International Association for Food Protection

P3-137: Prevalence and Characteristics of Shiga-toxigenic *Escherichia coli* (STEC) Isolates in Raw Cow Milk from Agro-Pastoral Farms in Ghana

Wednesday, July 11, 2018
09:00 AM - 03:00 PM
Salt Palace Convention Center

Introduction: Shiga toxin-producing *Escherichia coli* (STEC) is an important foodborne pathogen of public health concern in both developed and developing countries. STEC can cause severe clinical symptoms such as hemorrhagic colitis and hemolytic-uremic syndrome.

Purpose: This study determined the prevalence and characteristics of STEC isolates in raw cow milk from agro-pastoral farms in Ghana.

Methods: A total of 210 raw cow milk samples were collected from 42 agro-pastoral farms in Ghana for the isolation of *E. coli*. Suspected *E. coli* isolates were identified using Vitek II Compact system. STEC virulence genes encoding Shiga toxin (*stx*1 and *stx*2), intimin (*eae*A), and STEC autoagglutination adhesin (*saa*) were determined by PCR. The O-serotypes of STEC isolates were determined using *E. coli* antisera. Susceptibility of STEC isolates to 15 different antibiotics were determined using the microdilution method.

Results: In total, 58.1% (122 of 210) of raw milk collected from agro-pastoral farms were positive for *E. coli*. In general, 2.4% (10 of 423) of *E. coli* isolates harboured *stx* genes. Out of the 10 STEC isolates, 40% (4 of 10) harboured only *stx*1 gene, 10% (1 of 10) harboured only *stx*2 gene, and 50% (5 of 10) possessed both *stx*1 and *stx*2 genes. Additionally, all STEC isolates harboured *eae* gene, but not *saa* gene. All 10 STEC isolates belonged to 10 different serogroups, with no O157 serotype detected. STEC isolates showed phenotypic resistance to ampicillin (10 of 10; 100%), streptomycin (10 of 10; 100%), and tetracycline (8 of 10; 80%). All STEC isolates showed resistance to at least two different antibiotics.

Significance: Detection of antibiotic-resistant shiga toxin-producing *E. coli* (STEC) in raw cow milk in this report indicates the potential health risk associated with consuming milk. Thus, this report provides useful epidemiological information and emphasizes the need to develop strategies to prevent contamination of raw cow milk on Ghanaian farms to assure safety of consumers.

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