

Effects of dietary nucleosides on intestinal microbial activity and performance of newly weaned pigs

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ABSTRACT: Two experiments were conducted to determine the effects of adding nucleosides to starter diets for weanling pigs. In exp. 1, 36 pigs were weaned at 18 ± 2 d and allotted to three treatment groups in a completely randomized design. Pigs allotted to treatment 1 were fed a corn casein lactose-based basal diet (diet 1). Pigs allotted to treatments 2 and 3 were fed the basal diet supplemented with nucleosides in the following quantities: adenosine, 0.002 and 0.012%; cytidine, 0.001 and 0.006%; guanosine, 0.004 and 0.019%; inosine, 0.0005 and 0.002%; and uridine, 0.047 and 0.236% for diets 2 and 3, respectively. Fecal samples were obtained on the d of weaning and 7 and 14 d thereafter. On d-7, pigs fed diet 3 had lower ($P < 0.05$) fecal counts of *Cl. perfringens* compared with pigs fed diet 1 (6.08 vs. 5.04 \log_{10} cfu/g). On d-14, both pigs fed diet 2 and pigs fed diet 3 had lower ($P < 0.05$) fecal counts of *Cl. perfringens* compared with pigs fed diet 1 (4.26 and 3.00 vs. 4.76 \log_{10} cfu/g). On d-14, the fecal counts of *L. acidophilus* and of *Bifidobacterium* spp. were higher ($P < 0.05$) in pigs fed diet 2 compared to pigs fed diet 1 (9.32 and 8.35 vs. 8.82 and 7.68 \log_{10} cfu/g, respectively). Experiment 2 was an in-vitro study that was conducted to determine the antimicrobial and probiotic properties of nucleosides. Broths containing microflora from pigs were prepared and either not supplemented with nucleosides (control) or supplemented with nucleosides. The bacterial growth in both broths was measured over a 16 h period. Results showed that *E. coli* was inhibited ($P < 0.05$) by the inclusion of nucleosides. In contrast, *Cl. perfringens* and *Bifidobacterium* spp. counts in nucleoside supplemented

broth were higher ($P = 0.005$ and $P = 0.017$, respectively) compared to the control broth. The results of the two experiments indicate that nucleoside supplementation during the immediate post-weaning period may positively influence the gastrointestinal microflora by decreasing enterobacteria and increasing *L. acidophilus* and Bifidobacterium species.

Key Words: Immunoglobulins, Microflora, Nucleosides, Piglets