

New probiotic combats inflammatory bowel disease

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You know the probiotics in your peach yogurt are healthful, but now it appears they may also be a powerful treatment for disease.

A genetically tweaked version of a common probiotic found in yogurt and cheese appears to be an effective therapy for inflammatory bowel diseases such as Crohn's disease and [ulcerative colitis](#). It may also prove to be useful in colon cancer, another disease triggered by inflammation.

Northwestern Medicine researchers deleted a gene in the probiotic *Lactobacillus acidophilus* and fed the new form to mice with two different models of colitis. After 13 days of treatment, the novel probiotic strain nearly eliminated colon inflammation in the mice and halted progression of their disease by 95 percent.

"This opens brand new avenues to treat various [autoimmune diseases](#) of the gut, including [inflammatory bowel disease](#) and colon cancer, all which can be triggered by imbalanced inflammatory immune responses," said Mansour Mohamadzadeh, associate professor of medicine at Northwestern University Feinberg School of Medicine and lead investigator of the study. He also is a member of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University.

The study will be published Jan. 31 in the [Proceedings of the National Academy of Sciences](#).

While the origin of these bowel diseases is not known, Crohn's disease

and ulcerative colitis are two chronically relapsing diseases in which sufferers have an ongoing tissue inflammation that alters the functioning of the intestine. The diseases affect more than 1 million people in the United States and can cause weight loss, diarrhea, abdominal pain and cramping and gastrointestinal bleeding. Current drug treatment is not completely effective and patients can relapse, Mohamadzadeh said.

"Such gene targeting in a probiotic bacteria such as *Lactobacillus acidophilus* offers the possibility of a safe, drug-free treatment in the near future," he said.

In the study, the modified *Lactobacillus acidophilus* entered the gut, which is akin to a battlefield of friendly fire with immune cells attacking the intestine. The *Lactobacillus acidophilus* acted as the gut's peacekeeping force, calming the overstimulated immune cells.

The probiotic restored intestinal peace by mobilizing messenger immune cells, called dendritic cells. The dendritic cells, in turn, enhanced the production of other functional immune cells, regulatory T-cells that rebalanced intestinal and systemic inflammation.

"They essentially calm everything down and restore it to normal," Mohamadzadeh explained. The next step will be a clinical trial with the new form of *Lactobacillus acidophilus*.

Mohamadzadeh and his colleagues at the Lurie Cancer Center are currently researching the effect of the new *Lactobacillus acidophilus* on [colon cancer](#).

Provided by Northwestern University

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