

Gastric ulcer bacteria turn immune defense inwards

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Despite a strong response from our immune defence, the body is unable to rid itself of the bacterium *Helicobacter pylori*. One reason for this is that this bacterium encourages elements of the immune response to remain in tissue, activating the wrong immune cells. Research results that pave the way for a future vaccine are now being published by the Sahlgrenska Academy at the University of Gothenburg, Sweden.

Approximately half of the world's population are infected with [Helicobacter pylori](#), found primarily in the stomach. The majority never show any symptoms, but just over ten per cent develop gastric ulcers, while around one per cent develop gastric adenocarcinoma. Without antibiotics the body is unable to rid itself of the bacteria.

"*Helicobacter pylori* inhibits our [immune defence](#), preventing it from attacking the bacteria with sufficient strength, despite an immune response being activated," says biologist Malin Hansson, the author of the thesis.

When an immune response is initiated a specific type of cell migrates to the lymph nodes to activate new [immune cells](#), telling them where they need to go to tackle the infection. Infection with *Helicobacter pylori* prevents many of these cells from reaching their intended destination.

"*Helicobacter pylori* causes immune cells to accumulate in tissue. Many of the cells that ought to collect more new immune cells stop at these accumulations and begin activating these instead, leading to chronic

inflammation, which we believe benefits *Helicobacter pylori*," says Malin Hansson.

This thesis also paves the way for a future vaccine against gastric adenocarcinoma. Previous research has shown that many infected patients with gastric adenocarcinoma have low levels of a specific type of antibody in tissue, even though *Helicobacter pylori* normally causes unusually high levels of [antibodies](#). These antibodies should therefore be able to protect against this form of [cancer](#). For the first time in samples taken from humans Malin Hansson has been able to show that these antibodies are attracted to tissue by a signal substance called MEC.

"If these antibodies really can protect against development of gastric adenocarcinoma, it would be possible to develop a vaccine that increases MEC expression and thus the number of antibodies present in tissue," says Malin.

Helicobacter pylori is one of the most common pathogenic [bacteria](#) found in humans. It produces an enzyme that breaks down urea into carbon dioxide and ammonia, which in turn neutralises hydrochloric acid in the stomach. Without treatment, infection can lead to gastric and duodenal ulcers that can be fatal if left untreated. *Helicobacter pylori* is also the leading cause of gastric adenocarcinoma.

Provided by University of Gothenburg

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