

Genetically engineered bacteria are sweet success against IBD

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For the first time, scientists have used a genetically engineered "friendly" bacterium to deliver a therapy.

The treatment is for bowel disorders such as inflammatory bowel disease, which affects one in 400 people in the UK and for which there is no cure. The [bacterium](#) *Bacteroides ovatus* activates a [protein](#) when exposed to a specific type of sugar, xylan. In research to be published in *Gut*, the therapy has been proven to work in animals with colitis, one of the major forms of [inflammatory bowel disease](#).

The bacterium is able to deliver the protein, a human growth factor called KGF-2, directly to the damaged cells that line the gut, unlike other treatments which can cause unwanted side effects. Also unlike other treatments, it is envisaged that patients will be able to control the medication themselves by ingesting xylan, perhaps in the form of a drink.

"This is the first time that anyone has been able to control a therapeutic protein in a living system using something that can be eaten," said Professor Simon Carding of the Institute of Food Research and the University of East Anglia Medical School, lead author on the research. "The beneficial bugs could be activated when they are needed."

The treatment had a significant therapeutic effect. For example, it reduced rectal bleeding, accelerated the healing of the gut lining, and reduced inflammation. It was also able to prevent the onset of disease.

"The bacterium is being used to produce other protein molecules to treat various bowel disorders and we are now applying for funding to try out the bug in humans," said Dr. Zaed Hamady, an MRC Research Fellow at Leeds University.

Since [genetic engineering](#) techniques were developed in the 1970s, scientists have found ways to apply them to medicine. Insulin was the first medicine to be genetically engineered and the first genetically engineered vaccine was for [hepatitis B](#). The technology is now opening up ways to deliver drugs to specific targets, as with this treatment to deliver a protein directly to injured areas of the gut.

"Initially I envisage this being an adjunct therapy to patients' existing medicine, but eventually it could be the sole therapy," said Professor Carding. "Once our bugs are in the colon they could be activated when needed so we aim to use our bugs to prevent disease or relapse in IBD."

Source: Norwich BioScience Institutes

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