
Numerous studies have investigated responses of dairy cows to supplemental rumen protected (RP) lysine and methionine. Isoleucine has been intestinally absorbable supplies of methionine, lysine and isoleucine. Cows were supplemented with none of these amino acids (Control), lysine and methionine in a RP form (LM), isoleucine by abomasal infusion (I) or treatments was lower than expected due to low intake of dry matter (DM) which was probably due to the high fibrosity of the basal diet. This resulted in very high daily chewing times on all diets which was associated with high rumen pH values. Intake of DM and its components were not influenced by any treatment. Milk protein % tended (P=0.07) to be higher when cows were supplemented with RP lysine and RP methionine. However production of milk and its components were not affected. Cows tended (P=0.08) to produce more milk and (P=0.06) to produce more milk lactose when abomasally infused with isoleucine alone. However when cows were supplemented with all three AA, milk yield and composition did not differ from the control diet. Evaluation of results suggested that un-supplemented cows were actually co-supplemented in intestinally absorbable supplies of lysine, methionine and leucine and then, intestinally available leucine may have limited performance on all diets. Results demonstrate that isoleucine has the ability to stimulate milk lactose synthesis although this may be compromised by deficiency of another AA.


This study was designed to separate the effects of ruminally protected (RP) lysine (lys) from those of RP methionine (met) on performance of lactating dairy cows fed a diet 1st limiting in IA lys and 2nd limiting in IA met. Multiparous Holstein cows did not respond to enhanced IA lys where lys was not calculated to be 1st limiting. In contrast, cows supplemented with both lys and met for lactating Holstein cows fitted with ruminal and duodenal cannulas were used to determine the effect of ruminally protected lysine and methionine (RPLysMet) on microbial yield, amino acid flow to duodenum, and milk production and composition. The experimental design was a 3x3 Latin square design 96 DM at the beginning of the experiment. Two basal diets were formulated to provide either 56 % and 90 % required lysine and methionine (Neg) or 112 and 103% (Pos), using corn distillers grains or blood meal, fish meal, and meat bone meal as by-pass amino acid sources, respectively. The RPLys and RPLysMet were added to the diet to provide 8 g/d methionine and 27 g/d lysine. Yb was used as a particular marker fluid and the concentration of purines in the duodenal digesta was determined for estimation of microbial N. Milk protein, microbial synthesis in the rumen, and total EAA flow to duodenum were significantly improved by supplementation of RPLysMet.


Six lactating Holstein cows fitted with ruminal and duodenal cannulas were used to determine the effect of ruminally protected lysine and methionine (RPLysMet) on microbial yield, amino acid flow to duodenum, and milk production and composition. The experimental design was a 3x3 Latin square design 96 DM at the beginning of the experiment. Two basal diets were formulated to provide either 56 % and 90 % required lysine and methionine (Neg) or 112 and 103% (Pos), using corn distillers grains or blood meal, fish meal, and meat bone meal as by-pass amino acid sources, respectively. The RPLys and RPLysMet were added to the diet to provide 8 g/d methionine and 27 g/d lysine. Yb was used as a particular marker fluid and the concentration of purines in the duodenal digesta was determined for estimation of microbial N. Milk protein, microbial synthesis in the rumen, and total EAA flow to duodenum were significantly improved by supplementation of RPLysMet.