Amino acid digestibility by growing pigs of distillers dried grain with solubles produced from corn, sorghum, or a corn-sorghum blend.

P.E. Urriola[1], D. Hoehler[2], C. Pedersen[3], H.H. Stein[4], L.J. Johnston[1], G.C. Shurson[1], University of Minnesota[1], Degussa Corporation[2], Danisco Corporation[3], and University of Illinois[4]

The objective of this study was to evaluate CP and AA digestibility by growing pigs in distillers dried grain with solubles (DDGS) produced from corn (C), sorghum (S), or a corn-sorghum blend (CS). Eleven growing barrows (initial BW: 44.6 ± 6.5 kg) were fitted surgically with a T-cannula in the distal ileum. Eight of the 11 diets contained 66.7% of C, 1 diet contained 66.7% of S, 1 diet contained 66.7% CS, and the lastdiet was N-free. Chromic oxide (0.3%) was used in all diets as an indigestible marker. Standardized ileal digestibility (SID) values of CP and AA in all DDGS samples were calculated using the direct procedure. Crude protein, NDF, and ADF concentrations were higher in CS and S than in C. Sorghum DDGS had a higher concentration of CP and ADF, but a lower concentration of NDF than CS. Lysine SID values ranged from 47 to 67% (SEM: 1.94). Tryptophan was the second most variable AA with SID values ranging from 56.2 to 72.0% (SEM: 1.91). The SID of Thr varied from 63.6 to 75.9%. The SID of Leu and Met were among the least variable and ranged from 82.9 to 89.4% and 78.9 to 87.1%, respectively. Mean SID of Arg and Lys, in C (81.5 and 61.6%), S (79.2 and 64.0) and CS (81.8 and 60.9) were not different . The SID of His, Leu, Met, and Phe were lower ($P < 0.01$) in S (71.9, 77.3, 76.5, and 76.9, respectively) than in any sample of C (79.3, 86.0, 82.8, and 82.4, respectively) or CS (75.1, 81.0, 80.1, and 78.5, respectively. The SID of Trp was higher in S (72.0%) than in C (64.9; $P < 0.01$), but there was no difference between C and CS (62.4). There was a correlation between total AA content and digestible AA content for Met, Thr, and Trp ($r^2 = 0.97$, 0.84, and 0.78, respectively), but a poorer correlation for CP and lys ($r^2 = 0.73$ and 0.55, respectively). Poor correlations between nutrient content and digestibility indicate that rapid and accurate *in vitro* procedures need to be developed in order to predict digestible AA content in DDGS. Differences in nutrient content between C and S were similar to differences among the corn and sorghum grain.

Key words: amino acids, corn, digestibility, distillers dried grain with solubles, , pigs, sorghum