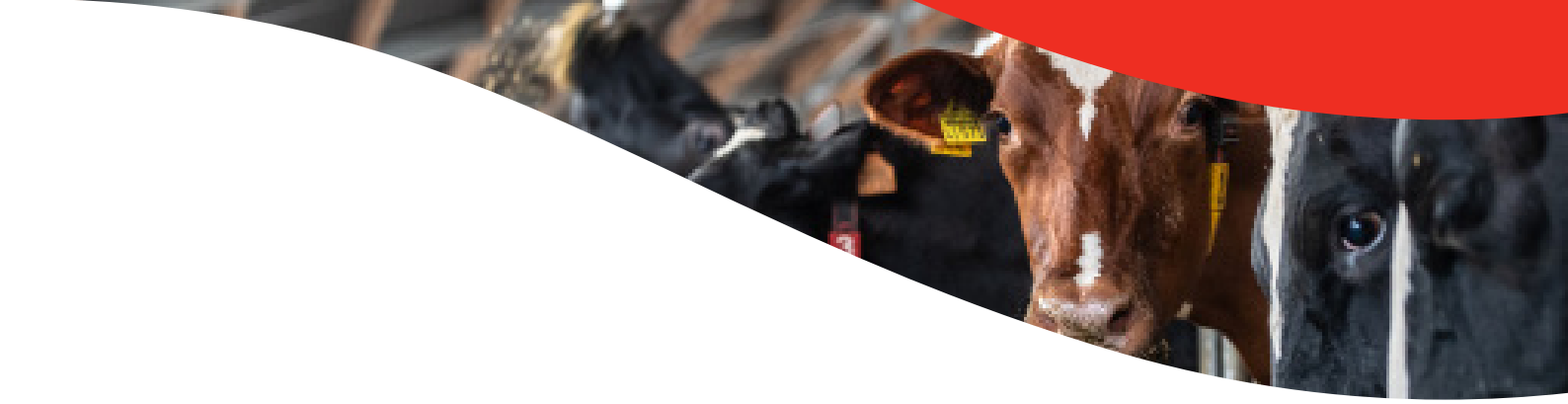

American Dairy Science Association® Annual Meeting Journal of Dairy Science®

Comparison of two Methionine precursor sources in dairy goats using the Area Under the Curve Method

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The kinetics and bioavailability of methionine analogues in dairy cows have been well documented in the literature. However, data on the utilization of the methionine precursor 2-hydroxy-4-(methylthio) butanoic isopropyl esters (HMBi) in dairy goats is scarce. This study evaluated the relative bioavailability of two HMBi products obtained through different production processes using the area under the curve (AUC) method in goats. The methionine precursors evaluated were the new HMBi product (KESSENT MF® Dry, Kemin) and an existing HMBi product (Metasmart®, Adisseo). Fifteen adult non-pregnant Murciano-Granadina goats, fed a 30:70 forage:concentrate diet, were assigned to a triplicate 3 x 3 Latin square design. Each period included 7 days: 2 experimental days and a 5-day washout. Three diets were evaluated: a negative control (NC), without methionine analogues, and two HMBi sources: KESSENT MF Dry® (KMF) and Metasmart® (MtS), both providing 6 g methionine equivalent. Treatments were dosed on day 1 of each period via esophageal tube directly into the rumen. Blood samples from the jugular vein were taken at various time points (0, 1, 2, 3, 4, 6, 9, 12 and 24 h) to measure plasma methionine concentrations. The elemental trapezoidal AUC was calculated by multiplying the mean methionine increase between consecutive samplings and the interval duration. The AUC was calculated for each treatment, as the sum of the elemental AUC calculated all along the sampling kinetics. The AUC and plasma methionine concentrations were analyzed using an ANOVA. No significant differences ($P > 0.05$) for the total AUC were found between the KMF and MtS treatments (3,548 vs.3,397 ± 251 arbitrary units). Plasma methionine concentrations reached their maximum value after 4 and 3 hours of supplementation for KMF and MtS (274 ± 21.4 vs. 247 ± 18.9 µM), respectively. Both HMBi sources returned to a similar basal concentration (37.8 ± 9.5 µM) after 24 hours of supplementation ($P = 0.422$). In conclusion, KESSENT MF® Dry demonstrated similar bioavailability to Metasmart®, in line with findings from previous studies conducted in dairy cows.

KEYWORDS:
Bioavailability, methionine, goats