

Kansas Agricultural Experiment Station Research Reports

Volume 0
Issue 1 *Cattleman's Day (1993-2014)*

Article 1100

1984

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Recommended Citation

Lomas, Lyle W. (1984) "Effect of Actaplanin on performance of grazing steers," *Kansas Agricultural Experiment Station Research Reports*: Vol. 0: Iss. 1. <https://doi.org/10.4148/2378-5977.2503>

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Effect of Actaplanin¹ on Performance of Grazing Steers

Lyle W. Lomas²

Summary

Feeding actaplanin in a loose mineral mix or twice weekly in a supplement significantly improved gains of grazing steers. The greatest improvement in performance was found with average daily actaplanin intakes of 255 or 257 mg per head in the two trials.

Introduction

Actaplanin, an experimental feed additive, is a complex of glycopeptide compounds produced by *Actinoplanes missouriensis*. It enhances propionic acid production without reducing total volatile fatty acid production. Two studies were conducted to determine the most effective dosage for promoting increased weight gain by grazing steers.

Procedure

Experiment A

In experiment A, 32 yearling Hereford steers with an initial weight of 506 lbs were used to evaluate the effect of free choice feeding a loose mineral mixture containing 0, 2, 3 and 4 mg of actaplanin per gm. Steers were blocked by weight and assigned randomly to the four actaplanin treatments. Eight steers were assigned to each of four 10-acre brome pastures. Cattle were rotated between pastures every seven days. Mineral was fed free choice in wind vane mineral feeders and weighed weekly to determine mineral and actaplanin intake. The mineral mixture was the only source of supplemental mineral offered. All animals were fed 2 lb of corn per head daily during the entire 119 day trial (April 8 - August 5, 1981). Initial and final weights were the average of two nonshrunk weights taken on consecutive days.

Experiment B

In experiment B, 81 yearling Angus steers with an initial weight of 533 lbs were used to evaluate actaplanin at levels of 0, 600, 900 and 1200 mg in one pound of corn supplement per head fed twice weekly (average mg/head/day dosages of 0, 171, 257 and 343, respectively). Steers were blocked by weight, assigned

¹ Actaplanin is an experimental feed additive produced by Eli Lilly and Co., Indianapolis, IN which provided the feed additive and partial financial assistance.

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randomly to one of the four treatments and allotted to nine 10-acre smooth brome grass pastures with nine steers per pasture. The block of light-weight cattle contained two control groups and one group for each level of actaplanin. The heavy-weight block had one group assigned to each treatment. Steers were rotated between pastures within a block at 14-day intervals and fed the supplements on Mondays and Thursdays. Supplemental feed was provided uniformly to all cattle when availability of high quality forage declined. Initial and final steer weights were the average of two nonshrunk weights taken on consecutive days. The 112 day trial was initiated on April 7, 1982 and terminated on July 28, 1982.

Results

Experiment A

Results of experiment A are presented in Table 27.1. All levels of actaplanin improved performance over the controls. Largest gain increases were with 3 and 4 mg of actaplanin per g of mineral. Actaplanin intake of 144 mg daily resulted in a 13.1% (26 lb) increase ($P<.10$) in gain over the control group; intakes of 255 mg and 353 mg increased ($P<.01$) gain 23.2% (46 lb) and 19.6% (39 lb), respectively. There was no significant difference ($P>.10$) in performance among the three actaplanin levels. In this study, 255 mg of actaplanin per head daily appeared most effective.

Table 27.1. Effect of Actaplanin in Loose Mineral on Grazing Steer Performance (119 days)

Item	Actaplanin Concentration (mg/g of mineral)			
	0	2	3	4
No. of steers	8	8	8	8
Initial wt., lb	506	510	506	503
Final wt., lb	706	736	752	742
Total gain, lb	200	226	246	239
Avg. daily gain, lb	1.68 ^{ac}	1.90 ^b	2.07 ^{bd}	2.01 ^{bd}
Avg. mineral intake, g/hd/day	66.8	72.0	84.9	88.2
Avg. actaplanin intake, mg/hd/day	0	144	255	353

^{a,b} Means with different superscripts differ significantly ($P<.10$).

^{c,d} Means with different superscripts differ significantly ($P<.01$).

Experiment B

Results of experiment B are shown in Table 27.2. Average daily actaplanin intakes were 0, 171, 257 and 343 mg per head daily. Cattle receiving actaplanin gained faster than controls. Actaplanin intakes of 171 mg and 257 mg resulted in 12.6% (25 lb) and 12.0% (24 lb) improvements ($P<.01$) in gain, respectively, over controls. Consumption of 343 mg of actaplanin per head daily improved ($P<.10$) gain 5.7% (11 lb) over the control group, but resulted in lower gain than the 171 mg ($P<.10$) and 257 mg ($P<.05$) per day treatments. The most effective doses of actaplanin were 171 and 257 mg per head daily.

Table 27.2. Effect of Feeding Actaplanin Twice Weekly on Grazing Steer Performance (112 days)

Item	Actaplanin Concentration (mg/lb of supplement)			
	0	600	900	1200
No. of steers	27	18	18	18
Initial wt., lb	526	538	537	535
Final wt., lb	722	759	757	742
Total gain, lb	196	221	220	207
Avg. daily gain, lb	1.75 ^{ac}	1.97 ^d	1.96 ^f	1.85 ^{eg}
Avg. actaplanin intake, mg/hd/day	0	171	257	343

^{a,b} Means with different superscripts differ significantly ($P<.01$).

^{c,d,e} Means with different superscripts differ significantly ($P<.10$).

^{f,g} Means with different superscripts differ significantly ($P<.05$).