LASALOCID IN A FREE-CHOICE MINERAL MIX
FOR GRAZING STEERS-1/

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SUMMARY

Improved feed efficiency and increased daily gain of growing cattle on high roughage diets can be obtained through addition of the ionophores, lasalocid and monensin, to feed rations. Although similar benefits can be expected from growing cattle on pasture, procedures for supplying the ionophore to the cattle have not been established. Brahman crossbred yearling steers averaging 525 lb/head were grazed on stargrass (Cynodon nlemfuensis) pastures for 126 days with lasalocid provided in a free-choice mineral mix at 0, 216, and 324 g/ton of mineral mix. Average daily lasalocid-sodium intakes of 0, 19, and 31 mg/head were obtained for the three rates, respectively. Increased gains for the grazing period of 4.7% and 12.3% for the low and high lasalocid intakes, respectively, were obtained over the no-lasalocid control.

INTRODUCTION

The ionophore compounds, lasalocid and monensin, are receiving wide acceptance in the beef cattle industry as feed additives. Both increased daily gains and improved feed efficiency have been widely reported. The major effects of these ionophore compounds on the ruminant digestive process are increased proportions of propionic acid and decreased methane production. High roughage diets hold the greatest potential for increased gains and improved efficiency in response to the ionophores because of the low propionic acid and high methane production from fermentation of roughage materials. The major limitation to use of ionophore compounds for grazing cattle is the lack of a suitable method to provide the compound to cattle which are not receiving a feed supplement.

OBJECTIVE

The objective of this research was to determine intake and effect on animal gain of the ionophore, lasalocid, fed in a free-choice mineral mix to yearling steers on pasture.

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Bovatec is the trade name for lasalocid and is marketed by Hoffman La-Roche. This material is not yet approved for grazing cattle on pasture.
PROCEDURE

Lasalocid was fed in a commercial salt-mineral mix to Brahman-European crossbred yearling steers grazing stargrass (Cynodon nlemfuensis) pastures at the Ola Agricultural Research Center. Two levels of lasalocid, 216 g/ton and 324 g/ton of mineral mix, and the same mineral mix without lasalocid were continuously available throughout a 126-day grazing period from July 12 to November 15, 1983.

Steers with an average initial weight of 525 lb/head were assigned to groups to stratify breed and weight differences. Three groups of steers with seven head per group were randomly assigned to each treatment. The nine groups of steers were rotated through nine 5-acre stargrass pastures to remove pasture effects. Mineral feeders were moved with the cattle as the groups were rotated among pastures. Steers were rotated to a different pasture every two weeks. Initial and final weights were taken following a 16-hour shrinkage period.

Four weeks prior to grazing, pastures were fertilized with 500 lb/acre of a 16-8-8 (N-P_{2}O_{5}-K_{2}O) fertilizer. After 12 weeks, pastures were fertilized with 50 lb/acre of nitrogen to ensure adequate forage availability for the entire grazing period. The mineral mixtures were fed free-choice in covered feeders. Excess amounts of mineral mix were maintained before the steers with all mineral weighed back every 14 days to determine intake.

RESULTS AND DISCUSSIONS

Mineral intake and animal gains are shown in table 1. The slight reduction (not significant) in mineral intake with addition of lasalocid to the mineral mix is consistent with the reported effects of high concentrations of lasalocid on intake of feedlot rations. High concentrations of lasalocid in the mineral mix were necessary to get consumption of sufficient quantities of lasalocid to affect rumen fermentation processes. Average daily intakes of lasalocid-sodium from the low and high concentrations in the mineral mix were 19 and 31 mg, respectively. Approved levels of lasalocid in the premix Bovatec® for feedlot diets provide 15 to 30 mg/head/day of lasalocid-sodium in feedlot rations is the approved range for improvement of animal gain.

The intakes of lasalocid from free-choice mineral consumption obtained in this trial were within the range for improvement of feed efficiency under feedlot conditions. Somewhat higher levels of lasalocid intake would be necessary to attain the range of efficacy for increased gains of animals on feed. However, proportions of volatile fatty acids and methane produced in the rumen differ with proportions of concentrate and roughage in animal diets. Therefore, the amount of lasalocid necessary to attain a given response could differ between pasture and high concentrate feedlot diets.

There was no statistically significant effect of lasalocid on animal gain in this trial. A pattern of increased animal gains with increased lasalocid concentration was produced, and a substantial difference (Table 1)
in animal gain between no lasalocid and the high lasalocid treatment was obtained. The 12.3% increase in total gain from no lasalocid to 31 mg/head/day of lasalocid indicates potential for increased gain of growing cattle on pasture alone. Target levels of lasalocid intake necessary for specific responses by grazing cattle need to be established. Once these levels are identified, minor alterations in mineral formulation can be readily made to adjust average mineral intake levels to provide desired levels of lasalocid consumption. Feeding of high concentrations of lasalocid through commercial mineral mixes can be achieved with only slight reductions in mineral consumption. However, variations among individual animals in mineral intake will likely result in less uniform lasalocid application than obtained with lasalocid in feedlot rations.

**TABLE 1. MINERAL INTAKE AND GAINS OF YEARLING STEERS GRAZING STARGRASS PASTURES SUPPLEMENTED WITH A FREE-CHOICE MINERAL MIX\(^1\) CONTAINING LASALOCID**

<table>
<thead>
<tr>
<th>Lasalocid concentration (g/ton)(^2)</th>
<th>0</th>
<th>216</th>
<th>324</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral intake, lb/head/day</td>
<td>0.22</td>
<td>0.17</td>
<td>0.19</td>
</tr>
<tr>
<td>Bovatec(^3) intake, mg/head/day</td>
<td>0</td>
<td>125</td>
<td>205</td>
</tr>
<tr>
<td>Lasalocid-sodium intake, mg/head/day</td>
<td>0</td>
<td>19</td>
<td>31</td>
</tr>
<tr>
<td>Daily gain, lb/head/day</td>
<td>1.36</td>
<td>1.42</td>
<td>1.52</td>
</tr>
<tr>
<td>Total gain, lb/head</td>
<td>171</td>
<td>179</td>
<td>192</td>
</tr>
<tr>
<td>Increased gain, %</td>
<td>4.7</td>
<td>7</td>
<td>12.3</td>
</tr>
</tbody>
</table>

\(^1\)The mineral mix contained 17-20% Ca, 6% P, 14-16% salt, 3% Mg, 0.55% S, 0.45% K, 0.30% Zn, 0.22% Fe, 0.125% Mn, 0.025% Cu, 0.014% I, 0.005% Co and 0.00147% Se.

\(^2\)Lasalocid concentration is presented as grams (g), which is a unit of the metric system, per ton of the English weight system because this is the unit of measure currently used for additives at this level by the U.S. feed trade industry.

\(^3\)Bovatec is a registered trade name of a commercial medicated pre-mix containing 15% lasalocid-sodium activity.