Microbial Contamination at Slaughter and Retail Points of the Pork Value Chain in Uganda

Velma Kivali[1,2], Uwe Rosler[2] , Sihn Dang-Xuan[1] , Ian Dohoo[1,4] , Clovice Kankya[3] , Kristina Roesel [1]& Elizabeth Anne Jessie Cook[1].

[1]International Livestock Research Institute,[2]Free University of Berlin ,[3]Makerere University, [4]University of Prince Edward Island.

Introduction

Uganda leads in per capita consumption of pork in the African region currently at 3.4 kilograms per person per year and this is projected to keep increasing. However, the pig value chain is not well organized, is constrained by weak legal frameworks, poor input services, inaccessibility to financial services and lack of polices to govern pig slaughter and processing. Expansion in pig production is therefore likely to be associated with increased proliferation, amplification and spread of bacterial foodborne infections. The increased levels of microbial contaminants due to cross-contamination at slaughter and poor meat handling, increases exposure to foodborne hazards to the final consumers of pork and to meat industry workers. However, the levels of microbial contamination in this chain remains uninvestigated. This study therefore aimed to establish the points in the pork value chain between slaughter and retail where contamination takes place and the factors that contribute to those levels.

Materials and Methods

A cross-sectional study design was employed . A total of 17 pig slaughter facilities and their associated 62 points of pork retail were recruited into the study in three different regions of Uganda: central, northern, and eastern regions. Pigs presented for slaughter were sampled, and the carcasses tracked to the point of retail. Samples were collected from the point of slaughter all the way to the point of retail for total coliform evaluation. This included water used for dressing (n=138), hand swabs of the meat handler handling the carcass (n=150), carcass swabs (n=151), hand swab of the main pork handler at retail(n=151), pork chopping surface(n=151), raw pork (n=151), cooked pork (n=151), and vegetables served with ready to eat pork(n=63). A total 1244 samples were subjected to total coliform evaluation in the laboratory. An observational tool was used to collect data on the facility's infrastructure, pork handling and storage practices and hygiene practices both at slaughter and at retail points among other factors that influence occurrence and levels of contamination.

Results and Conclusion

Preliminary findings reveal high levels of contamination with coliforms all along the chain from slaughter to retail. This highlights the need for improved hygiene and pork handling practices and improvement of infrastructure, regulation, and law enforcement in this chain. Data analysis on the laboratory findings and risk factor analysis is in its final stages and will be ready for presentation at this conference. The levels of contamination at different points along the chain, will provide useful data for control and mitigation of cross-contamination and ultimately improve pork safety and occupational health.