

## Vira Shield® 6+VL5 HB

**Bovine Rhinotracheitis-Virus Diarrhea-Parainfluenza 3-Respiratory Syncytial Virus Vaccine, Killed Virus-Campylobacter Fetus-Leptospira Canicola-Grippotyphosa-Hardjo-Icterohaemorrhagiae-Pomona Bacterin**

For use in healthy breeding cattle, including pregnant cows and heifers, as an aid in the prevention of disease caused by infectious bovine rhinotracheitis (IBR), bovine virus diarrhea (BVD Type 1 and BVD Type 2), parainfluenza Type 3 (PI<sub>3</sub>), bovine respiratory syncytial (BRSV) viruses, and *Campylobacter fetus*, *Leptospira canicola*, *grippotyphosa*, *hardjo-bovis*, *icterohaemorrhagiae*, and *pomona*. For use in calves vaccinated at four weeks of age, or older, as an aid in the prevention of hardjo-bovis kidney colonization, and as an aid in preventing urinary shedding and reproductive tract infection for 12 months. Produced from noncytopathic (BVD Type 1 and BVD Type 2) and cytopathic (BVD Type 1) isolates. Vaccinated animals subsequently exposed to *L. borgpetersenii* serovar *hardjo* (Type: *hardjo-bovis*) have been shown to clear renal infections within 8 weeks of exposure.

## Vira Shield® 6+VL5 HB Somnus

**Bovine Rhinotracheitis-Virus Diarrhea-Parainfluenza 3-Respiratory Syncytial Virus Vaccine, Killed Virus-Campylobacter Fetus-Haemophilus Somnus-Leptospira Canicola-Grippotyphosa-Hardjo-Icterohaemorrhagiae-Pomona Bacterin**

For use in healthy breeding cattle, including pregnant cows and heifers, as an aid in the prevention of disease caused by infectious bovine rhinotracheitis (IBR), bovine virus diarrhea (BVD Type 1 and BVD Type 2), parainfluenza Type 3 (PI<sub>3</sub>), bovine respiratory syncytial (BRSV) viruses and *Campylobacter fetus*, *Histophilus sanni*, *Leptospira canicola*, *grippotyphosa*, *hardjo*, *icterohaemorrhagiae*, and *pomona*. Produced from noncytopathic (BVD Type 1 and BVD Type 2) and cytopathic (BVD Type 1) isolates.

### Convenient, broad-spectrum protection

- Protection against up to 13 disease-causing organisms in one bottle

### First and only inactivated viral vaccine with Lepto hardjo-bovis

- Lepto hardjo-bovis is the most common cause of bovine leptospirosis in U.S. cattle<sup>1</sup>
- Contains a Lepto hardjo-bovis antigen isolated from a disease outbreak in the United States
- Demonstrates 12-month duration of immunity against Lepto hardjo-bovis<sup>2</sup>

### Broader BVD protection

- The only vaccine with three BVD isolates
- Contains noncytopathic (NCP) Type 1, NCP Type 2 and cytopathic (CP) Type 1 BVD

### Long-Lasting BVD protection

- Backed by independent research showing its Type 2 protection remains strong for 11 months<sup>3</sup>

## Vira Shield® 6+VL5 HB

ADJUVANT: Xtend® SP

**DIRECTIONS:** Shake well before using. Administer 5 mL subcutaneously 2 – 4 weeks prior to breeding. In accordance with Beef Quality Assurance guidelines, this product should be administered subcutaneously (under the skin) in the neck. Revaccinate with Vira Shield 6+L5 HB in 4 – 5 weeks. Revaccinate annually or as recommended by your veterinarian.

**PRECAUTIONS:** Store out of direct sunlight at 2° – 7° C (35° – 45° F). DO NOT FREEZE. Use entire contents when first opened. Do not vaccinate within 60 days prior to slaughter. Transient swelling may occur at the site of injection. Milk reduction and transient depression may be observed in lactating dairy cows for 3 – 6 days following vaccination. Anaphylactic reactions may occur. Symptomatic treatment: Epinephrine. Contains amphotericin B, gentamicin and thimerosal as preservatives.

## Vira Shield® 6+VL5 HB Somnus

ADJUVANT: Xtend® SP

**DIRECTIONS:** Shake well before using. Administer 5 mL intramuscularly in the neck 2 – 4 weeks prior to breeding. Revaccinate with Vira Shield 6+L5 HB Somnus in 4 – 5 weeks. Revaccinate annually or as recommended by your veterinarian.

**PRECAUTIONS:** Store out of direct sunlight at 2° – 7° C (35° – 45° F). DO NOT FREEZE. Use entire contents when first opened. Do not vaccinate within 60 days prior to slaughter. Transient swelling may occur at the site of injection. Milk reduction and transient depression may be observed in lactating dairy cows for 3 – 6 days following vaccination. Anaphylactic reactions may occur. Symptomatic treatment: Epinephrine. Contains amphotericin B, gentamicin and thimerosal as preservatives.

## Product Numbers

### Vira Shield® 6+VL5 HB

378 - 50 mL - 10 doses  
379 - 250 mL - 50 doses

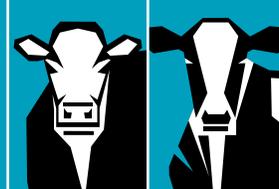


## Product Numbers

### Vira Shield® 6+VL5 HB Somnus

381 - 50 mL - 10 doses  
382 - 250 mL - 50 doses





# Technical disease information

## Leptospirosis

In North America, the most common cause of bovine leptospirosis is *L. borgpetersenii* serovar hardjo (Type: hardjo-bovis).<sup>1</sup> Research shows that hardjo-bovis is the most common host-adapted U.S. serovar and is most frequently associated with reproductive losses,<sup>4</sup> although an infected animal often will not show clinical signs.

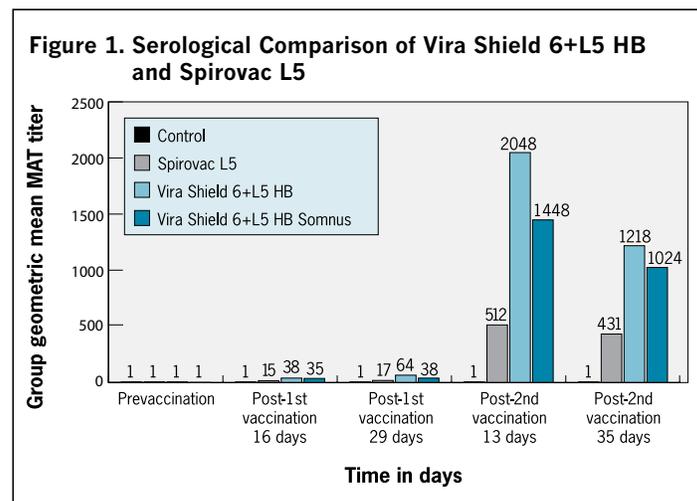
The most economically significant result of Lepto hardjo-bovis is persistent infection because the bacterium lives in the kidneys of carrier animals and is spread through the urine to other animals. Lepto hardjo-bovis can be extremely costly for beef and dairy producers, due to significantly lower conception rates and early embryonic deaths. The pathogen may be transmitted during breeding, as well as from cow to fetus. Calves may be born as congenitally infected maintenance hosts.

**Vira Shield® 6+VL5 HB** and **Vira Shield 6+VL5 HB Somnus** include a Lepto hardjo-bovis isolate that originates from a U.S. problem herd. It is the only vaccine using a Lepto hardjo-bovis component of U.S. origin.

In a head-to-head serology study, a superior geometric mean MAT titer was observed in animals vaccinated with the Lepto hardjo-bovis component of **Vira Shield 6+VL5 HB**.<sup>5</sup> Two weeks after the second vaccination, Vira Shield vaccinates had a geometric mean titer level of 2,048 vs. a geometric mean titer level of 512 for Spirovac® L5. See **Figure 1**.

### Trial protocol:

- 28 Holsteins were randomly assigned to one of four test groups. Each vaccination group had eight animals and the control group had four animals.
- Animals were vaccinated following label directions.
- Serum samples were titered for Lepto hardjo-bovis antibodies by microscopic agglutination.
- Group titers are a geometric mean of individual titers per test day and group.



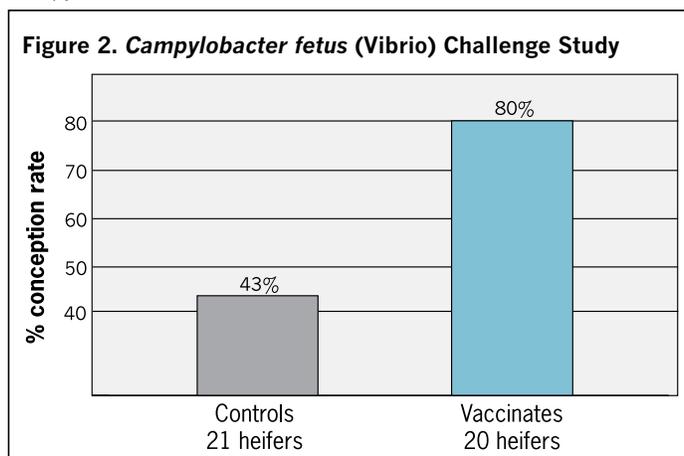
1. Zuerner RL, et al. Repetitive sequence element cloned from *Leptospira interrogans* serovar hardjo type hardjo-bovis provides a sensitive diagnostic probe for bovine leptospirosis. *J Clin Microbiol* 1988;26:2495-2500.  
 2. Data on file at Novartis Animal Health US, Inc. 2011.  
 3. Chase CCL. Protection with an inactivated vaccine against IBR, BRSV and BVDV. Paper presented at: Annual meeting of the American Association of Bovine Practitioners. 1995; San Antonio, TX. Vira Shield has no approved claim for duration of immunity for Type 2 BVD.  
 4. Hairgrove T. Leptospirosis in cattle. *AABP Proceedings*. Vol. 37. Sept. 2004.

## Campylobacteriosis

Bovine genital campylobacteriosis, previously known as vibriosis, is a venereal disease of cattle caused by *Campylobacter fetus* (Vibrio). This disease is spread from bull to cow and cow to bull during breeding. It can also be spread through artificial insemination if pipettes or semen are contaminated.

The presence of the disease should be suspected when conception rates for a herd drop below 90 percent. Definite diagnosis can be made by identifying the organism in the mucus from the cow's reproductive tract or in preputial fluid from the infected bull.

Research shows that vaccination with the vibrio component of **Vira Shield 6+VL5 HB** can improve conception rates.<sup>6</sup> In a severe prebreeding challenge, nearly twice as many heifers became pregnant in the vaccinated group, as shown in **Figure 2**. These animals were challenged with two different strains of *Campylobacter fetus*.



## Bovine Virus Diarrhea (BVD)

BVD virus is one of the most prevalent and challenging bovine viral pathogens in the world. It suppresses the immune system, which leads to secondary infections from other pathogens. The virus manifests itself in numerous ways, including:

- Bovine respiratory disease
- Hemorrhagic (bleeding) syndrome
- Reproductive disorders including infertility, abortion and neonatal defects
- Persistently infected (PI) calves that shed enormous amounts of infective virus throughout their lives
- Gastrointestinal disorders
- Mucosal disease in persistently infected calves

BVD viral strains fall into two genotype categories—BVD Type 1 and BVD Type 2. BVD viral strains are further classified according to biotype. They can be cytopathic (CP) or noncytopathic (NCP). Researchers have determined that NCP BVD is the more prevalent biotype. In fact, NCP biotypes have been found to cause up to 95 percent of BVD outbreaks.<sup>7</sup>

**Vira Shield** is the only product line to feature 3-way BVD protection. All **Vira Shield 6** combinations contain NCP Type 1 and NCP Type 2, as well as CP Type 1.

**Customer Service**  
**(800) 843-3386**

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 Spirovac is a registered trademark of Zoetis Inc.  
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5. Data on file, Study #05NAHLW5016. Novartis Animal Health US, Inc. 2006.  
 6. Data on File, Novartis Animal Health US, Inc.  
 7. Chase CCL, Elmowalid G, Yousef AAA. The immune response to bovine viral diarrhea virus: a constantly changing picture. *Veterinary Clinics of North America: Food Animal Practice* 2004;20:95-114.