(/)

Accurate Salmonella test gives veterinarians quick results

By Krishna Ramanujan | October 5, 2017

Food & Agriculture (/categories/food-agriculture)

Life Sciences & Veterinary Medicine (/categories/life-sciences-veterinary-medicine)

Media Inquiries

A new test allows accurate, rapid testing for Salmonella, bacteria that represent one of the leading causes of food-borne illness across all regions of the world. Salmonella can infect animals as well as people, with commonly reported cases of people falling sick after handling pets and livestock.

Tests that used to take days now take 24 hours, with a hundredfold improvement in detection for at least one type of Salmonella – called Salmonella Dublin – that is an emerging concern and is difficult to grow in culture, making diagnosis difficult.

The new method, first developed for automated food safety testing and then adapted by Cornell scientists for a wider range of sample types, can detect the bacteria from environmental and clinical samples, including swabs, feces,

(http://news.cornell.edu/sites/default/files/styles/full_size/public/2017-10/1005_perkins.jpg?itok=wkzSaUq7)

Robert Barker/University Photography

Gillian Perkins, biosecurity director of the Cornell University Hospital for Animals, performs routine Salmonella surveillance sampling.

milk and blood.

The test improves diagnosis time from as many as five days using current procedures, according to a recent study **published Sept. 1 in the Journal of Veterinary Diagnostic Investigation (http://journals.sagepub.com/doi/10.1177/1040638717728315)**.

Fast diagnosis of environmental samples is important because clinics are forced to leave rooms vacant or trust their cleaning and disinfection protocols and put healthy animals in areas that could spread infection.

"Because we have this 24-hour turnaround time with the new test, there are veterinary hospitals and clinics that can test and get results rapidly and make sure they are not exposing other animals to Salmonella," said Belinda

Thompson, assistant clinical professor at the Animal Health Diagnostic Center and a senior author of the paper.

Fast clinical diagnoses also allow veterinarians to quickly quarantine an infected animal.

Salmonella Dublin is "host adapted" in cattle, meaning infected animals can become permanent or long-term carriers, putting herd mates, especially susceptible calves, at risk. This strain can infect people who may be exposed by contact with infected animals, by drinking raw milk, or by consuming other contaminated food products. In humans, Salmonella Dublin has higher hospitalization and fatality rates than other Salmonella types; it causes systemic infection of body tissues, similar to typhoid.

"Salmonella biosurveillance in veterinary facilities is critical because animals can shed the bacteria without showing clinical disease signs," said Laura Goodman, a senior research associate in the Department of Population Medicine and Diagnostic Sciences and lead author of the study. Goodman added that the method described in the study is now available as an **environmental testing program (https://ahdc.vet.cornell.edu/programs/salmonella/)** through the Animal Health Diagnostic Center.

The test was funded and developed in collaboration with the Food and Drug Administration (FDA) Veterinary Laboratory Investigation and Response Network. Cornell works closely with FDA scientists to evaluate and perform new methods that the government agency can share with other veterinary labs.

The study describes an important innovation: Choosing a type of broth culture that selectively provides the right nutrients to grow certain bacteria. The researchers chose a broth that would cover a wide range of Salmonella types, including Salmonella Dublin and others relevant to animal health. They then applied an advanced molecular detection system to screen the broth for small amounts of Salmonella DNA. Bacteria can be further characterized with whole genome sequencing.

"Salmonellosis can be a serious and costly disease of animals and people, and anything we can do to enhance diagnostic procedures to help control the pathogen is a good thing," Thompson said.

STORY CONTACTS

Krishna Ramanujan

ksr32@cornell.edu (mailto:ksr32@cornell.edu)
607-255-3290 (tel:607-255-3290)

LINKS

About the Chronicle (/about)
Media Relations Office (http://mediarelations.cornell.edu/)
Copyright (/about/copyright)

CONTACT

Cornell Chronicle
312 College Ave
Ithaca, NY 14850
607-255-4206 (tel:+1607-255-4206)
cunews@cornell.edu (mailto:cunews@cornell.edu)