

New test to stop bacteria at factory door

May 13 2016, by Paul Mayne

What began as a conversation between parents at a hockey game could very well lead to the faster detection of a deadly E. coli bacteria, with the potential to drastically improve food safety around the world.

"One of my original partners, Michael Brock, our sons played hockey together and we got talking about what we did," said Michael Rieder, a Schulich School of Medicine & Dentistry professor and Robarts Research Institute scientist. "He was in [food safety](#) and I told him what we did the lab. We met again and we looked at the opportunities."

The opportunity they developed is a rapid-testing kit to detect E. coli 0157, a food-borne bacteria commonly found in ground meat. The test would allow manufacturers to identify contaminated food before it leaves the processing plant.

Currently, by the time the bacteria is identified by the processor, the food has been shipped to grocery stores and may have already caused illness. This can lead to major recalls and cost companies millions of dollars, such as the 2008 Canada-wide outbreak of listeriosis by Maple Leaf Foods.

"Most bacteria is harmless and a lot are actually healthy. It's the 1-5 per cent that are bad. In the E. coli family, 0157 is the 'Walkerton one.' It kills people all the time. We only look at the ones that matter," Rieder said. "During the slaughtering process the carcasses get contaminated with microorganisms, usually from the animal's intestinal track. Every now and then it causes a problem."

On average, 440 cases of E. coli 0157 infection in humans are reported annually to the Public Health Agency of Canada.

"Our rapid-testing kit takes it from about a week to 24 hours. Ideally, we can stop the product from leaving the facility," he said, equating the test's simplicity to pregnancy tests – one line for negative, two lines for positive.

"You want to get it tested at the facility level, before it hits the stores, so you can stop it before it enters the food chain. All the big companies have labs. This would help them in terms of speed, but for smaller or medium-sized companies that don't have labs, and have to contract out, this will let them do lab work in their facilities."

Much of the work has been funded through a grant from Mitacs, a national non-profit that encourages academic and industrial collaboration. Rieder then partnered with Toronto-based International Point of Care to develop the E. coli testing kit for the meat-processing industry.

Through the Health Canada-certified Agriculture and Food Laboratory at the University of Guelph, Rieder has been working on getting final approval, which he expects in the next couple months. Rieder stressed there is a need for similar testing kits for other potentially dangerous [bacteria](#), such as listeria, salmonella and campylobacter.

"It could be a big deal for E. coli, but could be even bigger for things like listeria, because that takes three weeks to bear out," he said. "We're doing that work with listeria now, and if we can get that same technology to work, that's actually a big deal."

The testing kit is not the only thing that ended up being faster, with the concept to production process taking just five-years for Rieder, a quick

turnaround in the R&D world. He attributes this to a number of factors.

"The real key to success is the ability to achieve partnerships with synergistic skill sets," he said. "Have an open mind, agility, look outside the box, a ton of people looking at this, get the right people, really talented postdocs and seize opportunities."

Provided by University of Western Ontario

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