

Saliva plays a role in the body's defense against traveler's diarrhea

March 8 2018

Researchers have identified a protein in saliva (histatin-5) that protects the body from traveler's diarrhea.

The findings, available online in the *Journal of Infectious Diseases*, may lead to the development of new preventive therapies for the disease.

Traveler's diarrhea is an inconvenience to many in the U.S., but worldwide it can be deadly. It produces a watery diarrhea, which can cause life-threatening dehydration in infants or other vulnerable populations in endemic countries. With more than one billion cases each year, hundreds of thousands of deaths can be attributed to this bacterial disease which is caused by enterotoxigenic *Escherichia coli* (ETEC), invading the [small intestine](#) using arm-like structures called "pili."

Researchers from Boston University School of Medicine (BUSM) and collaborators exposed miniature human small intestines that they were able to grow in a dish (organoids) to the bacteria ETEC in the presence and absence of the [protein](#) histatin-5. When examined under the microscope, significantly fewer bacteria were able to attach to the tissue in the presence of histatin-5.

"We found that the protein histatin-5 present in human saliva stiffens the pili of ETEC, preventing the bacteria from effectively adhering to the small intestine," explained corresponding author Esther Bullitt, PhD, associate professor of physiology and biophysics at BUSM. "If they can't attach, they simply can't cause [disease](#)."

Prior to this study, it was not known that saliva could play such a large role in protecting the body from gut infections. According to the researchers, this initial line of defense in the mouth likely explains why it takes such a large number of ETEC to infect a human. They also suggest that histatin-5 might be manufactured as a dissolvable powder and used to prevent traveler's [diarrhea](#) in the future.

This new finding opens up the possibility that other salivary proteins might exist which protect against many other diseases, including infectious gastritis, food poisoning or even pneumonia. "We believe that our data represent the first example of a new paradigm in innate immunity: the contributions of salivary components to preventing infection. This research opens an untapped avenue for prevention of enteric [infectious diseases](#) through the targeted use of naturally occurring components of [saliva](#)."

Provided by Boston University School of Medicine

Citation: Saliva plays a role in the body's defense against traveler's diarrhea (2018, March 8) retrieved 25 April 2024 from <https://medicalxpress.com/news/2018-03-saliva-role-body-defense-diarrhea.html>

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