

Effects of virginiamycin on microbial ecology in ileal digesta and feces of growing pigs.

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A study was conducted to evaluate effects of virginiamycin on microbial ecology in ileal digesta and feces of growing pigs. Pigs (n=15, 35kg BW) were surgically equipped with a T-cannula in the distal ileum. Pigs were assigned randomly to one of 3 dietary treatments: 1) a corn-soybean meal diet (CON), 2) CON + 11 ppm virginiamycin (V11), and 3) CON + 22 ppm virginiamycin (V22). During a 6-wk experiment, all pigs were fed the CON diet during wk 1, 5, and 6 and their respective treatment diets during wk 2, 3, and 4. Pigs were always allowed *ad libitum* access to feed and water. Ileal digesta and fecal samples were collected on d 6 and 7 of each period to measure the number of bacterial cells by Gram's method and to use denaturing gradient gel electrophoresis (DGGE) to estimate the species diversity of the bacterial population (the number of bands) and quantitative measures of the similarity of population structures (banding pattern expressed by Sorenson's pairwise similarity coefficients (C_s)) among pigs within and between treatments. Virginiamycin treatments reduced ($P<0.05$) the number of bacterial cells in ileal digesta for V22 (10.45 vs. 10.56 (CON), log (/g digesta), overall) and in feces for V11 and V22 (11.36 and 11.19 vs. 12.00 (CON), log (/g digesta), wk 4; 11.73 and 11.72 vs. 11.90 (CON), log (/g digesta), overall) when virginiamycin treatments were imposed. Pigs fed V22 had fewer (22.13 vs. 26.83; $P<0.05$) bands in ileal digesta than pigs fed CON over the entire experiment. There was no virginiamycin effect for the number of band in feces. In a few cases, specific bands were present in most pigs fed CON, but absent from most pigs fed virginiamycin treatments. There were no virginiamycin effects on intratreatment or intertreatment C_s values. In conclusion, virginiamycin reduces the number of total bacteria in ileal digesta and feces at some measurement times, and causes modest changes in the composition of the flora.

KEYWORDS

virginiamycin
microbial ecology
growing pigs