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Effects of melengestrol acetate (MGA) on performance and carcass quality of feedlot heifers

Abstract

Sixty yearling heifers (827 lb initial body weight) were fed finishing diets an average of 95 days. To eliminate social interaction and riding, they were fed in individual pens. Diets were formulated using steam-flaked corn and alfalfa hay. Thirty of the heifers were given 0.5 mg/head daily of MGA. Feed intakes, daily gains, and feed efficiencies were not significantly affected by MGA. However, heifers fed MGA had a greater percentage of carcasses grading USDA Prime and Choice. There also was greater incidence of USDA yield grade 3 and 4 carcasses with MGA supplementation. MGA generally increased fat deposition, but had no significant effect on feedlot performance of individually fed heifers.

Keywords

Cattlemen's Day, 2002; Kansas Agricultural Experiment Station contribution; no. 02-318-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 890; Beef; Melengestrol acetate (MGA); Performance; Carcass quality; Finishing heifers

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**EFFECTS OF MELENGESTROL ACETATE (MGA) ON
PERFORMANCE AND CARCASS QUALITY OF
FEEDLOT HEIFERS**

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Summary

Sixty yearling heifers (827 lb initial body weight) were fed finishing diets an average of 95 days. To eliminate social interaction and riding, they were fed in individual pens. Diets were formulated using steam-flaked corn and alfalfa hay. Thirty of the heifers were given 0.5 mg/head daily of MGA. Feed intakes, daily gains, and feed efficiencies were not significantly affected by MGA. However, heifers fed MGA had a greater percentage of carcasses grading USDA Prime and Choice. There also was greater incidence of USDA yield grade 3 and 4 carcasses with MGA supplementation. MGA generally increased fat deposition, but had no significant effect on feedlot performance of individually fed heifers.

(Key Words: Finishing Heifers, Melengestrol Acetate (MGA), Performance, Carcass Quality.)

Introduction

As part of a larger study, we are looking at how MGA affected several blood constituents. This report focuses on how MGA affected the heifer's performance and carcass quality. Previous research indicates that MGA improves feed efficiency and rate of gain when fed to heifers in feedlot pens. For this trial, heifers were fed in individual pens to eliminate social interaction and riding behavior.

Our objective was to observe differences, when fed individually, in performance and carcass quality of heifers supplemented with 0.5 mg MGA per head daily versus heifers not supplemented.

Experimental Procedures

Sixty yearling heifers were placed into individual feeding pens and fed for an average of 95 days. The diets (Table 1) were formulated using alfalfa hay and steam-flaked corn. Upon arrival, heifers were weighed, dewormed with Cydectin[®], implanted with Revalor-H[®], and measured for subcutaneous fat thickness by ultrasound and metabolic profile via infrared imaging. Heifers were stratified by initial weight, initial ultrasound fat thickness, and initial thermal profile. Cattle were then randomly allotted, within strata, to dietary treatments (Table 1) that provided 0 or 0.5 mg/head daily of MGA. Cattle were placed into 5 ft × 22 ft, concrete-surfaced, partially covered individual feeding pens, each equipped with its own feed bunk. A water fountain was shared between two pens. The heifers were fed at approximately 8:00 a.m. each morning. Feed remaining in the bunk the following morning was collected and weighed to determine dry matter intake. Heifers were shipped to a commercial abattoir in Emporia, Kansas when they achieved an estimated 12th rib fat thickness of 0.5 inches. They were fed an average of 95 days.

¹Food Animal Health and Management Center

Results and Discussion

Performance of heifers and carcass data are shown in Tables 2 and 3, respectively. MGA had no significant effect on feedlot gains or efficiencies of individually fed heifers. By feeding animals individually, we may have reduced the potential benefits of MGA supplementation by eliminating the opportunity for bulling activity. Deposition of intramuscular fat was

significantly greater for heifers fed MGA than for controls, thereby increasing the proportion of heifers that graded average Choice, high Choice, or Prime. Supplementation with MGA also resulted in greater deposition of kidney, pelvic and heart fat, and increased USDA yield grades. MGA appears to have effects on tissue accretion that are independent of cycling behavior, feed intake, and growth rate.

Table 1. Experimental Diets (% of Dry Matter)

	MGA	No MGA
Flaked corn	52.5	52.5
Corn distiller's dried grains	25.0	25.0
Corn steep liquor	8.0	8.0
Alfalfa hay	8.0	8.0
Ground corn	1.9	1.9
Limestone	1.19	1.19
Potassium chloride	0.43	0.43
Salt	0.30	0.30
Vitamin/trace mineral premix ^a	0.08	0.08
Rumensin, Tylan, MGA premix ^b	2.6	
Rumensin, Tylan premix ^b		2.6

^aVitamin/trace mineral premix provide (total diet dry matter) 20 ppm Cu, 0.1 ppm Co, 0.5 ppm Mn, 53 ppm Se, 50 ppm Zn, and 1200 IU vitamin A per lb of diet.

^bFeed additives were included in a ground corn carrier and provided, where applicable, 300 mg Rumensin, 90 mg Tylan, and 0.5 mg melengestrol acetate per head daily.

Table 2. Performance and Carcass Data

Item	MGA	No MGA	SEM	P-value
Number of heifers	30	30		
Initial weight, lb	827	827	11.9	0.96
Final weight, lb	1123	1122	14.0	0.94
Dry matter intake, lb/day	19.0	18.4	0.34	0.28
Average daily gain, lb/day	3.14	3.11	0.083	0.82
Feed:gain	6.05	5.94	0.120	0.52
Dress yield, %	61.66	61.64	0.258	0.95
Hot carcass weight, lb	693	692	9.9	0.91
12 th rib fat thickness, in	0.50	0.48	0.031	0.73
Kidney, pelvic, & heart fat, %	2.13	1.86	0.07	<0.01
Ribeye area, in ²	12.2	12.7	1.9	0.25
USDA Prime, %	7.2	0	3.2	0.15
USDA Average Choice or better, %	25.6	9.0	5.7	0.04
USDA Choice, %	49.5	39.5	8.4	0.40
USDA Select, %	32.0	42.0	8.9	0.43
Yield grade 1, %	0	12.6	4.4	0.04
Yield grade 2, %	33.6	43.7	8.2	0.39
Yield grade 3, %	59.8	39.8	8.1	0.09
Yield grade 4, %	7.4	4.1	4.0	0.55