The Presence and Prevalence of *Salmonella*, *Campylobacter* spp. and O-serotypes of *E. coli* in Swine Raised Under Differing Management Schemes

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There is increasing demand by the public for assurance of an economical, high quality and safe food supply. Microbial contamination of foods at slaughter is of increased interest, because one of the primary sources of carcass contamination is from feces. Thus, from a food safety perspective, a HACCP critical control point is the late finishing stage and how pigs are handled from farm to slaughter. Segregated early weaning systems produce pigs in fewer days to market than continuous flow systems, with higher health status and fewer respiratory pathogens. Feed is withheld from pigs during shipping, however, fasting reduces the inhibitory effect of the normal intestinal microflora and could potentially result in increased fecal pathogen levels. Thus, the objectives of this research project were: 1) compare multi-site SEW versus continuous flow rearing of swine on incidence of fecal pathogens of human health significance, 2) compare the effect of 24 hour fasting versus full feeding on the intestinal pathogen concentrations at slaughter with pathogen positive pigs, 3) assess the incidence of carcass contamination in pathogen positive and representative control swine.

One hundred twenty pigs were placed in segregated early weaning nursery facilities followed by placement into a cleaned, disinfected curtain-sided grower finisher unit, where they were reared until market weight of 240-260 lb. was reached. Littermate pigs (120) were kept with their dams until 28-30 days of age, at which time they were moved to an all-in, all-out nursery, followed by introduction into a continuous flow finisher building at 8 weeks of age. This group of pigs remained in the continuous flow finisher unit, interspersed with pens of pigs of varying ages, until they reached market weight. All pigs received Tylan® during the finishing phase. Rectal fecal specimens were collected from 1 week to 1 month prior to slaughter. The fecal specimens were cultured within 4 hours of collection for the presence of *Salmonella*, *Campylobacter* and O-serotype *E. coli*. Only four pigs tested positive for *Salmonella* during the later part of the finishing stage. However, these four pigs were from the high health status group. All pigs were negative for *Campylobacter* and O-serotype *E. coli*.

The *Salmonella* positive pigs, as well as an additional 18 *Salmonella* negative pigs were divided into two groups. One group was fasted for 24-30 hours prior to slaughter, while the second group was full-fed up to 4-6 hours prior to slaughter. Pigs were rectally sampled prior to and at the end of the fast. These pigs were followed to the slaughter plant and the chilled carcasses were swabbed at the shoulder, loin and ham. The samples were plated for the presence of pathogenic bacteria. All swabs collected from the carcasses were culturally negative for *Salmonella* and *Campylobacter* spp. and O-serotype *E. coli*.

In summary, 4 of 226 pigs sampled in this study were positive for *Salmonella* and all of the positive pigs were found in the high health status group of pigs. Only 1 of the 4 pigs initially testing positive for *Salmonella* remained positive at more than 1 sampling period, suggesting that shedding is periodic. With the small number of positive pigs, it was impossible to determine if fasting increased pathogen numbers.