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Efficacy and duration of immunity of *Campylobacter fetus* vaccine as measured by pregnancy rate in heifers challenged at breeding.

Efficacy of Vira Shield 6 + VL5 and Vib Shield Plus L5 for Protection Against Vibriosis.

Host Animal Efficacy Study

Key Findings

- Heifers inoculated with Vib Shield Plus L5 were protected against vibriosis for 360 days post-vaccination.
- 100% of vaccinated heifers were protected compared to 67% of nonvaccinated controls.
- Serological titers remained elevated throughout the vaccination period, indicating a robust immune response.

Study Overview

Bovine genital campylobacteriosis results in transient infertility in the cow associated with reproductive tract inflammation associated with endometritis. Bulls are asymptomatic carriers of the venereal disease. Historically, research demonstrated that duration of immunity is shorter than 4 ½ months and recommended twice a year vaccination in some management programs (1). This current study demonstrates the 360 day duration of immunity by the Vira Shield line against challenge by *Campylobacter fetus* in breeding heifers.

A comprehensive study was conducted to evaluate the efficacy and duration of immunity provided by the *Campylobacter fetus* bacterin (Vib Shield Plus L5) in naive heifers.

Trial Design

Objectives: Assess the duration of immunity provided by a single vaccination of VIB SHIELD-PLUS. Compare pregnancy rates between vaccinated and non-vaccinated heifers.

Study Design

Thirty-two virgin heifers, serologically naïve to *C. fetus* were randomly assigned to one of two treatment groups.

Groups

1. Vaccinated Group (n=17): Received a single 2 ml dose of VIB SHIELD-PLUS intramuscularly.
2. Control Group (n=15): No vaccination.

Procedures

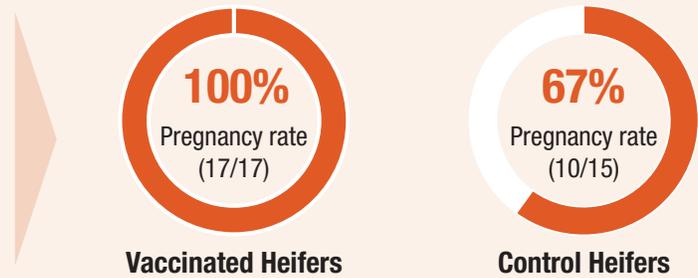
Serological Evaluations: Conducted at various stages (Pre-vaccination, initiation of breeding, and post-challenge).

Challenge Procedures

Bulls (5) and carrier heifers (4) were challenged Day -4 prior to and at initial breeding period, Day 0, with *C. fetus* culture directly into the prepuce sheath or cervix of each respective animal. Subsequent inoculations of culture were administered to these animals on Days 7, 14, 21, 28, and 42 post start of the breeding and challenge initiation. The bulls were used for breeding and the 4 carrier heifers were maintained in estrus with dinoprost to perpetuate the challenge throughout the breeding period. Naive Control and Vaccinated heifers treatment groups were exposed to bulls and infected with *C. fetus* by direct inoculation into the cervix on Days 0 and 14 of the breeding period.

Study Results

Pregnancy Outcomes: There was a significant difference in the two treatment group's pregnancy rate (P=0.025).



Serological Titers

Geometric Mean Titers to *C. fetus*

Treatment	Pre-vaccination	360 Days Post-vaccination (Day Post-Breeding/Challenge 0)	Day Post-Breeding/Challenge		
			14	28	42
Vaccinate	2	113	756	533	355
Control	8	38	105	147	102

Vaccinated heifers maintained high geometric mean antibody titer to *C. fetus* for 360 days prior to challenge via vaginal inoculation and exposure to *C. fetus* bulls during the breeding season.

Conclusion

VIB SHIELD-PLUS is equal to the Vibrio/Campylobacter available in Vira Shield 6 + VL5 and provides robust and long-lasting immunity against vibriosis, with a significant impact on pregnancy rates and overall reproductive success in heifers. These results demonstrate the vaccine's efficacy and ability to deliver protection from reproductive failure for up to a year post-vaccination.

1. Hoffer MA. Bovine campylobacteriosis: a review. Can Vet J. 1981 Nov;22(11):327-30. PMID: 7039808; PMCID: PMC1789996.

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