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Food Scientists Confirm the Effectiveness of Commercial Product in Killing Bacteria in Vegetable Washwater

BOISE, Idaho—Research conducted by food science faculty at the University of Idaho and Washington State University indicate that a commercially available fruit and vegetable wash, when used in a food-manufacturing setting, can dramatically decrease the number of disease-causing organisms in produce-processing washwater. That could reduce by manyfold the potential for cross-contamination within the water by such "gram-negative" bacteria as *Salmonella* and *E. coli* O157:H7.

The product, sold commercially as FIT Fruit and Vegetable Wash, not only proved much more effective than the commonly used chlorine dioxide but is made from ingredients like citric acid and distilled grapefruit oil that are generally regarded as safe. Chlorine dioxide, whose use in food plants can put workers at risk, was compromised by soils and plant debris in the washwater and killed only 90 percent of the target organisms in the food plant and followup laboratory studies. By contrast, FIT killed 99.9999 percent, according to associate professor of food science Dong-Hyun Kang of Washington State University. "If you had a million bacteria, you would have one left."

The research—unusual because part of it was conducted under real-world conditions in an Idaho freshpack potato operation—will be published by the *Journal of Food Science* in August and is currently available at www.blackwell-synergy.com/toc/jfds/0/0. University of Idaho Extension food scientist Jeff Kronenberg said the researchers chose potatoes for their study because their dirt-laden washwater poses the greatest challenge to products designed to control microbial contamination—not because of any food-safety threat potatoes pose. Indeed, Kronenberg said, "We have historically had zero problems with food-borne diseases in potatoes that are sold in grocery stores and restaurants because they're cooked."

Kronenberg believes FIT should be further investigated for fresh produce that has been associated with food-borne illness—including lettuce, spinach, tomatoes, cilantro, parsley and other leafy vegetables—where it is has the potential to save lives.

According to Kang, most food-processing firms cleanse their produce in flumes that operate as aquatic conveyor belts. “If a pathogen is introduced in the washwater, it will grow and continuously contaminate the new produce,” he said. With 15 years of experience, Kang has found it “very, very difficult” to control disease-causing organisms in flume water and said he “didn’t expect this kind of reduction. I’m really happy to see it.”

WSU research technologist Peter Gray agreed, noting that the bacteria were “knocked down below the detection limit almost instantaneously” in the FIT treatments.

Short Link