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Abstract

One backgrounding field study was conducted at two locations to compare the health and performance of high-risk receiving steers given an ExpressTM 5-Pasteurella Haemolytica- Multocida (PHM) vaccine or a Titanium® 5-PHM Bac®-1 vaccine. At one location, calves given the Titanium 5-PHM vaccination had fewer first and second repulls ($P<0.05$). At the other location, calves given the Express 5-PHM vaccination had fewer initial pulls for respiratory disease and more hospital pen days at initial pull ($P<0.05$) than those given Titanium 5-PHM. No differences were measured at either location for mortality and average daily gain.

Keywords

Cattlemen's Day, 2004; Kansas Agricultural Experiment Station contribution; no. 04-242-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 923; Beef; ExpressTM 5-PHM; Titanium® 5-PHM Bac®-1; High risk steers

EVALUATION OF EXPRESS™ 5-PHM AND TITANIUM® 5-PHM BAC®-1 ON HIGH-RISK RECEIVING STEERS[1]

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Summary

One backgrounding field study was conducted at two locations to compare the health and performance of high-risk receiving steers given an Express™ 5-Pasteurella Haemolytica-Multocida (PHM) vaccine or a Titanium® 5-PHM Bac®-1 vaccine. At one location, calves given the Titanium 5-PHM vaccination had fewer first and second repulls ($P<0.05$). At the other location, calves given the Express 5-PHM vaccination had fewer initial pulls for respiratory disease and more hospital pen days at initial pull ($P<0.05$) than those given Titanium 5-PHM. No differences were measured at either location for mortality and average daily gain.

Introduction

Throughout the marketing chain, beef cattle can be introduced to many types of stressors and degrees of trauma, such as weaning, exposure to pathogens and handling at salebarns, and long-distance hauling. Cattle that are "high-risk" have experienced many excessive-trauma stressors over an extended period and are classified as likely to acquire Bovine Respiratory Disease complex (BRD). This disease is ranked first among all disease conditions in U.S. feedyards (NAHMS, 1999) and accounts for millions of dollars of loss to producers every year.

There are several types of BRD, pneumonia being the most prevalent form. Three factors must be present for pneumonia to develop: (1) stress, (2) viral infection, and (3) bacterial infection. To help prevent the onset of a viral infection, a modified live vaccine with common respiratory antigen components is used. Common respiratory viruses in cattle include infectious bovine rhinotracheitis (IBR), parainfluenza 3 (PI3), bovine virus diarrhea (BVD) type I and II, and bovine respiratory syncytial virus (BRSV). Two of the most predominate types of bacterial infections involved in pneumonia are *Mannheimia (Pasteurella) haemolytica* (PHM) *and Pasteurella multocida*.

The objective of this study was to evaluate two different modified live virus-pasteurella combination vaccines, Express 5-PHM and Titanium 5-PHM, on subsequent health and performance of seriously stressed steers. Both vaccines contain the same five modified live viral components: IBR, PI3, BVD type I and II, and BRSV. The vaccines differ in the form of the *Pasteurella haemolytica-multocida*

[1]Sincere appreciation is expressed to Porter Farms, Reading and Moxley Ranch, Council Grove, for providing cattle, facilities, and assistance, and to Boehringer Ingelheim Vetmedica and Elanco Animal Health for support of this study.

component: Express 5-PHM is in a killed form, whereas in Titanium 5-PHM it is in a modified live form.

Experimental Procedures

Location 1. A total of 736 steers (average 352 lb initial body weight) from the southeastern United States, were used at location 1 in East-Central Kansas. These cattle were poorer quality, light-weight, and high-risk calves. Animals were randomly assigned to vaccine treatments and given a metaphylactic treatment of Micotil®, an endectocide pour-on, Revalor®-G growth implant, and were castrated/dehorned upon arrival. The cattle were *not* assigned vaccine treatments on the basis of castration status at time of arrival. Approximately 10 days later, a booster of the original vaccine product without the *Pasteurella haemolytica- multocida* component was given to all steers except those in the hospital pen. Sick animals were pulled and treated according to the standard protocol in use at this location. All cattle were fed a high-energy diet based on corn silage. Uniform health and management procedures were used throughout the study. A final weight was taken of all steers after an average of 93 days.

Location 2. All treatments and procedures at location 2 were the same as those used at location 1, except that a 7-way clostridial vaccine and a Synovex®-S growth implant were given at initial processing. A total of 422 steers (average 532 lb initial body weight) originating from the southeastern United States were used at location 2, which was also in East-Central Kansas. These cattle were better quality than those at location 1 and carried moderate flesh, but they were still considered to be high-risk calves. A final weight was taken of all steers after an average of 84 days.

Results and Discussion

Health and performance data for the locations were not pooled because of the wide range of differences in cattle quality and associated risk level. At location 1, there were fewer first repulls ($P<0.05$) of non-castrate calves (steers upon arrival) that had been given the Titanium 5-PHM treatment (Table 1). There were fewer second repulls ($P<0.05$) of castrates (bulls upon arrival). There were no other significant differences among treatments at location 1 for initial pulls for respiratory disease, hospital pen days, percentage death loss, and average daily gain.

At location 2, there were fewer initial pulls for respiratory disease and more average hospital days when initially pulled ($P<0.05$) in non-castrate calves (steers upon arrival) that had been given the Express 5-PHM treatment (Table 2). There were no other significant differences for the remaining measurements taken at location 2.

Because performance between non-castrates (steers) and castrates (bulls) upon arrival was not the primary focus of this study, statistical analyses were not conducted for these differences. Differences can be seen, however, in initial pulls, death loss, and average daily gain. These differences were particularly marked for the cattle type used at location 1.

Table 1. Performance Differences Between Express 5-PHM Vaccine and Titanium 5-PHM Vaccine on % Pulls for Respiratory Disease, Treatment Days in Hospital Pen for Each Pull Occasion, % Death Loss, and Average Daily Gain at Location 1

	Non-Castrate (Steers)[a]		Castrate (Bulls)	
Item	Express™	Titanium®	Express™	Titanium®
Head	89	74	282	291
Initial Pulls, %*	38.8	23.3	51.2	54.5
First Repulls, %*	22.3[b]	9.1[c]	23.4	26.4
Second Repulls, %*	5.6	1.1	9.2[b]	4.2[c]
Average Hospital Days				
Initial Pulls*	5.1	4.5	5.1	5.4
First Repulls*	5.4	5.1	4.5	4.7
Second Repulls*	4.3	1.3	3.9	4.2
Death Loss, %*	7.1	10.0	16.3	18.0
Daily gain, lb*	2.0	2.2	1.7	1.8

[a]Data analyzed separately according to castration status upon arrival.
[bc]Different superscripts between vaccines differ (P<0.05).
*Means blocked by load.

Table 2. Performance Differences Between Express 5-PHM Vaccine and Titanium 5-PHM Vaccine on % Pulls for Respiratory Disease, Treatment Days in Hospital Pen for Each Pull Occasion, % Death Loss, and Average Daily Gain at Location 2

	Non-Castrate (Steers)[a]		Castrate (Bulls)	
Item	Express™	Titanium®	Express™	Titanium®
Head	52	58	162	150
Initial Pulls, %*	23.1[b]	43.1[c]	42.0	48.0
First Repulls, %*	3.5	13.0[c]	16.0	16.0
Second Repulls, %*	0.5	8.3	5.6	4.0
Average Hospital Days				
Initial Pulls*	5.8[b]	3.5[c]	4.5	4.7
First Repulls*	3.3	4.8	4.2	4.8
Second Repulls*	0.0	4.9	3.3	6.2
Death Loss, %*	6.1	2.5	6.1	5.2
Daily gain, lb*	2.7	2.7	2.3	2.2

[a]Data analyzed separately according to castration status upon arrival.
[bc]Different superscripts between vaccines differ (P<0.05).
*Means blocked by load.