

P461 Supplementing low-forage diets with rumen-protected Met and Lys results in a reduction in mastitis risk and a modest increase of milk yield for mid-lactation multiparous Holstein cows.

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The aim was to evaluate the effects of rumen-protected Met and Lys (RPML) supplementation on the performance of mid-lactation multiparous Holstein cows fed low-forage diets. A total of 314 cows were randomly assigned to: control [CON; 107 g/d of dry distillers grains (DDG)] or RPML [107 g/d DDG + 107 g RPML (97.9% Smartamine ML + 2.1% Smartamine M; Adisseo USA Inc.)]. CON supplied 2.2% Met and 5.9% Lys of diet metabolizable protein (MP), while RPML supplied 2.8% Met and 7.0% Lys of MP (1.2 g Met/Mcal ME, and 3.2 g Lys/Mcal ME). Cows were group-housed and fed a 28% forage diet twice daily; treatments were top-dressed individually to each cow immediately after morning TMR delivery, at 6 a.m. for 6 wk. Milk yield was recorded daily. Individual milk samples for measuring components were collected from PM milking at d 0, and from AM/PM milkings at 2, 4 and 6 wk. Farm personnel evaluated and recorded any abnormal milk secretions or mastitis cases daily. Blood samples for plasma AA determination were taken 10 h after AM feeding at 0 and 14 d (n = 24 cows/treatment). Milk yield and components were analyzed as repeated measures using the MIXED procedure of SAS. Mastitis risk was assessed by Poisson regression using the GENMOD procedure of SAS. Compared with CON, cows fed RPML had higher plasma Met (36.0 vs. 26.9 $\mu\text{mol/L}$; $P < 0.001$) and tended to have higher plasma Lys (121.1 vs. 102.5 $\mu\text{mol/L}$; $P = 0.07$). Milk yield was higher for RPML than CON cows (46.0 vs. 45.4 kg/d; $P = 0.05$). No treatment effects were observed for ECM ($P = 0.70$) and 3.5% FCM ($P = 0.72$). Yields and concentration of both milk fat and protein were not affected by RPML supplementation ($P > 0.25$ to $P > 0.92$). Mastitis was detected on RPML (4.9%) and CON (12.5%) cows, but the risk was 0.39 times lower for RPML cows (95% CI: 0.17–0.90; $P = 0.03$). Somatic cell counts ($\log_{10}\text{SCC}$) were not different ($P = 0.92$). This study suggests that supplementing RP amino acids to adjust Met and Lys supply in low-forage diets, had positive effects in mammary gland health but modest effects on milk production.

Key Words: lysine, methionine, dairy cow