

Effects of feeding diets containing spray dried corn condensed distillers solubles and associated fractions to early-weaned pigs on intestinal morphology, immune status, circulating IGF-1 concentrations, and organ weights. J. Knott*, G. Shurson, M. Hathaway, and L. Johnston, *University of Minnesota*.

Intestinal morphology and serum acute phase protein and insulin-like growth factor 1 (IGF-1) concentrations were measured to determine the effectiveness of corn distillers solubles by-products as potential replacements for carbadox and porcine plasma in diets for early-weaned pigs. Barrows (n=560; 5.06 kg) were blocked by initial weight, and randomly allotted to one of 56 pens (10 pigs/pen). Pigs were fed one of seven experimental diets consisting of a negative control (NC), NC + 15% spray dried distillers solubles (DS), NC + 7.5% spray dried yeast cream (YC), NC + 15% spray dried residual solubles (RS), NC + 55 ppm carbadox (AB), NC + 6% spray dried porcine plasma (PP), and NC + AB + PP (PC) for the first 10-d post-weaning. On d 10, one pig from each pen (n=56) was sacrificed to determine villi height (VH) and crypt depth (CD) at 25, 50, and 75% of the small intestine (SI) length. Blood samples were collected on d 0, 3, 7, 10, 14, 21, 28, 35, and 42, and used to measure serum α 1-acid glycoprotein (AGP), serum haptoglobin (Hp), and IGF-1 concentrations. Pigs fed the RS and PC diets had longer villi ($P < 0.05$) and greater villi height: crypt depth ratio (VCR; $P < 0.05$) in the upper 25% of the SI compared to pigs fed the NC, DS, YC, and AB diets. There was no effect of diet on VH, CD, or VCR in the 50% and 75% portions of the SI length or overall. Small and large intestine length and weight were not affected by diet. Serum AGP concentration was not affected by diet on d 3 or d 10. However, Hp concentrations were lower ($P < 0.05$) on d 10 for pigs fed AB and PC diets indicating a lower immune system activation. Circulating IGF-1 levels were not affected by treatment. These results suggest that feeding diets containing RS and PC promotes greater villi height and VCR compared to pigs fed diets containing carbadox. However, pigs fed diets containing carbadox appeared to have lower immune system activation compared to pigs fed diets that did not contain carbadox.

Key Words: Distiller's solubles, Early-weaned pigs, Antimicrobial alternatives

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