



2021 American Dairy Science Association® Annual Meeting Journal of Dairy Science®

Volume 104, Supplement 1

P469 Evaluation of bioavailability of rumen-protected methionine supplement in lactating dairy cows.

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The objective of this study was to determine the bioavailability of a rumen-protected Methionine supplement in dairy cows using the plasma free amino acid dose-response technique. Five multiparous Holstein-Friesian cows (640 kg BW; 32 kg/d of milk) fitted with rumen cannulas were housed individually in a tie-stall barn. Cows were fed a 42:58 forage:concentrate total mixed ration formulated to meet or exceed requirements (NRC, 2001). Cows were milked twice daily. In experiment 1, 40 g of Met were dosed orally at the am feeding and blood samples were collected from the jugular vein at 0, 1, 2, 3, 4, 6, 9, 12, 24, 30 and 48 h after Met supply to determine plasma Met concentrations. In experiment 2, cows were used in a 5 × 5 Latin square. One week before the start of the experiment, blood samples were taken 8 h after feeding to measure the plasma AA concentrations used as covariate. Each experimental period consisted of 4 d for adaptation, 3 d for sample collection and 3 d for washout. Treatments were control (CTR): post-ruminal infusion of 15 g/d (InfLow) or 30 g/d (InfHigh) of Met: and 15 g/d (RPMLow) or 30 g/d of Met-equivalent of a rumen-protected Met (RPM, KESSENT®, Kemin Animal Nutrition and Health, Belgium) fed orally. Oral doses were fed in 2 equal portions before a.m. and p.m. feeding. Blood samples were collected at peak concentrations determined in experiment 1 (8 h after the Met supply) during the 3 sampling days following the same protocol described previously. Bioavailability of Met was estimated using the slope ratio method using the NLMIXED procedure of SAS. Results from experiment 1 indicated that Met plasma concentrations reached the peak around 8 h after feeding, and that time was selected for the sampling in experiment 2. In experiment 2, the lower slope of the oral treatment compared with the omasal infusion supplementation reflected the lower bioavailability due to rumen degradation and/or intestinal digestibility. The estimated of the bioavailability (ratio of slopes) of the RPM was 74.6% ± 5.2.

KEYWORDS:

bioavailability, rumen-protected methionine, dairy cow.