

221 Effects of carbadox on microbial ecology in ileal digesta and feces of weanling pigs. M. Song*¹, L. L. Stewart¹, J. Barnes¹, J. A. Soares¹, B. R. Gramm², R. D. Nimmo², H. H. Stein¹, and J. E. Pettigrew¹, ¹*University of Illinois, Urbana, IL, USA*, ²*Phibro Animal Health Co., Ridgefield Park, NJ, USA*.

A study was conducted to evaluate effects of carbadox on microbial ecology in ileal digesta and feces of weanling pigs. Pigs (n = 15, 9.3 ± 0.8 kg BW) were surgically fitted with a T-cannula in the distal ileum and were assigned randomly to one of 3 dietary treatments. The treatments were: 1) a corn-soybean meal diet (CON), 2) CON + 27.5 ppm carbadox (LO), and 3) CON + 55 ppm carbadox (HI). During the 6-wk experiment, all pigs were fed CON during wks 1, 5, and 6 and their respective treatments during wks 2, 3, and 4. Ileal digesta and feces were collected on d 6 and 7 of each period to measure the number of bacterial cells by Gram's method and to assess bacterial populations by denaturing gradient gel electrophoresis (DGGE). Results from DGGE included the species diversity (the number of bands) and the similarity of population structures (Sorenson's pairwise similarity coefficients (Cs)) assessed across pigs within treatment (INTRA), between treatments (INTER), and between treatment period and subsequent period within pig (INTER-P). There were no carbadox effects on the number of bacterial cells or bands, and the INTER Cs values did not show clear carbadox effects. The ileal INTRA Cs values of the carbadox treatments were lower (P < 0.05) than the controls in wk 2 (78, 75 & 93% for LO, HI & CON, respectively), but higher in wk 4 (89, 95 & 80%), suggesting that carbadox eventually makes pigs more uniform in microbiota after an initial disruption. The ileal INTER-P Cs values of the carbadox treatments were lower than the controls comparing the treatment period to wk 5 (68, 74 & 81%; P < 0.10) and wk 6 (67, 73 & 84%; P < 0.05), suggesting that ileal microbiota is changed by feeding carbadox. Several specific bands were present in most pigs fed CON, but absent from most pigs fed LO or HI in ileal digesta. Those patterns were not shown in feces. In conclusion, carbadox modifies ileal microbiota and makes it more uniform across pigs.

Key Words: carbadox, microbial ecology, weanling pigs