

Vira Shield® 6+L5^{HB}

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

Vira Shield® 6+L5^{HB} Somnus

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

Broad-spectrum protection

- Combats up to 12 disease-causing organisms

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

- Most common cause of bovine leptospirosis in U.S. cattle¹
- Contains an *L. hardjo-bovis* antigen isolated from a disease outbreak on a working U.S. dairy

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

Safe for use in all classes of cattle, even pregnant cows

Recommended for use in dry dairy cows

- Avoids concerns over lost milk production that may be associated with vaccination or other stressful procedures done during lactation

Vira Shield® 6+L5^{HB}

ADJUVANT: Xtend® SP

DIRECTIONS: Shake well before using. Administer 5 mL subcutaneously. In accordance with Beef Quality Assurance guidelines, this product should be administered subcutaneously (under the skin) in the neck. Revaccinate in 4-5 weeks. Vaccinate dairy cows at dry-off. 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. Anaphylactic reactions may occur. Symptomatic treatment: Epinephrine. Contains amphotericin B, gentamicin and thimerosal as preservatives.

Vira Shield® 6+L5^{HB} Somnus

ADJUVANT: Xtend® SP

DIRECTIONS: Shake well before using. Administer 5 mL intramuscularly in the neck. Revaccinate in 4-5 weeks. Vaccinate dairy cows at dry-off. Revaccinate annually or as recommended by your veterinarian.

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Product Numbers

Vira Shield® 6+L5^{HB}
370 - 50 mL - 10 doses
371 - 250 mL - 50 doses



Product Numbers

Vira Shield® 6+L5^{HB} Somnus
372 - 50 mL - 10 doses
373 - 250 mL - 50 doses



Customer Service (800) 843-3386

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Technical disease information

Leptospirosis

Leptospirosis is found worldwide, but is more common in warm, wet climates. 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,² although an infected animal often will not show clinical signs. *L. pomona*, for which cattle are an incidental host, is also associated with significant reproductive problems and affected animals are more likely to show clinical signs of disease.

Clinical signs of leptospirosis in incidental hosts can include abortion, typically between four and seven months of gestation; birth of premature and weak calves; milk drop syndrome and severe kidney and liver disease.

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. *L. hardjo-bovis* can be extremely costly for dairy and beef 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+L5^{HB} and **Vira Shield 6+L5^{HB} Somnus** include an *L. hardjo-bovis* isolate that originates from a real U.S. problem herd. It is the only vaccine using an *L. hardjo-bovis* component of U.S. origin.

In head-to-head serology studies, **Vira Shield 6+L5^{HB}** demonstrated a superior humoral response when compared to Spirovac[®] L5.³ Two weeks after the second vaccination, **Vira Shield 6+L5^{HB}** had a geometric mean titer level of 2,048 versus a geometric titer level of 512 for Spirovac L5. **See Figure 1.**

Trial protocol:

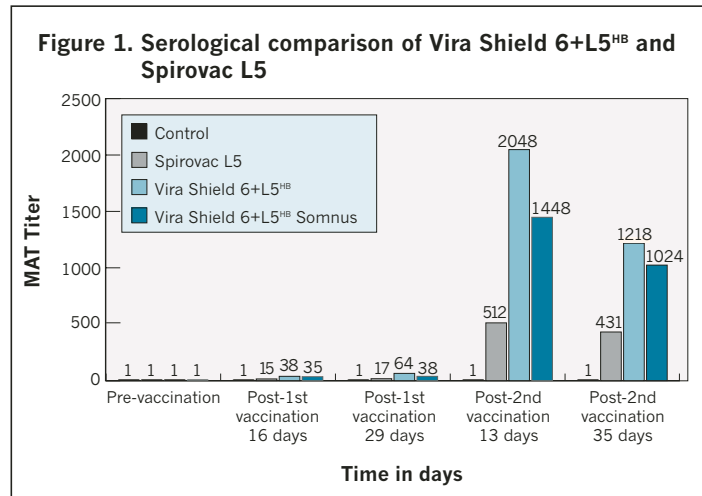
- 28 Holsteins were randomly assigned to one of four test groups. Each vaccination group had eight animals and the control group had four animals.
- Animals were vaccinated following label directions.
- Serum samples were titered for *L. hardjo-bovis* antibodies by microscopic agglutination.
- Group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

Bovine Virus Diarrhea (BVD)

BVD virus is one of the most prevalent and challenging bovine viral pathogens in the world. There are literally hundreds of BVD viral strains, and the number continues to increase due to the mutating nature of the virus.

The BVD virus 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.⁴

Vira Shield is the only product 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. A recent study shows that adding a third BVD strain improves immune responses against these biotypes and genotypes. **See Table 1.**

Table 1. Immune response measured via titers 28 days post-second vaccination

	CP Type 1	NCP Type 1	NCP Type 2
2-way BVD (Vira Shield [®] 2)	1:394	1:38	1:72
3-way BVD (BVD Shield [®] 3*)	1:508	1:77	1:236

* BVD Shield contains the same three BVD antigens that are in Vira Shield 6+L5^{HB}.

Infectious Bovine Rhinotracheitis (IBR)

IBR, sometimes referred to as “red nose,” is caused by Bovine Herpesvirus 1. Prior to the advent of large feedlots and dairy complexes, the primary manifestation of IBR was in a reproductive form called IPV (infectious pustular vulvovaginitis). Today, the IBR virus is associated with upper respiratory tract infections, bovine respiratory disease, eye disorders and reproductive disorders.

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. Hairgrove T. Leptospirosis in cattle. *AABP Proceedings.* Vol. 37. Sept. 2004.

3. Data on file, Study # 05NAHLW5016. Novartis Animal Health US, Inc. 2006.
4. Chase CCL. Department of Veterinary Science, South Dakota State University, Brookings, SD.