

EFFECTS OF TIMING OF VACCINATION (DAY 0 VERSUS DAY 14 OF A RECEIVING PERIOD) WITH A MODIFIED-LIVE RESPIRATORY VIRAL VACCINE ON PERFORMANCE, FEED INTAKE AND FEBRILE RESPONSE OF BEEF HEIFERS

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ABSTRACT: The objective of this study was to evaluate the effects of timing of the administration of a modified-live respiratory viral vaccine (IBR-P13-BRSV-BVD) on d 0 or on d 14 of a receiving period on performance, feed intake and febrile response in beef heifers. Our hypothesis was vaccine timing will alter febrile response and feed intake of feeder cattle. Thirty-six heifers (Angus and Angus crosses; initial BW = 265 ± 20 kg) were ranked by BW and assigned to treatment pens (9 pens total) in a completely randomized design. Treatments (3 pens/treatment with 4 heifers/pen) included no vaccine (CON), vaccination on d 0 (D0), and a delayed vaccination on d 14 (D14) of the receiving period. Heifers were fed in 6 x 12 m pens with GrowSafe feeding systems. Daily intakes were recorded and BW measured on d -1, 0, 14, 27, and 28. Temperature probes were attached to controlled intrauterine drug release devices (CIDR; active compound was removed) and vaginal temperatures were recorded every 5 min for the experiment; vaginal temperatures were then averaged for every h before data analysis. All data were analyzed using pen as the experimental unit. No differences (P > 0.10) among treatments were observed for initial BW, final BW, ADG for d 0 to end, or overall G:F. A treatment x d interaction (P < 0.05) was observed for feed intake. Daily intake was decreased for D14 versus D0 on d 14 (P < 0.01) and 15 (P < 0.10) and decreased (P < 0.05) on d 15 for the average of vaccinated calves versus CON. Eating rate (grams consumed/eating duration) was decreased (P < 0.05) on d 14 for D14 versus D0. A treatment x d interaction (P < 0.01) was observed for vaginal temperature. Vaginal temperature was increased (P < 0.10) on d 1 for D0 versus D14 heifers and increased for D14 versus D0 on d 14 (P < 0.01), 15 (P < 0.05) and 16 (P < 0.05). Our results suggest that time of administration of a modified-live respiratory viral vaccine can alter feed intake and vaginal temperature in feeder heifers.

INTRODUCTION

- ✓ Bovine Respiratory Disease (BRD) is the most common and costly problem in feedlot cattle in North America.
- ✓ Bovine herpes virus-1 causes the respiratory disease infectious bovine rhinotracheitis (IBR), often leading to susceptibility to BRD
- ✓ Other important viruses include bovine viral diarrhea (BVD), parainfluenza-3 (PI3), and bovine respiratory syncytial virus (BRSV).
- ✓ Immunological competence is arguably the most important subject in newly received cattle.
- ✓ Reported decreased BW gain in calves receiving a vaccination on-arrival.
- ✓ There is a shortage of data relating febrile response and its relationship between immune response and performance in cattle.

OBJECTIVE: The objective of this study was to determine if the timing of vaccination during a receiving period will alter feed intake and vaginal temperature.

NULL HYPOTHESIS: Vaccination timing will not alter feed intake and vaginal temperature.

MATERIALS AND METHODS

- Thirty six crossbred heifer calves (Angus and Angus crosses; average initial BW = 265 ± 20 kg)
- **TREATMENTS:** CON, control (no vaccination), d 0 vaccination (D0) and a 14-d delayed vaccination (D14).
 - (3 pens/treatment with 4 heifers/pen).
- Heifers were vaccinated subcutaneously on either d 0 (D0) or d 14 (D14) at approximately 1000 with 2 mL of Alpha-7 (Boehringer Ingelheim, Ingelheim Germany) and 2 mL Vision® 8 Somnus (Intervet, Summit, NJ). Control heifers (CON) received no vaccination.

RESULTS

- No differences (P > 0.10) were observed among treatments (D0, D14, and CON) for initial BW, final BW, ADG for d 0 to end, or overall G:F (Table 1).
- Daily intake (g) was measured using the GrowSafe system. A treatment x d interaction (P < 0.05) was observed for feed intake. Daily intake was decreased for D14 versus D0 on d 14 (P < 0.01) and 15 (P < 0.10) and decreased (P < 0.05) on d 15 for the average of vaccinated calves versus CON (Table 1 and Figure 1). Eating rate (g consumed/eating duration) was decreased (P < 0.05) on d 14 for D14 versus D0 (Figure 2).
- A treatment x d interaction (P < 0.01) was observed for vaginal temperature. Vaginal temperature was increased (P < 0.10) on d 1 for D0 versus D14 heifers and increased for D14 versus D0 treatments on d 14 (P < 0.01), 15 (P < 0.05) and 16 (P < 0.05) (Figure 3).

IMPLICATIONS

Vaccinating cattle with a modified live respiratory vaccine will increase body temperature and alter feed intake. Delaying vaccination altered feeding behavior for approximately 3 days versus altered feed intake for 1 day when the vaccine is administered during the start of the receiving period. Managers can use these data when determining vaccination protocols.

Table 1.
Effects of vaccination timing (on arrival versus delayed 14 d) on performance of beef heifers during a 28-d receiving period

Item	Treatments ¹			SEM	P-value contrast ²	
	CON 3 (12)	D0 3 (12)	D14 3 (12)		Con vs. Vacc	D0 vs. D14
BW, kg ^a						
Initial	262	268	266	5.96	0.51	0.84
d 14	286	279	279	5.2		0.32
Final	299	303	301	5.6	0.66	0.76
Performance, d 0 to 28						
ADG, kg	1.3	1.2	1.2	0.10	0.58	0.88
DMI, kg ⁵	9.8	8.8	9.1	0.41	0.16	0.64
G:F	0.13	0.14	0.13	0.01	0.82	0.53

¹ Treatments were day of vaccination: CON = Control, no vaccination; D0 = heifers received respiratory (IBR, PI3, BVD, BRSV) vaccination on d 0 of the receiving period; and D14 = heifers received respiratory (IBR, PI3, BVD, BRSV) vaccination on d 14 of the receiving period.

² Pooled SEM.

³ Contrasts evaluated were CON versus average of vaccinated heifers and d 0 vaccination versus d 14 vaccination.

⁴ Heifers were weighed two consecutive d at the beginning and end of the experiment.

⁵ A treatment x day interaction (P < 0.05) was observed for intake; therefore, data were analyzed by day. Data are presented in Figure 2

Figure 1.
Daily DMI for heifers receiving a viral vaccination on d 0 and d 14 of the receiving period

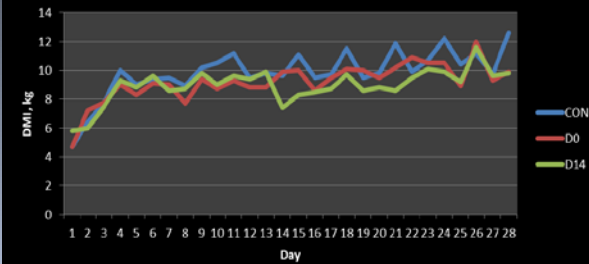


Figure 2.
Eating rate (g consumed/eating duration) for heifers receiving viral vaccinations on d 0 and d 14 of the receiving period

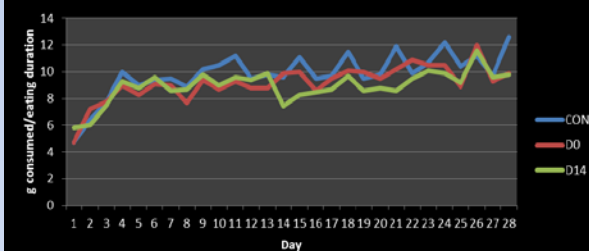


Figure 3.
Daily vaginal temperature response of heifers to a viral vaccination on d 0 and d 14 of the receiving period

