



Effect of Vaccination with Titanium 5 on Milk Production in Dairy Cattle

Elanco Study No. TR-09

Study overview

Although vaccine-related stress can be difficult to measure in cattle, researchers have found that vaccines can have a significant negative effect on milk production for several days following administration.^{1,2,3} This field trial was conducted to compare post-vaccination milk production in dairy cows receiving Titanium® 5 with that of controls.

Background information

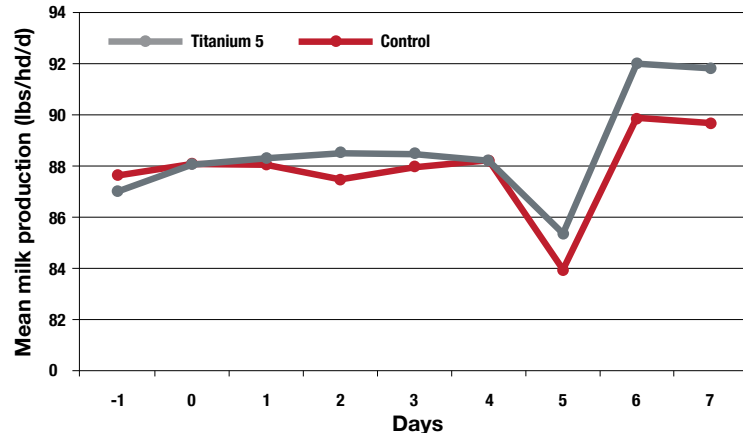
- Included 82 healthy, early-lactation Holstein cows milked three times per day and not scheduled for breeding during the trial
 - Divided into first-lactation and multiparous groups — 36 and 46 cows, respectively
 - Within groups, rank-ordered by average milk production from Day -5 through Day -1
- Blocked by milk production, matched pairs were assigned randomly to two treatment groups:
 - 1) Titanium 5, administered subcutaneously (SQ) in the neck on Day 0
 - 2) Untreated controls
- Cows were observed for adverse reactions from Day 0 through Day 7
- Used a mixed-model, split-plot statistical analysis to evaluate daily milk production
- Titanium 5 is a modified-live virus vaccine that protects against bovine viral diarrhea (BVD) virus, types 1 and 2, infectious bovine rhinotracheitis (IBR), parainfluenza₃ (PI₃) and bovine respiratory syncytial virus (BRSV)

Study results

Table 1. Mean milk production by treatment group

Treatment group	No. of animals	Milk production (lbs/hd/d)
Titanium 5	41	88.7
Unvaccinated control	41	87.9

Figure 1. Mean daily milk production by treatment group



Key finding

There was no significant difference in milk production between dairy cows vaccinated with Titanium 5 and the control group during the nine-day test period.

¹Musser, J. M., and K. L. Anderson. 1996. Effect of vaccination with an Escherichia coli bacterin-toxoid on milk production in dairy cattle. J. Am. Vet. Med. Assoc. 209(7):1291-1293.
²Bosch, J. C., K. Frankena, and J. T. van Oirschot. 1997. Effect on milk production of vaccination with a bovine herpesvirus 1 gene-deleted vaccine. Veterinary Record. 140:196-199.
³Cullor, J. S. 1994. Cullor, J. S. 1994. Safety and efficacy of gram-negative bacterial vaccines. The Bovine Proceedings. (26):13-18.

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.

