

Energy determination of corn co-products fed to finishing pigs and use of *in vitro* OM digestibility to predict *in vivo* ME.

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Twenty co-products from various ethanol plants were fed to finishing pigs to determine ME and to generate an equation to predict ME based upon each ingredient's chemical analysis. Additionally, a 3-step enzymatic assay was used to determine if *in vitro* OM digestibility would predict *in vivo* ME or improve the prediction estimate of ME for corn co-products. Co-products included: DDGS (7), HP-DDG (3), bran (2), germ (2), gluten meal and feed, dehulled degermed corn, dried solubles, starch, and corn oil. The *in vitro* OM digestibility for each co-product was determined in triplicate using procedures as described by Boisen and Fernandez (1997). For the *in vivo* study, the control diet was based on corn (97.1%), limestone, salt, vitamins, and trace minerals. All but two test diets were formulated by mixing the control diet with 30% of a co-product. Dried solubles and oil were included at 20% and 10%, respectively. Eight groups of 24 gilts (n=192, 112.7 final BW \pm 7.9 kg) were randomly assigned to a test diet and each diet was fed to a total of 8 pigs. Gilts were placed in metabolism crates and fed an amount equivalent to 3% BW daily for 9 d followed by collecting feces and urine separately for 4 d. Ingredients were analyzed for GE, CP, moisture, crude fat, crude fiber, ash, total dietary fiber (TDF), NDF, and ADF. Gross energy was determined on the feed, feces, and urine to calculate ME for each ingredient. The *in vitro* OM digestibility ranged from 33.3 to 93.5% for corn bran and dried solubles, while ME ranged from 2,334 to 8,755 kcal/kg for corn gluten feed and corn oil, respectively. Although *in vitro* OM digestibility was correlated to *in vivo* ME ($r = 0.62$, $P < 0.01$), it did not improve the prediction of ME from ingredient analysis. Stepwise regression resulted in the equation: ME, kcal/kg = $(0.949 \times \text{GE}) - (32.238 \times \text{TDF}) - (40.175 \times \text{ash})$ ($r^2 = 0.95$, SE = 306 $P < 0.01$). These results indicate that OM digestibility and ME vary substantially between corn co-products and the best predictors of ME are GE, TDF, and ash.

Keywords: pigs, corn co-products, energy, ME