EFFECT OF LATE SPRING AND SUMMER PROTEIN SUPPLEMENTATION WITH AND WITHOUT LASALOCID ON LACTATING BEEF COWS

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Story in Brief

The feeding of low levels of protein supplement with and without lasalocid during late spring and summer was compared to a conventional program where animals grazed native range without any supplementation. Seventy-two lactating Angus, Hereford, and Hereford X Angus cows were allotted to three supplemental protein treatments: (I) control (supplemented with 4 lb SBM/day from 2-4 weeks postcalving to April 27, 1984, and no supplement thereafter); (II) protein (supplemented with 4 lb SBM/day from 2-4 weeks postcalving to April 27, 1984, and 1 lb SBM/day until July 16, 1984); and (III) protein plus lasalocid (same as the protein treatment with the addition of 300 mg/hd/day lasalocid). During late spring and summer, cows fed protein or protein + lasalocid gained more ($P<.05$) weight and condition than control cows (91.19 lb, .58 units, and 86.32 lb, .57 units, -vs- 62.25 lb, .26 units). Protein plus lasalocid cows tended to produce slightly more milk (13.11 lbs -vs- 10.94 lb and 10.84 lbs for control and protein groups, respectively). Calf weaning weights were similar for all treatments (429 lbs, 418 lbs, and 435 lbs for the control, protein and protein plus lasalocid, respectively). Feeding low levels of protein in late spring and summer effectively increased cow weight and body condition but did not increase milk production, calf weaning weight or pregnancy rate. No advantage was seen from feeding 300 mg/hd/day lasalocid over protein supplementation alone. Approximately 2.9 lbs of SBM were required for each lb of added cow weight.

(Key Words: Protein Supplements, Lasalocid, Beef Cattle.)

Introduction

The months of May and June typically coincide with the beginning of the spring breeding season when an adequate level of nutrition is essential to insure a short postpartum interval to the onset of estrus. Typically, oilseed meal-based protein supplements are fed to spring calving cows grazing dormant winter range from mid-November until late April when spring forage becomes available. A supplementation program into May and June that would efficiently increase cow weight and condition during this period might increase rebreeding enough to offset the cost of the supplement. Additional benefits could be greater milk production, increased weaning weights and better cow body condition in late summer and fall when forage quality is declining.

Lasalocid, a polyether ionophore, improves average daily gain and feed efficiency in feedlot and stocker cattle. Recent work at the Oklahoma Agricultural Experiment Station (Wagner et al., 1984) suggests a possible increase in weight gain when lasalocid was added to a protein

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supplement fed to cows at the rate of 200 mg/day from August to April. This amount is typically fed to stocker calves that weigh considerably less than mature beef cows.

The objectives of this study were: (1) to determine the effects of feeding 300 mg of lasalocid from 2-4 weeks post calving to mid-July on cow weight and condition change; and (2) to determine the effects of feeding a low level of supplemental protein with 0 or 300 mg of lasalocid from the time winter supplementation normally ceases (mid to late April) through May and June, on cow weight and condition change, conception rates, milk production, and calf performance of spring calving Hereford and Angus cows.

Materials and Methods

Seventy-two lactating Angus, Hereford, and Angus X Hereford cows, ranging in age from 4-10 years, bred to calve from late February to mid-April, were blocked and assigned to three treatments based on breed, calving date, weight and body condition score. Actual assignment to treatments was made at each weighing when cows were 2-4 weeks postcalving (Table 1). Each cow was fed 4 lb of soybean meal after calving. Treatments were (I) control, 4 lb SBM/hd/day from 2-4 weeks postcalving to April 27, 1984, and no supplement thereafter; (II) same as treatment I, except that 1 lb SBM/hd/day was fed from April 27 to July 16; and (III) same as treatment II with 300 mg of lasalocid/hd/day fed from 2-4 weeks postcalving to July 16. All cows and their calves were maintained in a single pasture. Cows were gathered on Monday, Wednesday and Friday mornings and fed the prescribed supplement individually in covered stalls. Supplement amounts were prorated for 3 times/week feeding. Control cows were gathered along with treatments II and III during the May to July 16 phase of the trial.

Table 1. Supplementation schedule.

	Supplement Intake[a]		
Time Period	Control	Protein	Prot/Lasalocid[b]
Trial start[c] to April 27	4.0	4.0	4.0
April 28 to July 17	0.0	1.0	1.0

[a]Pounds/head/day.
[b]300 mg lasalocid/head/day.
[c]Trial start = 2-4 weeks postcalving.

Cow weights and body condition scores were measured after overnight withdrawal from feed and water at 14 day intervals. Milk production was estimated for a 24 hour period on May 1, June 5 and July 17, using the weigh-suckle-weigh procedure.

A 60-day breeding season began on May 20, 1984. Cows that were at least 60 days postpartum at the start of the breeding season were synchronized with prostaglandin at the beginning of the breeding season and artificially inseminated at the synchronized estrus. Chin-ball equipped breeding bulls were then run with the cows for the remainder of the breeding season. Pregnancy status was determined by rectal palpation on

October 11, 1984.

Blood samples were obtained weekly via the tail vein from May 25 until July 13. An anticoagulant was added to each sample and the samples were cooled in an ice bath. Samples were centrifuged and plasma decanted and stored at -10°C until glucose was quantified colorimetrically.

Rumen samples were obtained from a sample of cows within each treatment 24 hours after their last supplementation. Samples were taken via stomach tube, pH recorded, and then stored to be later analyzed for acetate, proprionate, and butyrate concentration by gas chromatography.

Results and Discussion

Cow weight and body condition changes during the trial are shown in Table 2. From May 8 to July 17, cows receiving protein supplement gained more ($P<.05$) weight and body condition than unsupplemented control cows (104 and .71 units, -vs- 76.03 and .33 units, respectively). No difference was seen due to the addition of lasalocid to the protein supplement.

Table 2. Cow weight change, condition change, and conception rates.

	Treatment[a]		
	Control	Protein	Prot/Lasalocid[b]
Number of cows	24	24	24
Time period:			
Trial start to May 8:			
Weight change, lbs	-13.77	-13.55	-12.25
Condition change[b]	-.07	-.13	.03
May 8 to July 17:			
Weight change, lbs	76.03[c]	104.74[d]	98.58[d]
Condition change	.33[c]	.71[d]	.54[cd]
Trial start to July 17:			
Weight change, lbs	62.25[c]	91.19[d]	86.32[d]
Condition change	.26[c]	.58[d]	.57[d]
Conception rate, %	87.5	79.0	83.3

[a] Least squares means adjusted for cow breed, initial weight, initial condition and calving date.
[b] Condition change in units (1=very thin, 9=very fat).
[cd] Means in same row with different superscripts differ ($P<.04$).

Milk production estimates and calf performance are presented in Table 3. Cows fed the protein plus lasalocid supplement had slightly (nonsignificant) greater milk production at each time measured. Calf weaning weights did not differ between treatments (429, 418 and 435 for treatments I, II and III, respectively).

Pregnancy rates are presented in Table 2. Treatments did not affect pregnancy rates which were 87.5, 79.0 and 83.3% for treatments I, II and III, respectively. Intervals from calving to conception will be calculated from calving dates in 1985.

Concentrations of glucose in plasma are summarized in Figure 1.

Table 3. Cow milk production and calf performance.

	Treatment		
	Control	Protein	Prot/Lasalocid[b]
Number of cows	24	24	24
Milk production[a]:			
May 1	10.54	9.50	12.60
June 5	10.20	10.95	13.23
July 17	12.11	12.06	13.50
Average	10.94	10.84	13.11
Ave. daily gain, calves[b]:			
Birth to May 8	1.64[cd]	1.55[c]	1.76[d]
May 8 to July 17	1.96	1.84	1.94
Birth to July 17	1.65[cd]	1.56[c]	1.77[d]
Birth to October 2	1.94	1.86	1.98
Adjusted weaning weight, calves[b]:			
Oct 2	429	418	435

[a]Least squares means, expressed in pounds, and adjusted for breed of cow, breed of calf, initial weight, initial condition and calving date.
[b]Least squares means, expressed in pounds, and adjusted for breed of cow, calf age, calf sex, initial cow weight and initial cow condition.
[cd]Means in same row with different superscript differ (P<.05).

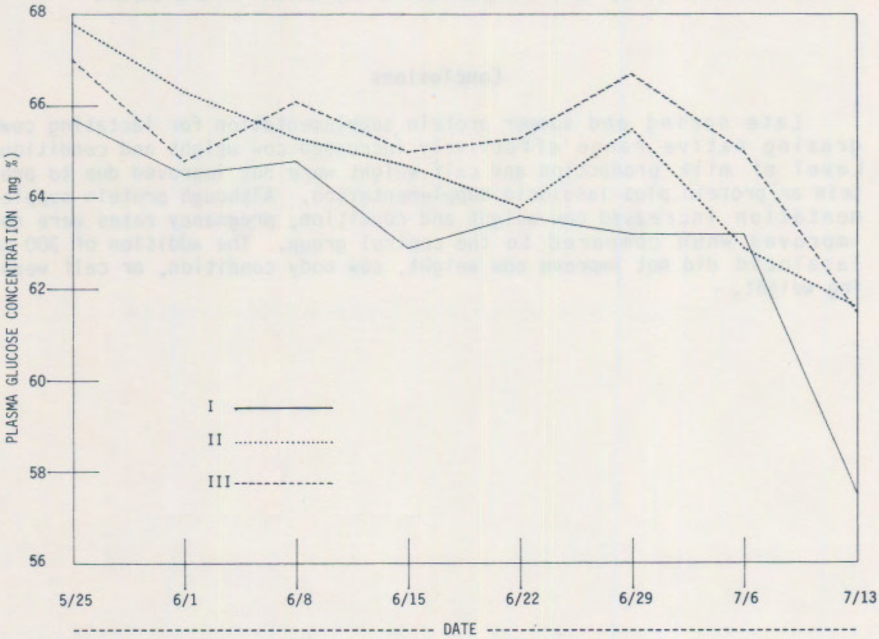

Figure 1. Plasma glucose concentrations (mg %) for Control (I), Protein (II) and Protein/Lasalocid (III) treatments.

Polynomial response curves were fit to plasma glucose concentrations and tests of heterogeneity of regression coefficients were used to determine treatment effects. Concentrations of glucose in plasma were not influenced by treatment. Glucose averaged 67 mg% for all cows on May 25 and concentrations decreased slightly until July 13.

Rumen volatile fatty acid concentrations and pH from samples taken 24 hours after the last supplemental feeding were similar between treatments (Table 4). The lasalocid fed cows had a slightly lower acetate to proprionate ratio (8.25 -vs- 8.57 and 8.07 for the control, protein and protein plus lasalocid groups, respectively).

Table 4. June 19 rumen volatile fatty acid concentration[a] and pH.

	Treatment		
	Control	Protein	Prot/Lasalocid[b]
Number of cows sampled	13	15	11
Total VFA's	66.57	76.28	59.36
Acetate	53.14	61.93	47.54
Proprionate	6.93	7.01	5.91
Butyrate	5.72	6.20	4.99
Acetate/Proprionate	8.25	8.57	8.07
pH	7.15	7.24	7.34

[a]Rumen volatile fatty acid concentration expressed in umoles/ml.

Conclusions

Late spring and summer protein supplementation for lactating cows grazing native range effectively increased cow weight and condition. Level of milk production and calf weight were not improved due to protein or protein plus lasalocid supplementation. Although protein supplementation increased cow weight and condition, pregnancy rates were not improved when compared to the control group. The addition of 300 mg lasalocid did not improve cow weight, cow body condition, or calf weaning weight.