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## The effect of protected lysine-methionine on gain and health of newly arrived calves

### Abstract

Long-hauled calves averaging 293 lb were allotted to groups fed with or without protected lysine-methionine (Smartamine ML®). Protected lysine-methionine did not improve ADG in the first 28 days but did improve ADG from 29 to 56 days. It also reduced morbidity (16.1 vs 34.2%) from day 29 to 56. Based on this research, the response of long-hauled calves to protected lysine-methionine in the diet appears to occur after they have recovered from the stress of shipment.

### Keywords

Cattlemen's Day, 1994; Kansas Agricultural Experiment Station contribution; no. 94-373-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 704; Beef; Lysine; Methionine; Protected amino acids; Stocker calves

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## THE EFFECT OF PROTECTED LYSINE-METHIONINE ON GAIN AND HEALTH OF NEWLY ARRIVED CALVES <sup>1</sup>

*F. K. Brazle* <sup>2</sup> and *G. L. Stokka* <sup>3</sup>

### Summary

Long-hauled calves averaging 293 lb were allotted to groups fed with or without protected lysine-methionine (Smartamine ML®). Protected lysine-methionine did not improve ADG in the first 28 days but did improve ADG from 29 to 56 days. It also reduced morbidity (16.1 vs 34.2%) from day 29 to 56. Based on this research, the response of long-hauled calves to protected lysine-methionine in the diet appears to occur after they have recovered from the stress of shipment.

(Key Words: Lysine, Methionine, Protected Amino Acids, Stocker Calves.)

### Introduction

Escape or bypass protein has been shown to improve performance of lightweight calves, and it has been hypothesized that rumen bypass of certain amino acids might improve gain and health of calves. The objective of this study was to evaluate the effect of protected lysine-methionine (amino acids) on the gain and health of newly arrived, lightweight calves.

### Experimental Procedures

One hundred and fifty-six bull and steer calves from Georgia were blocked by sexual status and randomly allotted to be fed with or

without protected lysine-methionine at 10g/hd/day. There were four pens per treatment.

The calves were vaccinated at arrival with modified-live IBR+BVD+PI<sub>3</sub>, 7-way blackleg, and Presponse®, and weighed individually on days 1, 14, 28, and 56. Additionally, they were dewormed and deloused with Ivomec®, implanted with Ralgro®, and mass medicated with Micotil®. On day 28, the bull calves were surgically castrated.

Body temperature of all calves was recorded on day 14. All calves with body temperature over 104°F were treated with Micotil, placed in sick pens by treatment group, and fed their original ration. The remaining calves were treated with long-acting penicillin and returned to their original pens.

### Results and Discussion

The calves receiving the protected lysine-methionine gained faster ( $P < .10$ ) than controls, with most of the increase occurring from days 29 to 56 (Table 1). Hay intake was increased ( $P < .01$ ) by feeding protected lysine-methionine during the first 28 days. The calves fed protected lysine-methionine had less sickness ( $P < .01$ ) from days 29 to 56. This reduction in sickness after 29 days could be very beneficial, if the calves were turned out to wheat pasture or grass.

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In this trial, the addition of lysine-methionine to the diet showed some

potential to improve the health and gain of highly stressed calves; however, more research must be conducted to determine if this response is related to improved nutrition or to an immune response.

**Table 1. Effect of Protected Lysine-Methionine on Gain and Health of Newly Arrived Calves during the First 56 Days**

	Lysine Methionine	Control
No. calves	78	78
Starting wt., lb	293	293
ADG, lb		
1 to 14 d	1.31	1.45
15 to 28 d	1.36	1.10
1 to 28 d	1.34	1.27
29 to 56 d	2.04 <sup>a</sup>	1.86 <sup>b</sup>
1 to 56 d	1.69 <sup>a</sup>	1.57 <sup>b</sup>
Feed intake, lb		
Grain - 1 to 28 d	5.75	5.75
Hay - 1 to 28 d	4.50 <sup>e</sup>	4.23 <sup>f</sup>
Total - 1 to 28 d	10.25 <sup>e</sup>	9.98 <sup>f</sup>
Grain 29 to 56 d	6.80	6.80
Hay 29 to 56 d	3.05	3.02
Total 29 to 56 d	9.85	9.82
Grain 1 to 56 d	6.27	6.27
Hay 1 to 56 d	3.77	3.62
Health		
Morbidity, %, 1 to 28 d	27.6	32.2
Treatments/animal, 1 to 28 d	8.1	8.0
Body temp., d 14, °F	103.1	103.2
No. dead	1	0
Morbidity, %, 29 to 56 d	16.1 <sup>c</sup>	34.2 <sup>d</sup>
Treatment/animal, 29 to 56 d	6.1	6.6

<sup>a,b</sup>Means in the same row with unlike superscripts are different (P<.10).

<sup>c,d</sup>Means in the same row with unlike superscripts are different (P<.01).

<sup>e,f</sup>Means in the same row with unlike superscripts are different (P<.06).