Energy and nutrient digestibility in dried distillers grain with solubles by growing pigs.

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Three experiments were conducted to measure energy and nutrient digestibility in dried distillers grain with solubles (DDGS) by growing pigs. In Exp. 1, apparent (AID) and standardized (SID) ileal digestibility coefficients of CP and AA were determined in four samples of DDGS. Five growing pigs were equipped with a T-cannula in the distal ileum and used in a 5 x 5 Latin square design. Exp. 2 was an energy balance experiment that aimed at measuring DE and ME concentrations in four samples of DDGS and in corn. The apparent total tract digestibility coefficients (ATTD) for DM, GE, P, ether extract, NDF, and ADF were also measured in this experiment. Five pigs were used in a 5 x 5 Latin square design in this experiment. The AID and the SID of CP and AA in ten samples of DDGS and in corn were measured in Exp. 3 using 12 pigs arranged in a Yuden square design. There were five observations per treatment in Exp. 1 and 2 and eight observations in Exp. 3. Pigs were fed at 3, 2.5, and 3 times their estimated energy requirement in Exp. 1, 2, and 3, respectively. In Exp. 1 and 3, AID and SID were estimated using the direct method while the difference method was used in Exp. 2. A N-free diet was included in Exp. 1 and 3 to measure endogenous losses of AA. Results of the experiments demonstrated that there is a considerable variation among ethanol plants in the AID and SID for most AA in DDGS. The most variable AA are Lys and Trp, where values for SID ranged from 44 to 78%, and from 46 to 80%, respectively. Methionine had the lowest variability for SID among the indispensable AA (74 to 89%), while values from 62 to 87%, 67 to 85%, and 66 to 84% were found for Thr, Ile, and Val, respectively. The average SID for Arg, His, Ile, Leu, Lys, Met, Phe, Thr, Trp, and Val in the 14 samples of DDGS were 79, 76, 73, 82, 60, 81, 79, 70, 73, and 72%, respectively. The four samples of DDGS that were used in Exp. 2 had average ATTD of DM, GE, P, ether extract, NDF and ADF of 71, 75, 55, 76, 84, and 67%, respectively. Significant differences ($P < 0.05$) between samples of DDGS were found for ether extract, NDF, and ADF, but not for DM, GE, and P. The DE and ME concentration in the four samples of DDGS averaged 3,639 and 3,378 kcal per kg DM, respectively, and no significant differences between sources were observed. It is concluded that considerable variation in AID and SID for CP and AA among samples of DDGS exists. Future work should focus on identifying the reasons for this variation.

Keywords: DDGS, Nutrient digestibility, Pigs.