

References:

1. Martin, Jerry, *et al.* 1976. Okla. Ag. Exp. Sta. Res. Rept-96, p. 87.
 2. Elanco, 1977. Rumensin-Protein Seminar, Jan 12, 1977, Indianapolis, Ind.
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Protein Sources and Rumensin for Feedlot Steers¹

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Story in Brief

Thirty-two steers initially weighing 564 pounds were fed whole shelled corn rations containing 11.3 percent protein with all supplemental protein from either soybean meal or urea, and with or without rumensin added. After 155 days, steers were slaughtered and carcasses were evaluated. Daily gains and feed intakes were both five percent higher for urea-fed steers, so feed efficiencies did not differ. Rumensin reduced gain by about two percent and intake by five percent, improving feed efficiency by five percent. Carcasses from steers fed urea were slightly heavier, and yield grades were slightly higher than from steers fed soybean meal.

Introduction

Least cost formulation of feedlot rations often includes urea when soybean meal prices are expensive relative to cereal grains, but urea levels above 0.75 percent of the ration are commonly avoided, especially with high moisture feeds. Animal performance from rations having more urea is often substandard. The advent of rumensin as a feed additive improving feed efficiency and possibly sparing protein suggests that rumensin may prove more beneficial with urea based rations.

The objective of this experiment was to examine the influence and interactions of protein sources (urea vs. soybean meal), and rumensin on steer growth and performance with an 11.3 percent protein shelled-corn ration.

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Materials and Methods

Procedures duplicated those presented in "Protein Levels and Rumensin for Feedlot Steers" by Gill *et al.* (1977) also in this publication. Ration compositions are in Table 1.

Results and Discussion

Protein Source

Daily gains and feed intakes (Table 2) were 5 percent greater with urea than soybean meal supplements; however efficiencies did not differ.

Rumensin Addition

Rumensin decreased intake by six percent, and improved efficiency by five percent in this trial. Liver abscess was more than tripled with monensin feeding, but carcass values were unchanged.

Protein Source by Rumensin Interaction

Feed consumption was depressed over 40 percent more by rumensin addition to the soybean meal than to the urea supplemented ration. Consequently, rate of gain was depressed slightly with the rumensin-soy combination. Feed efficiency improvements by rumensin addition, however, were equal (4.7 vs. 5.1 percent) with the two protein sources. The combination of rumensin and soybean meal caused the highest incidence of abscesses as well as the highest degree of marbling in the experiment. No detrimental effects of feeding urea plus rumensin were apparent.

Table 1. Ration composition (dry matter basis)

Ingredient	Rations	
	Soy	Urea
Corn, whole shelled %	87.3	91.5
Cottonseed hulls, %	5.0	5.0
Alfalfa, dehy, grnd, %	1.0	1.0
Soybean meal, %	5.15	---
Urea, %	---	0.75
Poly Phos, %	---	0.05
Calcium carbonate, %	1.03	1.04
Potassium chloride, %	0.15	0.34
Salt, %	0.30	0.30
Trace mineral, ppm	125	125
Vitamin A, 10,000 Iu/g, ppm	150	150
Monensin, 30 g/lb, ppm	0/500	0/500
Crude protein (determined)	11.23	11.38
Monensin (assay), ppm, 4 rations	1;52	1;15

Table 2. Protein sources and rumensin affects on performance and carcass characteristics

	Soybean meal	Urea	Control	Rumensin
Daily gain, lb.	3.27 ^a	3.44 ^b	3.38	3.33
Feed intake, lb.	17.5 ^a	18.4 ^b	18.5 ^b	17.4 ^a
Feed/gain	5.34	5.37	5.48 ^a	5.22 ^b
Metabolizable energy Kcd./Kg.	3.37	3.37	3.31	3.43
Carcass weight, lb.	661	680	675	667
Liver abscess ¹	0.50	0.28	0.18	0.59
Kidney, heart, and pelvic fat, %	3.0	3.0	3.0	3.0
Marbling score ²	17.0	16.8	17.0	16.8
Backfat, in.	0.66	0.74	0.75	0.66
Rib eye area, sq. in.	12.3	11.9	12.2	12.0
Yield grade ³	3.4	3.8	3.6	3.5

^a^bMeans with different superscripts differ statistically ($P < .10$).

¹0=None, 1=one small abscess, 2=two or three small abscesses and 3=many small or one or more large abscesses.

²15=small +, 16=modest-, 17=modest +, etc.

³1=highest and 5=lowest.

In conclusion, urea supplementation of whole shelled-corn ration in this experiment gave steer performance at least equivalent to that from soybean meal supplementation. No intake depression with urea-dry corn rations was apparent as had been observed with the urea-high moisture corn combination previously (Martin, *et al.*, 1976). Rumensin addition improved efficiency of energy use about five percent, equally with both rations.

References:

1. Gill, Donald, *et al.* 1977. Elsewhere in this Misc. Publ.
2. Martin, Jerry, *et al.* 1976. Okla. Ag. Exp. Sta. Res. Rept-96, p. 87.