

Effects of a *Pichia*-expressed phytase on performance and P excretion of growing pigs

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Two experiments were conducted to evaluate the effects of feeding a *Pichia*-expressed phytase, Quantum™ phytase (QP), to growing pigs. In Exp. 1, 60 growing pigs (initial BW: 23 kg) were allotted to 3 treatments with 2 pigs per pen and 10 pen replicates per treatment. The positive control diet (PC) was a corn-soybean meal diet containing 1.0% dicalcium phosphate and 0.20% digestible P. The negative control diet (NC) and the QP diet were similar to the PC diet with the exception that only 0.32% dicalcium phosphate was used. The QP diet contained 500 FTU/kg of phytase equivalency and the concentration of digestible P was calculated at 0.10 and 0.20% in the NC and the QP diets, respectively. The experiment lasted 42 d. Pigs fed the PC and QP diets had greater ( $P < 0.05$ ) ADG (0.92 and 0.91 vs. 0.82 kg/d), G:F ratio (0.41 and 0.43 vs. 0.37 kg/kg), and final BW (62.52 and 61.15 vs. 57.67 kg) than pigs fed the NC diet. There were, however, no differences between pigs fed the PC and QP diets. In Exp. 2, nine barrows (initial BW: 22 kg) were placed in metabolism cages and allotted to three 3 x 3 Latin squares with 3 diets and 3 periods. The 3 diets were similar to the diets used in Exp. 1. Urine and feces were collected for 5 d of each period. Pigs fed the QP diet had a lower ( $P < 0.001$ ) fecal P excretion (7.63 g/5d) and a greater ( $P < 0.01$ ) apparent total tract digestibility (ATTD) of P (62.46%) than pigs fed the PC diet (11.57 g/5 d and 56.35%) or the NC diet (11.73 g/5d and 41.85%). Fecal Ca output was lower ( $P < 0.001$ ) for pigs fed the QP diet than for pigs fed the PC or NC diets (6.48 vs. 7.62 and 9.96 g/5d). The ATTD

for Ca in pigs fed the QP (76.4%) or PC (75.5%) diets were not different, but they were greater ( $P < 0.001$ ) than the ATTD for NC fed pigs (66.0%). The results confirm that low-P, QP-containing diets support pig performance to the same degree as a high-P diet, but pigs fed the QP diet have a lower fecal excretion of P and Ca than pigs fed a high P diet.

**Key words:** P digestibility, pig, Quantum phytase