Stilbestrol and Erythromycin For Suckling Beef Calves

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The administration (oral and implant) of stilbestrol has been widely accepted in the cattle fattening industry because of the increased gain and improved feed efficiency which results from its use. Interest in its use has spread rapidly to those concerned in the production of range beef cattle. A particular phase of the industry where stilbestrol administration may be of value is with suckling beef calves. In most of the tests conducted thus far stilbestrol implants have been used in spring calves and have usually resulted in increased gain. There are considerably less data on the value of implanting or feeding stilbestrol with fall calves and feeding stilbestrol to spring calves.

Many antibiotics are offered for sale for use in beef cattle production. Their greatest use has apparently been in certain cattle-fattening systems. Since antibiotics have been effective in reducing losses of young dairy calves, their use has been proposed for creep-feeding beef calves.

Tests conducted at the Oklahoma Agricultural Experiment Station in 1959 are:

1. Implanting fall calves with 6 and 12 milligrams of stilbestrol.
2. Feeding 45 milligrams of erythromycin (an antibiotic) per head daily in the creep-feed of fall calves.
3. Feeding 5 milligrams of stilbestrol and 5 milligrams of stilbestrol plus 45 milligrams of erythromycin per head daily in the creep-feed of spring calves.

Trial 1. Stilbestrol Implants for Fall Calves

Procedure

Eight trios of steer calves and eight trios of heifer calves born in October and November of 1958 were selected on March 17, 1959. One calf in each trio served as a control, the second calf was implanted with 6 milligrams of stilbestrol, and the third calf was implanted with 12 milligrams of stilbestrol.

In certain of the earlier tests some of the heifers which were implanted with 12 and 24 milligrams of stilbestrol exhibited some noticeable side effects such as swelling of the vulva, elevated tail-head, and elongated teats. Certain of the steers had elevated tail-heads and elongated teats. However, both implanted steers and heifers were given a

higher feed grade at weaning. Apparently the noticeable side effects are related to size of implant and sex of the calf. Therefore, the test reported herein was conducted to determine whether or not lower levels of stilbestrol, which probably would not produce any noticeable side effects, were effective in increasing gain.

The calves were from four groups used in a nutrition and management study. All calves were creep-fed various rations. Three-fourths of the calves were creep-fed only until late April. Since the nutritional treatment was the same for all calves of a trio the differences between trios have been disregarded and the average data for all calves of each sex are reported.

The calves were left with their dams in the native grass pastures at the Lake Carl Blackwell experimental range area. They were weaned on July 3, 108 days after implanting.

Results

The weight data are summarized in Table 1. An implant of 6 milligrams of stilbestrol increased the gains of steers by 16 pounds (7 percent) and of heifers by 17 pounds (9 percent). There were no noticeable side effects. When the 12 milligram implant was used there was no additional increase in gains of the steers but an additional increase of 14 pounds by the heifers. Therefore, in heifers the 12 milligram implant increased gains 31 pounds or 16 percent.

Table 1.—Stilbestrol Implants for Fall Calves.

Stilbestrol implant, mg.[1]	0	6	12
	Steers		
Number of calves	8	8	8
Average weight per calf, lbs.			
Initial 3-17-59	286	282	279
Final 7-3-59	510	522	519
Gain	224	240(16)[2]	240(16)[2]
	Heifers		
Number of calves	8	8	8
Average weight per calf, lbs.			
Initial 3-17-59	271	274	274
Final 7-3-59	462	482	496
Gain	191	208(17)[2]	222(31)[2]

[1] Implants furnished by Chas. Pfizer and Co., Inc., Terre Haute, Indiana.
[2] Increased gain compared to no implant.

Observations as to general appearance of the calves were recorded and there were no noticeable side effects in those calves implanted with 6 milligrams of stilbestrol. Of those implanted with 12 milligrams, 25

percent were identified as having increased teat length, elevated tail-head or swollen vulva. However, about 20 percent of those not implanted were identified as having noticeable side effects. These results suggest that it is difficult to identify implanted calves.

The steer calves were sold at the Oklahoma City stockyards at $36 per 100 pounds with no apparent discrimination against the implanted calves. Such calves have been delivered to the same purchaser for three consecutive years and he has indicated that all calves have performed satisfactorily in the feed-lot. This statement is in agreement with results of our experiments which indicate that the subsequent performance in the feed-lot or when fed wintering rations is not adversely affected by stilbestrol implants in calves.

Current studies include a repetition of the test reported herein in that the value of 6 and 12 milligram stilbestrol implants in both steers and heifers is again being studied.

Trial 2. Stilbestrol and Erythromycin in Creep-feed for Spring Calves

Procedure

On April 23, 1959, 60 spring calves were divided into three lots on the basis of age, weight, and sex of the calf, and age and winter treatment of the dam. The dams had been fed on a low, medium, and high level of winter feeding. The summer treatments of the calves were: Lot 1, creep-fed a mixture consisting of 55 percent rolled milo, 30 percent whole oats, 10 percent cottonseed meal, and 5 percent cane molasses; Lot 2, the same mixture as Lot 1 with stilbestrol added to furnish an average of 5 milligrams of stilbestrol per head daily; and Lot 3, basal creep mixture plus stilbestrol and erythromycin in amounts to furnish 5 milligrams of stilbestrol and 45 milligrams of erythromycin per head daily.

Results

Average gain data and feed consumption in the 170-day feeding period are given in Table 2. The basal creep mixture was offered to all calves in late March while the cows were still being fed supplemental winter feed. Although creep-feed was first offered at this early date and division into the respective summer treatments was made in late April, practically no creep-feed was consumed until early June. Careful consideration was given to location of the creep-feeder and mineral feeder and freshness of feed, but, as in earlier tests, consumption was negligible until June. However, consumption from June until weaning in early October has been as high as 660 pounds. During the summer of 1959 when the rainfall was very high and much green grass was available the consumption varied from 404 to 457 pounds. The cattle were not rotated between pastures in order to eliminate any reduction in feed intake while the calves were learning the location of the feeders in a new pasture.

Table 2.—Stilbestrol and Erythromycin in Creep-Feed for Spring Calves.

	Creep-fed[1]	Creep-fed Stilbestrol[2]	Creep-fed Stilbestrol and Erythromycin[3]
Number of calves	16	22	22
Average weight per calf, lbs.			
Initial 4-23-59	142	142	142
Final 10-10-59	454	480	482
Gain	312	338(26)[4]	340(28)[4]
Creep-fed consumption, lbs.	417	457	404

[1] Basal creep-feed mixture was 55 percent rolled milo, 30 percent whole oats, 10 percent cottonseed meal and 5 percent cane molasses.
[2] 5 mg. stilbestrol per head daily. Fed as Stilbosol furnished by Eli Lilly and Co., Indianapolis, Indiana.
[3] 5 mg. stilbestrol and 45 mg. erythromycin per head daily. Erythromycin fed as Ilotycin furnished by Eli Lilly and Co.
[4] Increased gain compared to basal.

The feeding of 5 milligrams of stilbestrol per head daily increased the gains of spring calves 26 pounds. This is in contrast to the results of two previous tests in which feeding stilbestrol had no effect on gains of creep-fed spring calves. It does agree, however, with the increased gains of fall calves in earlier tests at Ft. Reno. The response to feeding stilbestrol was nearly the same for heifers and steers, an increase of 27 and 24 pounds, respectively.

Apparently the response due to the feeding of stilbestrol is quite variable, whereas the response from implants is more consistent.

As in 1958, the addition of 45 milligrams of erythromycin per head daily to the creep-feed containing stilbestrol did not increase the gains of the calves.

Trial 3. Erythromycin in Creep-feed for Fall Calves

Procedure

Thirty-six calves born in October and November were divided into two lots of 9 steers and 9 heifers each on January 7, 1959, at which time creep-feeding was started. One lot was fed the creep-feed mixture described in Trial 2. Those in the other lot were fed the mixture to which erythromycin had been added to furnish 45 milligrams of the antibiotic per head daily. Creep-feeding was continued until supplemental feeding of the cows was discontinued on April 23. The calves were weaned on July 3, 71 days after creep-feeding was stopped.

Results

A summary of the data is given in Table 3. Gains of the two groups of calves were nearly the same. Creep-feed consumption was essentially equal. These results are in agreement with other studies which have indicated little, if any, increased gain from the feeding of erythromycin.

Table 3.—Erythromycin in Creep-feed for Fall Calves.

	Creep-feed[1]	Creep-feed plus 45 mg. erythromycin[2]
Number of calves	18	18
Steers	9	9
Heifers	9	9
Average weight per calf, lbs.		
Initial 1-7-59	177	174
Final 4-23-59	349	348
Gain, 106 days	172	174(2)[3]
Creep-feed consumption, lbs.	514	517

[1] Basal creep-feed mixture was 55 percent rolled milo, 30 percent whole oats, 10 percent cottonseed meal and 5 percent cane molasses.
[2] Basal creep-feed plus 45 milligrams of erythromycin per head daily. Erythromycin fed as Ilotycin furnished by Eli Lilly and Co.
[3] Gain compared to basal.

Summary

Implants of 6 milligrams of stilbestrol increased gains of steer calves born in October and November 16 pounds and gains of heifer calves 17 pounds. An additional 6 milligrams (a total of 12 milligrams) did not result in additional gains of steers but heifers gained an additional 14 pounds, or a total increase of 31 pounds when compared to the control heifers. Prior to this test the average increase in gains due to stilbestrol implants was 22 pounds in eight trials with steers and 36 pounds in five trials with heifers.

Response to the addition of stilbestrol in creep-feeds has been variable. In the current test 5 milligrams of stilbestrol increased gains 26 pounds. The addition of 45 milligrams of erythromycin to the stilbestrol-containing feed did not increase gains. Also, gains of fall calves were not increased by the addition of erythromycin to the creep-feed.

Aureomycin, Stilbestrol and Ruelene Studies With Fattening Lambs in Dry Lot

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Previous work (M.P. 51, 55) with fattening lambs revealed a 10 to 15% increase in gain and feed efficiency by the addition of aureomycin to the ration or mixed with the salt. Likewise, a 10 to 15% increase in gains and feed efficiency was noted by using a 3 mg. stilbestrol implant. This report is a continuation of this study, in which aureomycin and stil-