

Effects of feeding an evolved E.coli-derived phytase to weanling and growing pigs.

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Two experiments were conducted to determine the effects of an evolved E.coli-derived phytase (Quantum™) in diets fed to weanling and growing pigs. In Exp 1, 120 newly weaned pigs were allotted to 1 of 5 treatments with 6 replicates per treatment and 4 pigs per pen. The positive control (PC) diet contained 0.32% digestible P while the negative control (NC) diet contained 0.18% digestible P. Three additional diets were similar to NC but contained 500, 1000, or 1500 FTU of Quantum phytase (QP). Pig performance was recorded for 4 weeks. Results showed no differences in ADG, ADFI, G:F, or BW between pigs fed PC and QP diets. There was a linear effect ($P \leq 0.10$) for ADG (0.27, 0.31, 0.32, and 0.32 kg/d) and G:F (0.66, 0.69, 0.71, and 0.73 kg/kg) as the concentration of phytase was increased. In Exp. 2, 192 growing pigs, initial BW 18.32 ± 0.19 kg, were allotted to 1 of 8 treatments with 4 pigs/pen and 6 replicates per treatment. Diets were fed for 8 wk. A PC and a NC were formulated to contain 0.23% and 0.11% digestible P, respectively. The remaining 6 diets were formulated by adding 250, 450, or 650 FTU of QP or a fungal phytase (Natuphos; FP) to the NC diet. At the conclusion of the experiment, 1 barrow and 1 gilt were selected from each pen and the 3rd and 4th metacarpals were harvested. Pigs fed PC were heavier (60.9 vs. 57.9 kg) and had greater ADG (0.76 vs. 0.70 kg) than pigs fed NC ($P \leq 0.10$). Final BW (62.5, 63.5, and 59.5 kg for QP and 62.0, 62.0, and 60.6 for FP) and ADG (0.77, 0.78, and 0.74 kg for QP and 0.78, 0.78, and 0.75 kg for FP) were greater (linear, $P \leq 0.05$) for pigs fed diets containing phytase compared with the NC group. Pigs fed QP had greater ($P \leq 0.05$) bone weight (8.1, 8.6, and 8.0 vs. 7.5, 7.8, and 8.0 g), more bone ash (2.88, 3.12, and 2.96 vs. 2.71, 3.82, and 3.07 g), and a greater quantity of bone P (0.48, 0.53, and 0.50 vs. 0.46, 0.48, and 0.52 g) than pigs fed FP. It is concluded that QP is a highly effective phytase source that can be fed to weanling and growing pigs as an alternative to inorganic P.

Key Words: Pigs, Phytase, Phosphorus