

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment, so long as no predators gobble them up or kill them.



Supplement to
The Art of Getting Well

Friendly Bacteria -- *Lactobacillus acidophilus* & *Bifido bacterium*

Sources are given in references.

Authors of contributions/quotations are alphabetically arranged; major author, if any, is underlined.

John M. Baron, D.O., Luc De Schepper, M.D., Ph.D., C.A., Gerald Domingue, M.D., Brad Everett, Howard Hughes, William H. Lee, R.Ph., Ph.D., Lida Mattman, Ph.D., Ed McCabe, Natasha Trenev, Dr. Ken Rifkin Ray C. Wunderlich, Jr., M.D./Responsible editor/writer Anthony di Fabio.

Copyright 1989

All rights reserved by the The Roger Wyburn-Mason and Jack M. Blount Foundation for Eradication of Rheumatoid Disease
AKA The Arthritis Trust of America®.

7376 Walker Road, Fairview, Tn 37062

The subject of intestinal microflora is of importance to arthritics for two major reasons: (1) it is essential for good health to have a good colony of synergistically (working together and reinforcing one another) behaving microflora; (2) it is essential for metabolization of some of the medicines we recommend when halting the progress of Rheumatoid Diseases, as reported in *The Art of Getting Well*¹. [See <http://www.arthritistrust.org>.]

There are more bacteria in the world today than all the humans ever born. There are more bacteria than all the mammals that have ever been born. The head of one pin may contain one trillion or more of them! Bacteria, as will be seen, exist under the most varying, most extreme, most hostile conditions on our planet. They are pervasive!

Clearly bacteria are the dominant life form on planet Earth!

As man's lifeline evolved from simple, one-celled origins, and became an interacting group of single-celled bacteria, and thence onward where each cell specialized to help the whole survive, we carried along with us a special set of cells that helped to digest food, produce certain key vitamins, maintain balance of acidity/alkalinity, and a host of other good features many of which are not yet known.

The single cell — whether classified as plant or animal -- is a wonderful and complex machine, not at all fully understood by the wisest men. [See "Correcting an Inaccurate Paradigm on Cellular Functions -- Lay Version," <http://www.arthritistrust.org>.]

As with all life-forms, bacteria strive to survive, and they do this by reproducing themselves again and again and again. Where was one bacteria, there are now two, then four, then eight, then sixteen, thirty-two, sixty-four, one hundred and twenty-eight — and they double each period of time, so long as nourishment is available to permit growth, and so long as space is there to grow in, and

An individual bacterium is unimportant to the species' survival, the group (species' survival) is all-important.

Yet an individual bacterium differs in ways that are too subtle to notice until the environment becomes hostile to the species. Perhaps one bacterium out of a trillion has the fascinating ability to survive in conditions that are inimical to most. A penicillin environment, for example, may kill all but one in a trillion, but that last goes on to double and redouble, until finally the species has different characteristics, different abilities — and most of the surviving progeny can survive in the changed environment. The use of penicillin — usually a dangerous environment for bacteria — is an excellent example. Use it to get well, and most bacteria die. Sooner or later there is spread amongst us progeny of that single or small colony of bacteria that are naturally resistant to penicillin.

Some bacteria can live in the absence of oxygen, and some require oxygen. Some live on sulfurs and hydrogen at the deeps of the sea, near turmoiling and broiling volcanic vents. Certain bacteria grow well on oil, and others on otherwise deadly poisons. Some must float nicely in conjunction with other miniscule life-forms in the ever-changing and billowing white clouds.

Some bacteria produce deadly toxins, and others produce life-giving (to humans) vitamins.

You can't kill all of the microorganisms in your food, unless you boil your water at 126° Centigrade (258.8° Fahrenheit), under some pressure (autoclaving) for 96 hours. As water under standard pressure conditions boils at 100° Centigrade (212° Fahrenheit), such persistent determination to kill all microorganisms will also destroy your food.

Some can live to 190° Centigrade (324° Fahrenheit) below zero.

Despite Howard Hughes' billions and his alleged fanatic attempts to shield himself from bacteria, he was surrounded in a sea of them. Only his immunological system, such as it might have been, waged the actual warfare, not his reputed ineffectual "non-contact" procedures.

If world governments sling holocaust bombs at each other, bacteria will still be alive and well!

A bacterium, called Radiodurans, thrives inside operating nuclear reactors. These bacteria have the highest levels of Super Oxide Dismutase and Catalase and some other antioxidant enzymes than any others measured².

According to Gerald Domingue, M.D.³, in a talk presented in part at the 75th Annual Meeting of American Society for Microbiology and subsequently published by *Microbia*, in his article "Naked Bacteria in Human Blood," many common and disease-producing bacteria, under the influence of many antibiotics, do not die, but rather are stripped of their walls so that they are no longer recognizable by our immune system. Our immune system uses the invader's cell walls to recognize a foreign invasion. If the cell wall is missing, our immune system assumes there is no invasion!

Some of these "Cell-Wall-Deficient Bacteria" can revert to and reduce themselves down to a filterable virus size — among the smallest known forms of virus.

Amazingly, it has been shown that these viral particles and the incomplete bacteria — Cell-Wall Deficient Bacteria -- can and often do restructure themselves again. Since the bacteria has restructured itself to include a cell wall, it is once again recognized as an invader by our immune system. So now our systems react and it appears as though another full-fledged disease is at hand, "another infection" that must be treated with more antibiotics, which then strip off the walls to go unrecognized, ad infinitum. . . .!

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment.

Consequences of this unexploited and little known phenomena are possibly vast. Sadly, very little has been done in established medicine to test for and to design treatment strategies for this fantastic survival ability of bacteria. Lida Mattman, Ph.D. of Wayne University⁴ trained numerous Ph.D. candidates in this new field of microbiology, but few of her graduates carry on with the work. She trained one laboratory to test for Cell Wall Deficient Bacteria, but the people with the training are long gone from that laboratory.

Quite clearly, microorganisms are the dominate species on planet earth!

According to Dr. Ken Rifkin⁵, “The average human body contains approximately three and a half pounds of bacteria some of which perform essential functions AND others which promote disease.” [This is about 11 trillion organisms: Ed.] “When the equilibrium of ‘friendly’ and pathogenic bacteria is disturbed through the ingestion of chemical additives, birth control pills, antibiotics, alcohol, pesticides, food additives and even stress — disease producing bacteria will multiply within the intestinal tract.”

In an article in *Health World*, Brad Everett⁶ says that *Giardia lamblia* is the most widespread intestinal parasite in the United States. It is estimated to affect 7.4% of our population. It is a flagellate organism that moves through its liquid environment by moving its whip-like tail. *Giardia* can be spread through contaminated food and water, sexual and household contacts. It may even be contracted from household pets.

“*Entamoeba histolytica* is the second most common intestinal parasite in this country, affecting 3% of the population and causing amoebic dysentery. An amoeba is a single-celled or acellular organism that moves by forming a ‘pseudopod’ or *fake foot*, with its protoplasm. It is a particular problem for travelers, homosexuals, and residents in mental institutions.

“Both of these organisms have similar life cycles. When ingested, protective cysts survive passage through the stomach. As the organisms are moved into the more dehydrated regions of the bowel, cyst formation is triggered by the decreasing amount of fluid. Cyst formation is essential for the survival of these organisms.”

Both *Giardia lamblia* and *Entamoeba histolytica* are amoebae, not bacteria, and while they number in the hundreds — nay, thousands of millions — they are nowhere near as numerous as are bacteria. They do, however, help to make up the colony of “bad guys” intestinal microflora — along with bacteria, mycoplasmas, yeasts/fungi, and other assorted and odd living companions. (Mycoplasmas are the smallest free-living bacterial form, but have no cell-wall.)

Some intestinal organisms live within us as parasites, sapping our life-blood, or cellular life. Some live on dead matter that we shed daily or ingest and these are called saprophytes. Some are commensal with us — they “dine at the same table.” Some take over our cellular machinery, using it for their own advantage.

You want to be completely free of bacteria and related microorganisms?

Go to the moon before man’s presence is there in any great numbers!

For man shall literally shed them wherever s/he goes, and they shall adapt and multiply!

Various pharmaceutical companies sell different strains of *Lactobacillus acidophilus* or *Bifido bacterium* or other organisms in order to help replace our valuable microflora. While one strain may be better for producing certain vitamins or effects than another, the wise choice is to colonize with a variety of “good-guys”. Its like diversifying your excess earnings into money market, blue-

chip stocks, commodities, foreign money markets and real estate. If one goes bad (or weakens), the other markets may be stronger, and compensate for losses. Similarly, a variety of different strains of “good-guys” bacteria in colonies in the intestinal tract may have one or several of the strains placed under undue stress, but the others pick up the synergistic biological load, all to protect you -- and their species!

From time to time a pharmaceutical company will do a definitive paper on some subject. Such contributors do not choose to be credited, however, because of possible trouble with the FDA -- accused of making claims that their product will do such and such in the absence of a \$25,000,000 double-blind study to “prove” “safety” and “effectiveness” -- or because folks may not take their information seriously because they sell the product and have the appearance of a conflict of interest. Sometimes, it is true, a company shows only their good points and deflates bad parts, just to sell their own product, and so pharmaceutical promotional literature is suspect.

The following article came from such a source without identification and was passed on to me from our Chairman Emeritus John M. Baron, D.O. It is, in our opinion, an excellent article.

“The Role of Microorganisms in the Intestinal Tract

“Introduction Numerous factors influence the interactions among intestinal microorganisms as well as those between microorganisms and their hosts. The cumulative effects of these interactions control the composition and metabolic activity of the intestinal microflora. An optimum ‘balance’ in microbial population has been associated with good nutrition and health. There is increasing evidence indicating that certain microorganisms can help maintain such a favorable microbial profile¹¹. The microorganisms most associated with this ‘balance’ are Lactobacilli and bifidobacteria.

“Intestinal Flora Competition among microorganisms in the large intestine is a major consideration since the highest numbers of bacteria occur here.

“Bifidobacteria are the predominant organisms in the large intestine of breast-fed infants, accounting for about 99% of the cultivatable flora. Lactobacilli, Enterococci, and Coliforms comprise about 1% of the flora.

“Bifidobacteria are a major component in the large intestine of adolescents and adults, while Lactobacilli, Enterococci, and Coliforms are a smaller component of the flora¹². Bifidobacteria are reduced significantly in the stools of old people, but Clostridia, Streptococci, and Coliforms are increased¹².

“Lactobacilli are the predominant organisms in the small intestine. Lactobacilli have important metabolic activities, although they may occur in smaller numbers than Bifidobacteria in the upper and lower intestines combined.

“The Role of Lactobacilli in the Intestinal Tract

“A. Antibiotic Production

“Inhibits the pathogenic flora by production of the following antibiotics [The author recommends verification by contacting the references.]

Lactolin (*L. plantarum*)

Lactobrevin (*L. brevis*)

Bulgarican (*L. bulgaricus*)

Acidophilin (*L. acidophilus*)

Lactocidin (*L. acidophilus*)

Acidolin (*L. acidophilus*)

Lactolin (*L. acidophilus*)^{2,12,13}

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment.

“The strains vary in their ability to produce these substances and cultural conditions will influence the amount produced¹³.

“In vitro [lab conditions: Ed] inhibitory activity has been reported against the following intestinal pathogens:

Salmonellae
Shigellae
Staphylococci
Proteus
Kelbsiella
Pseudomonads
Enteropathogenic Escherichia coli
Bacilli
Clostridium perfringens
Vibrio

“B. Organic Acid Production

“Lactobacilli produce lactic acid. Organic acetic and lactic acids which are produced by lactic acid bacteria will inhibit the growth of many bacteria, especially pathogenic gram-negative types⁷. Lactobacillus acidophilus produces DL-lactic acid which is metabolized to a limited extent¹².

“C. Lower pH and Oxidation Reduction

“Inhibition of pathogens by Lactobacilli is attributed to the lowering of the pH values by the liberation of acids, resulting in antimicrobial action (altering oxidation-reduction potential)¹³.

“D. Competitive Antagonists

“Lactobacilli may outcompete other bacteria for nutrients and occupy the sites, making them unavailable to other microorganisms¹³.

“In particular, Lactobacilli consume certain B-vitamins and biotin, decreasing their availability for other organisms¹⁴.

“E. Bile Deconjugation

“The role of Lactobacilli in the deconjugating of bile acids was studied. The results indicated that Lactobacilli can liberate (deconjugate) free bile acids in the intestinal tract and can exert an influence on the balance of bacteria present¹³. [Deconjugation is the chemical process of separating the two amino acids taurine and glycine from bile acids, the bile then being recycled for reuse: Ed.]

“The Role of Bifidobacteria in the Intestinal Tract

“A. Antibiotic Production

“The antibacterial nature of *B. bifidum* against a number of pathogenic organisms like *E. coli*, *Salmonella sp.*, *Shigella sp.*, and *Bacillus sp.* suggests that *B. bifidum* might produce certain antibacterial substances⁷.

“The oral administration of a freeze-dried culture of *B. bifidum* in conjunction with lactulose has been reported to eradicate enteropathogenic *E. coli* strains in infants and children¹².

“B. Organic Acid Production

“Bifidobacteria produces both acetic and lactic acids, but produces more acetic acid. Acetic acid has a stronger antagonistic effect against gram-negative bacteria than lactic acid¹². Bifidobacteria ferment carbohydrates to L(+)-lactic acid and acetic acid in a molar ratio of 2:3, producing small amounts of formic acid, succinic acid, and ethanol¹⁰. L(+)-lactic acid is more easily metabolized.

“C. Lower pH

“Bifidogenic factors (e.g. lactulose) added to the diet induce the growth of Bifidobacteria, decreasing the pH in the large intestine¹².

“D. Competitive Antagonistics

“Bifidobacteria prevent the colonization of the intestine by invading pathogens by competition for nutrients and attachment sites to the epithelial surfaces¹².

“Strains of Bifidobacteria may partially or completely inhibit the reduction of nitrates by other organisms through beneficial competition with other intestinal bacteria¹².

“E. Bile Deconjugation

“Bifidobacterium have a certain resistance to bile acids. The growth of Bifidobacteria has been demonstrated in MRS-broth with up to 2% ox-gall (4). Bifidobacteria continue to grow after the addition of 2% bile salts. This proves that Bifidobacteria survive passage through the gastrointestinal tract⁹.

“F. Detoxification

“The roles of *B. bifidum* and lactulose in the detoxification of subjects with chronic liver disease has been studied. The results showed that *B. bifidum* with lactulose may assist in re-establishing the normal intestinal flora which is usually disturbed in chronic liver cirrhosis. This is accomplished by a reduction of ammonia and free phenols in the blood¹².

“Summary

“Certain microorganisms such as *Lactobacillus acidophilus* and Bifidobacterium species can help to maintain a favorable intestinal microflora which has been associated with good nutrition and health.

“Bifidobacterium are the predominant organisms in the large intestine of breast-fed infants. They decrease into adulthood and diminish with old age.

“Although Lactobacilli occur in smaller numbers than Bifidobacteria overall, they have important metabolic properties, especially in the small intestine where they predominate.

“When taken in combination, a more complete, favorable intestinal microflora is achieved. The regular ingestion of Bifidobacteria with Lactobacilli will suppress harmful bacteria in the intestines by producing antibiotics and acetic and lactic acids which lower the intestinal pH, by competing for attachment sites, and through bile deconjugation.

“The Role of Lactobacilli in the Upper Intestinal Tract

“A. Antibiotic production — inhibits antibacterial substances.

“B. Organic acid production — acetic and lactic acids inhibit pathogenic gram-negative bacteria.

“C. Lactobacilli lower the pH and have an oxidation reduction potential which activates the acids, making them particularly antimicrobial.

“D. As competitive antagonists, Lactobacilli outcompetes other bacteria for attachment sites.

“E. Lactobacilli liberate free bile acid, thereby influencing the balance of existing bacteria.

“The Role of Bifidobacteria in the Lower Intestinal Tract

“A. Antibiotic production — *B. bifidum* in conjunction with lactulose eradicate enteropathogenic E. coli.

“B. Compared to Lactobacilli, Bifidobacteria produce more acetic acid which has a stronger antagonistic effect against gram-negative bacteria than lactic acid.

“C. Bifidogenic factors (i.e. lactulose) induce the growth of Bifidobacteria, thereby decreasing the pH in the large intestine.

“D. As competitive antagonists, Bifidobacteria prevent the colonization of the intestine by invading pathogens.

“E. Bifido resist bile acids and survive passage through the gastrointestinal tract.

“F. Compensational detoxification has been reported in subjects with chronic liver disease.

In *The Art of Getting Well*¹ we mention that it is best to use with our recommended medicines *Lactobacillus acidophilus*. We were

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment.

told by a research pharmacologist at a well-known university that Metronidazole would not metabolize via the human enzyme system, but rather required such an organism to be metabolized. It now appears that for good health, one should use a varied strain of *Lactobacillus acidophilus* as well as *Bifido bacterium*. [See *The Art of Getting Well, Arthritis: Little Known Treatments, Arthritis: Osteoarthritis and Rheumatoid Disease Including Rheumatoid Arthritis*, <http://www.arthritistrust.org>]

We also cautioned that many of these organisms are sensitive to temperatures around or greater than 23.3^o Centigrade [74^o Farhenheit] and that it is vitally important when obtaining your product to insure that from manufacture (from a reliable company) through packaging, shipment and sales to you the organisms are temperature controlled. Sometimes they will come via overnight shipment, and sometimes, when shipment time is longer, they come packed in dry ice.

It is equally important that you place them in your refrigerator, and keep them there when not in use.

The Bifido Factor overlooked in Chapter IV of *The Art of Getting Well* [Also see *Arthritis: Little Known Treatments, Arthritis: Osteoarthritis and Rheumatoid Disease Including Rheumatoid Arthritis*, <http://www.arthritistrust.org>] is said to be the first line of immune defense for infants and children, according to an article titled "Bifido Factor" and published for distribution by Natren, Inc. (10935 Camarillo Street, North Hollywood, CA 91602 [(818) 766-9300]. With their permission we have reproduced their article:

"What is [Bifido Bacteria]?"

"It is a micro-organism essential to the health of infants and small children called 'BIFIDO-BACTERIA.' This is the predominant strain of 'friendly' bacteria found naturally in the gastrointestinal tract of healthy breast-fed infants.

"As breast-fed infants are weaned, the bifidobacteria are gradually replaced by acidophilus. This transaction usually occurs around the age of seven.

"Why is it so important?"

"Breast-fed infants were found to be far less susceptible to infection than bottle-fed babies and the bifidobacteria in the colon plays a vital role in the baby's resistance to infection. When present in the intestines in large quantity, this bacteria creates an environment hostile to pathogens. [Also see "Universal Oral Vaccine," <http://www.arthritistrust.org>.]

"Research indicates that bifidobacteria inhibit growth of common pathogenic and toxin-producing bacteria including *E. coli* and Salmonella (which can cause severe cramping). It was also recently revealed that viruses will settle more readily in colons deficient in bifidobacteria.

"Clinical Research

"In a Guatemalan study, out of 210 babies born in a village, 109 were breast-fed. Only 4 of the breast-fed babies developed Shigella infection, which causes severe diarrhea. This rate was much lower than the infection rate of the entire population.

"The authors of this study concluded that the bifidobacteria in breast-fed infants allowed resistance to Shigella infection or caused the elimination of it when contracted. In the same study it was noted that children who were breast-fed had an extremely low incidence of intestinal infections.

Other studies show the reduction or absence of putrefactive bacteria (such as disease-causing Bacteroides, Veillonella, Clostridium, Proteus and others) in the stools of breast-fed infants.

"All of the above-mentioned studies show that bifidobacteria aid in bettering the nutrition of infants and thus

indirectly contribute to a greater resistance to infection. Bifidobacteria also help produce B vitamins and Vitamin K.

"Breast-feeding Alone May Not be Enough

"Breast-feeding alone does not seem to be sufficient to introduce bifidobacteria into the infant's colon. In a University of Pennsylvania Hospital study it was found that of 61 urban breast-fed babies, only 20% had an adequate number of bifidobacteria present. A similar study conducted at a suburban hospital found 66% of the breast-fed babies tested had large numbers of bifidobacteria.

"No scientific reason had been found to explain this contrast but environmental factors are suspected. The health of the mother and the nature of her surroundings may adversely affect her ability to transmit these vital microorganisms to her child.

"Contamination of Mother's Milk

"In another study conducted by the University of Nebraska, fresh mother's milk collected in sterile containers was studied. The milk was found to be infected with Salmonella (causes intestinal cramping among other things), streptococcus and herpes virus. Therefore, pasteurization of the mother's milk was recommended to minimize the spreading of infection through the milk banks.

"What Can Be Done About It?"

"1. Bifidobacteria should be included in the diets of both bottle-fed and breast-fed babies.

"2. Expectant mothers should increase their reserves by daily supplementation. . . .

"3. Nursing mothers should also raise their bifidus levels by daily supplementation.

"Adults May Require It Too

"A small percentage of adults do better on BIFIDUS supplementation than on acidophilus.

"Bifidobacteria have been found effective in treating patients with liver disease. A significant decrease in certain toxic waste products (free serum phenol, free amino nitrogen and blood ammonia) which may cause nausea, vomiting, decreased appetite and other reactions when present in excessive quantities in the blood. The authors of this study concluded that bifidobacteria contributed greatly to patient recovery.

"Usage

"Infants and small children (to 7 years).

1/8 to 1/4 teaspoon in 4 oz. unchilled water once daily between meals

"Adults:

1/2 teaspoon in 8 oz. unchilled water twice daily between meals.

For further information, Contact Natren Co., 10935 Camarillo St., No. Hollywood, CA 91602.

Natasha Trenev, President of Natren, reports on a finding so scandalous that it is of concern here. She reports her findings in *Townsend Letter for Doctors*, November 18, 1988¹⁸.

She says that the majority of products sold under the name of *Lactobacillus acidophilus* are actually *L. casei*, a product used for making cheese, and provided to cheese-making customers. She asked a professional organization (NNFA) to set standards on acidophilus. They assayed twenty-two products labeled as acidophilus, and the findings were so scandalous that the results were never published. Forty or so of the so-called acidophilus products were found to be *L. casei* (Rhamnosus sub-species) and not *Lactobacillus acidophilus*.

Apparently this deception came from one corporation. When the product (acidophilus) began to become known and popular, they

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment.

feared to lose their market. Their solution to the problem was to introduce "a cocktail mix of microorganisms including *S. faecium*, *L. acidophilus*, *L. bifidus* (*L. bifidus* re-classified in 1974 to bifidobacteria, per *Bergey's Manual of Determinative Bacteriology*, 8th Edition), *L. casei* and *L. bulgaricus*. The product mix would vary slightly with each private label customer, however, *S. faecium* would always be a part of the mix."

Natasha Trenev says that (1) Customers are buying acidophilus but getting something else, (2) the only apparent reasons for using *S. faecium* is because it is "easy and inexpensive to produce and withstands moisture and heat abuse, whereas *L. acidophilus* and *Bifidobacteria* cannot. Heat and moisture destroy *L. acidophilus* and *Bifidobacteria*."

If you mix organisms together, the stronger will dominate, and that means that *S. faecium* will reign supreme.

Trenev adds: "I have checked with various manufacturers and suppliers in the industry and found that:

1. No American-based supplier of friendly bacteria cultures will sell *S. faecium* for human consumption. *S. faecium* is sold exclusively for animal feed in the United States.

2. All *S. faecium* mixed cultured products currently sold in Canada and the United States are made by [the same firm that supplies *L. casei*, sold as *L. Acidophilus*]"

Ray C. Wunderlich, Jr., M.D.¹⁹ (in William H. Lee's R.Ph., Ph.D. pamphlet, *The Friendly Bacteria*) has written a "Foreward" which contains this statement: "One is continually surprised, too, at the beneficial role of 'friendly bacteria' in improving the health of patients. We suspect that a disturbance of the micro-biological flora runs rampant among the patients that we see. Some of my patients have severe, incapacitating, putrefactive flatus unless they include lactobacilli among their daily supplements."

Friendly Bacteria, is well worth reading. It shows how these friendly organisms can be helpful in Osteoporosis, cholesterol problems, with antibiotic action, with lactose intolerance, nutrient deficiencies, anxiety, cancer, skin problems, liver detoxification, diarrhea, children's needs and other uses [such as part of the treatment and prevention of Candidiasis. Also see "Treatment and Prevention of Osteoporosis" and "Candidiasis: Scourge of Arthritics," <http://www.arthritistrust.org>].

"Lactic bacteria supplements are available in different forms, including tablets, capsules and freeze-dried preparations. It is estimated that a dose of at least 10⁸ (one billion) of live bacteria delivered to the appropriate site — the large intestine for *Bifidobacterium bifidum*, the small intestine for *Lactobacillus acidophilus* — is required for efficacy. . . .

"Acidophilus capsules are not advantageous, because moisture is trapped within them in the manufacturing process, and; this moisture accelerates the life cycle of the bacteria, causing them to continue metabolism and feeding. By the time the capsule is consumed by the purchaser, the bacteria often have exhausted the food supply and starved to death.

"Purchasing supplements of guaranteed specified potency from a reputable manufacturer and taking them according to the indications given . . . gives the best chance of getting the benefits."

It is my belief, based on readings, physicians, and personal experience, that these bacteria should be used constantly by all arthritics, as an important wellness supplement. Gus J. Prosch, Jr., M.D. claims that out of all the brands he's tried, he's only been satisfied with Klair laboratories. He also asserts that the proper way to use the powdered *Lactobacillus acidophilus* is to swish it around in the mouth, gargle it, and then swallow it.²¹

Consider: the average person has 11 trillion bacteria making up

3-1/2 pounds in the intestinal tract. A billion or so bacteria washed down with water isn't a very large percentage of the total, and either we must supplement quite heavily at first, or for a long, long time, or both, depending upon our condition, metabolism, diet, and so on. In other words, don't expect immediate results, although it will be very nice if you get it.

The following treatment recommendations have been provided by the courtesy of Natren, Inc. There may be other organisms and treatment protocols desired by your physician.

A Treatment Protocol for *Bifidobacteria* and *Lactibacillus Acidophilus* as Used by Some Physicians

[As the proper dosage depends upon your condition and your doctor, these have been left off. The protocols were provided by Natren, producers of Bifido Factor and Superdophilus. Other brands may also be viable and useful: Ed.]

Bifido bacteria

Recommended Uses for Adults

Maintenance Dose:

___ 1/8 tsp; ___ 1/4 tsp; 1/2 tsp; ___ times daily. Mix with 8 oz. of unchilled filtered or spring water. Always take at least 45 minutes before meals. Never to be mixed with juices, milk or other beverages.

Therapeutic Dose:

___ 1/2 tsp; ___ 1 tsp; ___ times daily. Mix with 8 oz. of unchilled filtered or spring water. Always take at least 45 minutes before meals. Never to be mixed with juices, milk or other beverages.

Liver Detoxification:

1 (one) tsp 3 times daily at least 45 minutes before meals. Mix in 8 oz. of unchilled filtered or spring water. Never to be mixed with juices or other beverages.

Oral Application (*Candida albicans*):

1 tsp of **Bifido Factor** combined with 1 tsp **Superdophilus** in 8 oz. of unchilled filtered or spring water taken three times daily at least 45 minutes before meals. Never mix with juice, milk, or other beverages. In addition, use Biotin ___ mcg; ___ times after meals; Linseed or Primrose oil ___ capsules ___ times daily. Continue dosage until complete improvement is attained, then reduce to 1/2 tsp of **Bifido Factor** combined with 1/2 tsp of **Superdophilus** three times daily at least 45 minutes before meals. Never mix with juice, milk, or other beverages.

For vaginal/rectal application, use the Superdophilus Applicator Pack, available from your health care professional.

Recommended Uses for Babies and Children

Up to Seven Years Old:

Maintenance Dose:

___ 1/8 tsp; ___ 1/4 tsp; ___ times daily. Mix with 4 oz. of unchilled filtered or spring water.

Diaper Rash and Minor Skin Infections:

1 (one) rounded tsp **Bifido Factor**. Mix with enough lukewarm fresh milk to form a paste. Spread evenly onto the rash or infected area. Leave on until dry, then remove with a clean damp cloth. Continue oral maintenance dose.

Recommended Uses for Pregnant Women and Nursing Mothers:

Maintenance Dose:

___ 1/8 tsp; ___ 1/4 tsp; ___ 1/2 tsp; ___ times daily. Mix with 8 oz. of unchilled filtered or spring water. Always take at least 45 minutes before meals. Never to be mixed with juices, milk or other beverages.

Therapeutic Dose:

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment.

___ 1/2 tsp; ___ 1 tsp; ___ times daily. Mix with 8 oz. of unchilled filtered or spring water. Always take at least 45 minutes before meals. Never to be mixed with juices, milk or other beverages.

Bifido Factor is a pure strain of *Bifidobacteria* which is essential to the well-being of the immune system in infants, small children, and adults with toxic livers.

... Clinical studies show that environmental factors such as pollution, food chemical additives, alcohol, and smoking contribute to the destruction of the *Bifidobacteria* in mothers' milk.

There is an unknown daily consumption of antibiotics in dairy products, meats, and poultry which contribute to the eradication of the friendly and healthful bacteria in adults and nursing mothers.

Bifido Factor is a single strain *Bifidobacteria*, uniquely formulated and produced in such a way that, when taken orally, becomes a potent natural antibiotic.

Certain adults (with chronic gastrointestinal problems since birth) show better improvements when using **Bifido Factor** initially. After the administration of **Bifido Factor** for a few months, however, the individual may be switched to **Superdophilus** alone, or a combination of both products can be administered together because they are compatible.

For certain individuals who have a dairy (lactose) intolerance, the following is recommended. This supplementary schedule is designed to enable the individual to "recreate" the proper flora in the intestines which will produce lactase, an enzyme which digests the lactose present in dairy products. By taking very small amounts of **Bifido Factor**, the individual should not have a reaction.

Lactose Intolerance: Initial use: 1/16 tsp 2 times daily of **Bifido Factor** (follow instructions under Maintenance Dose). After 3-5 days depending on response to initial use, increase to 1/8 tsp 2 times daily. Again, after 3-5 days proceed to increase amount taken until meeting Maintenance level and/or Therapeutic Level. After 6-8 weeks proceed with full **Superdophilus** schedule.

Note: For persons with casein (protein) or fat intolerance, do not use **Bifido Factor**, unless directed by a health care professional.

Bifidobacteria (1) inhibits the growth of common disease-causing bacteria such as *E. coli*, *Salmonella*, etc.; significantly reduces blood ammonia levels; works as a potent natural antibiotic; detoxifies the liver in adults by removing (a) free phenols and (b) free alpha-amino nitrogen; greatly improves liver function, therefore enhances tolerance of proteins.

Lactobacillus acidophilus

Recommended Uses:

Maintenance dose:

___ 1/8 tsp; ___ 1/4 tsp; ___ 1/2 tsp; ___ times daily. Mix in 8 oz. of unchilled filtered or spring water. Always take at least 45 minutes before meals. Never to be mixed with juices, milk, or other beverages.

Therapeutic:

___ 1/2 tsp; ___ 1 tsp; ___ times daily. Mix in 8 oz. of unchilled filtered or spring water. Always take at least 45 minutes before meals. Never to be mixed with juices, milk, or other beverages.

Oral Application (*Candida albicans*):

1 tsp of **Superdophilus** combined with 1 tsp of **Bifido Factor** in 8 oz. of unchilled filtered or spring water: 3 times daily, at least 45 minutes before meals. Never to be mixed with juices or milk. In addition, use Biotin ___ mcg; ___ times daily after meals; Linseed or Primrose oil ___ capsules ___ times daily after meals; ___ garlic capsules ___ times daily.

Continue dosage until complete improvement is attained. Then, reduce to 1/2 tsp. of **Superdophilus** mixed with 1/2 tsp of **Bifido Factor**, 3 times daily at least 45 minutes before meals. never to be mixed with juices or milk, or other beverages.

Local Application Against Yeast Infection (**Superdophilus** Implant)::

2 tablespoons full of plain yogurt (full fat); 1 rounded tablespoon full of **Superdophilus**. [Mix two (2) separate mixtures of the above recipe.] Fill individually, a vaginal applicator and a rectal syringe* and insert accordingly each night before going to bed. Follow this regime for ten days.

(*Use the Natren Superdophilus Candida kit, available from your doctor, for vaginal and rectal application.)

Superdophilus Douche:

Plain lowfat yogurt diluted with warm water (50/50). Stir briskly forming a smooth texture. Add 1 teaspoon of **Superdophilus**, mix well and let stand, covered with a paper towel until slightly sour to taste, approximately 30 to 45 minutes. Use as a douche to remove excess insert mixture from previous night. Follow this regime for 10 days.

Constipation/Diarrhea:

1 tsp; 3 times daily. For chronic constipation, use this amount until first normal elimination occurs. After which, reduce dosage to 1 tsp; 3 times daily. Resume maintenance dose after the problem becomes normal; 1 tsp daily, at least 45 minutes before meals in 8 oz. of unchilled filtered or spring water. Never to be mixed with juices or milk, or other beverages.

Lactose Intolerance**:

Initial use: 1/16 tsp 2 times daily of **Bifido Factor**. (Follow instructions under Maintenance Dose above). After 3-5 days depending on response to initial use, increase to 1/8 tsp 2 times daily. Again after 3-5 days, proceed to increase amount taken until meeting Maintenance level and/or Therapeutic Level. After 6-8 weeks proceed with full **Superdophilus** schedule.

(**See full supplement schedule with **Bifido Factor** protocol above.)

Superdophilus Facial Mask (Normal/Dry Skin):

1 heaping teaspoon of **Superdophilus** mixed with enough whole milk to make a thin paste. Spread over face and neck area. Pat extra on blemished area. Keep on area until dry. Remove with water.

For Normal to Oily Skin: Follow same directions given above, except substitute whole milk with skim milk. After dry, remove with clean damp cloth or plain water. Rub lightly in circular motion until you have removed the mask. Splash with cool water and pat dry with a clean towel. Use no lotions, creams, or makeup for 10 to 15 minutes.

Superdophilus Facial Mask (Normal/Oily Skin):

Same as above except substitute whole milk or skim milk. After mask has thoroughly dried (20 minutes to 1 hour) remove with a clean dampened washcloth or warm water. Rub lightly in circular motions until you have removed all of the mask. Follow with splash of cool water and pat dry with a clean towel. Do not apply creams, lotions, or makeup for 10 to 15 minutes.

For Problem Skin (Acne/Blemishes):

Follow directions for facial mask for normal/oily skin. However, for optimum results, always use in conjunction with oral application in the following manner:

1 tsp **Superdophilus** with 1 tsp **Bifido Factor** in 8 oz. of unfiltered or spring water 3 times daily, 45 minutes before meals. Never mix with juices or milk. Continue using for ___ months.

It has been long understood that overall system immunity has

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment. improved via the absorption mechanism when the intestinal tract is rendered more efficient.

In turn, intestinal absorption as well as digestion and detoxification of the intestines are promoted by the presence and action of friendly lactobacilli, principally, *L. acidophilus*. Poor nutrition, illness, chlorine, and pesticide-laden tap water, the use of alcohol and drugs have historically produced fatal effects on *L. acidophilus*.

In recent years, the use of antibiotics and medicine, the unknown consumption of antibiotics in dairy products, meats, poultry, etc. and the effects of industrial and chemical pollution in our food and atmosphere have had even more lethal results. Furthermore, the high stress in today's life, cigarette smoking, alcohol, and diets that are high in sugar, fats, and hidden food chemicals that are consumed daily contribute to the eradication of the friendly healthful *L. acidophilus* bacteria in our intestines. Therefore, in the absence of *L. acidophilus*, the intestines become the fertile ground for growth of unfriendly putrefactive bacteria. This, in turn, leaves the intestines without any protection and thus become open to numerous kinds of infection and digestive distress.

Superdophilus is a single strain *Lactobacillus acidophilus* DDS-1 uniquely formulated to produce a potent, natural antibiotic.

Supplementation of **Superdophilus** should always follow use of broad spectrum antibiotics. Any gastroenteritis or diarrhea discomfort requires the use of **Superdophilus** both during and immediately following the cause.

As the body eliminates quantities of bacteria, both healthy and pathogenic, on a daily basis, when supplementation stops, a gradual decrease in the number of healthy bacteria occurs.

Therefore, **Superdophilus** should be used as a daily, long-term supplement, to ensure continued beneficial nutritional and general health effects.

Lactobacillus acidophilus produces natural antibiotic agents that can inhibit 27 bacteria, 11 of them known as pathogens; helps many skin disorders; helps reduce cholesterol levels in the blood; is a vehicle for detoxification programs; inhibits the growth of toxic producing micro-organisms in the intestines; produces enzymes which help the digestion of food; produces enzymes necessary for development of lactase which "digests" lactose (milk sugar); produces B vitamins that aid food digestion and are especially needed when under stress and nerve dysfunction; and helps to establish normal pH balance throughout the gastrointestinal and urinary tracts.

Sources of *Lactobacillus acidophilus* and/or *Bifido bacterium*

The Arthritis Trust of America/The Rheumatoid Disease Foundation is not associated with any manufacturer nor do we make any commission from any sale. The following names and addresses represent some known sources for *Lactobacillus acidophilus* and *Bifido bacterium*. There are undoubtedly other good sources that we do not know about.

Devine Tree, University of Nebraska, P.O. Box 5062, So. San Francisco, CA 94083; *L. acidophilus*, Rice Base.

Ecology #3, Multiway Assoc., P.O. Box 2796, Batesville, AR 72503.

Klaire Lab., Inc., P.O. Box 618, Carlsbad, CA 92008; Vital Life, Vitalplex.

Metagenics of California, 23180 Del Lago, Laguna Hills, CA 92653; Maxidophilus & Maxi Bivodus; (Ultradophilus: Doctors Label).

Natren Inc., 10935 Camarillo Street, North Hollywood, CA 91602 (818) 766-9300; Megadophilus (Superdophilus and Bifido

Factor: Doctors Label).

Seryoyal Northern California, P.O. Box 9861, Concord, CA 94524, In CA 1-8000321-3740, Outside CA 1-800-227-0822.

U.A.S. Laboratories, 7864 — 12th Ave. So., Minneapolis, MN 95420; D.D.S.I. Strain.

A Possible New Discovery

While this article has mentioned chiefly *Lactobacillus acidophilus* and *Bifido bacteria*, there are probably thousands of unknown "friendly" bacteria in the intestinal tract. Some probably exist in very small numbers, or act synergistically with others, providing for the health of other "good guys", and these little fellows, in turn, may assist us.

Almost any scenario is imaginable, but that's all it is -- imagination!

Because of the possibility of more than just the two friendly organisms discussed in this paper, I wanted to bring to your attention claims made about the usefulness of *Bacillus laterosporus* and *Bacillus sphaericus*. Micro-Flora Corporation, Newbury Park, CA 91320 [(805) 499-0615] produces and sells a product titled Super Neo-Flora™ that is supposed to assist in providing a healthy intestinal flora, and in so doing, also fight Candidiasis and other unnatural organisms of opportunity.

Super Neo-Flora does not need refrigerated, and contains: purified water, the two bacteria *Bacillus laterosporus* and *Bacillus sphaericus*, protein, niacin, vitamin B₁₂, trace minerals (sodium, potassium, calcium, iron, magnesium, zinc), and amino acids (aspartic acid, glutamic acid, glycine, alanine, serine, valine, threonine, proline, leucine, lysine, isoleucine, arginine, histidine, phenylalnine, tyrosine, methionine, cystine).

The claim is made that Super Neo-Flora quickly colonizes the intestinal tract enabling more efficient digestion, elimination of toxins and restoration of a destroyed intestinal flora.

Luc De Schepper, M.D., Ph.D., C.A. presented a talk at our Second National Medical Seminar in 1986. His experience with Super Neo-Flora is favorable. I have no studies or further objective data to provide on the subject.

Many folks take Yogurt for its helpful *Lactobacillus bulgaricus*, which, incidentally, feeds *Lactobacillus acidophilus* and *Bifidobacteria*. To use *Lactobacillus bulgaricus* in this manner requires, of course, having some of the latter organisms internally²⁰.

References

1. Anthony di Fabio, *The Art of Getting Well*, The Arthritis Trust of America, 7376 Walker Road, Fairview, TN, 1988. [Also see *Arthritis: Little Known Treatments* and *Arthritis: Osteoarthritis and Rheumatoid Disease Including Rheumatoid Arthritis*, <http://arthritis-trust.org>.]

2. Ed McCabe, *Oxygen Therapies*, Energy Publications, 99-RD1, Morrisville, NY 13408, p. 165.

3. Gerald Domingue, M.D., "Naked Bacteria in Human Blood," *Enterobacteriaceae Roundtable*, New York, New York, 1975, and subsequently published by *Microbia*, Annee 1976, Tome 2, No. 2.

4. Lida Mattman, Ph.D., *Cell Wall Deficient Forms*, Chemical Rubber Company CRC Press, Cleveland, OH 1974; *Cell Wall Deficient Forms, Stealth Pathogens*, 2nd Edition, CRC, Press, Inc., 2000 Corporate Blvd., N.W., Boca Raton, FL 33431, ISBN 0-8493-4405-0; *Cell Wall Deficient Forms, Stealth Pathogens*, 3rd Edition, CRC, Press, Inc., 2000 Corporate Blvd., N.W., Boca Raton, FL 33431; ISBN 0-8493-8767-1.

5. Dr. Ken Rifkin⁵ "What Are 3-1/2 Pounds of Bacteria Doing in Our Bodies", *Health Consciousness*, Vol IX, No. 6, p 33-34, December 1988.

6. Brad Everett, "Intestinal Parasites Can Create Chronic

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment. Health Problems," *Health World*, May-June 1989.

7. Anand RK, et. al.: Antibacterial Activity Associated with *Bifidobacterium Bifidus*. *J. Cultured Dairy Prod* Nov:608 (1984).

8. Babel FJ (1977) and Shahani KM (1980): *Nutritional and Healthful Aspects of Cultured Dairy Foods*.

9. Hansen R: Bifidobacteria Have Come to Stay. *N. European Dairy J* 3:8 (1985).

10. *Chr. Hansen's Laboratorium*, Copenhagen, Denmark.

11. Gut Ecology and Health Implications. *Nat Dairy Council Digest* 50(3):13-17 (1979).

12. Rasic JL: The Role of Dairy Foods Containing Bifido and Acidophilus in nutrition and Health? *N European Dairy J* 4:1-10 (1983).

13. Sandine WE: Roles of Lactobacillus in the Intestinal Tract. *J Food Protection* 42(3):259-62 (1979)

14. Savaiano DA, et. al.: Lactose Malabsorption in Yogurt and Sweet Acidophilus Milk. *Am J Clin Nutr* 40(6):1219-20."

15. Poupard, J.A., Husain, I., Norris, R.F.; June 1972 Biology of Bifidobacteria. *Bacteriological Review*, Vol. 37, No. 2, p. 136-165.

16. Angel, E.N., Friend, B.A., Long, A.C., Shahani, K.M.; Bacterial Content of Raw and Processed Human Milk. *Journal of Food Protection*, Vol. 45, No. 6, p. 533-536.

17. Vi Congresso Internazionale Di *Microbiologia*. - 1953; Riasunti Delle Comunicazioni Zisezioni 17-22: p. 799-1028."

18. Natasha Trenev, *Townsend Letter for Doctors*, November 18, 1988.

19. William H. Lee, R.Ph., Ph.D, *The Friendly Bacteria*, Keats Publishing, Inc., New Canaan, Ct., (Ray C. Wunderlich, Jr., M.D., "Forward.")

20. Jule Klotter, briefer, "Science News in Brief, Intestinal Bacteria," *Townsend Letter for Doctors*, August/September 1994, pp. 962.

21. Personal interview.

Selection Criteria For Probiotic Supplements

By Dr. S. K. Dash

Permission to publish granted by UAS Laboratories

5610 Rowland Rd #110,

Minnetonka, MN 55343

Ph. 952-935-1707 Fax 952-935-1650

dash@uaslabs.com

All probiotic products are not alike and do not have similar nutritional and therapeutic values. The name probiotic does not mean anything unless it contains the right strain, in the right amount, in the right formulation and in the right condition (viable) for the intended use.

For this reason one needs to know the strain, its viability, implantation criteria, and other features and health benefits.

Strain Selection

Lactic acid bacteria have a long history of safe use in dairy products. However, some probiotic supplements now contain bacteria, which have no record of safe use in humans or even animals. There are instances of probiotic supplements containing soil bacteria that are not normal inhabitants of the human gastrointestinal tract. These cultures may potentially be pathogenic. It is imperative to select bacteria for incorporation in probiotic supplements that are on the GRAS (Generally Recognized As Safe) list.

For example, *Lactobacillus acidophilus* species and some *Bifidobacterium* species are considered GRAS. Safe, proven cultures are your first and most important criteria for selection.

Any new bacterial culture that has no history of prior safe use in humans should be subject to toxicological studies prior to incorporation in any probiotic supplements. We want to know that the culture is benefiting, not harming the host.

The bacterial strains used in a superior probiotic supplement should play an important role in:

- Colonization within the intestinal, respiratory and urogenital tracts
- Cholesterol metabolism
- Inhibiting the carcinogenesis, directly or indirectly, by stimulation of the immune system
- The metabolism of lactose, the absorption of calcium and the synthesis of vitamins
- Reduction of yeast and vaginal infection
- Constipation and diarrheal diseases
- Gastritis and ulcers
- Acne and skin problems

Additionally, the culture should adhere to the intestinal walls and proliferate. The probiotic strain must be proven to survive stomach acids in live human subjects. And of course, it should produce natural antibiotics, lactic acid and hydrogen peroxide and inhibit pathogenic bacteria such as:

<i>Bacillus subtilis</i>	<i>Serratia marcescens</i>
<i>Bacillus cereus</i>	<i>Proteus vulgaris</i>
<i>Bacillus stearothermophilus</i>	
<i>Escherichia coli</i>	<i>Streptococcus faecalis</i>
<i>Salmonella typhosa</i>	<i>Salmonella schottmuelleri</i>
<i>Streptococcus faecalis var liquifaciens</i>	
<i>Shigella dysenteriae</i>	<i>Streptococcus lactis</i>
<i>Shigella paradysenteriae</i>	
<i>Lactobacillus lactis</i>	<i>Psuedomonas fluorescens</i>
<i>Lactobacillus casei</i>	<i>Psuedomonas aeruginosa</i>
<i>Lactobacillus plantarum</i>	<i>Staphylococcus aureus</i>
<i>Lactobacillus leichmannii</i>	<i>Vibrio comma</i>
<i>Klebsiella pneumoniae</i>	<i>Sarcina lutea</i>

(Source: US Patent #3,689,640 In Vitro Antibacterial Activity of DDS-1 *Lactobacillus acidophilus*.)

Not all strains of *Lactobacillus acidophilus* and other probiotics are acid-resistant. Selecting acid-resistant strains of *L. acidophilus* and other probiotics is the key to the success of the probiotic supplement. It is important to remember that enteric coating of bacteria is a poor and unproven substitute for actual acid resistance. Stay away from enteric-coated cultures for a few reasons. One is that no studies show that they work. In nature these cultures are not enteric coated. The process of coating these live cultures with a protective layer may in fact kill them or reduce their viability. If these cultures are supposed to get into the intestinal tract on their own and be acid resilient, the whole process of enteric coating is suspect.

Probiotic Supplements with Multiple Bacteria

Some probiotic supplements now contain several different cultures; many of these bacterial cultures have no safe-use history in human health and nutrition. These bacteria may be antagonistic to each other and may alter the gut flora in an undesirable way. So it should not be believed that if one bacterium is good, numerous

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment.
cultures combined together are even better. To the contrary, a few select cultures have been proven beneficial and almost all the others are yet to be proven.

L. acidophilus and *Bifidobacterium* species are normal inhabitants of the human gastrointestinal tract and are GRAS. Probiotic formulations containing these beneficial bacteria along with prebiotic fructooligosaccharides (FOS) are considered safe and offer many health benefits described earlier.

Manufacturing

The manufacturing process used to produce microorganisms for use in probiotic supplements plays an important role in the viability of the culture. The medium, the temperature and other associated factors influence the viability and identity of the microorganisms. If the probiotic supplements do not contain the same microorganisms with the same viability, they will not offer the same, consistent, good results. Also make sure that the probiotic culture has not itself been contaminated with other harmful bacteria during manufacturing process and packaging. Make sure the company manufacturing the product has a strong history of providing proven safe cultures (do not let yourself be a guinea pig).

Viability

The viability of probiotics is not only strain-dependent but is also influenced strongly by their physiological and chemical environment. For example probiotics in liquids including milk and yogurt do not normally survive longer than a few weeks.

Exposure of probiotics to oxygen decreases the stability of probiotic bacteria. For this reason, eliminating oxygen from and including nitrogen into probiotic supplement bottles can enhance the stability of probiotics.

Guarantee/Assay

In order to know more about the keeping qualities of a probiotic product, it is important to know that the supplement is tested for viable microorganisms at the time of manufacturing and at the expiration date. This quality control procedure is important to the manufacturer as well as the consumer.

The viable cells are guaranteed as CFU (colony forming units) per gram at the time of probiotic supplement packaging. If the supplement does not list viable cells, or does not list the amount in CFU form, it is not valid. Consumption of probiotic supplements with two to five billion CFU per day is necessary to have any chance of offering significant beneficial effects.

Storage, Handling and Shipping

Refrigerated storage of probiotic supplements (40°F) is recommended to maintain the viability of the microorganisms. This means even before the bottle is opened! Just like with yogurt, cheese and other refrigerated cultures. Probiotic supplements, if not kept refrigerated, may spoil and lose potency rapidly.

Probiotic supplements should be shipped in insulated containers via airfreight to avoid exposure to heat. Viability will not decline with short exposure to heat during shipping. Some companies package probiotic supplements in nitrogen-flushed bottles to maintain viability of the microorganisms during shipping and handling. It is certainly a good idea for these supplements to contain higher potency (higher CFU) than guaranteed on the label. This ensures that at a minimum, you get more than you pay for.

Glass Bottle vs. Plastic Bottle

Probiotics are “anaerobic” organisms, meaning they live in the absence of oxygen. Therefore, exposure to air is undesirable. This makes glass a preferred container over plastic, which is somewhat porous. Probiotics packaged in plastic bottles can lose potency during prolonged storage.

Dairy vs. Non-Dairy

Some Candida specialists recommend that individuals who are allergic to dairy products should consume non-dairy probiotic supplements for better results. This of course makes sense. If an individual has dairy sensitivities, suffers from yeast infections and so forth, it is a good idea to minimize exposure to dairy and dairy-based products.

Prebiotic/Probiotic Combination

Combinations of prebiotics with probiotics offer better opportunities to the probiotic strains to grow. They can then multiply faster in the gastrointestinal tract as prebiotics selectively feed probiotics. Since yeast and pathogenic cultures are absent, and the probiotic product has its own supply of prebiotics, this is an excellent choice for yeast sufferers.

Capsule, Tablet, Powder or Liquid?

Capsules are a preferred form of supplementation over powder. Some individuals find it difficult to measure exact dosages with the powder. In addition, each time the powder bottle is opened, the contents are exposed to atmospheric contamination. The powder is oxidized, and is exposed to humidity as well as to some potential contaminants. The spoon used to measure the powder may also add to the contamination if it is not sterile, as well as adding moisture to the powder. For these reasons, deterioration of powder tends to be more rapid when compared to capsules and tablets. However, there is versatility with powder when using with mixes for children or even for esoteric Candida treatments (beyond the normal oral routes).

- Capsules add another layer of insulation against the potential for contamination, moisture and oxygen related damage, etc. Consumers and health professionals alike prefer capsules due to convenience and viability.

- Chewable Tablets are a good choice for children, elderly patients who have difficulty swallowing and even those seeking to benefit the upper digestive tract. This may be for halitosis, (bad breath) for the esophagus (GIRD) or similar problems. Chewable acidophilus (bifidus does not lend itself to viable tablet manufacturing) is vegetarian (vegan). Those wishing to avoid gelatin capsules may choose tablets as a convenient alternative.

- Liquid Probiotics do not normally survive longer than just a few weeks. Another disadvantage is that microorganisms in liquid medium can mutate and change. If it is in a liquid, do not rely on it.

How, When and Why to Use Probiotic Supplements:

A Quick Summary

A number of factors are responsible for the lack of friendly cultures in our intestinal tract. Beneficial microflora are reduced by excessive use of antibiotics, chlorinated water, food preservatives, junk foods, and pollution in our environment. Seventy percent of the women in America and as high as forty percent of the men will suffer from yeast infections. Probiotics are almost always greatly lacking in the presence of a yeast infection and those who have sufficient quantities of beneficial microflora are not as susceptible to yeast infections. Studies at the VA Hospital of Minneapolis show that

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment. even amongst normal persons (with no obvious signs of poor health) there are virtually no probiotics in the gastrointestinal tract.

Health professionals recommend probiotic supplements for Candidiasis (yeast infection), digestive disorders (including diarrhea and constipation), gastritis, lactose intolerance, gas, heartburn, irritable bowel syndrome, (including colitis and Crohn's disease) immune dysfunctions and as a follow up to antibiotic therapy. Under these conditions higher amounts of the probiotic supplements should be used.

For this reason, it is advisable that one should take a proven probiotic supplement daily. Probiotic supplements containing *L. acidophilus*, *Bifidobacterium* species and FOS with two to five billion live cells ($2-5 \times 10^9$ CFU) should be taken daily just before breakfast or between meals for maintenance. Remember, if the probiotic supplements are not refrigerated and viable, they will offer no health benefits. Also, if these supplements are not taken in sufficient quantities, they will produce no results.

Remember that although probiotics play a key role in good health, they are not intended to be a substitute for a good healthy diet and active lifestyle. All these things work best together and the synergism of one helps the other! Use of probiotics or any other supplements for therapeutic reasons should be taken with the advice of a health professional who has knowledge and expertise in probiotics and other supplements.

References:

1. Donahue, D.C. et al Safety of Probiotic Bacteria, Lactic Acid Bacteria. 1998, p 369-383
2. Fuller, Roy. History and Development of Probiotics. *Probiotics – The Scientific Basis* 1992, p 1-8
3. Dash, S. K. How to Select an Acidophilus Supplement. *The Garden Within* 1989, p 12-18
4. Havenaar, R. et al. Selection of Strains for Probiotic Use. *Probiotics – The Scientific Basis*. 1992, p 210-224.