

## Nonruminant Nutrition: Amino Acids

### 153 Estimation of the ideal tryptophan:lysine ratio in 10- to 20-kg pigs. G. I. Petersen\* and H. H. Stein, *University of Illinois, Urbana.*

Two experiments that were designed to determine the ideal Trp:Lys ratio in 10 to 20 kg pigs were conducted utilizing 2 differing types of diets. In Exp. 1, a corn-corn gluten meal (CGM)-field pea diet was used, and in Exp. 2, a corn-high protein distillers dried grains (HP DDG) diet was used. In both experiments, a basal diet was formulated to contain 0.85% standardized ileal digestible (SID) Lys and 0.10% SID Trp. Five additional diets were formulated in each experiment by adding 0.02, 0.04, 0.06, 0.08, or 0.10% L-Trp to the basal diet. These diets, therefore, contained 11.7, 14.1, 16.5, 18.8, 21.2, or 23.5% SID Trp relative to the concentration of SID Lys. All diets were fed to pigs for 21 d, starting when pigs were  $10.32 \pm 0.95$  kg or  $10.05 \pm 1.05$  kg (Exp. 1 or 2, respectively). In both experiments, estimates for SID Trp:Lys were calculated using a broken line analysis, a quadratic analysis, and the intercept of the broken line and the quadratic line was also determined using ADG, G:F, and plasma urea nitrogen (PUN) as response criteria. In both experiments, there was a linear and a quadratic increase ( $P < 0.05$ ) in final BW, ADG, and G:F, and a reduction (linear and quadratic,  $P < 0.05$ ) in PUN with an increased Trp:Lys ratio. Using broken line analysis, estimates for the ideal Trp:Lys ratio of 20.1, 19.5, and 16.7% were determined in Exp. 1, and estimates of 18.1, 17.4, and 17.0% were determined in Exp. 2 with ADG, G:F, and PUN, respectively, as response criteria. Estimates based on the quadratic analysis were 26.1, 24.0, and 19.1% in Exp. 1, and 21.5, 20.1, and 19.3% in Exp. 2, with ADG, G:F, and PUN, respectively, as response criteria. When the intercept of the broken line and the quadratic analyses were obtained, estimates for the ideal Trp:Lys ratio of 22.2, 22.1, and 18.6% in Exp. 1 and 20.0, 18.9, and 18.6% in Exp. 2, were calculated for ADG, G:F, and PUN, respectively. Based on these data, it is suggested that the ideal SID Trp:Lys ratio in 10 to 20 kg pigs is approximately 18%.

**Key Words:** ideal protein, lysine, pigs, tryptophan