

Title: True ileal amino acid digestibility in cecectomized roosters and lysine bioavailability in chicks fed distillers dried grains with solubles

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The concentration of true ileal digestible (TID) Lys and relative bioavailable Lys in 7 sources of DDGS fed to poultry were compared. We also evaluated the use of 2 in vitro procedures, reactive Lys and color score, to predict the concentration of TID Lys and bioavailable Lys in DDGS. The TID of AA in all sources of DDGS were measured using cecectomized roosters. Relative bioavailable Lys in all sources of DDGS were measured using standard curve methodology. Initially, 9-d total gain of chicks fed increasing levels of L-Lys HCl was measured and a regression equation was derived by plotting the bioavailable Lys intake against 9-d total gain of chicks. Seven additional diets were formulated to contain each of 7 sources of DDGS, and 9-d total gain of chicks fed these diets was measured. Relative bioavailable Lys was then calculated by using the weight gain of chicks fed diets containing DDGS in the regression equation to predict bioavailable Lys. The 7 DDGS sources were analyzed for reactive Lys using the guanidination procedure, and Hunterlab L, a, and b scores were measured to determine the degree of lightness, redness, and yellowness in the samples. Results showed that the TID for Lys among the 7 DDGS sources varied ($P < 0.05$) from 52.7 to 70.4%. The average TID for Lys was 61.4%. Concentration of relative bioavailable Lys did not differ among the 7 sources of DDGS. The average concentration of TID Lys in DDGS was not different from the concentration of bioavailable Lys (0.47% and 0.53%, respectively). The concentration of TID Lys was correlated ($r^2=0.84$, $P < 0.05$) with the concentration of reactive Lys in the samples. Hunterlab L scores of DDGS was correlated ($r^2=0.90$, $P < 0.05$) with the concentration of bioavailable Lys. In conclusion, the concentration of TID Lys in DDGS is close to the concentration of bioavailable Lys in chicks. Values for reactive Lys and Hunterlab L may be used to estimate the concentration of TID Lys and bioavailable Lys in DDGS, respectively.

Keywords: amino acids, availability digestibility, DDGS