Effects of increasing level of corn distiller’s dried grains plus solubles on in situ disappearance in steers offered medium-quality grass hay.

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Five ruminally and duodenally cannulated beef steers (446 ± 42 kg of initial BW) were used in a 5 × 5 Latin square to evaluate effects of increasing level of supplemental corn distiller’s dried grains with solubles (DDGS; 25.4% CP, 9.8% fat, DM basis) on in situ rate of DM, NDF, and ADF disappearance and CP kinetic parameters of hay and DDGS. Dietary treatments consisted of grass hay (10.2% CP; DM basis) offered ad libitum, free access to water and trace mineral salt block, and one of five levels of DDGS (0, 0.3, 0.6, 0.9, and 1.2% BW DDGS; DM basis). Diets met or exceeded DIP requirements (microbial yield = 10.5%). All supplements were fed at 0600 before hay. Steers were adapted to diets for 14 d followed by a 7-d collection period. Hay DM disappearance responded cubically (P = 0.02) with the greatest rate of disappearance at 0.9% DDGS and least at 1.2% DDGS. Hay NDF and ADF disappearance were not affected (P ≥ 0.23; 3.74 ± 0.45%/h and 3.72 ± 0.46%/h, respectively) by treatment. Hay CP degradation rate increased (linear; P = 0.0025) with increasing DDGS while extent of CP degradation decreased quadratically (P = 0.02) with the lowest extent at 0.9% DDGS. Hay soluble and slowly degradable CP fractions were similar (P ≥ 0.93; 25.5 ± 1.7% and 63.0 ± 1.7%, respectively) across treatments. A cubic effect (P = 0.03) was noted for DDGS DM disappearance with the greatest disappearance at 0.9% and the least at 0.6% DDGS. No differences (P ≥ 0.45) among treatments were observed for DDGS NDF or ADF disappearance (3.04 ± 0.71%/h and 3.19 ± 0.94%/h, respectively). Soluble CP degradation fraction decreased (linear; P = 0.01) and slowly degradable CP fraction increased (linear; P = 0.002) with increasing DDGS. A linear increase (P < 0.0001) was observed for CP degradation rate with increasing DDGS. Treatment did not affect (P = 0.23) extent of DDGS CP degradability (99.8% ± 0.2). Using moderate to high levels of DDGS in forage diets resulted in increased degradation rates of CP. Results indicate up to 1.2% BW DDGS can be fed in forage-based diets without adverse effects.

Key Words: Distiller’s Dried Grains with Solubles, Medium-Quality Forage, Steers