

EFFECTS OF MGA®, TYLOSIN, LASALOCID AND MONENSIN FED IN COMBINATION ON THE PERFORMANCE OF FEEDLOT HEIFERS

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Story in Brief

Additives in the following combinations were tested for a 110 day feeding test: 1, MGA; 2, tylosin; 3, lasalocid; 4, MGA + tylosin; 5, MGA + lasalocid; 6, lasalocid + tylosin; 7, MGA + lasalocid + tylosin; and 8, MGA + monensin + tylosin. If the averages for treatments 1 and 2 (MGA or tylosin only) are used as the reference point then carcass adjusted feed efficiencies were improved 6% for lasalocid only (3), 10% for MGA + tylosin (4), 8% for MGA + lasalocid (5), 1% for lasalocid + tylosin (6), 6% for MGA + lasalocid + tylosin (7), and 15% for MGA + monensin + tylosin (8). The data from this test will be most meaningful when pooled with tests of the same design conducted at the same time at other universities. Only the combination of MGA + monensin + tylosin had significantly improved feed efficiency over MGA alone.

None of the additives or combinations had any effect on carcass measurements or liver abscesses. The fact that all test cattle were fed decoquinatone for the first 28 days of the 64 day warm up period before the test additives were administered may have affected the results.

(Key Words: Feedlot Heifers, MGA, Lasalocid, Monensin, Tylosin.)

INTRODUCTION

A major problem which greatly reduces the efficiency of beef production is the lack of safety-efficacy clearances by the FDA for a number of proven effective feed additives. The lack of necessary clearances often prevents cattlemen from using two or more proven effective additives at the same time in the diet. This study is a part of a number of studies conducted to obtain clearances which ultimately will allow cattle feeders to feed combinations of Monensin + Tylosin + MGA, or lasalocid + Tylosin + MGA at the same time. The feeding of combinations of proven safe and effective feed additives which in most cases are both complimentary and additive to one another can greatly improve the efficiency of beef production. Since modes of action of MGA, tylosin and the ionophores are different, administration of them in either two or three-way combinations should result in improved performance of feedlot heifers over that achieved with any additive fed singly. Two of these drugs, MGA and tylosin, have unique non-overlapping claims not shared with monensin or lasalocid. Therefore, these two drugs will contribute separate added claims to either of the ionophores utilized in three-way combinations. Because of MGA's estrus suppressing activity approval to administer this drug in two and/or three way combination with other feed additives will be of considerable benefit to the feedlot heifer industry.

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Experimental Procedure

A group of 192 heifers were selected for uniformity from a larger group purchased at sale barns in south central Oklahoma. At preproceeding, the heifers were pregnancy checked and heifers detected pregnant were not used. The test heifers were then injected with 5 ml Lutalyse® and shipped to Goodwell, Oklahoma for feeding. The heifers were placed on a high silage ration containing decoquinatate to provide 150 mg per head per day for the first 28 days. The heifers then were placed on additive-free starter ration and gradually moved up to the concentrate level of the test ration. They were held on the final additive-free ration until at least 50% of the animals had been observed cycling. In total, the heifers were fed 64 days before the test additives were added to the diets. At this time the heifers were palpated to further demonstrate that the heifers were in fact cycling. The animals were then stratified into three weight groups and randomly allocated to eight experimental feed groups consisting of three pens each.

Table 1. Treatment designation.

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1. MGA 0.5mg/hd/day
 2. Tylosin 10 g/ton of complete feed
 3. Lasalocid 30 g/ton of complete feed.
 4. MGA (0.5mg)-tylosin (10 g)
 5. MGA (0.5mg)-lasalocid (30g)
 6. Lasalocid (30g)-tylosin (10g)
 7. MGA (0.5mg)-lasalocid (30g)-tylosin (10g)
 8. MGA (0.5mg)-monensin (30g)-tylosin (10g)
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Special supplements containing the additives were added each day at feeding time so that MGA could be administered at a rate of 0.5 mg/head/day, while tylosin, lasalocid, and monensin were administered at specific concentrations per ton as indicated in Table 2.

Heifer weights were recorded following a 12 hour withdrawal from feed and water and were weighed at 28 day intervals. Final weights were taken after a 48 hour drug withdrawal. The animals were transported approximately 75 miles to Booker, Texas for slaughter and collection of routine carcass information, including liver abscess data. Data from 8 heifers were excluded from the trial because of apparent errors in the data collected at the packing plant. One heifer was injured in weighing and was slaughtered at Panhandle State University. The net energy equations were used to calculate feed consumed by the nine animals and these data were deleted from the analysis.

Results and Discussion

The design of this experiment dictated that open cycling heifers were to be used for the test. It was presumed that the heifers were both old and big enough to be cycling at time of purchase. However, they had to be held on feed for 64 days before these criteria could be met. As a result the pay to pay performance of these cattle greatly exceeded the performance in the trial summary. Because this design was dictated by the requirements of the FDA and a limitation in facilities

Table 2. Diet composition and additive concentrations.

Ingredient	Percent	
Corn Silage	4.00	
Whole Shelled Corn	85.98	
Supplement	5.02	
Limestone		1.00
Salt		.30
Urea		.45
Soybean Meal		2.08
Vitamin A-30000		.02
Cottonseed Meal		1.00
Cane Molasses ^a		.17
Additive Carrier ^a	5.00	
Ground Corn + additives		2.50
Soybean Meal		2.50

^aAdditive Carrier pellets contained:

Additive ^b	Theory	Assay
MGA ^b	3000 mg. per ton	2860
Tylosin ^c	600 gr. per ton	598
Lasalocid ^c	1800 gr. per ton	1583
Monensin ^c	1800 gr. per ton	1690
Blank no additives ^d		

^bMGA carrier fed at a rate of 0.33 lb/head/day (0.5 mg).

^cFed at a rate of 1.85% of ration dry matter to provide 30 grams per 90% dry matter basis ton of lasalocid or monensin, or to provide tylosin at 10 grams.

^dAdded at feeding time so that total additive carrier equals 5% of the ration dry matter.

and funding no negative control could be included. The reader of this report should use these data with those of 4 or 5 other experimental locations which conducted the similar tests using the same protocol. The level of MGA fed gave complete estrus suppression, and appeared to be additive with tylosin and the two ionophores.

The results of this test are presented in Table 3. The grading as indicated by the marbling scores on these light weight heifers was outstanding with only 2 animals not reaching the choice or better grade.

Table 3. The effect of treatment on heifer performance.

Item	Treatment Number							
	1	2	3	4	5	6	7	8
Number of Heifers	22	23	21	23	24	23	24	23
Starting wt	677	672	672	672	672	667	674	678
Final wt	924	909	932	936	936	904	930	952
ADG, live	2.25	2.15	2.36	2.40	2.40	2.16	2.33	2.50
Feed intake	15.77	14.45	14.97	14.92	14.79	14.48	14.76	14.55
Feed/gain, live	7.01 ^a	6.71 ^a	6.33 ^{ab}	6.25 ^{ab}	6.17 ^{ab}	6.79 ^a	6.32 ^{ab}	5.84 ^b
ADG, carcass ^c	2.42	2.26	2.50	2.59	2.50	2.30	2.45	2.67
Feed/gain, carcass ^c	6.50 ^a	6.40 ^{ab}	6.07 ^{ab}	5.80 ^{ab}	5.92 ^{ab}	6.39 ^{ab}	6.05 ^{ab}	5.45 ^b
Dress, %	63.42	63.03	63.18	63.54	62.88	63.28	63.03	63.37
Fat Thickness, in	.37	.36	.36	.40	.35	.38	.40	.36
Ribeye Area, in ^d	11.43	11.86	12.09	12.09	11.70	11.88	11.72	12.03
Marbling score	15.63	15.13	14.72	13.88	14.96	15.41	14.42	14.06
Cutability %	51.07	51.70	51.58	51.33	51.28	51.54	51.21	51.40
Liver abscesses ^e	.42	.08			.33			

^{ab}Means in a row with different superscripts differ ($P < .05$).

^cAdjusted live weight calculated by dividing hot carcass weight by 0.62.

^d12 = slight plus, 13 = small minus, 14 = average small, 15 = small plus, 16 = modest minus.

^e0 = none, 1 = small, 2 = 2 or more small, 3 = extensive.