



Tropentag, September 17-19, 2014, Prague, Czech Republic

“Bridging the gap between increasing knowledge and decreasing resources”

## ***Escherichia coli* O157 Serotype in Beef Carcasses Post Slaughterhouse in Nairobi and Eldoret, Kenya**

JOHN KAGO<sup>1</sup>, ERASTUS KANG'ETHE<sup>2</sup>, JOHN WANGO<sup>1</sup>, KOHEI MAKITA<sup>3</sup>

<sup>1</sup>University of Nairobi, Dept. of Food Science, Nutrition and Technology, Kenya

<sup>2</sup>University of Nairobi, Dept. of Public Health, Pharmacology and Toxicology, Kenya

<sup>3</sup>Rakuno Gakuen University, Veterinary Epidemiology, Japan

### **Abstract**

The research covered three slaughterhouses in Nairobi and Eldoret. The objectives were to assess the prevalence of *E. coli* O157 serotype contaminated carcasses at dispatch, the possible cross-contamination during transportation, and knowledge, attitude and handling practices that led to increased contamination or bacterial growth.

Randomly selected 250 beef carcasses were sampled. Swab samples from a single carcass were obtained from three sites during loading and offloading of meat to carriers. A total of 1500 samples were obtained. *E. coli* O157 serotype was isolated, and purified using sorbitol MacConkey, MacConkey and nutrient agar. Serotyping was by card agglutination test. Oxoid verotoxin test kit was used to test for verotoxin (VT1 and VT2) production. Carrier environment was monitored. Knowledge, attitude and practices of meat transporters were assessed through a semi structured questionnaire and observations. Probability of contamination was modeled and run through Monte Carlo simulation using winBUGS®. Prevalence and data from the questionnaire were analysed using SPSS Ver.17.

The contamination prevalence at offloading was significantly higher compared to loading ( $p = 0.05$ ). The probability of obtaining an *E. coli* O157 serotype contaminated carcass at Dagoretti, Limuru and Eldoret, respectively, was 14, 16 and 19 at loading and 31, 39 and 66 at offloading per 1000 carcasses handled. The temperature in the meat carrier significantly increased ( $p = 0.004$ ) during transportation between loading and offloading. The average time taken to transport the meat from the slaughterhouses to the butchery was 65 minutes.

About 14 (43.8%) of the meat transporters had worked in the meat industry for at least 5 years and almost an equal number 13 (40.4%) had had formal training on meat hygiene. About 53% of meat transporters claimed to wash hands regularly with cold water and soap. Meat carriers were cleaned at the river or in a car wash with cold water and soap only. Carcasses were loaded on the shoulders of the transportation personnel and placed on the floor of the carriers or heaped on top of other carcasses. Offloading at the butchery was done by the same person with no change over of clothes that could be soiled with blood.

**Keywords:** Beef carcasses, *Escherichia coli* O157 serotype, transportation chain