

[< Back](#) | [Home](#)



Tim Ditman

# Rinsing veggies may not be enough

## Alumna discovers shigella bacteria cannot be removed from vegetables

**By: Eric Heisig**

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Cooks run their vegetables under water to clean them before they are served, but even that preventative measure may not be enough, according to a University study published earlier this year.

While researching her doctoral dissertation, Meredith Agle, a 2003 University alumna who works as a scientist at Rich Products, found some types of food-borne pathogens on vegetables cannot be killed by rinsing them under water. These pathogens can make a person sick if not removed.

The study revolved around the shigella bacteria, Agle said, which can cause illness if biofilms form and stick to the vegetable. An outbreak of shigella in bean salad in a Chicago restaurant in 1999 was the basis for the research.

A good way to get these pathogens, which also include E. coli and salmonella, off of raw vegetables has yet to be discovered, said Scott Martin, professor in ACES.

"Once these pathogens get on the vegetables, you cannot remove them," Martin said. "There is nothing the consumer can do to remove the pathogens once they get onto the salad, unless you cook them."

These pathogens often enter the vegetables while they are still growing plants. They infect them through the stomata, structures on the outer skin of a plant that allow the exchange of oxygen and carbon dioxide.

Martin said there needs to be a better process in the field to kill these pathogens so people can eat bacteria-free vegetables. He compared vegetables contaminated by the pathogens to unpasteurized milk.

"There is no step available like the pasteurization step to treat fresh produce," he said.

The Food and Drug Administration has a procedure on its Web site for consumers to eliminate the chances of their vegetables being contaminated by food-borne pathogens. The FDA advises cutting off all bruised areas, rinsing the vegetable under water and then drying with a clean towel.

Sebastian Cianci, spokesman for the FDA, said these steps will help prevent people from getting sick.

"Food safety begins on the farm and ends with the consumer," Cianci said.

"By following a few simple rules for purchasing, storing and preparing produce, consumers can reduce the likelihood that they will experience food-borne illness," he said.

Agle said food-borne pathogen outbreaks are fairly common. Spinach was taken off the shelves in many supermarkets last year after an E. coli breakout, but Agle said the high level of publicity contributed to the widespread concern.

"There are a lot of outbreaks, but there are even more that go unreported," Agle said.

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