

**EFFECTS OF SUPPLEMENTAL PROTEIN WITH RUMENSIN OR DECCOX  
ON FECAL COCCIDIA AND PERFORMANCE OF WEANED CALVES  
GRAZING LATE SUMMER NATIVE RANGE**

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**Story in Brief**

The effects of small amounts of supplemental protein during the grazing phase on daily gains and the effects of Monensin and Deccox during both bawl out and grazing phases on oocyst numbers, incidence of coccidiosis and on daily gains were measured. During a 7-day bawl out period, all calves were fed free choice prairie hay and 2 lb of soybean meal supplement with either no additive, or 100 mg per head/day of Rumensin or Deccox. Calves fed Rumensin gained .6 lb during the bawl out period. Calves fed Deccox lost 4 lb while those fed protein supplement without additives lost 10 lb. After the bawl out period, all calves were moved to native range pastures for a 56-day grazing period and fed four supplement treatments: no supplement, .8 lb of soybean meal supplement, .8 lb of soybean meal supplement with 100 mg of Rumensin or .8 lb of soybean meal with 100 mg per head of Deccox. Calves fed no supplement gained .63 lb/head/day compared to 1.09 lb/head/day for calves fed soybean meal supplement. Adding Rumensin to the protein supplement increased daily gains to 1.25 lb/head/day while adding Deccox to the supplement did not improve gains over protein supplement. Both Rumensin and Deccox effectively reduced fecal oocyst counts during drylot and grazing phases of the study.

**Introduction**

Low levels of natural protein have been shown to efficiently increase daily gains of yearlings and lightweight calves grazing native range in late summer. Coccidiosis can be a serious problem in calves, particularly during periods of stress such as weaning or shipping. Decoquate (trade name Deccox) is a coccidiostat that can be administered through the feed and has been demonstrated in some cases to increase feed intake and reduce sickness in stressed cattle. The potential of Deccox for increasing gain in grazing cattle is not known. Monensin (trade name Rumensin) is cleared as a growth promotant for feeding to calves over 400 lb and is also used as a coccidiostat in poultry. Since most fall-born calves in Oklahoma are weaned in mid-summer when forage quality is declining, any management tool that could reduce stress during weaning and improve performance after weaning could be highly useful to cattlemen.

The objectives of this research were to study the effects of low levels of protein on the daily gain of fall-born calves weaned in late summer and grazed on native range, and to study the effects of Monensin and Deccox on coccidia control and weight gains.

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## Materials and Methods

Forty-eight Hereford and Hereford X Angus steer and heifer calves born in September and October of 1982 and raised at the Oklahoma State University Range Cow Research Center were weaned on July 11, 1983 and moved to the Range Cow Research Center headquarters for a 7-day bawling out period. Calves were weighed the day of weaning and allotted by breed, sex and weight to 4 supplemental protein and drug treatments (Table 1) for the 7-day bawl out and subsequent 56-day grazing period. Rumensin and Deccox were added to the supplements for 2 of the 4 groups of calves to provide 100 mg/hd/day for each drug. After 7 days in drylot, calves were moved to native tallgrass pasture and fed the supplemental protein treatments shown in Table 2 with Rumensin and Deccox levels adjusted to provide 100 mg/hd/day of each drug. During the bawl out period, all calves were maintained in treatment pens and fed free choice grass hay and 2 lb/head/day of a 39 percent protein supplement made principally of soybean meal (Table 2). Supplements were fed daily during the bawl-out phase, but were prorated for Monday, Wednesday, Friday feeding during the pasture phase.

**Table 1. Supplement levels for bawl-out and pasture phases.**

	Control	Protein	Protein and Monensin	Protein and Deccox
Weaning Phase (7 days)	2	2	2	2
Grazing Phase (56 days)	0	.8	.8	.8

**Table 2. Composition of protein supplements.**

	Percent (as fed)
<b>Ingredient:</b>	
Soybean meal	87.5
Limestone	1.5
Dicalcium phosphate	10.0
Potassium chloride	1.0
<b>Composition:</b>	
Crude protein	39.0
TDN	62.0
Calcium	2.3
Phosphorus	2.2
Potassium	2.1

Calf weights were taken after overnight withdrawal from feed and water at weaning, at the initiation of grazing, and at 28-day intervals during the 56-day grazing period. Fecal samples were taken from all Monensin and Deccox-fed calves and from 1/2 of control and protein-only calves at the times of weighing and at 2-week intervals during the grazing phase. Fecal samples were placed in plastic bags and immediately transported to the College of Veterinary Medicine where oocyst numbers were determined by a qualified technician.

### Results and Discussion

All calves received 2 lb of the protein supplement during the 7-day bawl out phase. Although Control and Protein (without Rumensin or Deccox) treatments were fed the same supplement during this phase, their data are presented separately in Table 3 because they were kept in separate pens. During bawl out, calves fed 100 mg of Rumensin in their supplement gained .6 lb/head while control calves lost 8.4 lb and 12.1 lb, respectively, ( $P < .05$ ). Weight losses for Deccox calves were intermediate between controls and Rumensin-fed calves but not significantly different. Calves fed the control and Deccox supplements consumed all their supplements quickly from the first feeding. Rumensin-fed calves were reluctant to consume their supplement during the first 3 or 4 days of feeding and required most of the day to clean up all the supplement. The rumensin supplement was eaten quickly afterward and no reluctance at consumption was observed in drylot or on pasture.

Feeding .8 lb of protein significantly increased pasture gains of calves during the 56 days following bawl out. Calves fed protein alone gained 1.09 lb/hd/day while control calves gained .63 lb. Gains of Deccox-fed calves (1.10 lb/hd/day) were not different from protein alone although calves fed Rumensin tended to gain faster (1.25 lb/hd/day).

Fecal oocyst counts are shown in Table 4. Seven calves each from treatments not receiving Rumensin or Deccox were sampled throughout the trial and are referred to as "controls" in Table 4. All calves from Rumensin and Deccox treatments were sampled. Oocyst counts taken prior to initiation of treatments averaged from 195 to 268 oocysts/gm. After 7 days of feeding, both drugs significantly reduced fecal coccidia. Deccox appeared to be slightly more effective than Rumensin during the first 7 days of treatment. Oocyst counts were very low for both Rumensin and Deccox groups throughout the study with rumensin-fed calves tending to have slightly lower counts than Deccox-fed calves. No clinical signs of coccidiosis were noted during the trial.

**Table 3. Gains of calves fed protein supplements with or without Rumensin or Deccox.**

	Treatments				Prob.
	Control	Protein	Protein-Rumensin <sup>a</sup>	Protein-Deccox <sup>a</sup>	
Number of Head	12	12	12	12	
Bawl out phase, 7 days					
lb Supp/Day	2	2	2	2	
Wt. Change, lb	-8.4 <sup>c</sup>	-12.1 <sup>c</sup>	.6 <sup>b</sup>	-4.0 <sup>bc</sup>	$P < .01$
Pasture phase, 56 days					
lb Supp/Day	0	.8	.8	.8	
Daily Gain, lb/hd/day	.63 <sup>c</sup>	1.09 <sup>b</sup>	1.25 <sup>b</sup>	1.10 <sup>b</sup>	$P < .01$

<sup>a</sup>Rumensin and Deccox fed at a rate of 100 mg/head/day.

<sup>bc</sup>Means on a line with the same superscript letters do not differ ( $P < .05$ ).

**Table 4. Coccidia (oocysts/gram) in feces of calves fed Rumensin or Deccox.**

	Treatments			Prob.
	Controls <sup>a</sup>	Rumensin	Deccox	
Number of Head Sampled <sup>a</sup>	11-14	10-12	11-12	
Coccidia, Oocysts/gram				
Initially, 7/11/1983	268	195 <sup>b</sup>	264 <sup>b</sup>	P<.53
After 7-day bawl out	181 <sup>c</sup>	49 <sup>b</sup>	7 <sup>b</sup>	P<.001
After 14 days on pasture	244	40 <sup>b</sup>	19 <sup>b</sup>	P<.07
After 28 days on pasture	84 <sup>c</sup>	2 <sup>b</sup>	26 <sup>b</sup>	P<.04
After 42 days on pasture	92	1 <sup>b</sup>	6 <sup>b</sup>	P<.09
After 56 days on pasture	114 <sup>c</sup>	1 <sup>b</sup>	13 <sup>b</sup>	P<.001

<sup>a</sup> Controls for coccidia counts consist of 7 calves each from no supplement and protein-only treatments. The number of samples varies due to lack of feces in a few calves at each sampling time.

<sup>b,c</sup> Means on a line with the same superscript numbers do not differ (P<.05).

### Conclusion

Although the effect of feeding Rumensin during periods of stress has not been widely studied, it appears that concerns of poor intake may be overstated. Although calves required more time to completely consume the rumensin supplement, the supplement was apparently consumed in sufficient quantities for coccidia control. The benefit of feeding Deccox occurred during the bawl out period. Fecal coccidia levels in these calves were relatively low and the level of stress was minimal relative to the stress of calves going through sale barns and subjected to long transits. Under conditions in which calves are heavily stressed and feed intake is likely to be a problem, Deccox during the stress period followed by Rumensin during the growing phase might be desirable. With these calves weaned on the farm, both drugs were effective in reducing coccidia shedding within a short period after the initiating of feeding. The gain response on pasture from Rumensin is typical of responses that have been reported in many trials.