Research Notes

Arm & Hammer Animal and Food Production

CELMANAX supported live production performance and reduced pathogen prevalence in commercial feedyard trial.

INTRODUCTION

The cattle feeding industry is seeking new, non-antibiotic methods to improve cattle health without hindering overall performance. Alternatives that address key areas such as health, immune function and control of liver abscesses are of particular interest. CELMANAX™ includes Refined Functional Carbohydrates™ (RFCs™), which can help prepare the immune system ahead of a challenge so animals can respond more quickly when challenges occur. Given these benefits, evaluation of CELMANAX effects in fed cattle in place of or with antibiotics was studied.

Additional benefits of feeding CELMANAX include reduction in pathogenic *E. coli*, and the prevalence of Shiga toxin-producing *E. coli* (STEC). Impact on the presence of these pathogens was also studied.

STUDY OVERVIEW

A study[1] was conducted to determine the health and performance benefits of CELMANAX when used in place of, or in combination with, Tylan® in commercial feedlot cattle.

Yearling heifers with similar, known nutritional backgrounds were received at a commercial feedyard, examined for health or locomotion issues and processed, including routine vaccination and anthelmintic program for the yard, double individual identification and implantation. A total of 3,641 yearling heifers with a mean weight of 882.2 lbs. were allocated to 24 pens, with eight replicate pens per treatment.

Treatments were as follows:

- Feedyard control (current practice): Rumensin® (430 mg/hd/day) and Tylan (85 mg/hd/day)
- Rumensin and CELMANAX SCP* (2 g/hd/day)
- Rumensin, CELMANAX SCP, and Tylan

All treatments were fed Bovamine® continuously and Optaflexx® at the end of the feeding period. Live performance data was supplied by the feedyard, and carcass data was collected from the plant settlement sheet for each lot. Liver data was recorded and compiled by a technician at West Texas A&M University. Fecal samples were collected across three different sampling times, and a microbial analysis was conducted at the ARM & HAMMER™ lab.

RESULTS

Performance

No differences in live performances due to treatment were observed. Removal of Tylan in the CELMANAX-only treatment did not negatively affect live performance of cattle. There were also no differences observed in carcass results due to treatment.

TABLE 1	Effect of CELMANAX or CELMANAX + Tylan on performance of yearling heifers.					
		Control	CELMANAX	CEL + Tyl	SEM	*P*
Pens		8	8	8		
Head in	n	1213	1212	1216		
Days on feed	d	132.4	132.4	132.4		
In wt	lb/hd	882.6	883.5	880.4	23.3	0.995
Out wt	lb/hd	1502.7	1502.2	1502.5	16.0	0.999
ADFI, dry	lb/hd/d	28.27	28.43	28.52	0.47	0.934
ADG	lb/hd/d	4.68	4.64	4.69	0.10	0.945
F/G, dry		6.05	6.13	6.08	0.05	0.617
Death loss	%	1.14	1.41	1.23	0.38	0.880

Note: all treatments received Rumensin and Bovamine

However, treatment did affect the percentage of livers abscessed (*P*=0.04), with 22.9% abscessed livers in the treatment that did not receive Tylan®, compared to an average of 17.27% in the two treatments that contained Tylan. This 29% increase (5.6 percentage points) when Tylan was not included is consistent with results of other studies that included Rumensin® in all treatments.**

Fecal Microbial Sampling

In the fecal microbial assessment, both the CELMANAX™ and CELMANAX + Tylan treatments significantly reduced pathogenic *E. coli* by approximately 0.3 log between the first and second sampling, and 0.75 log between the first and third sampling. Shiga toxin-producing *E. coli* (STEC) prevalence continually decreased with each sampling for the two treatment groups fed CELMANAX (Table 2).

TABLE 2	STEC summaries.					
Collection	**Treatment**	**Pens**	**Samples**	**Percent with STEC**	**SD between pens**	**Pooled within pen SD**
1	**Control**	8	40	2.5%	0.48	0.65
	CEL	8	40	12.5%	0.29	0.85
	CEL + Tyl	8	40	10.0%	0.44	0.64
2	**Control**	8	40	5.0%	0.25	0.37
	CEL	8	41	5.0%	0.26	0.37
	CEL + Tyl	8	40	2.5%	0.23	0.35
3	**Control**	6	30	13.3%	0.12	0.60
	CEL	6	30	0.0%	0.21	0.48
	CEL + Tyl	6	30	3.3%	0.39	0.57

CONCLUSION

In this trial, healthy cattle entering the feedyard did not show any productive performance responses to CELMANAX. However, these cattle also did not show any negative effects on live production performance when replacing Tylan with CELMANAX. A 5.6-percentage point increase (29%) in liver abscesses was observed in the trial. Additionally, fecal microbial results indicated that CELMANAX significantly reduced pathogenic *E. coli* and prevalence of STEC over the course of the trial.

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*Refers to the form of CELMANAX used in the study: Soluble Concentrated Powder
**CELMANAX is not indicated for disease/liver damage prevention

1 Effect of Feeding CELMANAX™ With or Without Tylan® to Yearling Heifers Fed High Energy Diets Containing Rumensin®. ARM & HAMMER report, 2020. Data on file.