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**180 Effect of a 3-Strain *Bacillus*-based direct-fed microbial on relative tissue gene expression in nursery and finishing pigs fed low- or high-fiber diets.**

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The effect of a *Bacillus*-based direct-fed microbial (DFM) on relative gene expression in nursery and finishing pigs was determined. Two hundred pigs (initial BW:  $6.31 \pm 0.73$  kg) were randomly allotted to a  $2 \times 2$  factorial arrangement with 2 diet types [low- (LF) or high-fiber (HF)] and 2 levels of DFM [0 or 60 g DFM ( $2.4 \times 10^{12}$  CFU/kg feed)/MT of feed] with 5 pigs/pen. Phase 1, phase 2, grower, early-, and late-finisher diets were fed for 14, 29, 35, 35, and 24 d, respectively. The LF diets contained corn and soybean meal as main ingredients and HF diets contained corn, soybean meal, distillers dried grains with solubles (7.5, 15, and 30% in phase 1, phase 2, and grow-finish diets, respectively) and wheat middlings (10%). One pig/pen was euthanized at the conclusion of phase 2 and late-finishing. Tissue samples were collected from the ileum, cecum, rectum, and liver of pigs. Total RNA was isolated from frozen tissue samples, reverse transcribed, and transcript abundance was measured by qPCR. Primers for amplification of target *MUC2*, *MCT1*, *CD147*, *PEPCK*, and *GLP-2R* genes were obtained from literature. House-keeping genes were *GAPDH* and *HMBS*. Data were analyzed separately for nursery and finishing pigs as a  $2 \times 2$  factorial arrangement with fiber and DFM as 2 factors and block as the random effect using PROC MIXED of SAS. Nursery pigs fed DFM containing diets had increased G:F, while DFM and fiber had no effect on growth performance during grow-finish. Results indicated nursery pigs fed diets containing DFM had a 1.6% reduction ( $P = 0.02$ ) in liver *GLP-2R* expression and a tendency for increased ( $P = 0.09$ ) ileum *MCT1* expression. Nursery pigs fed HF diets had a 2.9% reduction ( $P = 0.01$ ) in rectum *MCT1* and *PEPCK* tended to decrease ( $P = 0.05$ ). A tendency for an interaction between fiber and DFM was observed ( $P = 0.08$ ) for cecum *CD147* in nursery pigs. Finishing pigs fed HF diets had reduced ( $P < 0.05$ ) expression of *MCT1*, *CD147*, and *PEPCK* in cecum tissue. Addition of DFM to diets reduced ( $P = 0.03$ ) cecum *GLP-2R* by 1.6% in finishing pigs. High-fiber diets reduced ( $P < 0.05$ ) *MCT1* and *GLP-2R* by 1.6 and 2.3%, respectively, in liver tissue of finishing pigs. In conclusion, DFM addition to diets reduced *GLP-2R* in the liver of nursery pigs and this may be associated with the improved G:F that was observed.

**Key Words:** dietary fiber, direct-fed microbial, gene expression