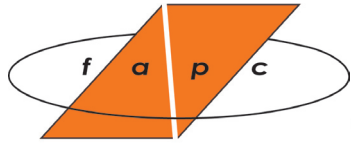


Food and Agricultural Products Center



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OKLAHOMA STATE UNIVERSITY™

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Potential Benefits of Probiotics in the Human Diet

STILLWATER, Okla. – Probiotics have been used for centuries in the manufacture of cultured dairy products and are generally regarded as safe.

Dairy products provide an excellent carrier for bacteria because most probiotics can readily utilize lactose as an energy source for growth, said Stanley Gilliland, food microbiologist for the Oklahoma Food and Agricultural Products and Research and Technology Center. This is the reason yogurt and milk are the two most common carriers of probiotics.

“The interest in probiotics was renewed some 20 to 30 years ago and several other potential benefits have come to light,” Gilliland said. “Many of the possible benefits have to do with human health and nutrition.”

Probiotics are defined as selected viable microorganisms that have potential for improving the health or nutrition of man or animal, following consumption in a food or feed. The major probiotics that have been considered over the years are *Lactobacillus acidophilus*, *Lactobacillus casei* and bifidobacteria, primarily *Bifidobacterium longum*.

Stimulation or modulation of the body’s immune system by probiotic bacteria can have health benefits. Probiotic bacteria can cause the body to secrete antimicrobial substances into the intestines. These antimicrobial substances, in turn, inhibit the growth of undesirable microorganisms.

Gilliland said, *Lactobacillus acidophilus* aids in lowering serum cholesterol levels in humans. This lower-

ing can reduce the risk of coronary heart disease in hypercholesterolemic persons. Consuming this organism may also lower the risk of colon cancer.

“While it is possible probiotics function in a therapeutic manner, it is more reasonable to consider them as a prophylactic treatment for intestinal infections,” Gilliland said.

This has been shown in a well-designed study involving germ-free chickens. In this study, germ-free chickens were fed a culture of *Lactobacillus acidophilus* and two days later were challenged with either *Salmonella typhimurium* or *Staphylococcus aureus*.

The results suggest it is important to have the *Lactobacillus acidophilus* initially as a prophylactic treatment to ward off the intestinal pathogens.

The scientists conducting this study also indicated that it was desirable to provide the probiotic organism on a continuing basis in a diet for best control of the pathogens.

Other well designed studies have shown that feeding products containing selected probiotic bacteria can be effective in helping control naturally occurring intestinal disorders brought on by intestinal pathogens especially in young children, Gilliland said.

“Based on what is known about the variation among strains and species of this group of bacteria, it is very important to properly select a strain or culture for use as a probiotic to control intestinal infections,” he said.

While there are a number of potential benefits from the inclusion of a probiotic culture in the diet, it is essential that a culture be properly selected for such use.

“One culture, that is one strain of one species, should not be expected to provide all of the potential benefits that might be derived from probiotics,” Gilliland said. “To help ensure that the culture is successful and has a positive effect, certain requirements are needed.”

In most cases, the site of action of the probiotic organisms is the intestinal tract; it is generally accepted that the organism should be a normal inhabitant of the intestinal tract. Strong evidence in literature indicates many of these probiotic bacteria exhibit host specificity.

For example, a strain of *Lactobacillus acidophilus* originating in the intestinal tract of a calf should not be expected to function equally well in the intestinal tract of a pig or of a human. Thus, it is desirable to

use a selected strain of bacteria that originated in the host species for which the product is to be used. If it is used as a probiotic for humans, it is highly desirable the probiotic organism originated in the human intestines.

Scientists will continue to research the benefits and ways to use probiotics, Gilliland said.

“It is important to follow certain steps,” he said. “Once a desired probiotic culture is selected, develop procedures for producing the culture, storing the culture and delivering the culture in the food or feed without damaging the desired characteristic.”

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