Evaluation of lysine digestibility in rumen undegraded protein using the precision-fed rooster assay and two *in vitro* methods. S.E. Boucher[1], C. Pedersen[2], H.H. Stein[3], C.M. Parsons[3], and C.G. Schwab[1], [1]*University of New Hampshire, Durham,* [2]*Danisco Animal Nutrition, Marlborough, UK,* [3]*University of Illinois, Urbana.*

Sixteen feed samples were obtained from the Feed Analysis Consortium, Inc. to evaluate furosine and homoarginine (HA) methods for determining the availability of Lys in rumen undegraded protein (RUP-Lys). Furosine is a secondary product of the initial stages of the Maillard reaction, and HA is formed by the reaction of reactive Lys with O-methylisourea (guanidination reaction). Three samples of soybean meal (SBM), 3 samples of SoyPlus®, 5 samples of dried distillers grains with solubles (DDGS), and 5 samples of fishmeal (FM) were used. Samples were incubated for 16 h *in situ* in the rumen of 4 lactating Holstein cows, averaging (mean ± SD) 48 ± 4 days in milk, fed a 55% forage, 45% concentrate diet. Residues were collected and pooled by feed sample, and portions were crop-intubated to cecectomized roosters. Four birds per sample were intubated with the residue, and endogenous AA excretion was estimated from fasted roosters. Total excreta was collected for 48 h post-intubation and analyzed for Lys content. True digestibility (TD) of RUP-Lys was calculated. In the furosine method, all residues were analyzed for furosine and Lys content; however, only 9 of the 16 samples contained furosine. Percent blocked Lys was calculated. In the HA method all residues were guanidinated for 72 h and analyzed for Lys and HA content. The percent Lys converted to HA was calculated. The results of the experiment showed that percent furosine (n=9), blocked Lys (n=9), and Lys converted to HA (n=16) were correlated to TD of RUP-Lys (R^2 = 0.86 0.94, and 0.90, respectively). In conclusion, it appears that measurements of furosine or HA in rumen digesta residues of SBM, SoyPlus®, DDGS, and FM can be used to predict RUP-Lys digestibility.

Key Words: Lysine digestibility, rumen undegraded protein, cecectomized roosters