the body, contributing to elevated blood levels of cholesterol and increasing the risk of cardiovascular disease.

The lactobacillus bacteria also function like little vitamin factories. Their metabolic processes produce **vitamin B-2, B-3, B-6, B-12, folic acid and vitamin K in our intestinal tract**.

BIFIDOBACTERIA

The health of the large intestine depends on adequate colonization of bifidobacteria. Bifidobacteria produce short-chain fatty acids (SCFAs), including acetic, propionic, butyric, lactic and formic acids. The most plentiful SCFA produced by bifidobacteria is acetic acid, which exerts a wide range of antimicrobial activity against yeasts, molds, and bacteria (8). Hence, a healthy intestinal microflora actively produces **organic acids and antibiotics which both function as part of our immune system**.

In addition to their natural antibiotic activity, the presence of L. acidophilus and bifidus bacteria protect us in other ways. When there is adequate colonization of the "friendly" bacteria, they protect us by simply occupying space. The presence of trillions of "friendly" bacteria in the mucous membrane of the intestinal tract literally leaves no room for **parasites or other undesirable organisms to attack**. Microbiologists call this the principle of exclusion. Another factor involves competition for nutrients. When adequate numbers of "friendly" bacteria are present, they consume most of the available nutrients, which makes it difficult for substantial numbers of pathological bacteria to proliferate.(9)

In addition to L. acidophilus and Bifidobacteria, which have been discussed, there are a number of other types of beneficial bacteria that you may encounter such as L. bulgaricus, L. lactis, L. casei,

L brevis, L. sporogenes, Saccharomyces boulardii, Enterococcus faecium, B. longum, and B. infantis, to name a few.

A listing of the names of some of the more common pathological bacteria include bacteroides, entamoeba, pseudomonas, proteus, streptococcus, staphylococcus, clostridia, salmonella, shigella and klebsiella.

SYSTEMIC IMMUNE ENHANCEMENT

Recent research reports that the immunological activity in our intestinal tract, which is associated with the gut-associated lymphoid tissue (GALT) represents approximately **60 percent of our immune system**.(10) Research shows that the "friendly" bacteria (lactobacilli in the small intestine and bifidobacteria in the large intestine) strengthen the ability of the **immune cells in the GI mucosa** to defend the body against toxins, bacteria and allergens.

Now, however, we are learning that the "friendly" bacteria produce benefits to our immunity that extend beyond the gastrointestinal tract. **Scientists from the departments of immunology and biochemistry at the University of Paris** administered oral doses of lactobacillus and bifidus organisms to adult human volunteers. They then measured the ability of white blood cells (granulocytes and monocytes) to attack and destroy hostile microorganisms.

Participants in this study received either a) 70 billion colony-forming units (cfu) of L. acidophilus, b) 10 billion cfu of B. bifidum, or c) a placebo daily. After three weeks, studies revealed that both types of **"friendly" bacteria resulted in a doubling of the percentage of phagocytes showing activity in the volunteer's peripheral blood**. This represents a remarkable increase in activity and reactivity of the immune system. There is another important revelation from this study. Six weeks after the discontinuation of the probiotic supplements, the phagocytic activity, although it had regressed somewhat, still remained **over 50 percent higher than it had been at the beginning of the study**. (11)

TREATMENT APPROACHES

Although there are many natural agents that can be used to treat bowel terrain problems, there are times when antibiotics should be utilized. Healthcare professionals can play an important role by advising customers about natural products that can be utilized to complement antibiotic therapy.

Saccharomyces boulardii is a species of yeast similar to brewer's yeast that exerts a direct antagonistic effect against a number of pathological organisms including Candida albicans and C. pseudotropicalis. S. boulardii also increases several immune system markers and enhances the activity of beneficial enzymes in the mucosa of the small intestine. S. boulardii has been shown to be effective in both the prevention and treatment of traveler's diarrhea and is also used successfully to treat Crohn's disease and AIDS-associated diarrhea.(12)

Many herbs and spices that are used for food preservation possess antimicrobial activity. Numerous studies document the antimicrobial activity of garlic against a wide variety of bacteria, fungi, parasites and viruses. In order to be effective, about three small cloves per day (10 grams) need to be used. Onions also possess antimicrobial activity, but at a substantially lower potency than garlic. (13)

Ginger, which contains over 400 active ingredients, has been used for centuries to treat digestive complaints. The constituents in ginger are active against a wide variety of intestinal parasites and

it also helps to protect the intestinal lining against ulceration. A normal dose is about one-half teaspoonful twice daily.

Turmeric has antifungal activity and can also be used to relieve intestinal gas. It seems to work by specifically decreasing the number of gas-forming bacteria. The usual dose is in the range of 500 mg twice daily.

Goldenseal, also known as berberine, is often used successfully to treat inflammations of the **GI tract as well as bronchitis and cystitis**. Its benefits derive from its ability to inhibit the growth of various bacteria, fungi and viruses. The suggested dose is 250 mg four times daily.

Oregano, rosemary, sage and thyme also have microbe-fighting capabilities. Although the whole herbs are generally safe, the concentrated essential oils from these herbs are irritating and should only be used with qualified medical supervision. Some practitioners report success using capsules containing standardized oregano extract to treat various parasite and yeast conditions.

Caprylic acid is a natural therapy that is frequently used to treat intestinal yeast overgrowth. It can be used by itself or in combination with other short-chain fatty acids such as sorbid and propionic acid.

One of the most successful herbal therapies for the treatment of a wide variety of intestinal parasites is a combination of black walnut hulls, wormwood and common cloves. In order for this therapy to be successful, all three herbs must be used together. **Black walnut hull and wormwood kill adults and the developmental stages of approximately 100 different parasites. Cloves kill the eggs** and prevent this stage of the life cycle from growing into new adults. Numerous books provide detailed instructions on how to use gradually increasing levels of these herbs over a period of time to do a complete cleansing of intestinal parasites. (14)

Practitioners of homeopathy report that combination nosode homeopathic products can also be used successfully to treat intestinal dysbiosis.

FIBER

In addition to health-promoting bacteria, the definition of probiotics mentioned earlier also includes “supportive substances” that beneficially affect our GI health by enhancing the proliferation of “friendly” bacteria. **Dietary fiber is one of these substances that exert a beneficial effect on human health by improving the balance of intestinal microflora**.

There are two types of fiber, soluble and insoluble. Soluble fiber is contained in a plant’s sticky components such as pectin, gum and mucilage. Foods containing soluble fiber include fruits, vegetables, whole grains, legumes and psyllium. Soluble fibers seem to be beneficial for elevated blood pressure, cholesterol and triglycerides, atherosclerosis, diabetes, obesity and gallstones. (14)

Insoluble fiber comes from plants’ skeletons, which consist of lignins, cellulose and hemicellulose. Insoluble dietary fibers adsorb carcinogens in the intestinal tract, carrying them away in the stool. Insoluble fibers also increase fecal bulk by simply absorbing water. This swelling increases the urge to evacuate, which speeds up transit times and decreases the amount of time toxic substances are in contact with the colonic epithelium.

The quantity and the type of dietary fiber consumed influence the type of intestinal flora that populate the GI tract. Low fiber diets encourage the proliferation of bacteria capable of transforming bile acids into metabolites that are carcinogenic.(15)

Fiber is especially important for diabetic individuals. High-fiber diets regulate plasma insulin levels, improve blood glucose control and normalize blood lipids in diabetics. (16)

This discussion of the importance and benefit of dietary fiber emphasizes why the fast food, junk food, processed food diet of many Americans creates a much higher risk of various diseases.

FRUCTOOLIGOSACCHARIDES (FOS)

The derivation of this word is as follows: fructo = fruit; oligo = short. Fructooligosaccharides are short-chain fruit sugars. We do not possess the necessary enzymes to metabolize fructooligosaccharides so **they are non-digestible and provide zero calories for humans**. However, bifidobacteria do have the enzymes to metabolize FOS, which make these sugars a preferred food source for the "friendly" bacteria in the large intestine. Thus, FOS can greatly improve the health of the large intestine by encouraging the proliferation of bifidobacteria, yet they are of no benefit to pathological organisms.

In one study, 23 elderly individuals ingested eight grams of FOS daily for two weeks. Bacteriological examinations eight days after the final dose revealed that the concentration of bifidobacteria in the stools had **increased nearly 1000 percent** over the level counts that existed before the FOS was given.(17)

Although small amounts of FOS occur naturally in bananas, beer, onions, rye, honey and oats, it is now produced commercially for the probiotics industry. FOS can be purchased separately and it is frequently an added ingredient in probiotic products.

HOW HEALTHCARE PROFESSIONALS CAN HELP

As we review the important immune-enhancing properties of probiotics and the potential health problems associated with dysbiosis, it is staggering to consider the implications of the **234 million antibiotic prescriptions filled each year**. This figure implies that there are enormous numbers of people who are developing secondary problems and compromised immune function. The origin of these problems is frequently misunderstood and often misdiagnosed. The travesty here is that most patients do not know that probiotics should follow a course of antibiotics. Hence, healthcare professionals have a professional responsibility to teach people how to avoid the problems that can occur when taking antibiotics.

Pharmacists should make this a regular part of patient counseling. Dialogue for counseling customers about this topic does not take long and is not difficult for the customer to understand. When a customer picks up an antibiotic, ask if they know about acidophilus. The answer is usually "no" and you begin by saying, "Acidophilus is the name of the "friendly," or beneficial bacteria in our gastrointestinal system. When you take an antibiotic, you not only kill off the bad bacteria; you also **kill off the good bacteria**. The acidophilus organisms have many important functions in our bodies and they should be replaced."

If you are counseling a woman, you should explain, "One of the main functions of the acidophilus organisms is that they keep yeast under control. When you take an antibiotic and kill off the acidophilus, the yeast can go into an explosive overgrowth and you may end up with a vaginal yeast infection. The way to prevent a yeast infection is to take approximately ½ teaspoonful of powdered acidophilus twice daily for two weeks after finishing your course of antibiotics."

If the antibiotic is for a child, you should tell the parent that the acidophilus organisms help with digestion and also produce a number of B-vitamins and some natural antibiotics in our bodies. If these "friendly" bacteria are killed off, a child is more likely to have problems with digestion and will also have a weaker immune system. This is actually a strong argument for doing acidophilus

replacement for people of all ages. The dose for children is the same as the dose for adults. For infants, you can suggest cutting the dose in half and giving about ¼ teaspoonful twice daily for two weeks.

SELECTION AND DOSING OF PROBIOTICS

There are a number of important factors that affect the quality and effectiveness of probiotic products, including the strain of bacteria, the method of culturing, packaging, and handling and the concentration and viability of the organisms in the product.

During the past several decades, scientists have conducted an enormous amount of research on many different strains of L. acidophilus, bifidobacteria and other forms of beneficial microorganisms. One important factor is host specificity. For example, it has been determined that strains of acidophilus that originate from the human intestinal tract adhere much more effectively to the lining of the gut mucosa than strains of acidophilus that originate from cattle or other animals. Even various human strains of acidophilus vary greatly in their ability to survive and grow in the hostile environment of the gastrointestinal tract. Their ability to survive and proliferate depends on their tolerance of stomach acid and intestinal bile, their production of natural antibiotics and their ability to adhere to the intestinal wall.

The method and care of culturing, packaging, shipping and storing probiotic products are also important. Light, heat and moisture can all have a devastating effect on these fragile organisms and these factors will ultimately affect the strength and viability of the product being purchased by the consumer. Because of these factors, it is important to have independent laboratories provide verification of the quantity and viability of the organisms, not just at the packaging date, but also at the expiration date of the product after a certain period of “shelf life” time.

There is also a wide variation in the potency of probiotic products. Although some labels claim to contain “millions of organisms,” better quality products contain several billion CFU (colony forming units) per dose. Probiotics should be refrigerated for optimum potency, however, a relatively new “freeze drying” technique enables probiotics to maintain their potency without being refrigerated. Refrigeration is still advisable after a bottle has been opened. Currently, the most potent acidophilus on the market is still a refrigerated agent.

Individuals with dysbiosis (especially after taking antibiotics) should consider ingesting a probiotic containing from 10 to 20 billion organisms per day for two weeks. Best results are obtained when probiotics are taken twice daily between meals on an empty stomach so that fewer organisms are destroyed by stomach acid.

Although products like yogurt and acidophilus milk do contain some of the live organisms, the amount of “friendly” bacteria in these products is not nearly enough to re-colonize the GI tract after taking antibiotics.

INFANTS

It is extremely important for infants to start out life with a strong, well-functioning immune system. One important aspect of this foundation is the development of a healthy gastrointestinal microflora. There are two situations that play a pivotal role in determining whether or not an infant gets the opportunity to develop a healthy immune system after being born.

The first determining factor is a normal vaginal birth. **At birth, an infant is microbiologically sterile, meaning there are no bacteria in the gastrointestinal tract**. However, when an infant passes through the vaginal canal during a normal vaginal birth, the infant's head and body are coated with the slimy mucous secretions from the mother's vaginal lining. These **vaginal mucous secretions contain large numbers of "friendly" bacteria, some of which get into the infant's mouth and down the throat into the stomach**. These organisms start to proliferate, and this is the beginning of developing a healthy intestinal microflora and a healthy immune system. This becomes an important topic when we realize that approximately 23 percent of births in the United States are by cesarean section. This means there is an enormous number of infants born every year whose immune systems are immediately compromised due to their unnatural birthing procedure.

The other important immune system development factor is **breast-feeding**. It is beyond the scope of this article to discuss the large number of immunoglobulins that are transferred from mother to infant during breast-feeding. However, one specific factor in breast milk does relate to our present discussion. Scientists have discovered that **mother's milk (but not cow's milk) contains a disaccharide amino sugar that is a required growth factor for the friendly bacteria**.(18) Thus, mother's milk contains a substance that specifically stimulates the growth and proliferation of bifidobacteria in infants. Studies show that the fecal flora of breast-fed infants is **99 percent bifidobacteria, whereas the fecal flora in bottle-fed infants is less than 20 percent bifidobacteria**. These are the babies who have a much higher incidence of colic, diarrhea, gas, fungal diaper rash, etc.
Healthcare professionals have a great opportunity and a professional responsibility to educate pregnant women customers about the importance of helping their newborn babies to develop a healthy intestinal microflora soon after birth. You should encourage women to breast-feed, and recommend probiotic supplements for infants if there has been a cesarean section birth or if the mother is choosing not to breast-feed.

FINAL REMARKS

The importance of good digestion, assimilation, elimination and general intestinal health is becoming widely accepted by health professionals as one of the keys to health and longevity. In fact, a healthy intestinal microflora is absolutely essential to good health. It is **good to advise people to take a good quality acidophilus product several times per week on a maintenance level, making it part of their regular nutritional supplement program**.

People who take antibiotics and those who may have developed dysbiosis for some other reason should be counseled on how to do high-dosage probiotic supplementation to rebuild the gastrointestinal microflora and improve their overall health.

Promoting the use of probiotics is a simple, yet effective measure in creating more business and happy, healthy customers.

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Compound of the Month

Formula for bowel terrain support. One capsule contains:

Formula	Dosage
Grapefruit Seed Extract	50mg
Olive Leaf Extract	50mg
FOS	100mg
L-Glutamine	250mg
Berberis	150mg
Rosemary Extract	25mg

Dosage: One capsule, three times a day.

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BOWEL TERRAIN PRODUCT LIST

Below are the products referenced in the newsletter. Recommended suppliers are also listed for those individuals wishing to purchase the products.

GENERAL SUPPORT

PRODUCT	SUPPLIER
Acidophilus/Bifidus	PHP
Duo-Probiotic	HVL – Professional Series

AGENTS FOR DYSBIOSIS

PRODUCT	SUPPLIER
Ultra-MFP™	HVL – Professional Series
Mycostat Complex Plus	PHP
Mytox	PHP
Pro Botanafuge	PHP
Pro Fiber Complex	PHP
Vermex	PHP

INTESTINAL INTEGRITY SUPPORT

PRODUCT	SUPPLIER
L-Glutamine	Vinco
G.I. Formula	HVL – Professional Series