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Abstract

In three trials, there was no gain response by stockers offered supplemental niacin while grazing tall fescue pasture in the spring or fall. There was a trend toward lower body temperatures for niacin-supplemented cattle, but this was not significant. Niacin fed at 2 to 4 g per head daily did not reduce the fescue endophyte fungus problem.

Keywords

Cattlemen's Day, 1990; Kansas Agricultural Experiment Station contribution; no. 90-361-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 592; Beef; Niacin; Fescue; Endophyte; Stockers

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EFFECT OF NIACIN SUPPLEMENTATION OF STOCKERS GRAZING TALL FESCUE PASTURES¹

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L. R. Corah, and J. Moyer⁴

Summary

In three trials, there was no gain response by stockers offered supplemental niacin while grazing tall fescue pasture in the spring or fall. There was a trend toward lower body temperatures for niacin-supplemented cattle, but this was not significant. Niacin fed at 2 to 4 g per head daily did not reduce the fescue endophyte fungus problem.

(Key Words: Niacin, Fescue, Endophyte, Stockers.)

Introduction

When fed at high levels, niacin helps dissipate body heat by stimulating peripheral vasodilation. Research with stressed calves shipped off of fescue pastures has shown increased gains when niacin was added to the receiving diet. This suggests that niacin may help reduce the heat stress and resulting gain reduction caused by the endophyte fungus in tall fescue. The objective was to determine if supplemental niacin fed to cattle grazing tall fescue pastures would improve average daily gain and moderate body temperature.

Experimental Procedures

In Trial I, 125 mixed-breed steers were allotted randomly on March 31 to either niacin or control groups. Each group was fed 2.6 lb of grain, with or without 4 g of niacin per head daily. There were two pastures per treatment. Steers were stocked at one steer/acre and grazed 65% endophyte-infected tall fescue pastures until May 16. Dry weather caused the trial to be terminated after 45 days. The steers were individually weighed, and their body temperatures were recorded at the start and end of the trial.

In Trial II, 200 mixed-breed steers were individually weighed and allotted randomly on October 10 to either a niacin bolus or control group. Half of each group of steers was assigned randomly to either a 30% or an 80% endophyte fungus-infected tall fescue pasture. Each steer in the niacin group was given a niacin bolus on d 1 and d 32 of the 64-d trial. Boluses were

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designed to release 2 g of niacin/day. In addition, all steers received 3 lb of grain sorghum per head daily. The steers were weighed off trial on December 13.

In Trial III, 40 mixed-breed heifers were weighed and allotted randomly on October 4 to either a niacin-supplemented or control group. Half of each group was assigned randomly to either a Mo-96 (fungus-free) tall fescue pasture or a K-31 (70% fungus-infected) tall fescue pasture. Niacin was added to a mineral mixture, and the heifers consumed approximately 4 g of niacin/day during the 63-d trial. The heifers were weighed individually, and body temperatures were recorded at the start and end of the trial.

Analysis of variance (SAS) was used to analyze the data, and the results are reported as least squares means.

Results

There was no difference ($P > .05$) in daily gain between niacin-supplemented and control groups in any of the three trials (Tables 33.1, 33.2, and 33.3). In Trials I and III, body temperature of the niacin-supplemented cattle tended to be lower, but the difference was not statistically significant.

In order for appetite and performance to improve on fungus-infected pastures, a substantial reduction in the normally elevated body temperature likely would have to occur. This was not the case in these spring and fall trials. However, a summer trial might have different results. For stocker cattle grazing tall fescue primarily in the spring and fall, a niacin supplement does not appear to be beneficial, at least at the 2 to 4 g/d level used in these trials.

Table 33.1. Effect of Niacin in a Grain Supplement on Steer Performance while Grazing Tall Fescue Pastures (Trial I)

Item	Control	Niacin
No. steers	60	65
Starting wt, lb	748	744
Daily gain, lb	1.37	1.35
Body temp., °F	103.4	103.2

Table 33.2. Effect of Niacin Bolus on Steer Gains while Grazing Tall Fescue Pastures (Trial II)

Item	Control	Niacin bolus
No. steers	100	100
Starting wt, lb	574	573
Daily gain, lb	1.25	1.25

Gain data were pooled across pastures with 30 and 80% endophyte infestations.

Table 33.3. Effect of Niacin in Mineral Mixture on Heifer Gains while Grazing High and Low Endophyte Tall Fescue Pastures

Item	Endophyte-free pasture		High-endophyte pasture	
	Control	Niacin	Control	Niacin
No. heifers	10	10	10	10
Starting wt, lb	608	610	609	606
Daily gain, lb	1.26	1.04	.81	.84
Body temperature, °F	103.6	103.3	103.4	102.9