80 Effects of increasing the apparent digestible tryptophan:lysine ratio on the growth performance of the 5 to 10 kg pig. J. A. Loughmiller*, J. L. Nelsens, R. D. Goodband, M. D. Tokach, K. Hongtrakul, P. R. O'Quinn, S. Moser, and J. W. Smith II, Kansas State University, Manhattan, Kansas, USA.

A 16 d growth assay was conducted to determine the appropriate apparent digestible tryptophan:lysine ratio for 5 to 10 kg pigs. Three hundred and sixty segregated early-weaned pigs (Newland Hybrids) were blocked by weight (initially 4.3 kg and 14 d of age) and allotted to one of 12 treatments. Treatments were arranged in a completely randomized design (4 by 12 treatments) to a 3 by 4 factorial arrangement of treatments, with four dietary lysine levels (11.5, 15, 17.5, and 20.25% of diet) and four apparent digestible tryptophan levels (15, 15, 15.75, and 20.25% of diet). All diets were formulated to provide 55.5% of the total gain and 1.15% apparent digestible lysine. Dietary tryptophan levels had no influence on performance for pigs fed the trial containing 15% apparent digestible lysine. Increasing the apparent digestible tryptophan:lysine ratio had no influence on performance for pigs fed diets containing 15% apparent digestible lysine. Conversely, increasing the apparent digestible tryptophan:lysine ratio improved ADG (quadratic, P < 0.05) and G:F (quadratic, P < 0.05) with pigs fed 1.15% apparent digestible lysine (Table 1). The greatest improvement in performance was observed as the apparent digestible tryptophan:lysine ratio was increased from 12.5% to 15%. Under these experimental conditions, the apparent digestible tryptophan:lysine ratio to maximize growth performance of the 5 to 10 kg pig is approximately 15%.

Key Words: Tryptophan, Lysine, Pigs


One hundred and fifty pigs (Bunbee genotype), comprising equal numbers of entire males, females, and castrated males were blocked by weight (6.5 ± 0.9 kg) and allotted to 3 treatments. Pigs were housed in individual pens and offered ad libitum feed and water. The experimental diet was formulated to contain 15.5 MJ DE/kg (3700 kcal DE/kg), 1.42% total lysine (0.9% ME available lysine). All amino acids were used to ensure all other essential amino acids were in excess (120% of Arg's predicted). L-Threonine was used to provide total threonine levels (0.76, 0.80, 1.00, 1.11, and 1.22%). A similar growth performance was measured between the three sexes during the 21 d period. ADG and feed efficiency were improved (P < 0.001) by increasing dietary threonine, with 1.00% total threonine (0.57 g/MJ DE available threonine) supporting maximum growth for the combined sexes. The higher levels of threonine reduced ADG (linear, P < 0.001; quadratic, P < 0.001), although this effect was more pronounced in entire males and females compared to castrates. The results suggest that between 6 and 14 kg, entire male, female and castrated male pigs of improved genotype, have a similar threonine requirement of approximately 1.00% of diet to support maximum growth performance. The corresponding values expressed as percent of lysine and g per MJ DE were 65% and 0.67, respectively.

Key Words: Consumer Survey, Beef Quality, Calcium Chloride

NONRUMINANT NUTRITION

**Key Words**: Beef Tenderness, Aging, Proteolysis

Moderate to heavy eaters of beef were chosen to participate in an "in-home" consumer evaluation of beef cuts (clod, top round, and top sirloin) and several treatment combinations of USDA quality grade and CaCl₂ for sensory traits. Consumer sensory traits (overall like, tenderness, juiciness, flavor like, and flavor amount) were evaluated on a ten point scale. Consumer preparation methods and actual degree of doneness also were used in analysis. One steak from each cut was used for Warner-Bratzler shear force (WBS) determination. Significant interactions involving cooking method and/or degree of doneness were found in all consumer traits for each cut. Cod steaks from four USDA grade categories (Top Choice, Low Choice, High Select, and Low Select) were evaluated by consumers (n = 1,241). USDA grade did not affect (P > .05) any consumer evaluation traits or WBS in the clod. Two USDA grades, High Select and Top Choice, and CaCl₂ treatment were utilized in the top round. During selection, a top round from one side of each carcass was injected with 200 mM CaCl₂ at 5% of cut weight. Each consumer received a steak from corresponding cuts, one with CaCl₂ and one without. Top Choice steaks rated higher (P < .05) for overall like than High Select (n = 1,247), 6.9 vs. 6.5, respectively. WBS was not affected (P > .05) by USDA grade or CaCl₂ marinate. Top sirloin steaks were evaluated by a different population of consumers. These consumers were divided into two groups. One group received cooking suggestions and the other did not. Top sirloins selected for this portion of the study graded High Select. Cuts from one side of each carcass were injected with CaCl₂. Neither injection with CaCl₂ nor cooking suggestions affected (P > .05) consumer ratings (n = 399). WBS revealed no CaCl₂ effects (P > .05). 2.9 kg vs. 2.7 kg for and control and CaCl₂, respectively. These data suggest that cooking method and degree of doneness are primary drivers in consumer satisfaction ratings.

**Key Words**: Threonine, Amino Acids

\[ \text{Thr:Lys} = 63\% \text{ TruePass} \]