



## The Gut Guide

### *The Role of Healthy Bacteria in the Digestive System*

The digestive system is a 29.5-foot journey through the mouth, esophagus, stomach, small intestine and large intestine. Read below for information on the role of probiotics during this process.

#### ***The Mouth and Teeth***

Bacteria found in the mouth are partly responsible for the development of cavities. Laboratory and human studies show that certain probiotic cultures have an effect on the destructive, cavity-causing bacteria in the mouth.<sup>1</sup> Specific strains of probiotic bacteria are also being researched for their ability to reduce the bacteria that causes bad breath.<sup>2</sup>

#### ***The Stomach***

Some types of probiotic bacteria are quickly destroyed by digestive enzymes in the stomach, while others are able to survive and pass through to the intestinal tract. The survival rate of these probiotic bacteria is important for helping to regulate certain intestinal functions. The Nobel Prize was awarded in 2005 to the scientists who discovered that most stomach ulcers are caused not by stress, but by *H. pylori*, a bacterium that is able to survive the acid environment of the stomach and grow and multiply in its lining. The presence of *H. pylori* also increases the risk of developing stomach cancer. About 50% of the population is infected with the *H. pylori* bacteria. Treating *H. pylori* may be a way to reduce the risk of developing stomach cancer. Animal and human studies suggest that regular intake of certain probiotic bacteria can affect the presence and activity of *H. pylori* and its ability to survive.<sup>3</sup>

#### ***Liver***

Probiotic bacteria can ferment indigestible carbohydrates in the intestines and increase the production of certain short chain fatty acids (SCFA) directly or indirectly by modulating the microflora. These SCFA cause the liver to produce less cholesterol. Some probiotic bacteria may also interfere with intestinal absorption of cholesterol produced by the liver.<sup>4,5,6</sup>

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<sup>1</sup> Caglar E, Kargul B, Tanboga I. Bacteriotherapy and probiotics' role on oral health. *Oral Diseases* 2005 May; 11(3):131-137, 2005.

<sup>2</sup> Burton JP, Chilcott CN, Tagg JR. The rationale and potential for the reduction of oral malodour using *Streptococcus salivarius* probiotics. *Oral Diseases* 2005 11;(s1); 29-31.

<sup>3</sup> Wang KY, Li, SN, Liu, CS, Perng DS, Su, YC, Wu, DC, Jan CM, Lai CH, Wang TN, Wang, WM. Effects of ingesting Lactobacillus-and Bifidobacterium-containing yogurt in subjects with colonized *Helicobacter pylori*. *American Journal of Clinical Nutrition* 2005 80:737-741.

<sup>4</sup> Pereira DI, Gibson GR - Effects of consumption of probiotics and prebiotics on serum lipid levels in humans. *Rev Biochem Mol Biol* 2002;37 (4):259-281.

<sup>5</sup> Agerholm-Larsen L, Bell ML, Grunwald GK, Astrup A-The effect of a probiotic milk product on plasma cholesterol: a meta-analysis of short-term intervention studies. *Eur J Clin Nutr* 2000 Nov;54(11):856-860.

<sup>6</sup> Kiessling G, Schneider J, Jahreis G -Long-term consumption of fermented dairy products over 6 months increases HDL cholesterol. *Eur J Clin Nutr* 2002;56 (9):843-849.



# Dannon Probiotics Center

Digestible information on healthy bacteria

## ***Small Intestine***

In healthy people, the effects of stomach acid, bile and secretions from the pancreas work together to keep bacteria levels in the small intestine under control. Contractions throughout the gastrointestinal system move food along to prevent bacterial overgrowth. In contrast, some types of probiotic bacteria are able to survive passage through the small intestine and arrive in the colon. Research suggests that certain probiotics may have a beneficial action on the regulation of critical components of the immune system such as antibodies and natural killer cells, and this effect happens mainly at the level of the small intestine.<sup>7,8</sup>

## ***Large Intestine***

Certain probiotic cultures produce bacteria-fighting substances, prevent harmful bacteria from binding to the intestinal wall and make nutrients unavailable to them for growth. Only certain strains of these probiotic bacteria are resistant to the digestive enzymes in the stomach, and are likely to survive passage to the colon. Research suggests that certain probiotics may have a beneficial action on the intestinal microflora by improving its balance and on the functioning of the intestinal lining.<sup>9</sup>

For more information, visit [www.ProbioticsCenter.com](http://www.ProbioticsCenter.com) or contact Beth Heller at [beth.heller@edelman.com](mailto:beth.heller@edelman.com) or 212.704.8161.

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<sup>7</sup> Pujol et al (2000) Multicentric study of the effect of milk fermented by *Lactobacillus casei* DN-114001 on the immune response to exercise.

<sup>8</sup> Marcos, et al (2004) The effect of milk fermented by yogurt cultures plus *Lactobacillus casei* DN-114001 on the immune response of subjects under academic examination stress.

<sup>9</sup> Sartor RB (2004) Therapeutic manipulation of the enteric microflora in inflammatory bowel diseases: antibiotics, probiotics, and prebiotics. *Gastroenterology* 2004 May; 126(6):1620-1633.

