

Nonruminant Nutrition: Amino Acids

168 Determination of Lys and Trp requirements in 10 to 20 kg pigs. G. I. Petersen* and H. H. Stein, *University of Illinois, Urbana.*

Three experiments were conducted to determine the Lys requirement of 10 to 20 kg pigs (Genetiporc, Alexandria, MN). In experiment 1, 5 corn-soybean meal diets containing between 1.0 and 1.4% standardized ileal digestible (SID) Lys were formulated. All diets were similar with the exception that graded levels of crystalline Lys were used. Data for

ADG and G:F were subjected to a broken line analysis and a quadratic analysis. The resulting SID Lys requirements for ADG and G:F were 1.18 and 1.29% for broken line analysis and 1.28 and 1.39% for quadratic analysis, respectively. A growth assay (Exp. 2) was conducted to develop diets using corn gluten meal (CGM) and field peas or high protein distillers dried grains (HP-DDG) as the main protein sources in corn-based diets. A corn-soybean meal control diet (1.20% SID Lys), 2 corn-CGM-field pea diets (1.20 and 1.35% SID Lys, respectively), and 2 corn-HP-DDG diets (1.20 and 1.35% SID Lys, respectively) were formulated. Pigs fed the control diet had greater ($P < 0.05$) ADG and G:F than pigs fed diets containing corn co-products. Pigs fed the corn-CGM-field pea diet and the corn-HP-DDG diet containing 1.35% SID Lys had greater ($P < 0.05$) G:F than pigs fed the diets with 1.20% SID Lys. Pigs fed the corn-CGM-field pea diet with 1.35% SID Lys also had greater ($P < 0.05$) ADG than pigs fed the same diet with 1.20% SID Lys. In Exp. 3, the requirements for Lys and Trp were determined in pigs fed diets containing corn, CGM, and field peas. Break point and quadratic analyses were conducted for ADG, G:F and plasma urea nitrogen (PUN). The requirements for SID Lys and SID Trp for maximum ADG, G:F, and PUN were 1.07 and 0.19%, 1.11 and 0.18%, and 1.10 and 0.20%, respectively, if the breakpoint analysis was used and 1.22 and 0.25%, 1.34 and 0.22%, and 1.30 and 0.25%, respectively, if the quadratic analysis was used. These data demonstrate that requirement estimates for Lys are influenced by the type of diet that is used and requirement estimates for both Lys and Trp are influenced by the response criteria and the type of analysis that is used to determine the requirement.

Key Words: amino acids, lysine, pigs, tryptophan