MASS MEDICATION TREATMENTS FOR NEWLY ARRIVED STOCKER CATTLE

M.T. Van Koevering[1], D.R. Gill[2], R.A. Smith[3], W.J. Hill[1] and R.L. Ball[4]

Story in Brief

Six truck loads (n=575) of cattle weighing an average of 413 lb were used to evaluate different mass medication treatments. Treatments consisted of controls (basal ration; 200 mg Bovatec per animal daily), control+LA-200 (4.5 cc/cwt) injected at processing, AS-700 (350 mg Aureomycin+350 mg sulfamethazine) in feed each day and Neo-Terramycin-50/50 (1.4 gram neomycin base + 2 gram oxytetracycline) in feed each day. Neo-Terramycin was fed for the first 14 d after arrival, after which the cattle were fed the control ration for the remainder of each 28 d trial. All calves were limit fed a ration of prairie hay plus 2 lb of protein pellets to achieve daily gains of .75 lb. Daily gains during the first 14 d were 11.3% greater for calves receiving LA-200 than to control calves. Supplementation with AS-700 or injections of LA-200 at processing increased daily gains during the entire trial by 9.6% and 9.2% respectively when compared to the control calves. Calves classified as healthy had higher daily gains (13.1%) when supplemented with Neo-Terr. than control calves. Injections of LA-200 at processing allowed calves to respond to drugs faster so that they required fewer treatment days and fewer animals were retreated.

(Key Words: Mass Medication, Newly Received Cattle, Shipping Fever.)

Introduction

Cattle are shipped to Oklahoma each year from all over the country. The transportation stress leads to high rates of both morbidity and mortality, primarily from bovine respiratory disease complex (BRD). Preventing BRD can be more economical than treating animals after they become ill. Administration of intramuscular oxytetracycline for three consecutive days to stressed calves entering the feedlot reduces the incidence of BRD, but this treatment is labor intensive (Addis et al., 1976; Lofgreen, 1983). Long acting

[1]Graduate Assistant [2]Regents Professor [3]Associate Professor, Veterinary Medicine [4]Herd Manager

oxytetracycline and sustained release mass medication at processing with sulfadimethoxine has improved daily gain of newly received stocker cattle (Gill et al., 1986; Van Koevering et al., 1991). Thus, administration of long acting antibiotics via injection at processing or administration of antibiotics in the feed may decrease the need for daily drug treatment, and help to prevent BRD while enhancing animal performance.

Materials and Methods

Six truckloads of cattle (Table 1) weighing an average of 413 lb originating from 4 different locations arrived at the research station in Pawhuska, OK. between October 1991 and February 1992. After unloading, cattle were individually weighed, identified, and allotted to pens. All cattle were given free access to hay and water overnight. The following day, all animals were processed as follows: vaccinated with IBR-PI3-BRSV (modified live virus; i.m.) and 4-way clostridial bacterin and dewormed with ivermectin. At 14 days the IBR-PI3-BRSV vaccine were boostered. Pens were randomly allotted to one of four different mass medication treatments three of which were administered in a protein supplement and the fourth was injected at processing. Treatments consisted of controls (basal ration containing 200 mg Bovatec), control+LA-200 (4.5cc/cwt) injected at processing, AS-700 (350 mg chlortetracycline+350 mg sulfamethazine) in feed and Neo-Terramycin-50/50 (1.4 grams neomycin base + 2 grams terramycin) in feed. Neo-Terramycin was fed for the first 14 d after arrival after which the cattle were fed the control ration for the remaining 14 d of the 28 d study. All calves were limit fed a ration (Table 2) at 3% of body

Table 1. Origin, date, arrival weight, sex and number calves from individual loads.

Load	Origin	Date	Arrival Weight	Gender	Number of Head
1	MO	10/91	395	S	119
2	AR	11/91	471	H	100
3	MO	11/91	411	H	53
4	KS	12/91	419	H	53
5	AR	12/91	478	H	101
6	AL	2/92	343	H	149

Table 2. Composition of diets (DM basis).

	Cont. (Bovatec)	AS-700 fed	Neo-Terr fed	LA-200 injected
Ingredients				
Prairie Hay, lb	10	10	10	10
Supplement, lb	2	2	2	2
	----------	(%)	----------	
Supplement				
Soybean meal	55.18	54.83	53.33	55.18
Cottonseed meal	40.00	40.00	40.00	40.00
Salt	3.00	3.00	3.00	3.00
Dicalcium phosphate	1.38	1.38	1.38	1.38
Vitamin A	.11	.11	.11	.11
Vitamin D	.09	.09	.09	.09
Selenium 600	.10	.10	.10	.10
Bovatec 68	.15			.15
Neo-Terramycin 50/50			2.00	
Aureo S-700		.50		

Nutrients	
NEm, Mcal/cwt	51.00
NEg, Mcal/cwt	25.80
Crude protein, %	12.28
K, %	1.25
Ca, %	0.44
P, %	0.32

weight to attain daily gains of .75 lb. This ration consisted of 2 lb of protein pellets and the remainder being prairie hay. During the first 14 days one-half the protein pellets and prairie hay were fed twice daily, while animals were fed the complete ration once daily for the final 14 d.

Calves were monitored twice daily for sickness (rectal temperature $>104^{o}$F, or visually depressed). Sick animals were treated daily with antibiotics until rectal temperature remained $<104^{o}$F for two consecutive days and visuals signs disappeared. At the end of the 28 day study, cattle

were held overnight without feed or water, weighed the following morning and castrated and branded as needed.

Results and Discussion

Effects of mass medication on animal performance are illustrated in Table 3. Weights upon arrival by random chance were higher ($P<.05$) for calves receiving LA-200 as compared to those receiving Neo-Terr. This difference in weight was maintained throughout the trial. Daily gains during the first 14 d were 11.3% greater ($P<.05$) for calves receiving LA-200 than controls. Daily gains for the first 14 d were much higher than daily gains during the last 14 d due to gut fill following arrival at the research station. There were no differences between treatments in daily gains during the last 14 d of the trial. Daily gains during the last 14 d are much more

Table 3. Effect of mass-medication treatments on performance[a].

	Cont. (Bovatec)	AS-700 fed	Neo-Terr fed	LA-200 injected
Animals, number	143	144	144	144
Pens, number	10	10	10	10
Weight, lb.				
Day 0	419^{ab}	421^{ab}	414^{a}	425^{b}
Day 14	459^{a}	465^{ab}	458^{a}	470^{b}
Day 28	471^{a}	479^{ab}	471^{a}	482^{b}
Average Daily Gain, lb				
Day 0-14	2.98^{a}	3.24^{ab}	3.22^{ab}	3.36^{b}
Day 14-28	.82	.94	.80	.77
Day 0-28	1.88^{a}	2.08^{b}	2.03^{ab}	2.07^{b}
Healthy calves	2.05^{a}	2.23^{ab}	2.36^{b}	2.21^{ab}
Calves sick at least once	1.49	1.49	1.52	1.46
Daily feed intake, lb.	12.77	12.82	12.62	12.77
Feed/gain	6.79	6.16	6.22	6.17

[a]Least squares means; means within the same row with different superscripts differ $P<.05$.

representative of growth by the animal, being close to the expected daily gain of .75 lb.

Supplementation with AS-700 in the diet or the injection of LA-200 at processing increased ($P<.05$) daily gains for the 28 day trial by 9.6% and 9.2% respectively when compared to the controls. The higher daily gains during the first 14 d of calves receiving LA-200 increased weight which remained until the end of the trial. Calves receiving AS-700 had the highest gains during the last 14 d of the trial. This in combination with gains during the first 14 d also resulted in the highest gains during the 28 day trial. Total gain was similar for AS-700 and LA-200 but the advantage over control cattle occurred at different times.

Calves classified as healthy are calves that were never treated for illness during the trial. Daily gains for healthy calves were 13.1% higher ($P<.05$) when supplemented with Neo-Terr. Daily gains of calves that became ill were not affected by mass medication treatments. Calves that were treated for illness during the trial had lower gains ($P<.01$) than calves that were healthy.

Calves were limit fed; thus feed intakes were not different between treatments. However, due greater ADG by certain treatments, feed efficiencies were improved for all treatments compared to the control pens of cattle.

Effects of mass medication on health are illustrated in Table 4. No treatment effects on morbidity or mortality were detected. Calves receiving

Table 4. Effect of mass-medication treatments on health[a].

	Cont. (Bovatec)	AS-700	Neo-Terr	LA-200 injected
Animals, number	142	144	144	144
Pen, number	10	10	10	10
Morbidity, %	27.78	24.78	31.32	28.16
Mortality, %	1.60	1.72	1.22	2.65
Initial Temp., ^{o}F	105.7	105.5	105.7	105.6
Treatment days	2.78^{a}	3.08^{a}	2.47^{ab}	2.08^{b}
Repulls	10.20^{b}	26.32^{a}	12.20^{b}	10.00^{b}
Retreats[b]	12.24^{a}	10.53^{ab}	0^{c}	2.50^{bc}

[a]Least squares means; means within the same row with different superscripts differ $P<.05$.

[b]Animals treated with more than one drug.

LA-200 at processing required fewer ($P<.05$) treatment days with antibiotics than did controls or calves fed AS-700. Calves fed AS-700 had the highest ($P<.05$) incidence of repulls. Calves treated with more than one drug during a given illness were classified as retreats. Calves receiving LA-200 at processing or Neo-Terr in their feed had fewer ($P<.05$) retreats. Thus, injections of LA-200 at processing allowed calves to respond to drugs faster, requiring fewer treatment days and fewer retreats within a given illness. Calves fed Neo-Terr also had fewer retreats than controls.

Mass medication treatments improved animal performance; however, routes of administration, oral vs injection, differed in the time at which performance was enhanced. Because health differs markedly between loads of calves the mass medication is highly dependent on the type of cattle received.

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