GRADUATE STUDENT ORAL COMPETITION: MS

18 Impact of in-feed vs. in-water antibiotic administrations on the fecal prevalence and antimicrobial susceptibilities of Campylobacter and Salmonella in piglets. Victor L. Ishengoma[1], Raghavendra G. Amachawadi[2], Kellen A. Habib[2], Xiaorong Shi[3], Taghreed Mahmood[4], Wade M. Hutchens[5], Mike D. Tokach[6], Steve S. Dritz[3], Jason C. Woodworth[5], Robert D. Goodband[6], Joel M. DeRouchey[6], Michael D. Apley[6], T.G. Nagaraja[3], *[1]Department of Clinical Sciences, College of Veterinary Medicine, Manhattan, KS 6650, [2]Department of Clinical Sciences, College of Veterinary Medicine, Manhattan, KS 66506., [3]Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506, [4]Department of Clinical Sciences, College of Veterinary Medicine, Manhattan, KS 66506, [5]Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, [6]Kansas State University*

Campylobacter and Salmonella are common food borne pathogens in the gut of pigs and are shed in the feces. The control of these bacteria in pigs is of importance in reducing the potential for transmission to humans. In swine, oral route, either in-feed or in-water, is by far the most common route of administration of antibiotics. Because the distribution of the antibiotic in the gut and the dosage are different, the impact of in-feed vs. in-water administration of antibiotics on the fecal shedding of food borne pathogens, Campylobacter and Salmonella, and on the development of antimicrobial resistance (AMR) in gut bacteria is a largely unexplored area. Therefore, a study was conducted to compare the effects of in-feed and in-water antibiotic administration on fecal prevalence of Campylobacter and Salmonella and AMR development in nursery piglets. A total of 1,296 weaned piglets were allocated into pens (48 pens; 27 pigs per pen) distributed in a single room. Pens were assigned randomly to six treatment groups; Control (No antibiotic), In-feed chlortetracycline (CTC), In-water CTC, In-feed tiamulin, In-water tiamulin, and a combination of CTC and tiamulin (In-feed). Fresh fecal samples were collected randomly from 5 of 27 piglets from each pen on pre-treatment (days -7, 0), treatment (days 7, 14) and post-treatment (days 21, 28) phases. Bacterial isolations and identifications were done by culture method and PCR, respectively. Overall prevalence of Campylobacter and Salmonella were 18.2% (262/1,440) and 3.9% (56/1,440) respectively. Speciation of Campylobacter isolates indicated C. hyointestinalis (17.9%; 258/1,440) and C. coli (0.3%; 4/1,440). Pigs from control group had a higher prevalence ($P < 0.05$) of both Campylobacter and Salmonella when compared to other treatment groups. Both treatment and post-treatment phases had a significant effect on the prevalence of Campylobacter and Salmonella ($P < 0.05$).

Keywords: Campylobacter, Salmonella, Antibiotic, In-feed, In-water