EFFECT OF ROUTE OF ADMINISTRATION OF LASALOCID ON RESPONSE OF YOUNG DAIRY CALVES

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Summary

Forty newborn bull calves were assigned to one of four feeding groups. The feeds either contained lasalocid in milk (M), prestarter (PS), and starter (S); lasalocid in PS and S; lasalocid in S only; or no lasalocid. Calves were fed M at 8% of birth weight (bw) daily and offered PS to a maximum of 0.5 lb daily. When 0.5 lb of PS was consumed in one day the calves were fed M at 4% of bw daily. They were weaned when they consumed dry feed at the rate of 1.3% of bw. Daily feed intake and weekly weight gains of calves were evaluated. Blood serum samples were used to evaluate blood metabolites at wk 4, 8, and 12. We concluded that lasalocid in M, PS, and S supported greater feed efficiency and allowed earlier weaning with less animal variation than when lasalocid was delivered in PS and S, only in S, or not at all.

Introduction

Feeding lasalocid to neonate calves through 12 wk of age has resulted in increased feed intake and weight gain. The greatest differences were observed during the last six wk. The lasalocid-fed group received lasalocid in the milk, prestarter, and starter, so it could not be determined from which part of the diet the lasalocid delivery was having the greatest effect.

Lasalocid-fed calves have shown metabolic signs of earlier ruminal development than control calves. The use of ionophores to encourage early feed consumption and early weaning may have economic and logistical advantages, because of decreased labor and feed costs associated with early weaning.

The objective of this study was to determine the most effective method of administering lasalocid. Three lasalocid treatment groups were used with one negative control group. A variable weaning program based upon dry feed consumption was used to allow for differing early feed consumption and differing days to meet requirements for weaning.

Procedures

Forty Holstein bull calves were removed from their dams at 24 hr of age and fed colostrum until 3 d of age. The calves were then blocked by age, and calves within that block were randomly assigned to one of four treatment groups. Treatments were feeds with no lasalocid; feeds with lasalocid in starter (S) only; feeds with lasalocid in prestarter (PS) and starter; or feeds with lasalocid in milk, prestarter, or starter. The calves in the group receiving lasalocid in milk (M), prestarter, and starter received untreated prestarter and starter until 2 wk of age, then lasalocid-treated prestarter and starter. For the group receiving lasalocid in milk, it was delivered on days 4 through 14 to provide daily .45 mg/lb of body

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weight daily. Lasalocid concentrations in feed were 80 mg/lb in the prestarter and 13.2 mg/lb in the starter, with a target consumption of .45 mg/lb of body weight per day. Body weights were measured weekly.

Milk was fed at 8% of body weight daily divided into two equal feedings and prestarter was offered beginning on experimental day one. Milk was fed at this rate until the calf consumed 0.5 lb of prestarter daily. The afternoon feeding of milk was discontinued at that time, and as much starter as the calf would consume daily was mixed with 0.5 lb prestarter. When daily dry feed (prestarter plus starter) consumption was 1.3% of body weight the calf was weaned. Prestarter was discontinued at 5 wk of age. Calves were housed in individual hutches with straw bedding and given free access to water. Daily feed intake and weekly weight gains were recorded. Fecal scores were recorded twice daily. Serum samples were taken at 4, 8, and 12 wk for metabolic evaluation using the SMA-12 analysis, which measures a 14 blood metabolites.

Results and Discussion

Table 1 shows weekly lasalocid intake for each treatment. The lasalocid intake varied by treatments across time, as was intended by the design of the experiment. The group receiving lasalocid in M, PS, and S reached the target of .45 mg/lb of body weight by the second wk, the group receiving lasalocid in PS and S reached the same point by wk 5, and the group receiving lasalocid in only S reached the target by wk 10. At week 7, calves in all three treatments were consuming similar amounts of lasalocid.

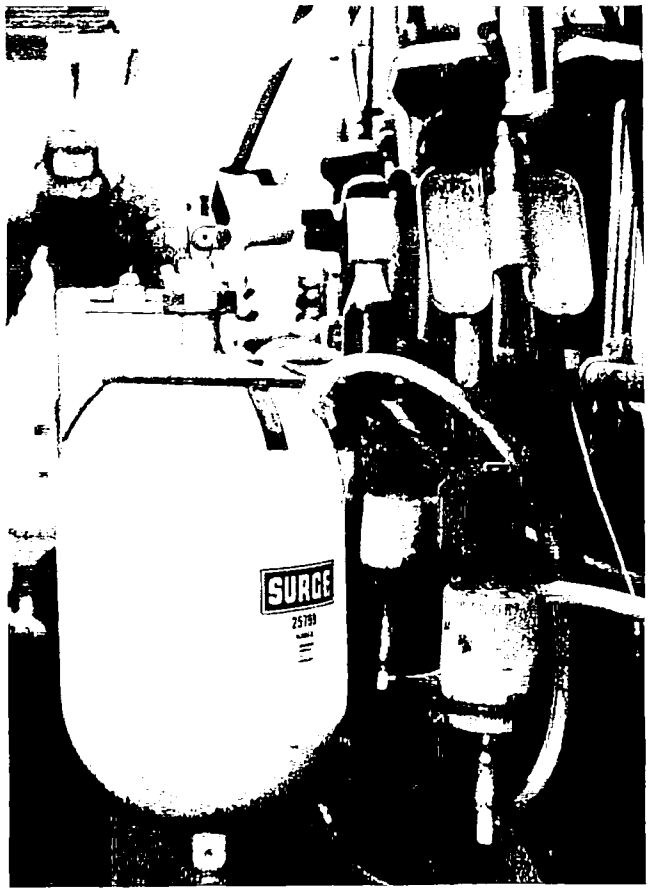
The group consuming lasalocid in M, PS, and S showed equal or greater ADG (Table 1) than the other three treatments for all 12 weeks. Calves receiving lasalocid in M, PS and S showed greater feed intake in the first 6 wk. The earlier gains seen in these calves may be attributed to lasalocid intake near .68 mg/lb during the first 6 wk. All treatment groups reached the same lasalocid intake from wk 7-12. Figure 1 shows the feed efficiency in lb of feed per lb of gain for all four treatments. Only dry feed consumption was used in these calculations. All lasalocid-fed groups had greater feed efficiency than the control group in wk 3-12. At 4 wk of age the nontreated control group had significantly higher fecal scores than the other three groups, perhaps indicating a beneficial effect of the lasalocid.

The group receiving lasalocid in M, PS, and S reached criterion for 1X feeding and weaning earlier than the other three groups (Figure 2). Blood metabolites reflected the stage of rumen development of the calves. The group that was weaned earliest showed decreased glucose and increased urea nitrogen at wk 4. Potassium concentrations at wk 12 were lowest for the group receiving lasalocid in all three feeds and highest for the control group.

Lasalocid delivered in all three feeds (M, PS and S) appeared to improve feed efficiency and rumen development and to decrease days to reach criteria for weaning compared to lasalocid delivery in PS and S or in S only.

Table 1. Daily Lasalocid Intake (mg/lb of body wt/days) and Cumulative Average Daily Gain (ADG, lb/day)

Age, wk	Lasalocid Delivery							
	M, PS, S		PS, S		S only		None	
	Lasalocid	ADG	Lasalocid	ADG	Lasalocid	ADG	Lasalocid	ADG
1	0.27	0.9	0.10	0.6	0.00	0.8	0	0.7
2	0.44	0.5	0.16	0.4	0.04	0.5	0	0.3
3	0.41	0.6	0.28	0.5	0.03	0.6	0	0.4
4	0.52	0.7	0.37	0.5	0.09	0.6	0	0.5
5	0.60	0.9	0.50	0.6	0.17	0.7	0	0.7
6	0.39	1.1	0.33	0.8	0.33	0.9	0	0.9
7	0.38	1.1	0.38	0.9	0.38	1.1	0	1.1
8	0.42	1.3	0.41	1.1	0.41	1.2	0	1.2
9	0.43	1.3	0.43	1.2	0.42	1.3	0	1.2
10	0.42	1.4	0.44	1.2	0.44	1.3	0	1.4
11	0.40	1.5	0.43	1.3	0.44	1.5	0	1.4
12	0.42	1.6	0.44	1.5	0.47	1.6	0	1.5



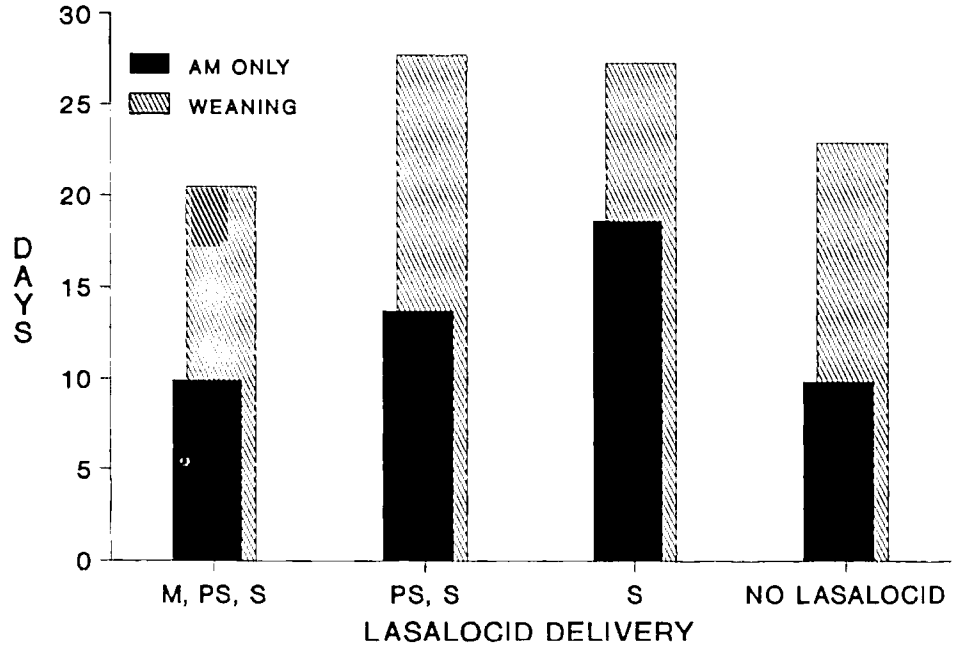


Figure 1. Feed Efficiency for Four Treatment Groups.

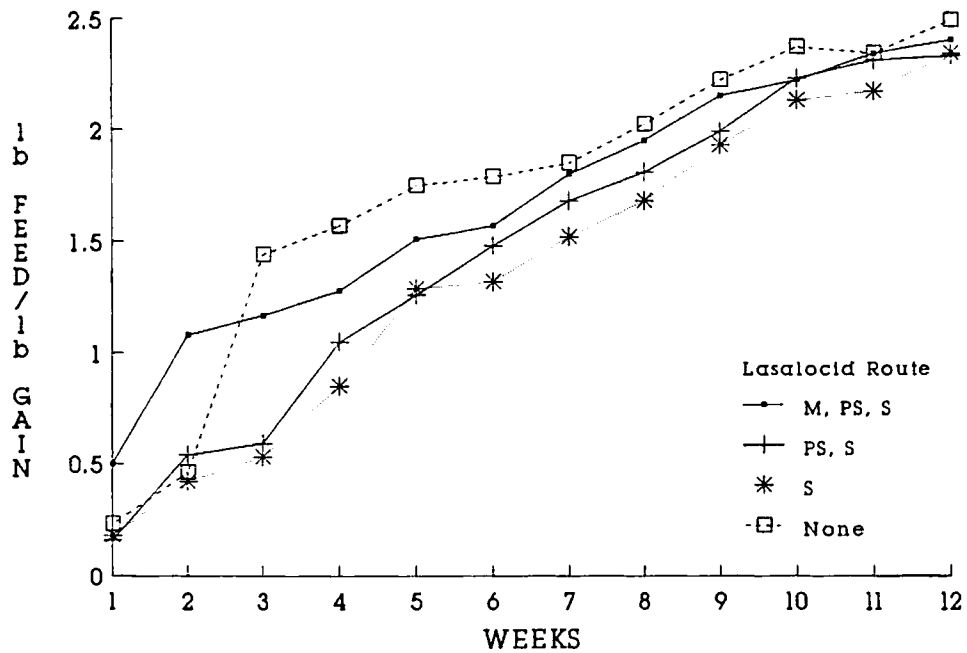


Figure 2. Days to Reach Criterion for A.M. only Feeding and Days to Weaning for Four Treatment Groups (M=Milk, PS=prestarter, S=starter).