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Effects of Optaflexx™ on finishing steer performance and USDA quality and yield grades

Abstract

Crossbred yearling steers (2,015 head) were fed at a commercial feedyard near Larned, Kansas, to evaluate the effects of feeding Optaflexx™ at 0 or 200 mg ractopamine-HCl per steer daily for the final 29 days on feed. Steers were fed a common diet, based on steam-flaked corn, throughout their finishing period. Cattle that were fed Optaflexx™ had heavier final bodyweights (1264 vs. 1236 lb). Optaflexx™-fed cattle gained 17.9% faster (carcass adjusted basis) and tended to consume more feed during the last 29 days on feed. Feed efficiency was 14% better during the last 29 days for the Optaflexx™-fed steers. Feeding Optaflexx™ increased carcass weight by 19.7 lb and increased carcass weight gained during the last 29 days on feed by 11.2 lb. There were more liver abscesses for the control steers (19.7%) than for Optaflexx™-fed steers (13.5%). Quality grade was not affected by feeding Optaflexx™. There was a decrease in USDA Yield Grade 2 carcasses (49.6 vs. 54.8%) and an increase in USDA Yield Grade 4 carcasses (3.3 vs 1.7%) when cattle were fed Optaflexx™. Performance of the steers from the time that they were sorted into their treatment pens until slaughter (98 days) was improved by feeding Optaflexx™ during the last 29 days on feed. For the full 98-day period, daily gain was 8% greater for steers fed Optaflexx™ vs. control, feed intake was greater for the steers fed Optaflexx™, and feed efficiency was moderately improved (3.3%). Steers that received Optaflexx™ gained 6.4% more bodyweight during the 98-day feeding period. These data show that addition of Optaflexx™ into finishing diets fed to steers is beneficial, increasing bodyweight and carcass gain and improving conversion of feed to beef without affecting USDA quality grade.

Keywords

Cattlemen's Day, 2005; Kansas Agricultural Experiment Station contribution; no. 05-144-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 943; Beef; Optaflexx; Steer performance; USDA quality grades; USDA yield grades

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EFFECTS OF OPTAFLEXX™ ON FINISHING STEER PERFORMANCE AND USDA QUALITY AND YIELD GRADES

E. R. Loe, J. S. Drouillard, T. J. Klopfenstein¹, G. E. Erickson¹, and B. E. Dicke²

Summary

Crossbred yearling steers (2,015 head) were fed at a commercial feedyard near Larned, Kansas, to evaluate the effects of feeding Optaflexx™ at 0 or 200 mg ractopamine-HCl per steer daily for the final 29 days on feed. Steers were fed a common diet, based on steam-flaked corn, throughout their finishing period. Cattle that were fed Optaflexx™ had heavier final bodyweights (1264 vs. 1236 lb). Optaflexx™-fed cattle gained 17.9% faster (carcass adjusted basis) and tended to consume more feed during the last 29 days on feed. Feed efficiency was 14% better during the last 29 days for the Optaflexx™-fed steers. Feeding Optaflexx™ increased carcass weight by 19.7 lb and increased carcass weight gained during the last 29 days on feed by 11.2 lb. There were more liver abscesses for the control steers (19.7%) than for Optaflexx™-fed steers (13.5%). Quality grade was not affected by feeding Optaflexx™. There was a decrease in USDA Yield Grade 2 carcasses (49.6 vs. 54.8%) and an increase in USDA Yield Grade 4 carcasses (3.3 vs 1.7%) when cattle were fed Optaflexx™. Performance of the steers from the time that they were sorted into their treatment pens until slaughter (98 days) was improved by feeding Optaflexx™ during the last 29 days on feed. For the full 98-day period, daily gain was 8% greater for steers fed Optaflexx™ vs. control, feed intake was greater for the steers fed Optaflexx™, and feed efficiency was moderately improved (3.3%). Steers that received Op-

taflexx™ gained 6.4% more bodyweight during the 98-day feeding period. These data show that addition of Optaflexx™ into finishing diets fed to steers is beneficial, increasing bodyweight and carcass gain and improving conversion of feed to beef without affecting USDA quality grade.

Introduction

Within the last year, the U.S. Food and Drug Administration approved Optaflexx™ for addition to feedlot cattle diets during the final 28 to 42 days on feed. Optaflexx™ is the trade name for the compound ractopamine-HCl, a β -agonist that attaches to β -1 receptors located primarily on muscle fibers, stimulating muscle growth. Responses to Optaflexx™ have been measured as increases in live-weight gain, carcass weight gain, gain efficiency, and carcass yield. The present study was conducted to determine if these responses could be achieved under commercial cattle-feeding conditions.

Procedures

Two thousand fifteen yearling steers (891 lb reimplant bodyweight) were fed at a commercial feedyard near Larned, Kansas, to evaluate the effect on finishing performance and USDA Quality and Yield Grade of feeding Optaflexx™ for the last 29 days of the feeding period. Groups of cattle were sorted into their treatment pens at initial processing (six replications) or reimplantation (two replications). All cattle received a terminal

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implant (Component[®] TE-S with Tylan; average days on terminal implant was 92) the day they were sorted into their treatment pens. At reimplantation or initial processing, cattle were split into treatment groups on the basis of the order of processing, such that even-numbered cattle were placed into one group and odd-numbered cattle were placed into another. Each group had been pre-assigned to a treatment and pen. Cattle that were sorted into the Optaflexx[™] group were given an eartag that was a different color and contained a different lot number than the eartags of the control cattle. The number of cattle within a pen ranged from 91 to 206 steers. There were eight replications of each treatment.

An average of 29 days before the projected slaughter date, cattle were removed from their pens and weighed as a group. Feeding Optaflexx[™] started on this day and was continued until the cattle were shipped for slaughter. Diets (Table 1) were formulated to provide 0 or 200 mg per day of ractopamine-HCl (0 or 2 g/day of Optaflexx[™]) for control and Optaflexx[™] groups, respectively. Feed additives, including Rumensin, Tylan, and Optaflexx[™], were added by using a microingredient machine, and separate trucks were used for mixing and delivering each experimental diet to prevent the possibility of cross contamination. Throughout the experiment, cattle identified as sick were treated in accordance with standard operating procedures of the feedlot. Cattle identified as bullers were sorted and removed from the home pens and placed into a buller pen. Total weight of each pen was measured at 1) reimplant/initial processing time, 2) the start of Optaflexx[™] feeding, and 3) immediately before shipping to a commercial slaughter facility in Emporia, Kansas.

Results and Discussion

Optaflexx[™] was incorporated into the diets an average of 29 days before shipping the cattle to a commercial slaughter facility. The Optaflexx[™] steers had slightly heavier initial bodyweights (1155 vs. 1142 lb for Optaflexx[™]

and control, respectively, Table 2) and had heavier final bodyweights, whether bodyweight was measured live or calculated as hot carcass weight divided by a common 63.5% dress. Optaflexx[™] increased rate of gain by 17.9% (calculated using carcass weights). Even though the Optaflexx[™]-fed steers had a tendency for greater feed consumption during the last 29 days on feed, they had a 13.9% improvement in feed efficiency during that time. Bodyweight gain was 15.5 lb greater for Optaflexx[™]-fed cattle during Optaflexx[™] feeding.

Table 1. Composition and Nutrient Content of Diet^a

Item	% of Dry Matter
Steam-flaked corn	64.3
Distiller's grains	15.4
Haylage	5.5
Tallow	2.5
Liquid supplement	5.3
Dry supplement	7.0
Actual nutrient content, %	
Crude protein	15.2
Crude fat	7.5
Calcium	0.7
Phosphorus	0.6

^aDiets fed were similar except that the Optaflexx[™] diet contained 200 mg/steer daily of ractopamine-HCl (0 or 2 g/steer daily of Optaflexx[™]).

Optaflexx[™] increased hot carcass weight 19.7 lb and total pounds of carcass accumulated 11.2 lb. Feeding Optaflexx[™] did not influence dressing percentage. Control steers had a dressed yield of 63.9%, compared with 64.0% for Optaflexx[™] steers. The incidence of liver abscesses was greater for control cattle than for those fed Optaflexx[™]. Quality grade was not affected by feeding Optaflexx[™].

There was a decrease in the percentage of USDA Yield Grade 2 carcasses and an increase in percentage USDA Yield Grade 4 carcasses for cattle fed Optaflexx™.

There were 2,006 steers that finished the study. There were no cattle that died during the time that Optaflexx™ was fed. The only cattle that were removed from the study were buller steers. The incidence of bullers was not statistically different between treatments (6 for control and 3 for Optaflexx™).

The data from the last 29 days of the feeding period (the days that Optaflexx™ was fed) suggest that feeding 200 mg/steer daily of ractopamine-HCl enhanced performance of finishing steers. Overall performance (reimplant to slaughter, Table 4) was better for steers fed Op-

taflexx™. Calculated over a 98-day feeding period, Optaflexx™-fed steers gained 8% faster, also consuming 0.8 lb more feed daily, which led to a modest improvement in total finishing-period feed efficiency of 3.3%.

Incorporating Optaflexx™ into finishing diets in a commercial feedyard during the last 29 days on feed improved live-weight gain and gain efficiency similar to that claimed by the manufacturer. Furthermore, carcass quality grade was not affected by feeding Optaflexx™. These data show that dressing percentage was not affected by Optaflexx™. The carcasses of steers fed Optaflexx™ contained more fat than carcasses from steers not fed Optaflexx™. Optaflexx™ is an effective feed additive for improving steer performance when fed in commercial feedyards.

Table 2. Performance of Steers during Optaflexx™ Feeding (Last 29 Days on Feed)

Item	Control	Optaflexx™	SEM	P
Pens	8	8	–	–
Cattle started Optaflexx™ period	1003	1012	–	–
Cattle ended Optaflexx™ period	997	1009	–	–
Average days of Optaflexx™ feeding	29	29	–	–
Initial weight, lb	1141.9	1155.2	5.4	0.13
Final live weight, lb	1235.5	1264.3	6.4	0.02
Carcass-adjusted final weight, lb ^a	1242.7	1273.7	6.2	0.009
Daily gain, lb ^b	3.18	3.73	0.10	0.007
Carcass-adjusted daily gain, lb ^c	3.46	4.08	0.09	0.002
Live bodyweight gain, lb	93.6	109.1	2.6	0.004
Feed offered, lb/day ^d	20.9	21.7	0.3	0.07
Carcass-adjusted feed:gain ^e	6.02	5.29	–	0.001

^aHot carcass weight divided by a common 63.5% dress.

^bFinal live weight minus initial weight divided by days fed Optaflexx™.

^cCarcass-adjusted final weight minus initial weight divided by days fed Optaflexx™.

^dAverage feed delivered (dry matter basis).

^eAnalyzed as carcass-adjusted gain:feed, with the inverse reported here as feed:gain. SEM for gain:feed was 1.8% of the average value.

Table 3. USDA Quality and Yield Grades of Steers Fed Optaflexx™ during the Last 29 Days on Feed

Item	Control	Optaflexx™	SEM	P
Pens	8	8	–	–
Cattle started Optaflexx™ period	1003	1012	–	–
Cattle ended Optaflexx™ period	997	1009	–	–
Average days of Optaflexx™ feeding	29	29	–	–
Hot carcass weight, lb	789.1	808.8	3.9	0.009
Hot carcass weight gain, lb ^a	64.1	75.3	1.4	<0.001
Dressing %	63.9	64.0	0.1	0.25
USDA Prime, %	0.3	0.3	0.2	0.97
USDA Choice, %	35.8	36.3	1.7	0.84
USDA Select, %	55.1	55.7	1.6	0.82
No roll, %	8.8	7.7	0.7	0.35
Dark carcasses, %	0.12	0.11	0.12	0.98
USDA Yield Grade 1, %	16.8	18.1	1.3	0.51
USDA Yield Grade 2, %	54.8	49.6	1.3	0.02
USDA Yield Grade 3, %	26.6	28.7	1.5	0.37
USDA Yield Grade 4, %	1.7	3.3	0.5	0.05
USDA Yield Grade 5, %	0.1	0.2	0.1	0.36
Liver abscesses, % ^b	19.7	13.5	1.5	0.04

^aHot carcass weight gain was calculated as hot carcass weight minus carcass weight at the beginning of the Optaflexx™ feeding period. Carcass weight at the beginning of the Optaflexx™ feeding period was estimated from live weight, assuming 4% shrink and a dressed yield of 63.5%.

^bOnly 5 pens from each treatment had liver abscess scores recorded.

Table 4. Performance of Steers from Initial Processing or Reimplantation to Harvest (Day 0 to 98) when Optaflexx™ Was Only Fed to Steers in the Optaflexx™ Treatment during the Last 29 Days on Feed

Item	Control	Optaflexx™	SEM	P
Number of pens	8	8	–	–
Average days on feed ^a	98	98	–	–
Arrival weight, lb	887.9	894.5	2.9	0.14
Final live weight, lb	1235.5	1264.3	6.4	0.02
Average daily gain, lb	3.48	3.75	0.05	0.008
Live body weight gain, lb	347.6	369.8	4.2	0.008
Feed offered, lb/day ^b	20.9	21.7	0.2	0.01
Feed:gain ^c	5.98	5.78	–	0.09

^aWeighted average of total days on feed (range was 84 to 127).

^bAverage feed delivered (dry matter basis).

^cAnalyzed as carcass-adjusted gain:feed with the inverse reported here as feed:gain. SEM for gain:feed was 1.0% of the average value.