

Evaluation of protein fractionation and ruminal and intestinal digestibility of corn milling co-products. <sup>1</sup>Kelzer, J.M., P.J. Kononoff<sup>1</sup>, K. Karges<sup>2</sup>, and M.L. Gibson<sup>2</sup>. University of Nebraska-Lincoln. (2007).

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Inputs for the Cornell-Penn-Miner Dairy model require feed protein to be divided into five fractions: A = non-protein nitrogen; B1 = rapidly degraded true protein; B2 = moderately degraded true protein; B3 = slowly degraded true protein; and C = undegraded true protein. The objectives of this study were to characterize feed protein fractions and evaluate differences in rumen undegradable protein (RUP), RUP digestibility (dRUP), and amino acid concentration in the RUP of seven corn milling co-products. The corn co-products and their respective CP (% DM) included Germ (16.3), Bran (13.5), High Protein Dried Distillers Grains (HPDDGS; 47.2), Dried Distillers Grains (DDGS1; 30.1), Dried Distillers Grains (DDGS2; 28.9), Wet Corn Gluten Feed (WCGF; 26.7), and Wet Distillers Grains (WDGS; 29.9). Two ruminally and duodenally fistulated Holstein steers averaging 665 kg were used to determine RUP and dRUP. Samples of each feed were ruminally incubated for 16 hours. After simulated abomasal digestion, half of the total samples were inserted into the duodenum and collected in the feces. Protein fractions A, B1, B2, B3, and C are reported as follows (% CP): Germ = 30.0, 15.0, 38.1, 13.5, 3.4; Bran = 33.5, 4.0, 54.3, 6.0, 2.2; HPDDGS = 7.4, 0.6, 82.4, 8.8, 0.8; DDGS1 = 17.0, 7.0, 67.0, 4.8, 4.2; DDGS2 = 17.9, 2.1, 41.0, 11.1, 27.9; WCGF = 36.6, 15.9, 33.2, 10.1, 4.1; and WDGS = 18.6, 2.4, 53.1, 11.0, 14.9. RUP ( $P < 0.01$ ), dRUP ( $P < 0.01$ ), Lys ( $P < 0.01$ ) and Met ( $P < 0.10$ ) were different and are reported as follows (%CP): Germ = 16.5, 66.8, 2.9, 1.9; Bran = 20.7, 65.8, 3.2, 1.4; HPDDGS = 55.2, 97.7, 2.0, 3.2; DDGS1 = 33.2, 92.0, 1.9, 2.0; DDGS2 = 56.3, 91.9, 1.9, 2.4; WCGF = 11.5, 51.0, 3.5, 1.6; and WDGS = 44.7, 93.1, 1.9, 2.3. Comparison of the co-products defined differences in protein fractions, RUP, dRUP, and post-ruminal Lys supply.

Key Words: Protein, Dairy, Co-products