4 Effects of galactosyl lactose on ileal microflora, entation acids, performance, and energy and nitrogen ration in the weanling pig. C. M. Robbins*, S. E. Chattin, A. G. Mathew, The University of Tennessee, Knoxville.

A series of trials, cannulated and intact pigs were used to mine the effects of galactosyl lactose (GL) on ileal microflora, short chain fatty acid concentrations, performance, and gen and energy utilization. All pigs were weaned at 21 d of age and assigned to one of two treatments, including: 1) an 18% protein corn-soy based control diet, and 2) a similar diet 2.99 kg/kg of galactosyl lactose. In the cannulation studies, ileal feca were collected weekly from 24 pigs over a 3 week period. Digesta were analyzed for total E. coli, streptococci, bacilli, lactate, and VFA. No differences (P > 0.05) were observed in ileal feca microflora or short chain fatty acid concentrations between treatments. Average ileal E. coli concentrations of 7.59 6.99, streptococci concentrations of 8.77 and 8.58, and bacilli concentrations of 7.84 and 8.04 log CFU/g were observed in control and GL-fed pigs respectively. Total ileal VFA concentrations of 46.1 and 43.0 mg/mL and total lactate concentrations of 44.5 and 36.4 mg/mL were observed for control and GL-fed pigs. In performance trials using a total of 90 pigs, a d (P < 0.06) for greater intake was observed in GL-fed pigs compared to controls while gain and feed/gain ratios were similar (P > 10) between treatments. For digestibility trials, 20 pigs were collected caged and feces and urine collected three consecutive 1 week over a 3-week period. Apparent energy digestibility, nitrogen digestibility and metabolizability were not different (P > 0.1) between treatments. These results indicate that the milk derived oligosaccharide, galactosyl lactose, does not affect ileal microflora and their metabolites, performance, energy and nitrogen utilization in the weanling pig.

Words: Oligosaccharide, Microflora, Short Chain Fatty Acids


The efficacy of adding pharmacological levels of Zn (as ZnO) or amycin sulfate (APR) to simple or complex starter diets for 21 to 28 days weaned pigs was studied. A split-split plot design was used. A total of 258 pigs (7.1 kg) were weaned in two groups with h group assigned to 24 pens at different nursery sites (whole). Diets (sub-plots) were simple containing corn, soybean meal, and 20% dried-whey or complex containing these ingredients plus 10% lactose and 2% spelt-dried plasma. All treatments were formulated for 1.40% lysine at 140 ppm. There were seven dietary treatments as indicated in the table below. Diets were fed in three phases: phase I (d 0 to 7), phase II (d 7 to 22), and phase III (d 22 to 34). When supplemented, Zn levels were 3,000 ppm from d 0 to 7 and 2,000 from d 7 to 34; Cu supplemented diets contained 250 ppm Cu. During phase I, no differences were detected for ADG, ADV, or G:F. From d 7 to 22, pigs fed the diet containing Zn (regimen 3, 4, and 5) had increased ADG and were more efficient than pigs fed the control diet (regimen 1, 2, and 6; P < 0.05). Pig 3 fed the diet containing copper (P < 0.10). During the first week of phase III (d 22 to 28), pigs fed regimen 3 had better G:F than pigs fed regimen 5. From d 28 to 34, no differences were detected, but pigs fed regimen 3 had the numerically lowest ADG and ADV. For the entire phase III period, no differences were detected for ADG, ADV, or G:F. For the entire trial, pigs fed regimen 3 and 4 were heavier (P < 0.10) than pigs fed regimen 1 and 6. There were no differences detected for any of these parameters between treatments.

Key Words: Zinc, Copper, Pigs


A 34 d growth assay utilized 266 pigs (initially 5.65 kg and 21 d of age) to compare the effects of Zn (zinc oxide) and Cu (copper sulfate) supplementation regimen on the growth performance of starter pigs. There were two replicate pens per treatment with 6 or 7 pigs per pen. Pigs were blocked by BW and assigned to one of seven dietary treatments as indicated in the table headings below. Diets were fed in three phases: phase I (d 0 to 7), phase II (d 7 to 22), and phase III (d 22 to 34). Added Zn levels were 3,000 ppm from d 0 to 7 and 2,000 from d 7 to 34; Cu supplemented diets contained 250 ppm Cu. During phase I, no differences were detected for ADG, ADV, or G:F. From d 7 to 22, pigs fed the diet containing Zn (regimens 3, 4, and 5) had increased ADG and were more efficient than pigs fed the control diet (regimens 1, 2, and 6; P < 0.05). Pig 3 fed the diet containing copper (P < 0.10). During the first week of phase III (d 22 to 28), pigs fed regimen 3 had better G:F than pigs fed regimen 5. From d 28 to 34, no differences were detected, but pigs fed regimen 3 had the numerically lowest ADG and ADV. For the entire phase III period, no differences were detected for ADG, ADV, or G:F. For the entire trial, pigs fed regimen 3 and 4 were heavier (P < 0.10) than pigs fed regimen 1 and 6. There were no differences detected for any of these parameters between treatments.

Key Words: Zinc, Copper, Pigs, Immunity

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