Medical Xpress

H. pylori vaccine shows promise in mouse studies

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Researchers from Southern Medical University in Guangdong, Guangzhou, China, have developed an oral vaccine against *Helicobacter pylori*, the bacteria responsible for peptic ulcers and some forms of gastric cancer, and have successfully tested it in mice. The research is published ahead of print in the journal *Clinical and Vaccine Immunology*.

The investigators constructed a live recombinant bacterial vaccine, expressing the *H. pylori* antigen, adhesin Hp0410, in the food-grade bacterium, *Lactobacillus acidophilus*. They then used it to orally vaccinate the mice.

The vaccine elicited specific anti-Hp0410 IgG antibodies in serum, and showed "a significant increase" in the level of protection against gastric *Helicobacter* infection, according to the report. When assayed, following challenge with *H. pylori*, immunized mice had significantly lower bacterial loads than non-immunized mice.

H. pylori is a class 1 human carcinogen, according to the World Health Organization. It causes gastritis, peptic ulcers, stomach cancer, and mucosa-associated lymphoid tissue lymphoma. Antibiotic therapy is complex, unsuccessful in some patients (particularly in developing countries) and relapse is common. A vaccine against *H. pylori* could circumvent these difficulties.

L. acidophilus, a bacterium which is common in yogurt cultures, has distinct advantages as an oral vaccine antigen delivery vehicle. It is safe

and nontoxic. It resists the stomach's acidity and tolerates bile, all of which aids in enabling it to survive in the gastrointestinal (GI) tract for more than 72 hours. Additionally, it adheres to, and elicits an immune response from the GI tract mucosa.

The current first-line treatment option for *H. pylori* infection includes two antibiotics and a proton pump inhibitor, but is ineffective in roughly 20 percent of patients.

"The high cost of treatment, noncompliance, and antibiotic resistance are the most important reasons," says first author Fan Hongying.

Roughly 15-30 percent of patients relapse quickly, she says, noting that after treatment, *H. pylori* may be resupplied to the stomach from a reservoir in the mouth. A vaccine would circumvent these problems.

"Our results collectively indicate that adhesin Hp0410 is a promising candidate vaccine antigen and recombinant *Lactobacillus acidophilus* expressing Hp0410 is likely to constitute an effective, low-cost live bacterial vaccine against *H. pylori*," says Hongying.

More information: www.asm.org/images/Communicati … /2013/1213pylori.pdf

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