

Common stomach bacteria may fight off inflammatory bowel disease caused by *Salmonella*

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Helicobacter pylori, a common stomach bacterium, reduced the severity of inflammation of the colon caused by *Salmonella* in mice, according to research from U-M Medical School scientists.

More than half the people in the world are infected with *H. pylori*, although it is very unusual to find it in the United States. But this research shows there may be an inflammation control benefit to hosting the *H. pylori* infection, says Peter Higgins, M.D., Ph.D., M.Sc., lead author of the study published last week in the journal *Inflammatory Bowel Diseases*.

"If we have evolved to live with certain bugs, maybe there is a reason," said Higgins, assistant professor of [gastroenterology](#) in U-M's Department of Internal Medicine. "This research demonstrates that having *H. pylori* in your stomach could have beneficial immune effects in other parts of the body."

In the study, mice were infected with *H. pylori*, allowed to develop immune tolerance for a month, and then infected with [Salmonella](#), which induces the [inflammatory bowel disease](#) colitis. The data provided the first evidence that *H. pylori* infection in the stomach alters the immunological environment of the lower gastrointestinal tract and reduced the severity of *Salmonella*-induced colitis.

"This was surprising because *H. pylori* infects the stomach, not the colon. It appears to have a more global effect on the gut immune system," says John Kao, M.D., senior author of this study and assistant professor in U-M's Department of Internal Medicine.

"But it may explain why people in regions with lots of *H. pylori* infection — such as Asia and Africa — get fewer inflammatory bowel diseases, like ulcerative colitis and Crohn's disease."

It also may explain why *H. pylori* infection is so common, Higgins says. *Salmonella* was historically a rampant fatal infection that caused the plague of Athens, which led to rise of Sparta. It also likely led to the early death of Alexander the Great. So it would make sense that many humans carry the *H. pylori* bacteria, if it truly reduces the severity of inflammation caused by *Salmonella*, Higgins says.

The *H. pylori* infection is now more commonly found in developing countries or those with poor sanitation, where *Salmonella* and inflammatory bowel diseases are more common. Most people contract *H. pylori* in their first seven years of life, most commonly through exposure to feces.

Higgins does not recommend that inflammatory bowel patients should be infected with *H. pylori*, however. In the U.S., *H. pylori* infection is treated with antibiotics because it can lead to stomach ulcers or cancer, even though most people don't notice they have it.

"There may be a reason we co-exist with *H. pylori*. Maybe we should not be so quick to get rid of it in patients who do not have stomach ulcers," Higgins says, adding that this may be especially true in places where *Salmonella* remains a common threat.

"It would be reasonable for researchers to look at whether *H. pylori*

infection is associated with reduced severity of other gut infections like cholera or *Clostridium difficile*. Many more studies are needed, however, to see if *H. pylori* could actually prevent inflammatory bowel disease."

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