



balchem®

AminoShure®-XM

Precision Release Methionine

Balchem Research Summary

Mixing Stability of *AminoShure®-XM*

Background

Ruminal protection, intestinal release and biological responses are all important factors to consider when evaluating the efficacy of rumen protected amino acids. However, a rumen protected amino acid must first be tough enough to withstand the rigors of mixing, transportation, and storage. Thus, the objectives of these two experiments were to determine the mix stability of AminoShure[®]-XM in both a mineral blend and a total mixed ration (TMR).

Method

Mineral Mixing Stability – conducted internally at Balchem

The mineral blend used in the mineral mix experiment consisted of coarse limestone (45%), sodium bicarbonate (44%), magnesium oxide (10%) and soybean oil (for dust control, 1%). AminoShure-XM (2.3 lbs) was mixed for 3 minutes with the mineral blend (97.7 lbs) using a small batch mixer fitted with paddles and two ribbons. After mixing, the batch was sampled then sifted to separate AminoShure-XM from the mineral. Samples of AminoShure-XM pre and post mixing were submitted to a third-party commercial laboratory (Cumberland Valley Analytical Services [Waynesboro, PA]) for in situ rumen stability testing. Duplicate samples of both mixed and unmixed AminoShure-XM were individually sealed into dacron bags (50 µm pore size, Ankom Technology) and suspended in the rumen of three cannulated lactating cows for 2 and 8 hr. Nitrogen (N; proxy for methionine) and dry matter (DM) content were determined at each timepoint.

TMR Mixing Stability – conducted at Miner Institute

A TMR (47% DM) and a Super Data Ranger (American Calan Inc., Northwood, NH) fitted with a paddle mixer were utilized to determine the TMR mix stability of AminoShure-XM. Triplicate samples of AminoShure-XM were weighed and heat-sealed into dacron bags (50 µm pore size, Ankom Technology) to allow for recovery of the product post-treatment. Dacron bags were either placed in the Super Data Ranger containing 770 lbs of TMR and mixed at full speed (6.5 rotations per minute) for 6 min or placed into a barrel, gently incorporated with TMR, and allowed to sit for 6 min. The dacron bags from both treatments were removed from the TMR and immediately suspended in the rumen of three cannulated lactating cows for 0, 6 or 12 hr. Methionine content was then determined at each timepoint.

Results

The results from the mineral mix and TMR mix tests are presented in Figures 1 and 2, respectively. When tested in the mineral, the mixed and unmixed AminoShure-XM had the same rumen stability at 2 hrs of incubation (roughly 95% N remaining). At 8 hrs of incubation, the mixed sample of AminoShure-XM had slightly less rumen stability when compared to the unmixed (4% difference) suggesting very minimal damage occurred. Even less difference (2% or less) was observed between mixed and unmixed samples when AminoShure-XM was mixed in a TMR.

Conclusions

AminoShure-XM incurred very little to no damage when mixed with either a mineral mix or TMR, suggesting that AminoShure-XM is stable in both mixing environments.

Figure 1.

Mineral Mix Stability of AminoShure-XM

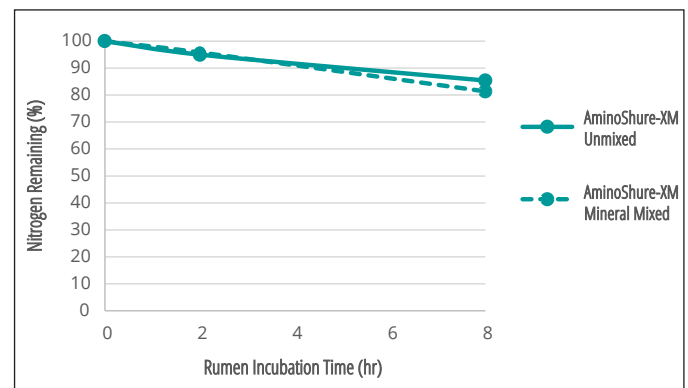


Figure 2.

TMR Mix Stability of AminoShure-XM

