MedicalXpress

Food laboratory accuracy remains a concern

May 20 2013

Food microbiology laboratories continue to submit false negative results and false positive results on a routine basis. A retrospective study of nearly 40,000 proficiency test results over the past 14 years, presented today at the 113th General Meeting of the American Society for Microbiology, examined the ability of food laboratories to detect or rule out the presence of *Escherichia coli* O157:H7, *Salmonella*, *Listeria monocytogenes*, and *Campylobacter*.

"There is concern when laboratories report that pathogens are not found in a food sample, when in fact they are there," explained Christopher Snabes, lead author on the study. "This is known as a 'false negative'. Similar concerns arise when a laboratory reports a 'false positive' suggesting that pathogens are in the food sample, when indeed they are not."

The study found that, on average, food laboratories report false negatives of 9.1% for *Campylobacter*, a bacterial foodborne illness that may cause bloody diarrhea, cramping and fever, and 4.9% for *Salmonella*, a bacteria that may cause diarrhea, fever and abdominal cramps sometimes leading to hospitalization or death. The false positive rate, on average, is 3.9% for *Salmonella*, and 2.5% for both *E. coli* and *L. monocytogenes*.

This study was conducted by the American Proficiency Institute (API) located in Traverse City, Michigan. API is a private institute that supplies proficiency testing programs for food laboratories and clinical laboratories.

API offers proficiency testing (PT) as an objective method for measuring the accuracy of a laboratory. Participants use API PT up to three times a year to examine the accuracy of their laboratory personnel and their testing methods. The purpose of PT is to determine if the laboratory professional can properly respond to API with correct answers as to what API places in a food sample. PT may test for presence or absence of a substance in a qualitative test, and sometimes PT may require an enumeration response, or quantitative test.

Currently, food laboratories are not required to assess the accuracy or quality of their tests. Laboratories that utilize API PT are doing so voluntarily. Some laboratories use API services to obtain and maintain accreditation. API food microbiology PT programs are used by over 700 food laboratories in 43 countries.

Proficiency testing is an objective means for measuring laboratory accuracy. "Improved accuracy in our nation's food laboratories will lead to a safer food supply," noted Snabes.

The Food Safety Modernization Act, passed in 2011, included sweeping changes to the country's food safety requirements. Model laboratory standards and laboratory accreditation are addressed as important components of the law. Once rules are promulgated, it is anticipated that all food laboratories will need to ensure that their personnel, and the test methods they use, are in compliance with the law. Yet, food laboratories may start using proficiency testing now to help ensure a safer food product.

More information: This research was presented as part of the 2013 General Meeting of the American Society for Microbiology held May 18-21, 2013 in Denver, Colorado.

Provided by American Society for Microbiology