



Effect of Palatability on Free-Choice Mineral Intake of High Magnesium Minerals Made With Either Magnesium Oxide or MIN-AD[®] by Beef Cows

Introduction

Grass tetany, which is caused by low serum magnesium, is common in many parts of the United States, especially during the spring months because of low magnesium levels and high potassium levels in lush forages. The potassium interferes with absorption of magnesium resulting in low serum levels. Many producers routinely feed a high magnesium free-choice mineral mix prior to grass “green up” in the spring with the goal of maintaining adequate serum magnesium levels. The most common magnesium source in these minerals is magnesium oxide (MgO), which is unpalatable and causes low intakes of these minerals. MIN-AD is a palatable magnesium limestone and thus is an alternative source of magnesium. The research trial described in this report was conducted to compare intakes of high magnesium minerals fed free-choice to beef cows.

Protocol

To compare mineral intakes, 75 cow/calf pairs were randomly assigned to nine pastures at the Fort Hays Experiment Station, Hays, KS, in 2010 and 2011. Three of the pastures were western wheatgrass, three were tall wheatgrass, and three were native grass. A single tub feeder was placed in each pasture. Three free-choice minerals were evaluated with replication across pasture types. Composition of the test minerals is shown in table 1.

Table 1. Nutrient composition of the minerals used in the study.

Nutrient Composition	Mineral		
	A	B	C
Calcium, %	19.5	17.5	15.2
Phosphorus, %	4.0	4.0	4.0
Salt, %	21.5	21.5	14.2
Magnesium, %	1.9	10.0	10.1

Minerals A and B are commercially available minerals. Mineral B is a typical high magnesium mineral fed during the spring to reduce the potential for grass tetany. Mineral A essentially served as a control with a low magnesium level. The source of magnesium in mineral B was primarily MgO while the source of magnesium in mineral C was primarily MIN-AD. Approximately 6% MgO was used in mineral C to allow the formulation of a mineral with 10% magnesium. Trace mineral and vitamin levels were the same for all three minerals. The trial

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was initiated on 4/27 and terminated on 6/2 in 2010. In 2011, the trial was initiated on 4/14 and terminated on 6/2.

Results

Intakes for the entire trial period in each year are shown in Table 2. Intakes were below expected levels for all minerals in 2010 partially because it took the cows some time to adjust to new mineral feeders.

Table 2. Intakes of free-choice minerals by beef cows.

	Mineral		
	A	B	C
Year	Intake Per Head Per Day, oz.		
2010	2.2	1.3	2.1
2011	2.7	2.5	3.5

In both years, the intakes of the high magnesium mineral with a high level of MgO was below that of the control mineral, which is typical of high MgO minerals. Conversely, when MIN-AD was used as the primary source of magnesium, the average intake of the mineral was similar to the control mineral in 2010 and numerically higher in 2011. Because of the limited number of pastures and variability in intake, the differences shown in Table 2 are not statistically significant ($P > .05$). Nevertheless, these data illustrate the palatability of MIN-AD in a free-choice mineral. The resulting increase in magnesium intake should reduce the potential for grass tetany problems.