

VACCINE TREATMENTS TO IMPROVE HEALTH AND PERFORMANCE OF NEWLY ARRIVED STOCKER CATTLE

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Story in Brief

Four truck loads (n=462) of cattle weighing an average of 422 lb arrived at the Pawhuska Research Station to evaluate Presponse[®] (American Cyanamid), a new vaccine for the control of *Pasteurella haemolytica*. Presponse[®] was injected (2 ml; intramuscularly) at processing time and again at 14 days. The calves were limit fed a ration of prairie hay and 2 lb of protein pellets to achieve daily gains of .75 lb for the 28 day study. During the first 14 days of the study, controls had a 9.7% higher average daily gain (ADG) (3.21 vs 2.90 lb), while Presponse[®] demonstrated an 18.8% higher ADG (.82 vs 1.01) during the second 14 days of the study. This resulted in no treatment differences in ADG (2.00 vs 1.96), or feed efficiency (6.36 vs 6.22) for controls vs Presponse[®] at the end of the 28 day study. Health parameters such as morbidity, mortality, incidence of retreats and repulls, or the number of drug treatment days were unaffected by treatment. Thus, Presponse[®] altered the time of weight gain during the 28 day study; however, there was no difference in final ADG or feed efficiency.

(Key Words: Newly Received Cattle, Shipping Fever, Vaccine, Pneumonia.)

Introduction

Numerous cattle are shipped into the state of Oklahoma each year from all over the country. The stress related with transportation and the mixing of cattle leads to high rates of both morbidity and mortality, resulting primarily from bovine respiratory disease complex (BRD). Pneumonia associated with BRD is primarily associated with the bacteria, *Pasteurella haemolytica*. Cattlemen receiving stressed cattle realize that preventing pneumonia is more economical than treating animals after they become ill. Thus,

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administration of vaccines that could prevent pneumonia, such as Presponse® could be of great economic importance.

Materials and Methods

Four truck loads of cattle (Table 1) weighing an average of 422, and originating from 3 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 allowed 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. One-half of the calves were also vaccinated (intramuscularly) with 2 ml of Presponse® (American Cyanamid). At 14 days the IBR-PI3-BRSV vaccine and Presponse® were boosted. All calves were limit fed a ration (Table 2) at 3 % of body 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 $>104^{\circ}\text{F}$, or visually depressed). Sick animals were treated daily with antibiotics until rectal temperature was $<104^{\circ}\text{F}$ for two consecutive days and visual signs disappeared. At the end of the 28 day study, cattle were held overnight without feed or water, weighed the following morning and, as necessary, castrated, horns tipped, and branded.

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

Load	Origin	Date	Arrival Weight	Sex	Number Head
1	MO	10/91	395	S	112
2	AR	11/91	471	H	100
3	AR	12/91	478	H	101
4	AL	2/92	343	H	149

Table 2. Composition of diets (dry matter basis).

Ingredient	
Ration	
Prairie Hay, lb	10
Supplement, lb	2
Supplement	% Composition
Soybean meal	55.18
Cottonseed meal	40.00
Salt	3.00
Dicalcium phosphate	1.30
Vitamin A	.11
Vitamin D	.09
Selenium 600	.10
Bovatec 68	.15

Average calculated composition of the ration:

Nutrients	Ration Composition DM %
NE _m , Mcal/cwt	51.00
NE _g , Mcal/cwt	25.80
Crude protein, %	12.28
K, %	1.25
Ca, %	0.44
P, %	0.32

Results and Discussion

Table 3 illustrates the effects of Presponse[®] on animal performance. During the first 14 d of the study, controls had a 9.7% higher ($P < .05$) daily gains (3.21 vs 2.90), while Presponse[®] demonstrated an 18.8% higher ($P < .06$) daily gains (.82 vs 1.01) during the second 14 d of the study. This resulted in no treatment differences in daily gain (2.00 vs 1.96), or feed efficiency (6.36 vs 6.22) for controls vs Presponse[®] at the end of the 28 d study. Brazle (1992) also found similar effects on gain when Presponse[®] was given to 500 shipping-stressed calves. This difference in the time of gain is difficult to explain, but may be a result of the animal being affected by the Presponse[®] vaccination and then being readjusted by day 14-28 of the study. The gains of the controls are similar to the projected gains (.75 lb). The increased gains during the second 14 d period of this study may indicate some type of recovery by the Presponse[®] calves. The time of weight gain does not appear to be important in the overall gain during the 28 d study.

Health parameters are illustrated in Table 4. There were no differences due to treatments in morbidity, mortality, the incidence of

Table 3. Effect of Presponse vaccine on performance^a.

	Control	Presponse [®]	Probability (P <)
Animals, number	232	230	
Pen, number	16	16	
Weight, lb.			
Day 0	418	408	
Day 14	462	449	
Day 28	477	465	
Average Daily Gain, lb			
Day 0-14	3.21	2.90	.05
Day 14-28	.82	1.01	.06
Day 0-28	2.00	1.96	
Healthy	2.30	2.29	
Sick	1.70	1.64	
Feed Intake, lb.	12.61	12.51	
Feed Efficiency	6.36	6.22	

^aLeast squares means with day 0 weight used as a covariate.

Table 4. Effect of Presponse vaccine treatments on health^a.

	Control	Presponse [®]
Animals, number	232	230
Pen, number	16	16
Morbidity, %	30.21	26.68
Mortality, %	1.46	2.12
Initial Temp., °F	105.7	105.7
Treatment days	3.38	3.26
Responders, %	24.76	19.21
Repulls	8.21	10.13
Retreats ^b	6.57	2.81

^aLeast squares means.

^bAnimals treated with more than one drug.

retreats and repulls, or the number of drug treatment days required by sick animals. Brazle (1992) also did not detect any differences in mortality or morbidity with morbidity rates being greater than 80 percent for both controls and Presponse[®] treated calves. There was however a decrease in the number of medication days per animal. Although Presponse[®] is marketed for the control of *Pasteurella haemolytica* which is a leading cause of pneumonia in shipping-stressed calves, no change in animal health were noted in this study.

Literature Cited

- Brazle, F.K. 1992. The effect of Presponse[®] on gain and health of long-hauled newly arrived calves. *J. Anim. Sci.* 70(Suppl): in press.