



## Improving Digestion

### Nestlé characterizes how Bifidobacteria enhance digestive health

In the human intestine a balanced mixture of bacteria is essential for healthy gut function. *Lactobacilli* and *Bifidobacteria* are important components of the human gut and have risen considerable interest for their therapeutic potential in gastroenterology. Characterization of the physiological role of bifidobacteria in the gut will help Nestlé develop products that improve digestive health.

Analyzing the genetic makeup of *Bifidobacteria longum*, Nestlé scientists have discovered a serine protease inhibitor (serpin) that may play a role in modulating function of the host. The study, published in the *Journal of Biological Chemistry*, showed that the *Bifidobacterium longum* serpin inhibits *in vitro* the activity of the eukaryotic, pancreatic and neutrophil elastase.

Serpins have been well characterized as regulators for protease-mediated processes in multicellular eukaryotes, but little is known about their functional role in prokaryotes. Recent studies indicate that bifidobacterium species can stimulate an intestinal anti-inflammatory response.

"We are interested in this particular protein because similar proteins were so far best recognized for their co-ordination of key regulatory functions in multicellular eukaryotes. We speculated that the *Bifidobacterium* serpin may play a role in host bacterium interaction by inhibition of a eukaryotic protease," said Fabrizio Arigoni, microbiologist at Nestlé Research Center, in Lausanne, Switzerland.

These findings follow previous success by Nestlé to sequence the first ever complete genome of *Lactobacillus johnsonii* and *Bifidobacteria*. Nestlé continues to investigate the molecular action of probiotics, including what proteins are involved with the inflammatory response.

**For more information, please read the entire article:**

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A Serpin from the Gut Bacterium *Bifidobacterium longum* Inhibits Eukaryotic Elastase-like Serine Proteases. *J.Biol Chem.*, 23;281(25),17246-52, 2006.

**The Internet link:**

<http://www.jbc.org/cgi/content/full/281/25/17246>