

Preventing foodborne illness, naturally—with cinnamon

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Cinnamomum cassia oil has been shown to kill certain strains of *E. coli* bacteria.
Credit: Robert Hubner, WSU Photo Services

Seeking ways to prevent some of the most serious foodborne illnesses caused by pathogenic bacteria, two Washington State University scientists have found promise in an ancient but common cooking spice: cinnamon.

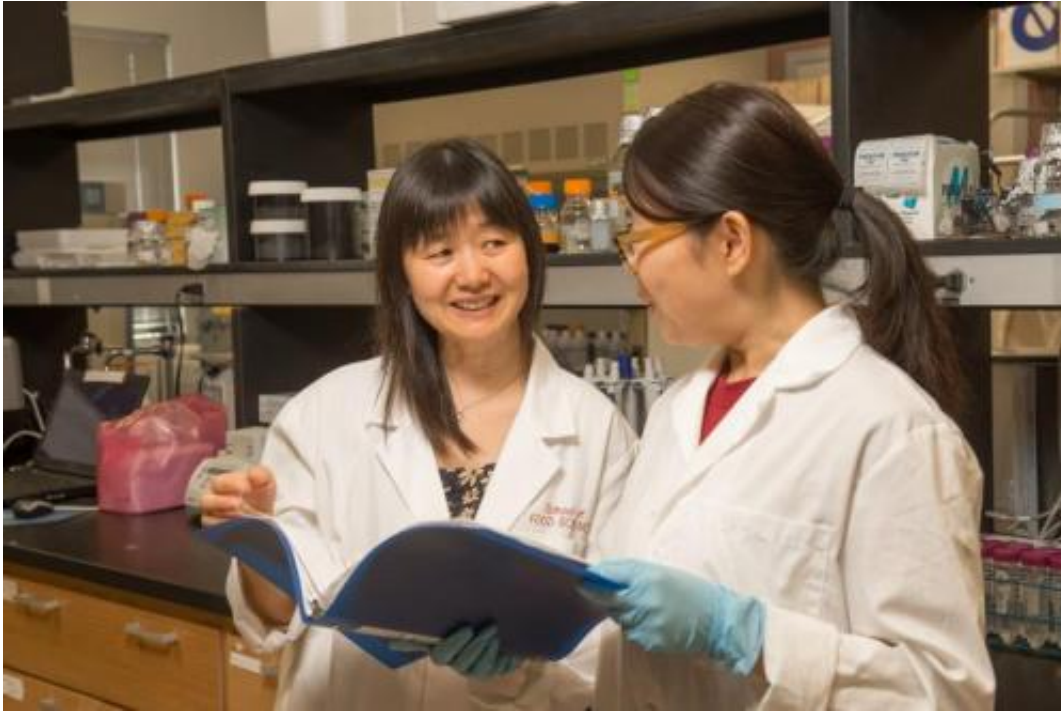
Recent findings published in *Food Control* journal [online](#) suggest Cinnamomum cassia oil can work effectively as a natural antibacterial agent in the [food industry](#). The study results add to a body of knowledge that will help improve food safety and reduce or eliminate cases of [food poisoning](#) and related deaths.

In the study, the essential oil killed several strains of Shiga toxin-producing *Escherichia coli* (*E. coli*), known to the U.S. Centers for Disease Control and Prevention as "non-O157 STEC." The study looked at the top six strains of non-O157 STEC, said co-author Lina Sheng, a graduate student in the School of Food Science.

The cinnamon cassia oil is effective in low concentrations, she said – about 10 drops diluted in a liter of water killed the bacteria within 24 hours.

Demand for natural food additives

Rising health concerns about chemical additives have strengthened demand for natural food additives, said co-author Meijun Zhu, an assistant professor in the School of Food Science.



This image depicts researchers at the WSU School of Food Science. Credit: Robert Hubner, WSU Photo Services

"Our focus is on exploring plant-derived natural [food](#) bioactive compounds as antimicrobials to control foodborne pathogens, in order to ensure safety of fresh produce," she said.

Sheng said about 110,000 cases of illness are caused annually by non-O157 STEC.

The U.S. Department of Agriculture Food Safety and Inspection Service has a "zero tolerance" policy for the CDC top six non-O157 STECs in raw ground beef and trimmings, indicating any raw non-intact beef products containing these pathogens will be considered adulterated. This has led Zhu and Sheng to include the beef industry in the large-scale application of their findings on cinnamon.

"The oil can be incorporated into films and coatings for packaging both meat and fresh produce," Sheng said. "It can also be added into the washing step of meat, fruits or vegetables to eliminate microorganisms."

Cassia cinnamon is produced primarily in Indonesia and has a stronger smell than the other common cinnamon variety, Ceylon.

In addition to *Cinnamomum cassia* oil, Sheng plans to take a look at another natural source to kill bacteria. She and her coworkers will study the potential of dandelions to inhibit bacteria related to bovine mastitis, an infection in the mammary glands of dairy cows.

More information: The article, "Inhibitory effect of *Cinnamomum cassia* oil on non-O157 Shiga toxin-producing *Escherichia coli*," will be published in the print version of *Food Control* in December 2014.

Provided by Washington State University

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