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January 2000

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Scott, Tony; Milton, Todd; Dicke, Bill; Poppert, Pete; and Hollis, Larry, "The Effect of V-Max® on Performance and Carcass Characteristics of Finishing Cattle Fed Corn and Corn By-product Finishing Diets" (2000). *Nebraska Beef Cattle Reports*. 391.

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The Effect of V-Max® on Performance and Carcass Characteristics of Finishing Cattle Fed Corn and Corn By-product Finishing Diets

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Performance and carcass characteristics were unaffected in steers fed V-Max versus steers fed Rumensin®/Tylan®; however, incidence and severity of liver abscesses were increased with V-Max.

Summary

Seven hundred sixty-two crossbred steers were used in a feedlot trial to determine the effect of V-Max® on performance, carcass characteristics, and the incidence and severity of liver abscesses. Finishing diets included either V-max® or the combination of Rumensin® and Tylan®. Performance was not different between the two treatments; however, including V-max® in the diet resulted in an increased incidence and severity of liver abscesses. Numbers of steers with small abscesses were similar between treatments; however, moderate and severe liver abscesses were increased in steers fed V-Max® compared to steers fed the combination of Rumensin® and Tylan®.

Introduction

The use of feed additives in finishing diets to enhance performance has been

widely accepted by producers. These compounds stabilize feed intake, decrease the incidence of subacute acidosis and are partially responsible for controlling liver abscesses. Feeding the combination of Rumensin® and Tylan® has become the industry “standard.” Recently, virginiamycin (V-Max®) has become available for use as a feed additive in finishing diets for beef cattle. Virginiamycin has been shown to increase daily gain, improve feed efficiency and reduce the incidence of liver abscesses relative to unsupplemented controls (Rogers et al., 1995, J. of Anim. Sci., 73:9). Little is known about the effect of virginiamycin supplementation in finishing cattle diets containing grain byproducts such as wet corn gluten feed. Numerous experiments at the University of Nebraska have demonstrated that subacute acidosis is reduced when grain byproducts are included in finishing diets. Presumably, liver abscess incidence is also reduced. Wet corn gluten feed and wet distillers grains are commonly used feed ingredients in many Nebraska feedlot diets. Therefore, the objectives of this experiment were to determine the effects of V-Max® on performance, carcass characteristics and the incidence and severity of liver abscesses.

Procedure

Seven hundred sixty-two crossbred steers (732 lb) were blocked by source and randomly allotted to one of two treatments. Steers received either 17.5

g/ton V-Max® or the combination of 28 g/ton Rumensin® and 10 g/ton Tylan® (DM basis) as part of a pelleted supplement in the finishing diet. Numbers of steers within a replication were similar; however, numbers of steers across replications differed due to differing arrival dates. Four pens of calves and 8 pens of yearlings were placed on feed between July 12, 1997, and Aug. 13, 1997 (resulting in 6 replications/treatment with 60-68 head/pen). Upon arrival, steers were individually weighed and identified, vaccinated for viral and bacterial infections, treated for internal parasites and implanted with Synovex-S®. Steers were fed a high-concentrate finishing diet that included 52.5% dry-rolled corn, 20% wet distillers grains, 17% wet corn gluten feed, 5.5% pelleted supplement, 3% corn silage and 2% alfalfa hay (DM basis). The diet contained 16.5% CP, .85% Ca and .52% P. Steers were reimplanted with Revalor-S® towards the midpoint of the feeding period with reimplant dates ranging from 55 to 109 days on feed or 66 to 111 days prior to slaughter. Steers were slaughtered by replication such that days on feed within a replication were similar. Days on feed ranged from 121 to 220 days and averaged 158 days. Steers were slaughtered at a commercial packing plant where hot carcass weights and liver scores were obtained. Following a 36-hour chill, yield grade, quality grade, ribeye area, 12th rib fat thickness, kidney, pelvic, and heart (KPH) fat, and marbling scores were obtained. Final weights were

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Table 1. Effect of virginiamycin or a combination of Rumensin® and Tylan® on finishing performance of feedlot steers fed corn- and byproduct-based diets.

Item	Dietary Treatment		SEM	P-value
	V-Max ^a	R/T ^b		
Number of pens	6	6	—	—
Number of steers	372	376	—	—
Initial weight, lb	728	733	3.5	.41
Final weight, lb ^c	1332	1346	3.7	.03
DMI, lb/day	24.3	24.5	.3	.80
ADG, lb ^d	3.83	3.89	.03	.18
F/G	6.38	6.32	.08	.58

^aV-Max = 17.5 g/ton V-Max®.

^bR/T = 28 g/ton Rumensin® and 10 g/ton Tylan®.

^cFinal weight calculated as hot carcass weight divided by a common 63% dressing percentage.

^dCalculated using carcass adjusted final weight.

Table 2. Effect of virginiamycin or a combination of Rumensin® and Tylan® on carcass characteristics of feedlot steers fed corn- and byproduct-based diets.

Item	Dietary Treatment		SEM	P-value
	V-Max ^a	R/T ^b		
Hot carcass weight, lb	839	848	2	.03
Dressing percentage	63.32	62.72	.24	.14
Fat thickness, in.	.57	.57	.01	.69
KPH fat ^c	2.43	2.46	.02	.44
Marbling score ^d	545	534	5	.19
Yield grade	3.1	3.1	.1	.70
Ribeye area, sq. in.	14.14	14.05	.20	.77
Quality grade distribution, %				.55 ^e
Prime, %	1.43	1.69		
Upper 2/3 Choice, %	13.14	15.45		
Low Choice, %	44.86	39.33		
Select, %	34.57	38.48		
Standard, %	6.00	5.06		
Liver abscesses, %	36.1	17.3	—	<.01 ^e
Distribution of severity, %				<.01 ^e
None	63.4	82.6	—	
Small	10.4	8.9		
Moderate	11.5	3.5		
Severe	9.1	2.7		
Adhered to body wall	5.6	2.4		

^aV-Max = 17.5 g/ton V-Max®.

^bR/T = 28 g/ton Rumensin® and 10 g/ton Tylan®.

^cKPH = kidney, pelvic, and heart.

^dMarbling score of 500 = small 0.

^eP-value from Chi-square analysis.

determined by adjusting hot carcass weight to a common dressing percentage (63%). This dressing percentage represents the average of the two treatments in the trial. Pen weights used to determine dressing percentage with off-truck weights shrunk 2.5%. Perfor-

mance data were analyzed using the GLM procedure of SAS. Quality grade and incidence and severity of liver abscesses were analyzed using the Chi square (frequency distribution) procedure of SAS.

Results

Dry matter intake, ADG, and F/G were similar between steers fed V-Max® or the combination of Rumensin® and Tylan® (Table 1).

Also, steers fed the combination of Rumensin® and Tylan® had heavier (P < .05) carcasses than steers fed V-Max® (Table 2). However, a trend (P = .14) for increased dressing percentage and numerical differences in initial weight for steers fed V-Max® resulted in ADG similar to steers fed Rumensin® and Tylan® when carcasses were adjusted to a common dressing percentage. Twelfth rib fat thickness, KPH fat, USDA quality and yield grades and ribeye area were unaffected by treatment. The incidence of liver abscesses was higher (P < .01) in steers fed V-Max® compared to those fed Rumensin® and Tylan®. The incidence of liver abscesses was increased approximately two-fold in steers fed V-Max® and the magnitude of difference was similar across all replications and in calves and yearlings. The severity of liver abscesses was also greater (P < .01) in steers fed V-Max® compared to steers fed Rumensin® and Tylan®. Increases in moderate and severe liver abscesses and livers adhered to the body wall were responsible for the total increase in the incidence of liver abscesses in steers fed V-Max®. Although control of liver abscess incidence and severity was compromised, feedlot performance was similar for steers fed V-Max® or the combination of Rumensin® and Tylan®.

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