



Vira Shield® 6+VL5^{HB}

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

Vira Shield® 6+VL5^{HB} Somnus

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

Convenient, broad-spectrum protection

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

First and only inactivated viral vaccine with vibrio and *Lepto hardjo-bovis*

- *L. hardjo-bovis* is the most common cause of bovine leptospirosis in U.S. cattle¹
- Contains an *L. hardjo-bovis* antigen isolated from a disease outbreak in the United States

Broader, stronger 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 protection

- Backed by independent research showing its Type 2 protection remains strong for 11 months²

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



Customer Service (800) 843-3386

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Technical disease information

Leptospirosis

In North America, the most common cause of bovine leptospirosis is *L. borgpetersenii* serovar hardjo (Type: *hardjo-bovis*).¹ Research shows that *hardjo-bovis* is the most common host-adapted U.S. serovar and is most frequently associated with reproductive losses,³ although an infected animal often will not show clinical signs.

The most economically significant result of *L. hardjo-bovis* is persistent infection, because the bacterium lives in the kidney 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.

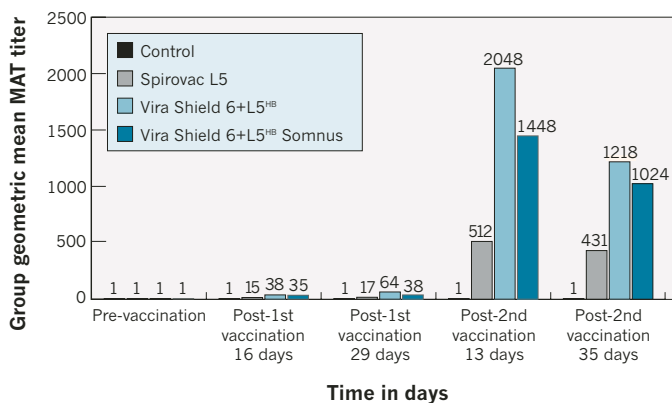
Vira Shield 6+VL5^{HB} and **Vira Shield 6+VL5^{HB} Somnus** include an *L. hardjo-bovis* isolate that originates from a U.S. problem herd. It is the only vaccine using an *L. hardjo-bovis* component of U.S. origin.

In a head-to-head serology study, a superior geometric mean MAT titer was observed in animals vaccinated with the *L. hardjo-bovis* component of **Vira Shield 6+VL5^{HB}**.⁴ 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 *L. hardjo-bovis* antibodies by microscopic agglutination.
- Group titers are a geometric mean of individual titers per test day and group.

Figure 1. Serological comparison of Vira Shield 6+L5^{HB} and Spirovac L5



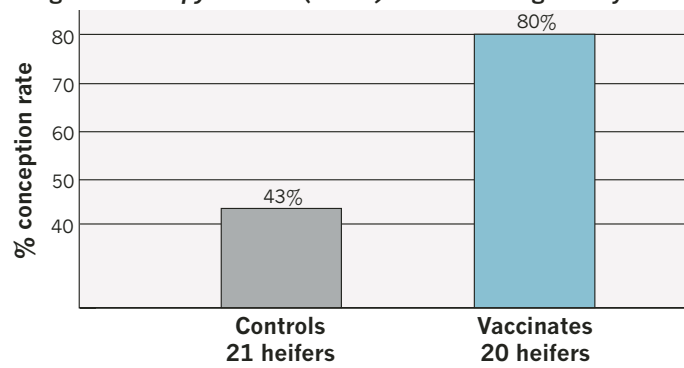
Campylobacteriosis

Bovine genital campylobacteriosis, previously known as vibriosis, is a venereal disease of cattle caused by *Campylobacter (Vibrio) fetus*. 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.⁴ In a severe pre-breeding 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*.

Figure 2. Campylobacter (Vibrio) fetus challenge study



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 greater than 90 percent of BVD outbreaks.⁵

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.

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. 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, Texas. Vira Shield has no approved claim for duration of immunity for Type 2 BVD.

3. Hairgrove T. Leptospirosis in cattle. *AABP Proceedings*. Vol. 37. Sept. 2004.
 4. Data on file, Novartis Animal Health US, Inc.
 5. Chase CCL. *Vet Clin Food Anim*. 2004;20:95-114.