

Standardized Ileal Amino Acid Digestibility of Corn, Sorghum, and a Corn-Sorghum Blend Distiller's Dried Grains with Solubles (DDGS) and Correlations with Color Scores

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Amino acid (AA) digestibility in corn DDGS (CD) is highly variable and no values have been determined for sorghum DDGS (SD) or blends of corn and sorghum DDGS (CSD). Standardized ileal digestibility (SID) of AA and crude protein (CP) were determined for eight CD sources, one SD source, and one CSD source. Eleven growing barrows (initial BW = 44.6 ± 6.5 kg) were surgically fitted with a T-cannula in the distal ileum, and fed one of ten experimental diets that contain 67% DDGS representing each source, and a N-free diet was also fed to determine basal endogenous N contributions. Chromic oxide was added to the diets as indigestible marker. Experimental diets were fed over 8 weekly periods in a Youden square design. Simple correlations and stepwise multiple regression analysis were used to evaluate the predictability of *in vivo* AA digestibility of DDGS sources with Minolta and Hunter Lab color scores, NDF, ADF, and acid detergent insoluble crude protein (ADICP). Digestibility of CP and Lys was lower ( $P < .01$ ) in SD compared to CSD (56.1 vs. 61.6, and 45.1 vs. 48.8 for CP and Lys, respectively), and both were lower than the SID of the CD samples. The SID of Met, Thr, and His were lower ( $P < .01$ ) in SD and CSD than CS. Digestibility of CP was correlated ( $P < .02$ ) with Lys, Met, Thr, and His digestibility ( $R^2 = .89, .78, .90, .90$ , respectively), but poorer correlated ( $P < .01$ ) with Trp digestibility ( $R^2 = .56$ ). Color scores  $L^*$  and  $b^*$  of DDGS were correlated ( $P < .03$ ) with SID of CP ( $R^2 = .56$  and  $.59$ , respectively), but not with Lys SID ( $R^2 = .32$ , and  $.10$ ). Furthermore,  $L^* + NDF + ADICP$  were correlated with SID of CP ( $R^2 = .92$ ), but not SID Lys. Hunter Lab color scores were better correlated for CP and Lys SID than Minolta color scores (Colorimeter CR-310). A larger data set representing greater variation in SID of AA and color scores among DDGS sources is required to determine the accuracy of using color scores to predict AA digestibility among DDGS sources for swine.

Keywords: Amino Acid Digestibility, Corn DDGS, Sorghum DDGS.