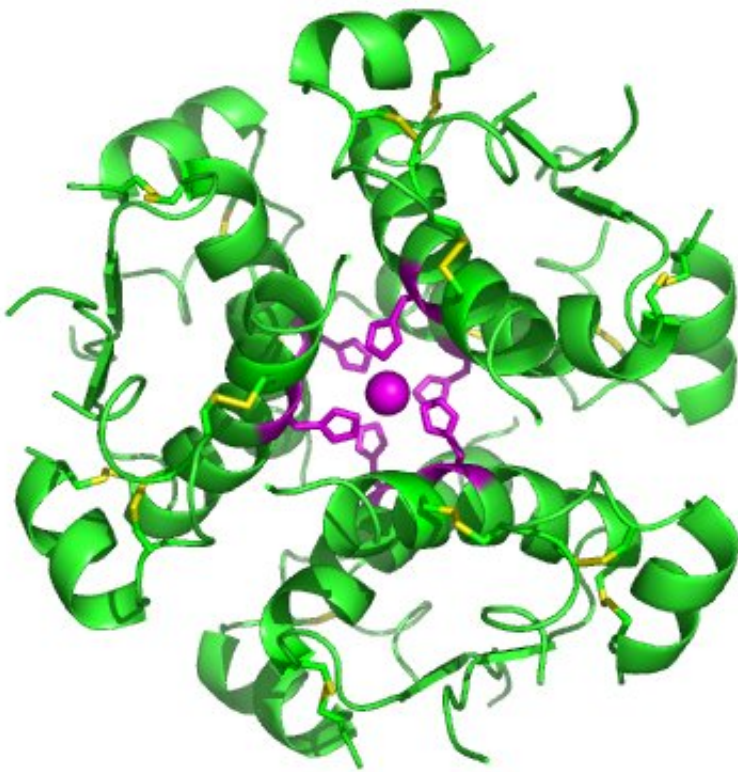


Insulin shows great potential against chronic colitis

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High-resolution model of six insulin molecules assembled in a hexamer. Credit: Isaac Yonemoto/Wikipedia

Diabetes is not the only disease on which insulin has an effect, it appears. In a new study using tests on mice, researchers from the University of Copenhagen, among others, have discovered a new method

for treating chronic colitis with regular insulin. The researchers have set up a company with a view to testing the treatment and hopefully making it available to patients.

Millions of people take daily [insulin](#) to treat their diabetes. But diabetes is not the only disease on which insulin has an effect, it appears. Chronic [bowel](#) inflammation can be treated effectively by injecting insulin into the rectum, according to a new study. The study is a collaboration between departments at the University of Copenhagen and Roskilde University.

"Our new treatment with insulin on [mice](#) shows great potential against chronic bowel inflammation in humans like colitis ulcerosa, which causes a lot of people great discomfort. Existing treatments attack the bowel's immune system, dampening it; instead, our method strengthens the [bowel cells](#)' own defence. It appears to work equally well, and it can probably be used in combination with existing treatments," says Jørgen Olsen, co-inventor of the treatment and professor at the Department of Cellular and Molecular Medicine, University of Copenhagen.

The new study has just been published in the *Journal of Crohn's and Colitis*, and it has examined the effect of the treatment in a series of tests on mice with chronic colitis of the type colitis ulcerosa, among others, from which about 20,000 Danes suffer. The cause of these bowel disorders is unknown, but they cause patients great discomfort and can involve bloody diarrhoea, anaemia, stomach ache and weight loss.

Strengthened Defence and Weakened Attack

The researchers studied the effect of the insulin treatment in various ways. First, they showed that the amount of inflammation, expressed as the level of the marker Cox2, drops by 50 percent compared to the saltwater control treatment. That is more or less the same effect shown

in tests on mice prior to the launch of the existing treatment on the market.

Second, the researchers measured the body weight of the mice—people suffering from [colitis](#) typically lose a lot of weight because they do not eat much. As this marker is relatively crude, some studies of the existing treatment have shown no effect at all. However, using the new insulin treatment, the mice lost 15 to 20 percent less weight than the control group, and following treatment, they gained weight 50 percent faster, which is an important sign of health.

The insulin activates a gene inside the bowel cells, which, according to other studies, has an antioxidant effect, and thus may be able to protect the bowel cells from inflammation. This makes the new treatment different from existing medication, which, instead of strengthening the bowel's defence, weakens the immune system's attack on the bowel. Therefore, the researchers hope the new treatment can be combined with the existing.

Based on the positive results, the researchers have now set up a company that will test the treatment in clinical trials on humans and hopefully make the technology available to patients.

According to Professor Jørgen Olsen the researchers should be able to initiate Phase 1 trials, which are the first safety tests performed on humans closely monitored by healthcare personnel.

More information: Mohammad Yassin et al, Rectal insulin instillation inhibits inflammation and tumor development in chemically-induced colitis, *Journal of Crohn's and Colitis* (2018). [DOI: 10.1093/ecco-jcc/jjy112](https://doi.org/10.1093/ecco-jcc/jjy112)

Provided by University of Copenhagen

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