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Effects of feeding controlled-energy and high-energy diets with rumen-protected lysine and methionine prepartum on performance and health of Holstein cows.

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The aim of this study was to determine cows' performance when Rumen-protected lysine (RPL) and methionine (RPM) were fed in the same amino acid to ME ratio in prepartum diets (1.21g of methionine/Mcal of dietary ME and 3.21g of lysine/Mcal of dietary ME) with different NEL concentrations. Sixty-two multiparous Holstein cows, blocked by parity, previous 305-d mature-equivalent milk production, and body condition score (BCS) during the far-off dry period were assigned to 1 of 3 dietary treatments. Prepartum (-21 d to calving), animals were fed a controlled-energy diet (1.45 NEL, Mcal/kg of DM) with RPL (Kemin Industries Inc., Des Moines, IA) and RPM (Kemin Industries Inc., Des Moines, IA) [CEAA; 0.15% RPL and 0.09% RPM of dietary dry matter intake (DMI)], a controlled-energy diet without RPL and RPM (control; CENAA), or high-energy diet (1.71 NEL, Mcal/kg of DM) with RPL and RPM (HEAA; RPL 0.22% and RPM 0.12% of dietary DMI). Dry matter intake was recorded daily and body weight (BW) and body condition score (BCS; 1 to 5 scale) were taken weekly. Statistical analyses were performed using the MIXED procedure of SAS. There was no treatment effect ($P>0.37$) for DMI (CEAA=12.46; CENAA=12.63; and HEAA=13.04 kg/d; SEM=0.35); BCS (CEAA=3.80; CENAA=3.83; and HEAA=3.92; SEM=0.64); BW change (wk -3 to -1; CEAA=-12.1; CENAA=-5.5; and HEAA=-11.56; SEM=7.41); and BCS change (wk -3 to -1; CEAA=-0.14; CENAA=-0.15; and HEAA=-0.14; SEM=0.08). There was a tendency ($P=0.11$) for a treatment effect for DMI as a percentage of BW (CEAA=1.51; CENAA=1.44; and HEAA=1.70 %; SEM=0.09) and a tendency ($P=0.11$) for BW (CEAA=810; CENAA=842; and HEAA=827 kg; SEM = 10.6). There was a treatment effect ($P=0.01$) for energy balance (EBAL; CEAA=1.82; CENAA=0.6; and HEAA=4.16 Mcal/d; SEM=0.84). Cows that received RPL and RPM had higher ($P=0.02$) EBAL than cows in CENAA. Cows in CEAA had lower ($P=0.05$) EBAL than cows in HEAA. In conclusion, providing RPL and RPM prepartum improved EBAL and seemed to improve DMI as a percentage of BW of Holstein cows.

KEYWORDS:

Methionine, Lysine, transition, energy balance.