

PORK SAFETY

Title: Epidemiology of STEC in Swine, #10-128

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Scientific Abstract:

Shiga toxin-producing *Escherichia coli* (STEC) are important public health concern, causing more than 200,000 cases of illness annually in the United States. STEC infections are associated with severe clinical diseases in humans: hemorrhagic colitis (HC) and hemolytic uremic syndrome (HUS). The majority of STEC infections are attributed to food or water contaminated by animal feces. There have been outbreaks and cases of STEC infections in humans associated with pork products. However, little is known about swine STEC to date. We have conducted a descriptive longitudinal study to achieve our objectives: to describe the epidemiology of STEC shedding in US swine during the finishing period and to characterize swine STEC strains. **Methods:** This study included three cohorts of pigs from one production company. In each cohort, 50 randomly-selected pigs were individually identified and followed through the finishing period. Fecal samples were collected from each pig every two weeks within the 16 weeks of the finishing period (eight samples/pig). Samples were submitted for STEC detection by enrichment (10 min in TSB, pH 3 followed by incubation for 15 h in modified TSB, pH 8.7 at 41 °C) followed by the polymerase chain reaction (PCR) targeting the Shiga toxin genes (*stx*) and the intimin protein gene (*eae*). Shiga toxin gene-positive samples were plated onto ChromAgar STEC. Presumptive STEC isolates were recovered and confirmed. Serotypes and *stx* gene subtypes were characterized. **Results:** In general, STEC was detected in samples from 31 out of the 50 pigs in cohort 1, 27 out of the 50 pigs in cohort 2, and 40 out of the 50 pigs in cohort 3. STEC was detected more than one time in over 50 % of the pigs in each cohort. The shedding patterns within the finishing period were similar to outbreak curves. No *eae* gene has been detected in these swine STEC strains.

Conclusions:

These data will be critical to fill the current knowledge gaps in swine STEC epidemiology and the association of swine STEC and public health.

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

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