

# Fetal Protection Against a Type 2 Bovine Viral Diarrhea Virus (BVDV) Challenge in Cattle Vaccinated with a Type I Modified Live BVDV Vaccine

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## Introduction

Bovine viral diarrhea virus (BVDV) is a continual concern to the cattle industry. Infection with BVDV may result in either acute disease or persistently infected, asymptomatic carriers. Clinical signs of acute disease include depression, anorexia, reproductive failure, respiratory and gastrointestinal disease in cattle. Acute BVDV infection of pregnant cattle at 30-150 days of gestation may result in calves that are persistently infected (PI). Due to intermittent shedding of virus, these calves pose a continual threat to other cattle. In addition, calves may be at risk for superinfection with a different strain of BVDV, resulting in high mortality. The objective of this study was to evaluate the efficacy of a BVDV Type I modified-live virus (MLV) vaccine to protect against the development of persistently infected calves following a homologous Type 2 challenge of heifers.

## Materials and Methods

Fourteen heifers were vaccinated with a BVDV MLV Type 1 vaccine (Arsenal<sup>®</sup> 4.1, Novartis Animal

Health) 46 days prior to breeding. Eight heifers were used as non-vaccinated controls (NVC). All heifers were challenged with BVDV Type II (PA131) at 75-80 days of gestation. Individual heifers were observed for evidence of clinical disease and abortion. Fetuses were recovered at approximately 150 days of gestation and fetal tissues were analyzed for BVDV by virus isolation.

## Results

One fetus from the vaccinated group (1/14) and all eight fetuses from the control group (8/8) were positive for BVDV. Therefore, a 92.8% protection rate against the Type II challenge was obtained in the heifers that were administered the BVDV Type I MLV vaccine.

## Significance

A BVDV Type I vaccine protected 92.8% of fetuses from BVDV Type II infection. The use of this vaccine may reduce the incidence of persistently infected calves and provide cross-protection from a BVDV Type I or Type II infection.