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# **Probiotics**

*Another in the Life Sources' Client Education Series*

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**Life Sources, Inc.**

**5006 Sunrise Blvd., Ste 101**

**Fair Oaks, California 95628**

**916-536-9930**

**[www.life-sources.com](http://www.life-sources.com)**

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# Probiotics

Probiotics may well prove to be to the 21<sup>st</sup> Century what antibiotics were to the 20<sup>th</sup> Century. Health care providers are literally “running scared” due to the increase in antibiotic resistant strains of bacteria. For example, by 1998 antibiotic resistant Staph aureus (the largest killer of patients in hospital) appeared. It is resistant to Vancomycin, the strongest antibiotic known and has begun to appear in pre-schools and daycare centers.

What we seem to forget is that all life is imbued with the need to survive. That survival includes reproduction and adaptation. Bacteria, being living things, follow the same disciplines as higher forms of life and will adapt and change as the need arises. Because of the admitted overuse of antibiotics, we are creating our own pandemic.

Today, our farm animals, farm-raised fish, frozen vegetables and almost all of our fruits are treated with antibiotics and hormones. If you are eating any of these foods, you *absolutely must defend yourself by using probiotics daily.*

The term “probiotic” (meaning “for life”) covers microbial food supplements whose primary aim is to improve the health and well being of the consumer. It comprises not only products specifically designed to produce health benefits, but also traditional yogurts and bioyogurts which contain special bacteria of intestinal origin. A more formal definition widely used is: “A *live* microbial food supplement which beneficially affects the host animal by improving its intestinal microbial balance”. (Fuller, 1989).

This definition emphasizes the need for the probiotic preparation to contain *viable, living microorganisms*. The difficulty of maintaining viability over long storage periods has led to confusing results in the past. In fact, because supermarket yogurts are pasteurized the cultures are destroyed which is the very reason consumers eat yogurt (to obtain live beneficial cultures). So supplementation by other means is vital.

It is increasingly more important in our modern world to be aware of the importance and use of probiotics on a daily basis. Our increasing dependence upon and overuse of antibiotics has reduced the body’s natural ability to fend off destructive bacteria and generate its own anti-biotics.

The result is an alarming increase in conditions such as C-albicans (candida), irritable bowel syndrome, “leaky gut syndrome”, salmonella, so called 24 hour flu, digestive disorders and a profusion of diseases which heretofore were notable by their scarcity. Since a change in eating habits and food processing is not likely to change drastically in the U.S., we believe strongly that no one should leave home without a supply of probiotics and consumers should be supplementing their diets with probiotics.

## **The Intestinal Microflora**

At birth the intestinal tract of the baby is sterile, but it rapidly acquires microorganisms from its mother through breast milk and the environment. In nature, the major source of microorganisms would be the mother, but in the developed world the standards of hygiene practiced in the hospital and the home restrict the transfer of microbes from mother to offspring. The increase in bottle-feeding has also had a deleterious effect on the development of the microbial population in the intestines (the so-called gut microflora). In spite of attempts to simulate the composition of breast milk, formula milk-fed babies have significant differences in the composition of their gut microflora.

After weaning on to solid foods, the gut microflora changes and, by about one year, the composition resembles that of the adult. The composition of the adult gut microflora is fairly stable but can be affected by such factors as diet, medication, environmental stress (temperature and humidity) and emotional stress. It is these adverse changes in the gut flora that probiotics seek to reverse and/or prevent.

The flora which eventually develops is a very complex collection of hundreds of different types of bacteria which may be affecting each other and influencing the host. There is a delicate balance which exists in the normal healthy individual where the 'good' bacteria suppress the potentially 'bad' bacteria. This results in a symbiotic association between the flora and the host. This exchange has been evolved to work under natural conditions to the benefit of the host but modern lifestyles, especially in developed countries, have compromised the association and, in some circumstances, have left the host vulnerable.

How do we know that the gut microflora is doing its job of protecting the host against disease? The evidence comes from three sources:

- 1.** If animals are reared in the complete absence of microbes (germfree) they are more susceptible to diseases such as cholera, dysentery and salmonellosis.
- 2.** Antibiotics given orally often induce diarrhea. The antibiotic is killing off the protective microbes and allowing the dangerous pathogens to multiply.
- 3.** The diarrhea conditions induced by antibiotic feeding can be treated, by dosing with an enema prepared from a suspension of feces from a healthy adult.

The evidence for the protective effect of the gut flora is, therefore, incontrovertible. The aim of probiotic supplements is to ensure that the microbes responsible for the protection are present in the intestine.

## Development of Probiotics

Evidence for fermented milks goes back to pre-Christian times. Sumerian cave drawings show what appears to be men transferring material from the soured milk to urns of fresh milk to maintain the fermentation. Although this fermented milk was not produced as a health food, the improvement in keeping quality of the milk would undoubtedly have had an effect on the health of the consumers.

It was not until the beginning of this century that Metchnikoff, working at the Pasteur Institute in Paris, put the practice on to a scientific footing. He was convinced that the microbial flora of the lower gut was having an adverse effect on the host – what he called ‘auto intoxication’. He had also observed that Bulgarian peasants lived to a ripe old age and also consumed large quantities of soured milk. Without any good evidence, he related the two. Subsequent events have tended to confirm this relationship. He attempted to repeat the effect by isolating pure cultures of organisms and using them in his experimental trials. One of the organisms he described is one of those which is now used in yogurt and is a primary ingredient of Life Sources’ Probiotic formula (*Lactobacillus delbrueckii* subsp. *bulgaricus*).

The other line of approach was the use of bacteria isolated from the intestine. When Metchnikoff died, the center of research moved from Paris to the USA. At Yale, Rettger and his colleagues reasoned that if the organism was to grow and have its effect in the intestine, it seemed likely that organisms isolated from the gut would have more activity. They isolated and used a bacterium called *Lactobacillus acidophilus* which they found to be active in ameliorating the effects of constipation. A great deal of work has been done with this species over the years, but it soon became obvious that this was not the only lactobacillus in the gut and several other species are now commonly included in probiotic preparations.

Probiotics now contain not only lactobacilli but other lactic acid bacteria such as bifidobacteria, enterococci and streptococci. Other unrelated microbes used in probiotics are yeasts (*Saccharomyces cerevisiae*, *Sac. boulardii*), filamentous fungi (*Aspergillus oryzae*) and some spore forming bacilli.

Probiotics can be presented to the consumer in various forms. As well as the fermented milk now commonly available in super- markets, there are probiotics available as tablets, powders and liquid suspensions. There are also products sold, mainly in Japan, in which probiotic micro-organisms are incorporated into confectionery and fruit drinks.

## Probiotic Usage

In human consumption the two main benefits are improved nutrition and increased resistance to disease. The most convincing evidence is for improvement in resistance to infectious disease although claims have been made based on trials in experimental animals that probiotics can reduce the incidence of cancer and coronary heart disease.

The experimental evidence in animals is very encouraging but the confirmation of the effect in humans remains to be produced.

There are many anecdotal reports of positive effects and much of the experimental evidence is derived from trials which were poorly designed and inadequately analyzed. But there are well-controlled studies which give significant positive effects and prove that given in the right way under the right conditions, probiotics can achieve much of what is claimed for them. Some examples are given below.

The inability to digest lactose is a condition that afflicts over half the world's population. Ingestion of milk results in stomach cramps and diarrhea. Subjects suffering from this lactose maldigestion can, however, tolerate the same amount of lactose when given in the form of yogurt. The reason is still obscure with some authorities claiming that the increased lactose activity is originating from the gut flora, whereas others detect it in the gut epithelium.

The antibiotic induced diarrhea is usually caused by an organism called *Clostridium difficile* and can be a very persistent infection. Good results have been obtained by treatment with probiotics. In a double-blind placebo controlled study by McFarland and her colleagues in the United States, it was shown that treatment with *Sac. boulardii* gave a reduction in incidence of diarrhea of 50% and this result was statistically significant. Similar results were obtained by Wunderlich and colleagues in Switzerland using strain SF68 of *Enterococcus faecium*.

Diarrhea in children is often caused by rotavirus infection. This also can be controlled with probiotics. Isolauri and her colleagues in Finland studied the effect of treatment with *L. rhamnosus* GG in children aged 4-45 months. There was a significant reduction in the duration of the diarrhea when the probiotic was given as a powder or as a fermented product. The results were even more significant when the data was related to those patients with confirmed rotavirus infections.

In another carefully controlled trial, children aged 5-24 months who were hospitalized for non-gastrointestinal conditions were given *Bifidobacterium* sp and *Strep. salivarius* subsp. thermophilus as a probiotic treatment. After 17 months on the treatment there had been a significant reduction in the incidence of diarrhea in the probiotic group when compared with the control group given no treatment.

Chemotherapy for leukemia often results in intestinal upsets caused by *Candida* overgrowth. In a trial in Japan conducted by Tomoda leukemia patients were treated with a milk containing *L. acidophilus* and *Bifidobacterium* sp. There was a marked reduction in the count of *Candida* in the feces.

Results such as these show that probiotics can have beneficial therapeutic effects in a wide variety of different intestinal disorders caused by a range of different aetiological agents. As well as these effects on established disease, probiotics are recommended

as a routine food supplement to restore the gut flora back to its full protective complement and act by preventing diseases in the gastrointestinal tract. One such important function of probiotics is in situations of food poisoning. The continuing rise of Salmonella, E. coli and antibiotic resistant strains of various bacteria makes the need for probiotic supplementation more important than ever.

### How Do They Work?

Little is known about the way in which probiotics are able to inhibit other micro-organisms in the gut. But we can speculate about how they may be operating by reference to existing knowledge on microbial interaction in the gut. Probiotics may be having their effect by one or more of the following methods:

- 1. Competition for nutrients.** The gut is such a rich source of nutrients that this seems unlikely, but it should be remembered that it only requires the absence of one essential nutrient to prevent the growth of a micro-organism. There is some evidence that this type of mechanism is at least partly responsible for the inhibition of *Cl. difficile* by the gut microflora.
- 2. Direct chemical inhibition.** Lactic acid bacteria are known to produce a variety of different antibiotic-like substances. However, their activity in the gut has never been demonstrated and this seems an unlikely explanation.
- 3. Competition for adhesion sites on the gut wall.** Many gut pathogens, in order to colonize the gut, have to attach to the lining of the intestinal tract. This enables them to survive the flushing effect of peristalsis. If the probiotic organism attaches preferentially to the gut wall and prevents the pathogen adhering it will be unable to colonize and produce disease. There is good evidence that lactobacilli, commonly used in probiotic preparations, can adhere to the gut wall.
- 4. Stimulation of immunity.** A great deal of work has been done recently in laboratory animals which demonstrates that administration of lactic acid bacteria by mouth can stimulate the immune system. Perdigon and her colleagues in Argentina have shown that the increase in antibody level is related to the reduction in salmonella. Recent work by Nestlé in Switzerland has shown that similar immune responses can be induced in human subjects by administration of *L. acidophilus* LC1. The recognition that lactic acid bacteria can stimulate an immune response is a very important finding because it means that there is now a mechanism for the probiotic to have an effect in sites outside the intestinal tract.

The composition of probiotic preparations varies greatly and it is likely that no one mechanism would explain the activity of all probiotics. However, there seems little doubt that one or more of the above suggested mechanisms will be responsible for the antimicrobial activity of many probiotic preparations.

Below are twelve reasons Life Source's uses L-Acidophilus as a primary source of live cultures.

### **Twelve Points On Lactobacillus Acidophilus**

1. Lactobacillus bacteria are a group of aerobic, long, slender rods which produce large amounts of lactic acid in the fermentation of carbohydrates.
2. Daily dietary intake of Lactobacillus acidophilus helps to maintain proper balance of healthy bacteria in the intestinal tract. (Some problems from lack of "healthy" bacteria in the intestinal tract due to the proliferation of "unhealthy" bacteria are constipation, irritated colon and diarrhea. Acne, eczema and fever blisters may also be caused by "unhealthy" bacteria.)
3. Lactobacillus acidophilus is essential to help synthesize and assimilate necessary vitamins in the intestinal tract.
4. Lactobacillus acidophilus has been found to help lower cholesterol levels in the blood stream.
5. Lactobacillus acidophilus has been known to help detoxify toxic and hazardous material found in the diet.
6. Lactobacillus acidophilus aid in producing enzymes which help the digestibility of food.
7. Lactobacillus acidophilus improves the digestibility of feed for animals and has been tested and used as a feed additive.
8. Lactobacillus acidophilus helps maintain the pH level of the intestine by producing lactic acid from carbohydrates thus preventing an increase of pH which could then allow the proliferation of sensitive microbes which could produce various toxic substances harmful to the health of the body.
9. Lactobacillus acidophilus helps to replace normal healthy bacteria in the gastro intestinal tract after oral antibiotics have been administered. Oral antimicrobial drugs suppress the drug susceptible components of fecal flora (L. acidophilus) and thus allow, through increased pH, drug resistant strains to become predominant, resulting in loss of benefits derived from normal bacterial activity.
10. There is no known toxicity from ingesting too large a dose of Lactobacillus acidophilus.
11. Lactobacillus acidophilus in the intestinal tract are small in number compared to other organisms. It is, therefore, essential that the human body be assured a

maintenance of the proper level of this particular culture by daily ingestion of *Lactobacillus acidophilus*.

12. *Lactobacillus acidophilus* is, therefore, justified as a supplemental dietary substance especially in these days when stress, uncertainty and unhealthy pollution of air, water and food predominate.

### **Recommended Dosages**

Unlike drugs, it is virtually impossible to overdose on probiotics and one should feel free and confident to use these “friendlies” without reservation regarding amounts. It is vital that probiotics be taken with filtered water only since tap water contains dangerous chemicals which kill the live cultures. For a complete discussion of Probiotics we recommend reading Natasha Trenev’s *Probiotics*.

The following information is only a small list of uses and we highly recommend you consult your nutritional counselor regarding additional uses.

For healthy individuals, it is important that a daily regimen of probiotic supplementation be maintained. We recommend *at least* 1 capsule of the Life Sources’ probiotic twice a day and on an empty stomach (more if your current health status warrants). This supplementation will help maintain a healthy immune system.

Probiotic use during antibiotic treatments should be followed due to the fact that antibiotics kill friendly bacteria along with the unfriendlies and increase the possibility of antibiotic resistant strains being created.

Two hours following antibiotic ingestion, take 4 capsules of probiotics and 4 capsules at bedtime. Continue taking probiotics for at least 2 weeks following antibiotic treatments.

To combat acne, take 1 to 2 capsules each day. Additionally, ***Pantothenic Acid – B-5***, a water soluble co-enzyme A will be a safe and efficacious supplement; results have been astounding in the ridding of acne. Those who know the side-effects of Accutane will definitely welcome the results of B-5. Be sure to consult with your healthcare practitioner before using this product. Milligrams vary from person to person.

For food poisoning (which can be determined if one experiences nausea, cold sweats and diarrhea within 3 hours of eating), we recommend 5 capsules every half an hour until symptoms subside. Relief is usually within a few hours.

For flu and cold like conditions, 2-3 capsules every other hour can help alleviate symptoms.

## Further reading

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## Company Profile

Life Sources is a Nevada Corporation with order fulfillment located in Fair Oaks, California and is a member of the NNFA, National Health Federation and the Citrus Heights, California Chamber of Commerce.

The President and Founder is Andrea McCreery, PhD. Dr. McCreery is currently developing several new proprietary products to add to the Life Sources anti-aging and chronic illness system.

Based upon clinical observations, Dr. McCreery has developed several innovative products designed to slow the aging process and naturally combat chronic illnesses. Nutritional counseling is effective with ADD/ADHD, fibromyalgia, chronic fatigue syndrome, irritable bowel syndrome, weight loss, arthritis, candidiasis and more.

Life Sources specializes in Vital Hematology as a means of observing cell wall deficient forms in the living blood of clients to recommend nutritional interventions to reverse risk factors for chronic disease and nutritional deficiencies. (If an individual is interested in scheduling a consultation, please e-mail for details and fee schedules to [clinic@life-sources.com](mailto:clinic@life-sources.com) or call the clinic at 916-536-9930.

The Life Sources clinic is located at 5006 Sunrise Blvd., Suite 101, Fair Oaks, California 95628. Initial client visit includes the observation of living blood (with a videotape of the observation included), blood typing and nutritional counseling for chronic illness and potential risk factors.

Individuals interested in scheduling a seminar or group demonstration of Vital Hematology should address e-mail to [info@life-sources.com](mailto:info@life-sources.com).

Dr. McCreery is available for demonstrations to groups, health food stores and/or practices wishing to offer nutritional interventions to their clients and practice.

Life Sources is dedicated to quality and quantity of life and the eventual reduction of health care costs in the U.S. Client support is appreciated.