

Phosphorus bioavailability of distiller's dried grains plus solubles

B.S. Lumpkins, N.M. Dale, and A.B. Batal

University of Georgia Athens, GA

Increased emphasis on ethanol production in the United States has and will continue to lead to significant increases in the amount of distiller's dried grains plus solubles (DDGS) available to the feed industry. Two experiments were conducted to evaluate the bioavailability of phosphorus in DDGS. Chicks were placed on a standard starter diet from 0 to 7 days of age. After an overnight fast, 6 replications of 6 chicks were fed each of five experimental diets from 8-22 days of age. Experiment 1, dietary treatments were: 1) Corn- soybean meal basal with 0.12% available phosphorus, 2) Basal + 0.05% P from K_2HPO_4 (0.17% available P), 3) Basal + 0.10% P from K_2HPO_4 , 4) Basal + 5.0% DDGS, and 5) Basal + 10.0% DDGS. Experiment 2, dietary treatments were: 1) Corn- soybean meal basal with 0.12% available phosphorus, 2) Basal + 0.05% P from K_2HPO_4 , 3) Basal + 0.10% P from K_2HPO_4 , 4) Basal + 7.0% DDGS, and 5) Basal + 14.0% DDGS. The basal diet was adequate in all nutrients except P and DDGS was added at the expense of cornstarch. A linear response was observed from the addition of K_2HPO_4 in both experiments. Multiple regression analysis produced the models for experiments 1 and 2, respectively: bone ash (%) = 25.09 + 0.01 P intake (mg) + 0.005 DDGS intake (g) ($R^2=0.81$) and bone ash (%) = 26.11 + 0.01 P intake (mg) + 0.004 DDGS intake (g) ($R^2=0.88$). The ratio of slopes indicated the bioavailable concentrations of 0.50 and 0.54% in DDGS. The expressed values as a percent of total P (0.74%) in DDGS, yields availability estimate of 68% for experiment 1 and 54% for experiment 2. Phosphorus availability of DDGS is estimated at 61%.

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