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P470 Bioavailability of different rumen-protected lysine products for dairy cattle.

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The objective of this study was to determine the relative bioavailability of different sources of rumen protected Lys and its interaction with different sources of rumen-protected Met supplements in dairy cows. Six multiparous Holstein cows (32 kg/d of milk) fitted with a ruminal cannula and an infusion line into the abomasum were used in a 6 × 6 Latin square. Treatments were pairs of Lys+Met (Lys hydrochloride (Lys HCl); LysiGEM™ (Kemin Animal Nutrition and Health, Emena, Belgium); and AjiPro (Ajinomoto Health & Nutrition North America, Inc., United States); DLMet, Met1, Met2, Met3, Met4 and Met5). Treatments were abomasal infusion of LysHCl+DLMet, and oral supply of LysiGEM+M1; LysiGEM+M2, AjiPro+M3, AjiPro+M4 and AjiPro+M5. Treatment were doses at the morning feeding (40 and 120 g for Met and Lys equivalents, respectively). Oral treatments were dosed into the rumen close to the esophageal orifice. Blood samples collected from the jugular vein at 0, 1, 2, 3, 4, 6, 9, 12, 24, 30 and 48 h after treatments. There were 3 d washout between periods. Results were used to determine the basal concentration (0 h), the maximum concentration (C_{max}), the time to reach the C_{max} (T_{max}), and the area under the curve (AUC) of Lys. Results were analyzed with the PROC MIXED of SAS and differences declared at P < 0.05. The Lys basal concentration was similar among treatments (58.0 μM). The average C_{max} was numerically higher (140.5 vs. 97.3 μM) and the T_{max} numerically lower (5.8 h vs. 11.8) in LysiGEM vs. AjiPro, but differences were not significant. The AUC was higher in LysiGEM+M1 (1,204 units) and lower in AjiPro treatments (average 276 units). The plasma Lys concentration within the same type of Lys was different depending on the Met supplemented. The AUC of LysiGEM was 1,204 or 790 units, a 35% reduction, when mixed with M1 or M2, respectively. Similarly, the AUC of Lys from AjiPro ranged from 399 to 110, a 73% reduction, when mixed with M4 or M5, respectively. Results suggest that relative Lys bioavailability was higher in LysiGEM compared with AjiPro, and that bioavailability may be affected by the type of rumen-protected methionine supplement used.

KEYWORDS:

lysine bioavailability, methionine interaction, area under the curve