

Gut Feeling: Probiotics and your Gut

By Allison Tannis, BSc, MSc

What's your gut feeling about bacteria? Bacteria have a bad reputation. However, not all bacteria are bad. Without bacteria, our intestines would not function. Our intestines are colonized by over 400 different species of bacteria; many of which are "friendly" bacteria, called probiotics. Probiotics, by definition, are live microbes which when administered in adequate amounts cause a health benefit on the host.

There are many species and strains of probiotics. Each type causes a different effect on the body. To explain each species' effects in detail would take up more pages than this magazine can hold, so let's focus on the most prominent indigenous bacteria in our gut, Lactobacilli (i.e. lactic acid bacteria). Of these, *Acidophilus*, officially known as *Lactobacillus acidophilus*, is perhaps the most well known "good" bacteria.

How does *Acidophilus* work? Probiotics, like *L. acidophilus*, attach to the walls of the intestine and affect both the surface of the intestines (i.e. mucosal layer) and the system that lies beneath the surface (i.e. the systemic immune system). When attached, *Acidophilus* is able to inhibit bad bacteria, such as *Escherichia coli* and *Salmonella typhimurium*, and yeast *Candida albicans*, from attaching to the walls of the intestinal tract by producing anti-microbial compounds, altering the mucosal layer and enhancing the immune system. (J Dairy Sci, 2001) This ability to inhibit bad bacteria results in a change in the flora population in favor of beneficial bacteria like *Lactobacillus* and *Bifidus*.

Bad bacteria can increase flatulence, may be associated with irritable bowel syndrome, and can cause infection. For example, 78% of women have overgrowth of bad bacteria in their vagina which increases their risk of developing a yeast infection, bladder infection and vaginosis. As probiotics can inhibit the colonization of bad bugs they have been found to reduce the frequency of these types of infections. (J Infect Dis 1999)

Preventing the colonization of "bad" bacteria is also important as they produce enzymes that create carcinogenic compounds in the colon. Thus, the ability of *Acidophilus* to reduce the presence of "bad" bacteria may decrease the risk of colon cancer.

Acidophilus has been widely studied for a number of years by scientists and has been found to decrease toxic amines in the blood of kidney dialysis patients, help in the treatment of pediatric diarrhea, facilitate lactose digestion in lactose-intolerant people, and may have a role in inhibiting cholesterol assimilation. (J Dairy Sci, 2001)

Probiotic's ability to affect the systemic immune system has researchers wondering if probiotics may be a multipurpose immune enhancer. For example, researchers found that children taking *Lactobacillus* had fewer respiratory illnesses. (BMJ 2001) Further research is still needed.

Not surprisingly, *Acidophilus* is the most common probiotic used in supplements to date. This is partially because studies have confirmed that *Lactobacillus acidophilus* does

survive gastrointestinal tract transit in both healthy and diseased populations. An enteric coating appears to aid this process. Also, researcher's have found that probiotics need to be taken repeatedly and regularly and in adequate levels (e.g. 10^8) to result in a positive effect. (J Dairy Sci. 2001)

Based on current knowledge, *L. acidophilus* appears to be a beneficial probiotic to enhance immune function, inhibit bad bacteria colonization in the gut and reduce the risk of yeast/bladder/vaginal infections, as well as reduce the risk of colon cancer. In addition, probiotics, including *Acidophilus* have an excellent safety record. (Clin Rev Allergy Immunol. 2002) So, don't be afraid of bacteria. The good ones can help.

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