

A Comparison of Titanium® 5 L5 HB and Bovi-Shield® 4 L5 Following Virulent Infectious Bovine Rhinotracheitis Virus Challenge

Elanco Study No. TR-04



Study overview

The role of infectious bovine rhinotracheitis (IBR) in the bovine respiratory disease complex in feeder calves is well-documented. IBR can be a problem not only upon arrival, but also during much of the feeding period. Many cattle are revaccinated against IBR midway through the feeding period to address inadequate duration of immunity or poor protection.

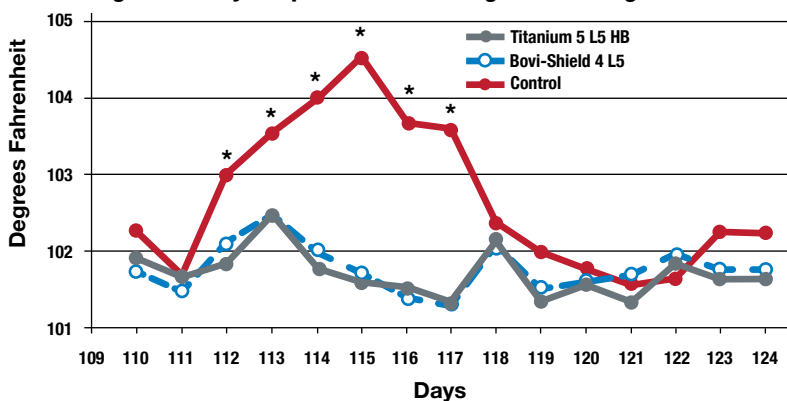
This immunogenicity study was conducted to evaluate effectiveness of Titanium 5 L5 HB and another modified-live virus (MLV) vaccine against a virulent IBR challenge 110 days after initial vaccination.

Background information

- Included 36 healthy, IBR-susceptible (serum-neutralization index < 1:2) cattle from 12 to 16 months of age
- Cattle were assigned randomly to three treatment groups: Titanium 5 L5 HB (15), Bovi-Shield 4 L5 (15) and unvaccinated controls (6)
- Vaccines were administered via a 2 mL intramuscular (IM) dose in the neck on Day 0
- Cattle were observed for adverse reactions from Day 0 through Day 7
- On Day 109, serum samples were used to verify seronegative status of control cattle
- On Day 110, an IBR virus (Cooper strain) was administered intranasally to all test cattle
- Researchers took rectal temperatures and observed animals for clinical signs from Day 110 through Day 124
- Titanium 5 L5 HB is an MLV vaccine that protects against bovine viral diarrhea (BVD) virus, types 1 and 2, IBR, parainfluenza₃ (PI₃) and bovine respiratory syncytial virus (BRSV), and includes a bacterin with killed *Leptospira canicola*, *L. grippotyphosa*, *L. hardjo*, *L. hardjo-bovis*, *L. icterohaemorrhagiae* and *L. pomona*
- Bovi-Shield 4 L5 is an MLV vaccine indicated for BVD virus, types 1 and 2, IBR, PI₃ and BRSV, with a bacterin including killed *L. canicola*, *L. grippotyphosa*, *L. hardjo*, *L. icterohaemorrhagiae* and *L. pomona*

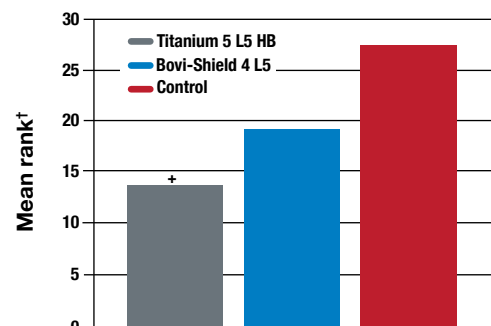
Study results

Figure 1. Body temperatures following IBR challenge



*Indicates a difference between controls, and either Titanium or Bovi-Shield vaccinates ($P < 0.05$). No differences were detected between vaccinated groups at any point in time.

Figure 2. Average daily clinical-score ranking following IBR challenge

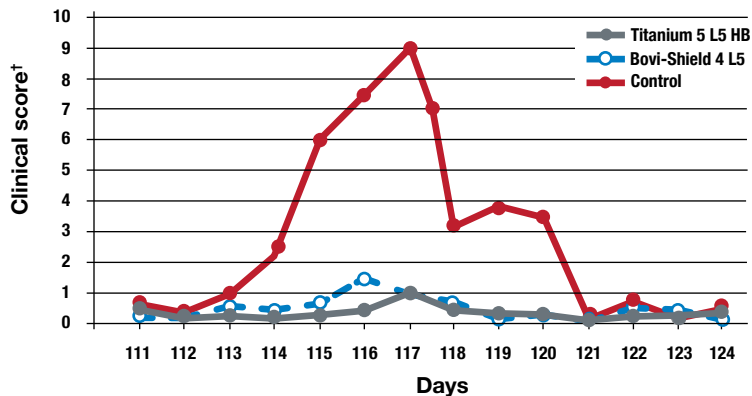


[†]Clinical scores were summed throughout the 14-day post-challenge period, then ranked; the ranks then were averaged for each treatment.

*Indicates Titanium vaccinates showed reduced clinical signs compared to controls ($P < 0.05$).

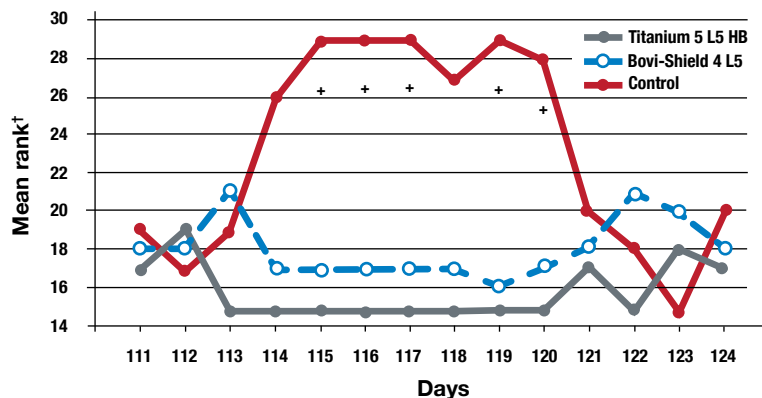
The difference between Bovi-Shield vaccinates and controls was not significant.

Figure 3. Mean daily clinical score following IBR challenge



[†]Clinical signs (depression, respiratory distress, nasal discharge, nasal lesions, ocular discharge, appetite and coughing) were assigned a numeric value based on severity.

Figure 4. Daily clinical-score ranking following IBR challenge



Clinical scores were assessed using the Kruskal-Wallis nonparametric test; when this test revealed significant differences ($P < 0.05$), researchers used a pairwise Dunn's procedure to further compare test groups.

[†]Within each day, clinical scores were ranked, with the average score ranks for each treatment plotted.

[‡]Indicates Titanium vaccinates showed reduced clinical signs compared to controls ($P < 0.05$).

Key findings

- No systemic or site-directed adverse reactions were detected in vaccinates during the post-vaccination observation period
- Vaccinated cattle had significantly lower rectal temperatures than control cattle
- Five of six control animals exhibited clinical signs indicative of IBR infection after the challenge
 - Titanium 5 L5 HB vaccinates had significantly lower clinical scores than controls
 - Clinical scores of Bovi-Shield 4 L5 vaccinates were not significantly different from either controls or Titanium 5 L5 HB vaccinates
- Titanium 5 L5 HB and Bovi-Shield 4 L5 prevented clinical disease associated with IBR infection for at least 110 days post-vaccination

The label contains complete use information, including cautions and warnings. Always read, understand and follow the label and use directions.

Do not vaccinate within 21 days of slaughter.

