Stomach bacteria need vitamin to establish infection

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Scientists have determined that Helicobacter pylori, the bacterium that causes peptic ulcers and some forms of stomach cancer, requires the vitamin B6 to establish and maintain chronic infection, according to research published this week in the online journal *mBio*. This finding, along with the identification of the enzyme the microbe requires to utilize the vitamin, could lead to the development of an entirely new class of antibiotics.

"Approximately half the world's population is infected with *H. pylori*, yet how *H. pylori* bacteria establish chronic infections in human hosts remains elusive. To our knowledge, this study is the first to describe a link between this vitamin and bacterial pathogenesis," says Richard Ferrero of Monash University in Melbourne, Australia, a researcher on the study which also included scientists from the Institut Pasteur and the University of Notre Dame, Sydney, Australia.

To better understand how *H. pylori* causes disease, Ferrero and his colleagues used a method known as in vitro attenuation to create low-infectivity variants of the bacteria and then compared the gene expression profiles to that of the original highly infectious bacteria. Using this method they identified PdxA and PdxJ, enzymes involved in vitamin B6 biosythesis, as being important factors for the chronic colonization of mice by *H. pylori*. Bacteria that lacked these enzymes were unable to establish a chronic infection in a mouse model.

"This work identifies vitamin B6 biosynthesis enzymes as novel virulence factors for bacterial pathogens," says Ferrero. "Interestingly, a number of human pathogens, but not their mammalian hosts, possess these genes, which suggests that Pdx enzymes may represent ideal candidates for new therapeutic drugs."

More information: A full copy of the article can be found online at mbio.asm.org/content/1/3/e00112-10.

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