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1245M Stability of liquid 2-hydroxy-4-methylthiobutanoic isopropyl esters (HMBi) in compound feed and total mixed rations.

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Isopropyl ester of hydroxy methionine analogs (HMBi) stand out as an alternative way to supply methionine in ruminant diets to encapsulated forms due to their stability against aggressive thermo-physical processing. But one of the big questions still unanswered is whether HMBi-based products are stable in total mixed rations (TMR) and in the presence of a high proportion of cereals, like grain mixes (GM). Two experiments were designed to evaluate the stability of HMBi in GM for up to 2 mo and in TMR up to 24 h. In Experiment 1, liquid HMBi (≥97% wt., KESSENT MF, Kemin Europa N.V., Belgium) was added at 3% to a GM consisting of wheat, barley, corn, and soybean (21% CP, 2.77 Mcal/kg ME, 42% starch). The HMBi concentrations were analyzed on d 1, 14, 21, 30, and 60 of storage. In Experiment 2, the HMBi was added at 1.5% to a corn silage-based-TMR (57.5% DM, 14.5% CP, 1.64 Mcal/kg ME, 16% starch). The HMBi concentrations were analyzed after 1 h, 4 h, 8 h, 12 h, and 24 h. The HMBi concentration was determined using the protocol based on RP-HPLC as described by EURL evaluation report No. 1831/2003, with minor modifications (n = 5). Samples were extracted using an (acidified) extractive solution and subjected for analysis. For methodology, coefficient of determination (R2) ≥0.99 was satisfactory for both experiments. Quantitative results were expressed as HMBi recovery (%) and were evaluated using PROC MIXED of SAS. Relative HMBi concentrations (%, relative to time zero) of 99.3, 99.3, 100, and 100 were obtained at d 14, 21, 30, and 60 of storage in GM, and of 98.5 at 24 h, 100 at all other time points in TMR. The least squares means of HMBi recovery (%) showed no significant changes (P > 0.05) both in GM until d 60 (73.2, 72.7, 72.8, 72.2, 74.2 ± 1.2; at d 1, d 14, d 21, d 30, d 60, respectively) and in TMR compared with time zero (76.4, 78.9, 81.8, 80.4, 75.1 ± 1.4 after 1 h, 4 h, 8 h, 12 h, 24 h, respectively). Altogether, liquid HMBi from KESSENT MF remains stable in the grain mix and in TMR under real field conditions. This is the first stability report of HMBi in TMR to our knowledge.

KEYWORDS:
2-hydroxy-4-methylthiobutanoic isopropyl esters (HMBi), feed stability, methionine.