

# Promising probiotic treatment for inflammatory bowel disease

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Bacteria that produce compounds to reduce inflammation and strengthen host defences could be used to treat inflammatory bowel disease (IBD). Such probiotic microbes could be the most successful treatment for IBD to date, as explained in a review published in the February issue of the *Journal of Medical Microbiology*.

IBD is inflammation of the gastro-intestinal tract that causes severe watery and [bloody diarrhoea](#) and abdominal pain. It is an emerging disease that affects 20 out of 100,000 genetically susceptible people in Europe and North America. The most common manifestations of IBD are [Crohn's disease](#) and [ulcerative colitis](#). While the exact causes are unclear, IBD is known to be the result of an overactive immune response that is linked to an imbalance of the normal types of bacteria found in the gut.

Several recent studies have identified butyric acid as a potential therapeutic agent for IBD. Some gut bacteria produce butyric acid naturally in the intestines, but in IBD patients some of these strains are heavily depleted. Trials in mice have shown that injecting one such strain *Faecalibacterium prausnitzii* into the digestive tract is effective at restoring normal levels of [gut bacteria](#) and treating the symptoms of IBD. In addition, novel identified butyrate-producing strains, such as *Butyricoccus pullicaecorum*, have been shown to exert similar effects.

Butyric acid has well-known anti-inflammatory effects and is able to strengthen intestinal wall cells - making it an ideal therapeutic agent

against IBD. In addition to butyric acid, it is hypothesized that strains such as *F. prausnitzii* and *B. pullicaecorum* secrete other anti-inflammatory compounds that may enhance the therapeutic effect.

Prof. Filip Van Immerseel, a medical microbiologist from Ghent University in Belgium said that a new treatment for IBD would be welcomed. "Conventional drug therapy has limited effectiveness and considerable side effects. Probiotics are live bacterial supplements or food ingredients, which when taken in sufficient numbers confer health benefits to the host," he said. Previous trials of probiotics to treat IBD using mainly lactic acid bacteria have given mixed results. "Now we realise that lactic acid is used for growth by a certain population of bacteria that produce butyric acid, which could explain why some of the older studies had a positive outcome. Recent trials focussing on butyric acid-producing bacterial strains have been extremely promising and could lead to a new treatment for IBD."

Developing an effective probiotic treatment for IBD will not be easy, however. "As butyric acid-producing bacteria are naturally depleted in IBD patients, we will need to identify strains that are able to colonize the gut without being outcompeted. Many bacterial species produce butyric acid and possibly other anti-inflammatory molecules so it's a case of finding which is the most robust under these conditions," said Prof. Van Immerseel.

Provided by Society for General Microbiology

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