

RUMINANT NUTRITION VI

0655 Effect of rumen-protected lysine supplementation of corn-protein based diets fed to lactating dairy cows. N. E. Lobos^{*1}, G. A. Broderick², and M. A. Wattiaux³, ¹*Dep. of Dairy Science, University of Wisconsin–Madison, Madison*, ²*Broderick Nutrition & Research, LLC, Madison, WI*, ³*University of Wisconsin–Madison, Madison*.

This trial tested whether rumen-protected Lys (RPL) supplementation would improve the nutritive value of RUP from corn protein. Thirty-two lactating Holstein cows were blocked by DIM and parity into eight squares of four cows in replicated 4 × 4 Latin squares. Treatments were all supplemental CP from: 1) Soy [67% expeller soybean meal (ESBM) plus 33% solvent soybean meal (SSBM)]; 2) Soy/Corn [33% ESBM, 17% SSBM, 25% corn gluten meal (CGM) plus 25% distillers dried grains plus solubles (DDGS)]; 3) Corn (50% CGM plus 50% DDGS); or 4) Corn/RPL [diet 3 top-dressed with RPL (125 g AjiPro/d, an estimated 20 g absorbed Lys/d)]. Diets contained (DM basis) 22% alfalfa silage, 43% corn silage, 18% ground high moisture and dry corn, 2.4% mineral-vitamin premix, 1.5–3.9% soyhulls, 15% CP, 30–32% NDF, and, as predicted by NRC (2001), equal RDP, RUP and metabolizable protein. Cows within squares were randomly assigned to treatment sequences and fed diets for 4-wk periods before switching; data from the last 2 wk were analyzed using the PROC MIXED of SAS. The Table 0655 reports LS-means. Intake was highest on diet 1, intermediate on diets 2 and 3, and lowest on diet 4; BW change was highest on diet 3, intermediate on diets 1 and 2 and lowest on diet 4. Intakes and BW changes were reflected by differences in Milk/DMI, which were highest on diets 2 and 4 and lowest on diet 3. Milk yield was lower on diet 3 than on diets 1, 2, and 4, and protein yield was highest on diets 1 and 2, intermediate on diet 4, and lowest on diet 3. These results indicated that dilution of soybean meal RUP with that from corn protein did not reduce milk yield and adding RPL to the corn-protein based diet increased milk and protein yields.

Key Words: soybean meal, corn gluten meal, corn distillers dried grains, rumen-protected Lys

Table 0655. Effect of Dietary CP Source and Rumen-Protected Lys on Production

Item	Soy	Soy/Corn	Corn	Corn/RPL	SE	P > F
DMI, kg/d	27.7 ^a	27.4 ^{ab}	26.9 ^{bc}	26.8 ^c	0.40	< 0.01
BW change, kg/d	0.03 ^{bc}	0.59 ^{ab}	0.70 ^a	-0.07 ^c	0.23	0.04
Milk, kg/d	45.8 ^a	46.1 ^a	44.3 ^b	45.4 ^a	1.17	0.01
Milk/DMI	1.66 ^{ab}	1.69 ^a	1.65 ^b	1.69 ^a	0.038	0.04
Fat, kg/d	1.87	1.87	1.83	1.83	0.060	0.37
True protein, kg/d	1.36 ^a	1.34 ^a	1.25 ^c	1.30 ^b	0.029	< 0.01
MUN, mg/dL	10.6	10.6	10.8	11.1	0.25	0.06

^{abc} ($P < 0.05$)

0656 Effects of a rumen protected lysine (AjiPro-L) supplementation on peripartum disease, reproduction, and lactational performance of dairy cows. J. E. Nocek^{*1}, A. Haruno², M. Miura², T. Takagi², I. Shinzato³, and T. Fujieda², ¹*Spruce Haven Farm and Research Center, Auburn, NY*, ²*Ajinomoto Co., Inc., Tokyo, Japan*, ³*Ajinomoto Heartland, Inc., Chicago, IL*

We used 108 multiparous cows to examine the effects of feeding AjiPro-L (Ajinomoto Co., Inc., Tokyo) 21 d pre- through 21 d postpartum and then withdrawal. Cows were assigned to one of four pre/postpartum regimens: a) Control:Control (C/C), b) 100 g AjiPro-L:Control (A/C), c) Control:150 g AjiPro-L (C/A), and d) 100 g AjiPro-L:150 g AjiPro-L (A/A). All cows started their treatment regime 21 d before expected calving date through 21 d postpartum (phase 1). Upon completion of the 21 d postpartum period, all cows were moved to a common group and fed the same diet without AjiPro-L (phase 2, 21–63 DIM). Individual DMI and milk yield were measured daily, and milk components weekly throughout both phases. Body weights, BCS, health incidence were recorded. During phase 1, DMI was not affected in the prepartum period by AjiPro-L inclusion. Postpartum, cows on A/C consumed more ($P = 0.05$) DM than C/C and C/A, with A/A cow not being different. Milk yield was highest ($P = 0.04$) for cows receiving A/A compared to C/C, with other treatments not being different. Milk fat yield was higher ($P = 0.04$) for cows supplemented with A/A compared to C/C and C/A, but not different from A/C. Cows receiving the C/A had higher milk protein percentage than A/C and A/A and not different from C/C. Milk fat percentage and milk protein yields were not affected by treatment regimens. During phase 2, no differences in body weight, BCS or milk yields were observed. Milk fat yield was higher ($P = 0.05$) for A/C and A/A cows compared to C/A with C/C not being different. Milk protein percentage was higher ($P = 0.02$) for C/A cows than those on C/C or A/A regime, with A/C not being different. Cows on A/C had higher ($P = 0.05$) milk fat percentage than C/C and C/A, not being different than A/A. Cows on A/C exhibited lower incidences of displaced abomasum and ketosis than other regimens. These results suggest that AjiPro-L supplementation both pre- and postpartum generally resulted in the most consistently positive production performance immediate postpartum than other regimens. It was also suggested that feeding AjiPro-L only prepartum had some specific effects on postpartum health status and production performance.

Key Words: lysine, milk production, transition period