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K. Bolsen

L. Corah

G. Fink

See next page for additional authors

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Effect of Rumensin on performance of growing heifers (1976)

Authors

K. Bolsen, L. Corah, G. Fink, and Jack G. Riley

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Effect of Rumensin on Performance of Growing Heifers

SJack Riley, Keith Bolsen, Larry Corah,
and Galen Fink**U**

Summary

We used 136 Hereford heifer calves in two studies to determine the effect on performance of 200 mg monensin (trade name Rumensin¹) per head daily. It significantly improved gain by 7.5% and 4.6% in trials 1 and 2 respectively, and significantly improved efficiency 11.6% and 12.2%, respectively.

Introduction

Rumensin was cleared for use in feedlot rations by the FDA in late December, 1975. It has consistently improved efficiency of gain in feedlot cattle with limited influence on daily gain. The mode of action appears to be to increase the molar proportion of propionic acid in the rumen. Ruminants use the energy from propionic acid much more efficiently than that from acetic or butyric acids, the other two in abundant supply. We wanted to determine the effect of 200 mg Rumensin per head per day on performance of beef heifer calves fed high-silage rations instead of typical high-concentrate rations.

Procedure

Trial 1. Ninety-six Hereford heifers were allotted at random, 6 each to 16 pens. Eight pens were fed control rations; and 8 the same rations plus a premix that provided 200 mg Rumensin daily per heifer. Composition of the complete rations is shown on page 46.

Trial 2. Forty Hereford heifer calves were allotted at random to 10 pens of 4 heifers each. Five pens were controls, five were fed the same rations plus 200 mg Rumensin daily per heifer. Supplement composition is shown in Table 21.1.

Fecal samples, obtained early in both studies, were negative for coccidia oocysts. Rumen samples for volatile fatty acids were taken on day 56 of each trial. Heifers were fed twice daily all they would eat. Individual weights were taken initially, at 28-day intervals, and at the end of each trial. Initial and final weights were taken after a 15-hour shrink.

¹ Rumensin and partial financial assistance provided by Eli Lilly Co.

Rumensin is a trade name of Elanco Products Co.

Results

Heifer performance data for the two trials are summarized in Table 21.3. Feeding 200 mg Rumensin improved daily gain 7.5 and 4.6%, reduced daily feed intake 5 and 8.2% and improved efficiency 11.6 and 12.2% in trials 1 and 2, respectively. Results of the rumen-volatile fatty-acid samples are shown in Table 21.4. Propionic acid had increased 19 and 49% in Rumensin-treated heifers in studies 1 and 2, respectively.

Table 21.1 Composition of Supplement -- Trial 2

Supplement Ingredient	Percent
Soybean Oil Meal	63.20
Milo, Ground	32.30
Dicalcium Phosphate	0.67
Limestone	1.33
Salt	1.51
Fat	0.89
Trace mineral	0.04
Vitamin A	0.06

Table 21.2 Composition of Rations -- Trial 2

Ingredient	<u>0 - 56 days</u>		<u>57 - 112 days</u>	
	% (D.M. basis)	% C.P	% D.M. basis)	% C.P
Corn silage	79.5	8.6	--	--
Supplement (see table 1)	9.6	36.8	10.3	36.8
Premix ^{1/}	10.9	19.7	--	--
Sorghum silage	--	--	78.1	6.7
Premix ^{2/}	--	--	11.6	28.4
Complete ration	100.0	12.5	100.0	12.3

^{1/}Premix was 1 part soybean oilmeal and 3 parts milo^{3/}.

^{2/}Premix was 2 parts soybean oilmeal and 2 parts milo^{3/}.

^{3/}Rumensin was added in the milo portion to provide 200 mg per heifer per day.

Table 21.3 Effect of Rumensin on Performance of Growing Heifers

Item	Trial 1 ^{1/}		Trial 2 ^{2/}	
	0	200 mg	0	200 mg
No. heifers	48	48	20	20
Initial wt, lbs.	501.9	503.8	452	452
Final wt, lbs.	665.4	679.6	671	680
ADG	1.46	1.57	1.95	2.04
ADF (D.M. basis)	12.92	12.27	15.7	14.4
Eff.	8.85	7.82	8.05	7.06

^{1/}Trial 1 was conducted Dec. 12, 1974 - March 10, 1975

^{2/}Trial 2 was conducted May 1, 1975 - August 10, 1975

Table 21.4 Effect of Rumensin on Ruminant Volatile Fatty Acids

	treatment: Control		200 mg/day	
	trial: 1	2	1	2
No. heifers	10	10	10	10
Molar % VFA conc.				
Acetic	66.0	66.8	60.7	59.3
Propionic	23.0	22.1	27.4	33.0
Butyric	10.9	11.1	11.8	7.7