
243 Effects of a novel phytase on growth performance and metacarpal bone ash in weanling pigs.

Y. Liu^{*1}, J. C. González-Vega¹, M. Vázquez-Añón²,
J. Zhao², J. Escobar², F. N. Almeida², H. H. Stein³,

¹*University of Illinois, Urbana*, ²*Novus International, Inc., St. Charles, MO*, ³*University of Illinois at Urbana-Champaign, Urbana*.

The objective of this experiment was to determine effects on growth performance and metacarpal bone ash of adding a novel next generation phytase (CIBENZA® PHYTAVERSE® G10) to diets for weanling pigs. A total of 160 pigs (initial BW: 9.79 ± 1.22 kg) were allotted to 4 diets with 10 replicated pens per treatment and 4 pigs per pen using a randomized complete block design. The experiment was conducted in 2 phases of 14 d each. Four diets within each phase were formulated based on corn and soybean meal, including a positive control (PC) that met or exceeded NRC (2012) nutrient requirements, a negative control (NC) that was similar to the PC diet with the exception that digestible P was reduced to 58% of the requirement in phase 1 and 56% of the requirement in phase 2. Two additional diets were formulated by adding 250 or 500 phytase units (FTU) per kg to the NC diet. At the conclusion of the experiment, 2 pigs per pen were euthanized and the third and fourth metacarpals from the right foot were collected. Data were analyzed by PROC GLM of SAS and means

were separated by LSDs. Means between the PC and NC diets were separated using PDIFF and linear and quadratic effects of supplemental graded levels of phytase were determined using orthogonal polynomial contrasts. Results indicated that pigs fed the PC diet had greater ($P < 0.05$) ADG, ADFI, and G:F during phase 1, phase 2, and the entire experimental period than pigs fed the NC diet. Inclusion of phytase linearly increased ($P < 0.05$) ADG, ADFI, and G:F during phase 2 and the entire experimental period. Pigs fed 500 FTU/kg of phytase had greater ($P < 0.05$) G:F than pigs fed 250 FTU/kg phytase in phase 2 and for the overall period. Pigs fed the PC diet had greater ($P < 0.05$) bone ash and bone P content compared with pigs fed the NC diet. Supplementation of phytase to the NC diet linearly increased ($P < 0.05$) bone ash weight (1.35, 1.57, and 1.68 g, respectively) and percentage (48.58, 49.71, and 50.70%, respectively) and bone P weight (0.48, 0.55, and 0.58 g, respectively). No differences were determined in bone measurements between 250 and 500 FTU/kg of phytase. In conclusion, both doses (250 or 500 FTU/kg) of CIBENZA® PHYTAVERSE®G10 supplementation to a P-deficient diet efficiently improved P utilization by weanling pigs.

Key Words: bone ash, phytase, weanling pigs
