

# I N N A T E

RESPONSE FORMULAS

## FLORA 20-14™

*V i s m e d i c a t r i x n a t u r a e*

### Product Rationale

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# INNATE Response Formulas™

## Flora 20-14™

### *Rationale*

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Probiotic microflora is one of the most important supplements that can be taken on a daily basis. Human intestines contain 100 trillion viable bacteria. Humans and bacteria have developed a symbiotic relationship. Over 500 different species of microflora inhabit the digestive tract; both health supporting and pathogenic. The beneficial microflora are live single-cell, lactic acid producing bacteria that colonize the majority of the digestive tract. Extensive research has shown that probiotic microflora are essential to optimal health. They perform very specific physiological functions. Microflora provide a wide variety of invaluable micro-nutrients, enzymes, vitamins, immune supportive factors and organic acids, which are absorbed from the intestines and utilized by epithelial cells of the gut and by vital organs such as the liver. For centuries people have consumed foods rich in probiotics both for their taste and health benefits.

The complex actions of the organisms in *Flora 20-14™* allow the body to perform with vitality and well-being. They accomplish this by implanting themselves like sentinels in the digestive tract and other vulnerable mucus membranes (such as vaginal tissue). Nutritional absorption is accomplished in the small intestine. *Flora 20-14™*'s microflora ferment the simple sugars that are the by-products of carbohydrate digestion. This fermentation process promotes complete digestion of carbohydrates, reduces putrefaction and produces many important substances that enhance optimal health.

A large array of factors affect our microflora populations including changes in environment, stress, diet, water, drugs (especially antibiotics), alcohol, caffeine, illness and pathogens. Microflora adapt constantly to existing conditions, an important reason for regular Probiotic supplementation.

Consider the levels of toxins we (and the planet) are subjected to. As of 1981, over 70,000 chemicals were produced; 3000 of them have been deliberately added to food, 700 to drinking water. Pesticides add to this onslaught our bodies must constantly face. Thirty-five million pounds of antibiotics are manufactured in the U.S. for use on humans and live-stock. People who eat meat, dairy products and poultry often end up inadvertently consuming antibiotics. This will increase now that the FDA approved bovine growth hormone (BGH) for use in dairy cows and BGH increases mastitis. The mastitis is then treated with antibiotics. Antibiotics kill off the good bacteria along with the bad (pathogenic). Many of the broad-spectrum antibiotics are believed to cause the production of mutant, antibiotic-resistant strains of pathogenic bacteria.

Probiotic microflora are an essential part of our body's natural processes of digestion, assimilation, nutrient production, immunity and detoxification. Microflora are also responsible for building protective mucosal shields in the intestines and vagina.

Microflora implant throughout the digestive system and ferment the simple sugars that are by-products of carbohydrate digestion. Through this fermentation process, microflora assist complete digestion of carbohydrates and produce the following incredible range of benefits:

- B Vitamins - including B1, B2, B6, B12, folic acid, biotin and vitamin K
- Digestive enzymes such as lactose
- Natural immune enhancers
- Natural antibiotics and bacteriocins which control proliferation of pathogenic bacteria.
- Volatile fatty acids - short chain fatty acids that provide food for intestinal mucosal cells
- Organic acids: Lactic acid, acetic acid and some formic acid for proper pH balance which suppresses growth of pathogenic organisms.
- Protective shield lining the intestinal tract, mouth, and vagina.

Probiotic microflora break down cholesterol, linked to heart disease and colon cancer, into a number of products that can be utilized or excreted as needed. Proper utilization and breakdown into the non-absorbable by-product called coprostanol, may be an important factor in cholesterol regulation. A healthy intestinal microflora colony makes a difference in cholesterol regulation and possibly in the prevention of cardiovascular disease.

### INHIBITION OF PUTREFACTIVE AND PATHOGENIC BACTERIA

Probiotic microflora implantation and proliferation along the intestinal wall are necessary to inhibit pathogenic bacterial growth. The bacteria compete for receptor sites along the intestinal wall and for the same nutrients. Probiotic microflora inhibit colonization and proliferation of pathogenic microorganisms by forming a protective shield or barrier that covers the inner lining of the intestines. This can stop the pathogens' attempts to attach to sites along the intestinal wall, thereby thwarting their "takeover."

Manufacturing natural antibiotics is another way microflora can stop proliferation of pathogenic bacteria. Natural antibiotics, such as: acidophilin, lactocidin, lactobacilline, hydrogen peroxide, bacterial pesticides, nisin and streptococcins, are useful in killing off detrimental bacteria.

Lactic acid produced by probiotics assist in balancing the proper pH of the intestinal tract — further supporting healthy microflora and impeding the growth of pathogens such as *Staphylococcus aureus*, *E. coli*, *S. enteritis*, shigella, salmonella, listeria, vibriocholerae, and candida albicans. (Proper pH can be a factor in alleviating rectal irritation and itching.)

Prominent pathogenic bacterial strains that cause putrefaction include: *C. lastridia* (anaerobes), *Bacillus* (aerobes), *Proteus* and *Coliforms*. Putrefaction can cause health-threatening end products such as: ammonia, hydrogen sulfide, amides, methylated amines, Methane, Indol, Phenol and Mercaptans.

#### **Consequences from these end products of putrefaction include:**

- Stress and damage to organs - including kidneys, liver and suprarenals
- Hindered manufacture and secretion of digestive enzymes
- Weakened endocrine system
- Arteriosclerosis
- Early Senility
- Cancers - liver, colon, breast
- Debility
- Hepatic encephalopathy (damage to brain)
- Production of increased levels of putrefactive bacterial

Enzymes related to cancer:

- B-glucuronidase (shown to relate to tumor production)
- Azoreductase
- Nitroreductase

Ammonia is one of the most harmful of the toxic compounds created by the body during digestion, particularly during the digestion of proteins. Fermentation by probiotic microflora decreases the damage to the intestinal mucous membrane by breaking down the ammonia with certain enzymes. Ammonia is detrimental to the functioning of the liver. By breaking down ammonia and inhibiting proliferation of pathogenic and putrefactive microorganisms probiotics are an aid in liver protection.

## PROBIOTIC FLORA 20-14 AS IMMUNE ENHANCER

Probiotics assist our immune systems in several ways:

- They assist in the complete digestion and assimilation of nutrients from our foods.
- They produce B vitamins and vitamin K contributing to nutritional support.
- They inhibit pathogenic, putrefactive microorganisms by:
  - Producing lactic acid.
  - Producing natural antibiotics.
  - Creating protective shields.
  - Fermenting simple sugars.
  - Producing digestive enzymes.
  - Stimulating intestinal immune cells.

### EXAMPLES

Studies show that *Streptococcus thermophilus* (*S. Thermophilus*), one of the lactic acid-producing strains, can bind to human T- lymphocytes and B-lymphocytes. Lymphocytes are specific cells involved in production of antibodies needed to combat infectious disease. *Streptococcus thermophilus* and other lactic acid-producing bacteria have demonstrated the ability to migrate to Peyer's patches (special intestinal immune tissue) and lymph nodes associated with the intestines, where they stimulate immune responses. (deSimone et al, 1988, 41) *S. Thermophilus* also increases the production of gamma interferon up to three to four times.

Probiotic Microflora, along with other dietary factors, have been shown in research studies to play tremendously important roles in the prevention of bowel cancer. A recent study indicates that *Lactobacillus* bacteria play a key role in reducing the risk of breast cancer. (Le, 1986)

Research indicates that probiotics lower the levels of fecal bacterial enzymes such as beta-glucuronidase (related to tumor formation), azoreductase and Nitroreductase (high levels of these enzymes are associated with colorectal and breast cancers). Azoreductase and Nitroreductase can convert other substances into aromatic amines which are known carcinogens (Cancer 40 2421-2426, 1977).

The use of antibiotics, whether directly or inadvertently from animal products with antibiotic residuals, can indiscriminately destroy both beneficial and pathogenic bacteria in the body. Antibiotics can create imbalance in our microflora throughout the body, with very negative effects. They cause the microflora to dislodge from the intestinal wall, allowing the attachment and proliferation of potentially putrefactive and pathogenic microorganisms such as candida albicans and staphylococci. Implantation by these types of microorganisms can easily lead to diarrhea, infection, disturbed digestion, flatulence or numerous other disorders of the digestive system and the vagina. Regular supplementation with probiotics can offset and often eliminate the potentially damaging side effects of antibiotics. The specific strains used for supplementation are important. Some strains have shown to be more resistant to antibiotics and to be more potent at minimizing the negative results of antibiotic use. (Hooker and DiPiro, 1988). Probiotics are an essential supplement when undergoing antibiotic treatment, including the use of herbal preparations with "antibiotic-like" properties, such as goldenseal root.

The contribution they make to the body's detoxification, elimination, digestion and assimilation of nutrients, and various other factors, indicate the value of probiotic microflora in many skin care programs. The vagina is colonized by many microflora species. A predominant strain is *Bifidobacteria*. Many of the imbalances affecting a woman's vagina can be corrected with the assistance of beneficial microflora. It may be advantageous to include the *Bifidobacteria* strains both orally and as a vaginal douche, combined with good quality water, when under antibiotic therapy.

Microflora produce volatile fatty acids, ( short chain fatty acids) as a by-product of fermentation in the intestinal tract. These fatty acids are food energy for the mucosal lining of the intestines and are indispensable to mucosal health and its optimal functioning. The intestinal microbes are also known to break down mucus to get energy. It is believed that the intestinal microflora play an integral part in regulating the composition and density of the intestinal mucus. (Heneghan, 1973) The volatile fatty acids are important to the mucosal lining's regulation of fluids in our intestinal tract and in our fecal matter. Healthy intestinal microflora can greatly reduce risks of inflammatory bowel disorders such as colitis, Crohn's disease and irritable bowel syndrome. Other bowel dysfunction's such as constipation, diarrhea and hard stool

can also be balanced with probiotic supplementation.

Fermented and cultured foods contain a variety of species of microflora rather than one single strain. Time honored scientific research has shown that certain species work synergistically together colonizing and proliferating in the intestinal tract. Different strains ferment different simple sugars; some strains aid in digestion of fats, others proteins or carbohydrates; they produce different natural antibiotics; some implant, others are transient; they produce different enzymes and by-products. The proper combinations enhance the over-all efficacy of the microflora.

Based on the wonderful results from fermented foods and on the vast research on microflora as nutritional supplementation, the combination of compatible strains is indicated. Combining cooperative probiotic strains results in a more complete and synergistic product. Most authorities agree that a multi-strain probiotic, with lactic acid-producing bacteria, including lactobacillus and bifidobacteria strains can provide the highest level of beneficial results.

The strains used to formulate a probiotic supplement are crucial to its effectiveness. Strain compatibility is important. "The same test must be done against a large range of species of lactic bacteria to verify compatibility. These tests are done at Institute Rosell, Edouard Brochu writes, "Synergy between *Bifidobacteria* and other lactic bacteria naturally exists in the digestive tract, especially in the intestines and in the human vagina. Several scientific reports show the simultaneous presence of several species of *Bifidobacteria lactobacilli* and lactic streptococci. Synergy is routinely checked in the laboratory by growing isolated and mixed species and evaluating the number of cells and their activities."

### **Transient Microorganisms & Colonizing Microorganisms**

The different strains all also have different properties which make them unique and important together. As mentioned previously in this article, these strains ferment different sugars, produce different digestive enzymes, some assisting fat digestion, some proteins. Natural antibiotics are produced; each strain produces different types. All the different by-products, including vitamins and fatty acids, are greatly increased when compatible strains are combined. Together they work to create the optimal environment for healthy bacteria colonization, providing the human body with all the protective and nourishing benefits they are capable of.

Studies indicate that probiotic supplements, such as *Flora 20-14* should be taken daily, with only an occasional break of not more than one week. Some research indicated that a lapse of more than seven days resulted in changes in the bacterial profile to "pre-supplemental" conditions. For maximum benefits daily probiotic supplementation is suggested.

Controversy exists as to which time is best for optimal results - with or without food. For years most authorities agreed that maximum implantation occurred when taken away from meals, on an empty stomach. Recently a research study indicates that probiotic supplements may be best when taken with food. This study suggested a more alkaline pH exists when food is in the stomach. Following label directions may be the answer until research is conclusive. Complex carbohydrate meals would be appropriate, however a meal high in fat and or concentrated animal protein may be counter-productive.

Some spices have probiotic enhancing properties especially Ginger root and Turmeric root. Incorporation of these spices in one's diet may enhance proliferation of beneficial microflora.

### **Probiotic Strains Provided by Flora 20-14**

#### ***Lactobacillus rhamnosus***

- Naturally inhabits the intestinal tract and vagina
- Highly prolific - 8-10 times more than *Lactobacillus acidophilus* - rapid generation
- Ferments large spectrum of sugars - 24 vs. 11 by *Lactobacillus acidophilus*
- Produces L plus lactic acid - vs. DL lactic acid - L plus (+) is biologically superior
- Higher resistance to bile salts and antibiotics than many strains
- Known for stability
- Naturally occurring in fermented dairy products
- Often called *Lactobacillus lactis* or *Lactobacillus acidophilus*
- One of the most highly studied strains of microflora.
- Name derived from ability to ferment rhamnose (type of natural simple sugar)
- Dr. Edouard Brochu of Institute Rosell believes that *Lactobacillus rhamnosus* "is the most important and the most

potent lactobacillus. That is the main reason for its use in dietetic, prophylactic and therapeutic bacterial products all over the world.”

- Assists bacterial populations by manufacturing enzymes to break down potential carcinogenic or mutagenic by-products of digestion (especially of meat and fat).
- Research suggests enhancement of immune response
- Beneficial as part of nutritional support for lactose intolerance, constipation, inflammatory bowel disorders, vaginitis, urinary tract infections and many food allergies.

### ***Bifidobacterium bifidum***

- This microflora class contains was the first discovered in 1900 and encompasses several different species. Four of the most important are: *Bifidobacterium infantis*, *Bifidobacterium longum*, *Bifidobacterium bifidum* and *Bifidobacterium breve*
- Bifidobacteria appear split at one end - forked into 2 equal parts
- First probiotic effects were demonstrated in the 1950's
- Prevalent microorganism in infants, children, the vagina, large intestine and mouth
- Predominant organisms in stool of breast-fed infants
- Several studies show protective properties against intestinal infections
- Research demonstrates prevention of growth of candida albicans following penicillin therapy (Rasic,1983)
- Assists in digestion of lactose
- Improves protein and mineral absorption
- Contains lactic-acid producing bacteria, which protects against harmful and putrefactive bacteria such as enterococci, clostridia and anterobacteria, E. coli, staphylococcus
- Reduces ammonia and nitrates
- Studies suggest its synergy with other lactobacillus strains in adults
- Manufactures the organic acids: lactic, formic and acetic acids, which lower and balance pH, supporting healthful microbe colonization
- Synthesizes B1, B2, B6 and K
- Enhances the immune system - assists in antibody formation
- Aids liver detoxification of some by-products of protein metabolism ( such as phenols, ammonia, indole)
- Useful in nutritional treatment of allergies
- Helpful in alleviating diarrhea and/or constipation
- Research indicates *B. longum* may inhibit formation of mammary gland and colon tumors when caused by nitrosamines (common mutagens found in charred food)

### ***Lactobacillus acidophilus* & *Lactobacillus acidophilus* DDS-1**

- *Lactobacillus acidophilus* is considered the most important resident of the small intestines. It also inhabits digestive tract, mouth and vagina
- produces lactic acid, which assists in proper pH balance
- improves lactose absorption, an aid to those with lactose intolerance - (results felt in about a week)
- DDS-1 Research by Dr. Shahani indicates effectiveness against a wide number of pathogens including salmonella, staphylococci and candida albicans
- moderate generation time (approx. 64 min.)
- moderate acid resistance
- reduces intestinal putrefaction from coliform bacteria and reduces actual bacteria count of coliform
- aids nutrient uptake, especially calcium
- reduces activity of detrimental fecal enzymes, such as B-glucosidase and B-glucuronidase, involved in carcinogen production
- helps break down toxic nitrates and nitrites
- assists in regulating blood cholesterol levels
- assists in protection from radiation
- must be taken continually to be maintained in large intestine - after a 9 day break, bacteria composition returns to pre-supplemental levels
- produces natural antibiotic factors including acidophilin which inhibit the growth of several undesirable microorganisms

- implanting strain that attaches to the intestinal wall with great tenacity

### ***Streptococcus thermophilus***

- Lactic acid producing microorganism
- Used in yogurt production
- Transient - as it progresses through the GI tract this strain synthesizes important by-products
- Antioxidant, free radical scavenging activity: Superoxide Dismutase (SOD) has been identified in *S. thermophilus*
- Increases proliferation of lymphocytes, stimulates B-lymphocyte and macrophage response
- Enhances gamma-interferon (a viral inhibitor) production
- Stimulates the body's immune response through special intestinal immune tissue called Peyer's patches and intestinal lymph nodes
- Studies indicate importance as part of program for colon cancer and tumor prevention
- Supports treatment of vaginal and intestinal infections
- Generates lactase activity supporting digestion of dairy products

### ***Lactobacillus plantarum***

- Stable lactic acid producing strain that colonizes in the intestinal tract
- Reports from research in Japan show benefits for treatment and prevention of food allergies
- Assists utilization of Omega 3 essential fatty acids
- Contributes to cholesterol regulation

### ***Lactobacillus salivarius***

- Research indicates this bacteria has the unique ability to eradicate the bacteria *Helicobacter pylori* which is considered a primary cause of peptic ulcers.
- Effective against other pathogenic organisms such as *Salmonella typhimurium*.

### ***Lactobacillus reuteri***

- The efficacy of this beneficial bacteria in controlling certain types of pathogenic bacteria such as *E. coli* and *Salmonella*, and the parasite *Cryptosporidium parvum* was reported in the *Journal of Infectious Diseases*.
- Research shows effectiveness in some bacteria related diarrhea.

### ***Lactobacillus casei***

- Research reported in *Microbiology & Immunology* indicates this beneficial bacteria to be effective in combating the *Listeria* bacteria.
- Reports published in *Cancer Letters* suggest *L. casei* promotes beneficial activity in healthy cells while inhibiting activity in tumor cells.
- Supports immune response.
- Studies indicate this bacteria may be useful as part of the treatment of STD's (sexually transmitted diseases).

### ***Lactobacillus bulgaricus***

- Transient strain that supports and works synergistically with beneficial colonizing strains.
- Supports digestion of dairy products and other proteins.
- Produces natural antibiotic substances and assists in building natural resistance of colon and entire system.
- Used to treat after-effects of long-term antibiotic use.

### ***Lactobacillus sporogenes***

- Spore-forming, gram positive, lactic acid producing, highly prolific
- Research indicates it's effectiveness in cholesterol management and reduction of LDL's
- Important in management of pathogenic bacteria and in intestinal health

### ***Lactobacillus Lactis***

- A natural antibiotic, helps to reduce pathogenic bacteria to grow and cause infection.

- Effective against *Listeria monocytogenes*, which causes severe food poisoning.

### **Formation of Intestinal Micro-flora begins at Birth**

The *Bifidobacteria* strains are essential supplementation for infants and young children. Current research indicates that the formation of one's intestinal microflora begins at birth. A study (Midtvedt, et al. 1988) shows that an infant is inoculated with bacteria from the mother's vagina when passing through the birth canal. Breast-fed infants are also provided with immunity-enhancing substances and bacteria that create *bifidobacteria*, such as lysosomes found in mothers' milk, encourage bifidobacteria growth.

A diet of formula and/or cow's milk is shown to decrease the number of *bifidobacteria*, increase the pH and the potential for proliferation of pathogenic bacteria, such as clostridia, (Drasar, et. al., 1986), another reason cow's milk is an undesirable food for humans. (It was really only meant for calves. Considering that a baby cow weighs about 100-150 pounds at birth and can weigh 400-500 pounds in one year, it's obviously a much different food than needed by a baby human.)

Important research demonstrates the necessity of establishing vital microflora colonization during infancy. The composition of intestinal microflora at this early age greatly affects the composition of intestinal microflora later in life. (Alm, et. al., 1983) Once babies are weaned, the intestinal microbial population changes and becomes less adaptable than it was during infancy. Parents who supplement both their children's diets and their own with a high potency multi-strain Probiotic will greatly enhance the quality of their digestive, eliminative and immune health.

Combining *Lactobacillus Rhamnosus* with the key *Bifidobacteria* has been documented in research to have a synergistic beneficial effect, making the combination even more health-supporting than when taken individually.

Follow directions on the label or those given by a holistic health practitioner to take as a daily supplement. When taking antibiotics, increased dosage, spread throughout the day, may be indicated to offset negative side-effects from antibiotic use. Maximum results are often achieved by taking a probiotic supplement several times throughout the day, with pure water. Best taken away from the ingestion of antibiotics, when possible.

**INNATE Response Formulas**  
**Flora 20-14**  
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