

Bacteria Wins First Round Against Inflammatory Bowel Disease

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ARS microbiologist Terry Whitehead is part of a team that found and altered a microbe so it might one day help treat inflammatory bowel disease and other chronic intestinal diseases in people.

(PhysOrg.com) -- A group of British scientists and their Agricultural Research Service (ARS) colleague used a benign bacterium from the human gut to develop a microbe that someday might help treat inflammatory bowel disease (IBD) and other chronic intestinal diseases.

IBD erodes the delicate lining of the intestine, and its symptoms—often severe—include cramping, abdominal pain and other gastrointestinal discomfort. IBD cannot be cured, and current treatments can have adverse side effects. Medical practitioners and patients are anxious for

the development of more effective therapies, particularly protocols that deliver drugs directly to the intestine.

So ARS microbiologist Terry Whitehead, who works at the National Center for Agricultural Utilization Research in Peoria, Ill., and his partners began searching for a solution. Simon Carding, who works at the Institute of Food Research and the University of East Anglia in Norwich, Great Britain, led the research project with Zaed Hamady, who works at the University of Leeds in Great Britain and St. James University Hospital, also in Leeds.

The group focused on the [bacterium](#) *Bacteroides ovatus* (*B. ovatus*), which is one of an assortment of intestinal microflora in humans. *B. ovatus* thrives in the oxygen-free environment of the large intestine, where it breaks down xylan—a fiber found in plants—and other sugars for energy and growth.

The team created a strain of *B. ovatus* that used xylan to induce secretion of human keratinocyte growth factor, a protein that helps repair and restore the intestine's delicate lining. This increased the ability of the intestine to repair IBD-inflicted damage.

The researchers found that IBD-affected mice treated with oral doses of xylan and the engineered strain of *B. ovatus* had intestinal tissues that healed more rapidly. This group of mice also lost less weight and had lower levels of rectal bleeding. In addition, dosing mice with *B. ovatus* provided protection from induced IBD and limited the development of subsequent intestinal inflammation.

An abstract of this research was published online in the journal [Gut](#).

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