

**173 Effects of dietary concentration of P and microbial phytase on the digestibility of amino acids and energy by growing pigs.** A. A. Pahn<sup>1</sup>, G. I. Petersen\*<sup>1</sup>, N. R. Augspurger<sup>2</sup>, and H. H. Stein<sup>1</sup>, <sup>1</sup>*University of Illinois, Urbana*, <sup>2</sup>*JBS United Inc., Sheridan, IN*.

Previous research has shown that the standardized ileal digestibility (SID) of AA and the apparent ileal (AID) or the apparent total tract digestibility (ATTD) of energy may be improved if exogenous microbial phytase is added to diets fed to pigs, but that is not always the case. The objective of this experiment was, therefore, to test the hypothesis that the concentration of dietary P affects the influence of microbial phytase on AA and energy digestibility in corn-soybean meal diets fed to growing pigs. Fourteen barrows (initial average BW: 35.0 kg) that were prepared with a T-cannula in the distal ileum and housed in individual pens were randomly allotted to a replicated 7 × 7 Latin square design with 7 diets and 7 periods. Six of the diets were used in a 2 × 3 factorial design with 2 levels of calculated digestible P (0.13 and 0.23%) and 3 levels of exogenous microbial phytase (0, 250, or 500 units per kg). An N-free diet that was used to measure ileal endogenous AA losses was formulated as well. The microbial phytase that was used was Optiphos (Enzyvia LLC, Sheridan, IN). Data were analyzed as a 2 × 3 factorial using PROC MIXED of SAS. In diets containing 0.13% digestible P, phytase improved (linear,  $P \leq 0.05$ ) the SID of indispensable AA (83.3, 87.2, and 88.8%), the AID of energy (71.62, 75.03, and 78.41%), and the ATTD of energy (84.2, 85.0, and 87.7%) for diets containing 0, 250, and 500 units of phytase, respectively. Increasing the concentration of digestible P in the diets from 0.13 to 0.23% increased ( $P \leq 0.05$ ) the SID of AA from 86.6 to 88.8%, and the AID of energy from 75 to 79.4%, indicating that dietary P by itself has a significant impact on the digestibility of AA and energy. However, adding phytase to the diet containing 0.23% digestible P had no effect on the digestibility of AA or energy resulting in an interaction ( $P \leq 0.05$ ) between dietary P and phytase. These observations indicate that the observed improvement in AA and energy digestibility with phytase supplementation to P-deficient diets may be a result of greater P absorption rather than solely enzymatic activity.

**Key Words:** AA digestibility, energy digestibility, phytase