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Efficacy of Multimin™ in Improving Performance and Health in Receiving Cattle

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Story in Brief

Two loads of crossbred bull calves assembled from Oklahoma sale barns were assigned to either a negative control treatment or received 3 mL of Multimin™ subcutaneously at processing. Animals were weighed on d 0, 14, 28, and 42 of the trial and performance data were calculated. In addition, animals were evaluated for clinical signs of sickness daily and treated accordingly. Multimin™ injected calves had higher overall daily gains and improved feed conversions. In addition, calves injected with trace minerals tended to be treated for sickness less frequently. The data from this experiment suggest that a study of a larger scale should be conducted to fully validate the efficacy of Multimin™.

Key Words: Beef Cattle, Trace Mineral, Multimin™

Introduction

Although actual mineral requirements of stressed calves do not seem to be greater than those of unstressed calves (Cole, 1993), calves may have difficulty meeting requirements during their first few days in the feedlot due to low feed intakes. RXV Veterinary Products advertises Multimin™ [6], an injectable trace mineral solution, as a method to avoid potential deficiencies due to low initial intake. The objective of this study was to test the efficacy of injecting stressed calves with Multimin™ in order to alleviate sickness, thus improving feedlot performance.

Product Description. Multimin™, an injectable trace mineral solution containing 20 mg/mL zinc, 20 mg/mL manganese, 5 mg/mL selenium, and 10 mg/mL copper, has been advertised as being more effective than dietary trace mineral supplementation due to avoidance of interactions with sulfur molybdenum. Its label dosage for calves is 3 ml administered subcutaneously. Ingredients include: manganese sulfate, zinc oxide, soda ash, copper carbonate, sodium selenite, disodium EDTA, and sodium hydroxide.

Materials and Methods

Two loads of crossbred bull calves (n = 60, BW = 317 ± 22 lb, and n = 81, BW = 371 ± 29.04 lb) assembled from Oklahoma sale barns were received at the Willard Sparks Beef Research Center in Stillwater, OK, on September 26, 1999, and January 9, 2000, respectively. Upon arrival, calves were individually weighed, ear-tagged, and assigned randomly to receive Multimin™ or assigned to a control treatment group. Bull calves from each load received similar processing. The day following arrival all calves were surgically castrated, vaccinated with BRSV-Vac® 4™, given a Covexin® 8™ clostridial preparation, medicated with Micotil® and treated for parasites with Ivomec Plus®. All steers were revaccinated with BRSV-Vac-4 on d 14 of the trial.

Steers were housed in four uncovered pens per load (2 pens/treatment/load). Animals in each treatment group were fed identical diets (Table 1) ad libitum. Feed was delivered twice daily at 8:00 a.m. and 2:00 p.m. for the first load and once daily at 8:00 a.m. for the second load. Calves were weighed on d 0,14, 28, and 42 with all steers being held off of feed and water overnight prior to 42-d weights. Other weights, with the exception of the initial weight, received a 4% shrink prior to performance calculations.

Prior to the morning feeding, calves were evaluated for clinical signs of sickness. If the animal was determined to have clinical signs of sickness and it had a rectal temperature of 104° F or greater, then it was treated. Medical treatments consisted of Nuflor™ for the first treatment and Excenel™ for each treatment thereafter. Treatment, rectal temperature, weight, and severity of sickness data were recorded for each calf treated.

Statistical Analysis. Data were analyzed using the GLM procedure of SAS (SAS, 1996) as a completely randomized design. Pen served as the experimental unit for gain, dry matter intake, efficiency, and health data. Treatments were evaluated contrasting calves injected with Multimin™ vs negative control. Interaction terms were insignificant and removed from the model. All models were evaluated using treatment nested within load as the error term.

Results and Discussion

Performance data are presented in Table 2. Multimin™ increased feed intake from d 29 to 42, however, the injectable mineral had no other significant effects on performance of calves in this trial. Nonetheless, Multimin™ tended to increase ($P<.06$) overall daily gain as well feed conversion ($P<.19$) compared to their negative control contrasts. Calves on the mineral treatment also tended to be treated for sickness less ($P<.08$) frequently (Table 3). It is important to note that the experimenters made no attempt to evaluate the calves in this experiment as to their mineral status upon entering the trial. Given the tendencies detected in this study, however, further research is warranted involving calves with predetermined deficiencies. Also, this experiment involved limited numbers of experimental units. In order to conclusively validate Multimin's efficacy in affecting performance and health in receiving cattle, larger data sets should be generated.

Literature Cited

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SAS. 1996. The SAS System for Windows (Release 6.12). SAS Inst. Inc., Cary, NC.

Acknowledgements

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Table 1. Ration fed to calves for 42 d.

Ingredient	%DM
Soybean hulls	33.0
Corn, whole-shelled	26.5
Wheat midds	16.9
Cottonseed hulls	10.0
Cottonseed meal	7.5
Soybean meal	4.3
Limestone	1.2
Pellet Partner™	.68
Bovatec™ 68	.023
Vitamin A 30,000	.020
Selenium 600	.011
Vitamin E 50%	.003

Table 2. Least squares means for feedlot performance.

Item	Control	Multimin™	SEM[a]	Prob > F
Steers	71	70		
Pens, n	4	4	--	--
Weight, lb				
Initial	345	343	2.59	.6397
Final	428	433	2.91	.4416
Daily gain, lb				
d 0-14	.18	.25	.04	.4264
d 15-28	2.59	2.91	.10	.2703
d 29-42	3.06	3.20	.04	.2689
d 0-42	1.92	2.09	.01	.0574
Intake, lb DM/d				
d 0-14	5.3	5.0	.25	.4941
d 15-28	9.0	8.9	.10	.6500
d 29-42	11.9[b]	12.3[c]	.02	.0305
d 0-42	8.7	8.7	.02	.3215
Gain:feed				
d 0-14	.09	.14	.01	.1199
d 15-28	.29	.36	.01	.1577
d 29-42	.26	.26	.01	.0885
d 0-42	.23	.26	.01	.1836

[a]Standard error of the least squares means.

[b,c]Means in same row with different superscript differ (P<.05).

Table 3. Health data for receiving steers.

Item	Control	Multimin™	SEM[a]	Prob > F
Pulls[b]	1.02	.96	.06	.6067
Treatments[c]	.71	.63	.01	.0733
Number of pulls, % of treatment				
0	40.8	31.4	--	--
1	29.6	44.3	--	--
2	19.7	21.4	--	--
3	8.5	2.9	--	--
4	1.4	--	--	--
Number of treatments[c], % of treatment				
0	50.7	47.1	--	--
1	29.6	42.9	--	--
2	15.5	8.6	--	--
3	4.2	1.4	--	--

[a]Standard error of the least squares means.

[b]Animal pulled due to clinical sign of sickness.

[c]Animal treated for sickness.

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