Lesser-known Escherichia coli types targeted in food safety research

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Almost everyone knows about *Escherichia coli* O157:H7, the culprit behind many headline-making outbreaks of foodborne illness in the United States. But the lesser-known relatives of this pathogenic microbe are increasingly of concern to food safety scientists.

That's according to U.S. Department of Agriculture (USDA) microbiologist and research leader Pina M. Fratamico. Researchers such as Fratamico, along with food safety regulators, public health officials and food producers in the United States and abroad, want to know more about these less-studied pathogens.

In the past few years, a half-dozen of these emerging *E. coli* species, also called "serogroups," have come to be known among food safety specialists as "the Big Six," namely *E. coli* O26, O45, O103, O111, O121, and O145.

Fratamico and her colleagues are sorting out "who's who" among these related pathogens so that the microbes can be identified and detected quickly and reliably. The researchers are doing that by uncovering telltale clues in the microbes' genetic makeup.

Building upon this work, Fratamico and her Agricultural Research Service (ARS), university, and industry collaborators have developed gene-based PCR (polymerase chain reaction) assays for each of the Big Six. With further work, the assays might be presented as user-friendly test kits for use by regulatory agencies and others. Foodmakers, for

example, might be able to use such kits for in-house quality control, while public health agencies might rely on them when processing specimens from patients hospitalized with foodborne illness.

Analyses of test results might help researchers determine whether certain strains of Big Six *E. coli* species cause more illness than *E. coli* O157:H7 does, and if so, why.

More information: Fratamico has collaborated in this work with Chin-Yi Chen, Yanhong Liu, Terence P. Strobaugh, Jr., and Xianghe Yan at Wyndmoor; Connie E. Briggs, formerly with ARS; and others. Their findings appeared in *Applied and Environmental Microbiology*, the *Canadian Journal of Microbiology*, and other scientific journals.

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