

# Researchers find bad bacteria reducer

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A substance linked to mood enhancement could be a key to combating bacteria that can cause a serious foodborne illness, NDSU researchers say.

The Department of Veterinary and Microbiological Sciences researchers discovered that B-phenylethylamine, or PEA, reduced the number of cells of Escherichia coli in a beef broth. PEA is a substance found in chocolate in trace amounts. Health food stores sell it in pill form to improve people's moods.

The E. coli bacterium commonly is found in the lower intestine of warm-blooded organisms. A few strains can cause a critical and sometimes fatal illness in humans.

PEA also reduced the amount of E. coli [biofilm](#), or thick, complex colonies of bacteria, in bacteria grown in the beef broth. In addition, PEA reduced bacterial cell numbers of the bacteria growing on the surface of meat.

The goal of the research is to use bacteria nutrients such as PEA to manipulate dangerous bacteria into behaving in ways that are less harmful to people, associate professor and researcher Birgit Pruess says.

This research is part of Pruess' ongoing work on developing techniques to prevent biofilm formation. Biofilms are a contributing factor in 60 to 80 percent of bacterial infections, according to the National Institutes of Health and Centers for Disease Control and Prevention.

Funding for the PEA research came from the State Board of Agricultural Research and Education and the North Dakota Beef Commission.

The researchers also used fluorescence labeling to identify genes that will become targets of biofilm prevention efforts. The genes show up as green bacteria on images a fluorescence microscope produces, says Priyankar Samanta, a doctoral student who is involved in the research.

The first target, FlhD/FlhC, is a regulator of flagella, lashlike appendages that protrude from the body of certain cells and enable [bacteria](#) to swim in favorable environments.

Pruess received a \$358,750 through National Institutes of Health grant 1R15AI089404 for this research.

"The identification of the first target, as well as the first bacterial nutrient that will inhibit biofilm formation, are major breakthroughs on the path to the development of novel biofilm prevention techniques," Pruess says.

The researchers have published articles about their findings in publications such as *Meat Science*, the American Meat Science Association journal, and *BMC Microbiology*, BioMed Central's journal.

Provided by North Dakota State University

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