

## Clostridium Chauvoei-Septicum-Novyi-Sordellii-Perfringens Types C & D-Pasteurella Haemolytica Bacterin-Toxoid

### One Shot Ultra® 7

**PRODUCT DESCRIPTION:** One Shot Ultra 7 is for vaccination of healthy cattle as an aid in preventing blackleg caused by *Clostridium chauvoei*, malignant edema caused by *Cl. septicum*, black disease caused by *Cl. novyi*, gas-gangrene caused by *Cl. sordellii*, enterotoxemia and enteritis caused by *Cl. perfringens* types B, C, and D, and bovine pneumonic pasteurellosis caused by *Pasteurella haemolytica* type A1. Although *Cl. perfringens* type B is not a significant problem in North America, immunity is provided by the beta toxoid of type C and the epsilon toxoid of type D. The freeze-dried component is a preparation of inactivated whole cultures of *P. haemolytica* propagated to increase the production of leukotoxin and capsular and cell-associated antigens. The liquid component consists of killed, standardized cultures of *Cl. chauvoei*, *Cl. septicum*, *Cl. novyi*, *Cl. sordellii*, and *Cl. perfringens* types C and D, with a special, water-soluble adjuvant (Stimugen™) to enhance the immune response.

**DISEASE DESCRIPTION:** Pneumonic pasteurellosis caused by *P. haemolytica* type A1 has resulted in substantial economic losses in the cattle industry.<sup>1</sup> The disease condition, known as shipping fever, often prevents optimal weight gain in infected cattle and may result in death. Clinical signs may include difficult breathing, nasal discharge, reduced feed intake, fever, and increased pulse rate.

*P. haemolytica* type A1, a normal constituent of the bovine nasopharynx, increases greatly in number when an animal undergoes stress (transport, change in climate, viral infections). This rapid increase in bacterial population adds to the deposition of organisms in the lungs. In the lung, *P. haemolytica* type A1 may grow rapidly and produce a leukotoxin which incapacitates leukocytes (alveolar macrophages and polymorphonuclear neutrophils).<sup>2</sup> When the bacterium is engulfed by a weakened leukocyte, the leukocyte is unable to destroy the bacterium, allowing the bacterium to produce leukotoxin, which kills the leukocyte. As the leukocyte dies, it releases enzymes that add to the fibrinopurulent consolidation and local areas of necrosis characteristic of pneumonic pasteurellosis (shipping fever).

**SAFETY AND EFFICACY:** In safety studies involving 595 animals, no untoward reactions were noted following vaccination. Vaccination did result in small, temporary injection site swellings.

Efficacy of the *P. haemolytica* fraction in One Shot Ultra 7 was demonstrated in a challenge-of-immunity study. Cattle (300–550 lb) vaccinated with 1 dose of One Shot Ultra 8 were subjected to severe experimental challenge at 2 weeks postvaccination with a heterologous strain of *P. haemolytica* type A1. Four days postchallenge, animals were necropsied and individual lungs were evaluated for lung damage and lesions characteristic of *P. haemolytica* type A1 infection. Vaccinates demonstrated a statistically significant reduction (82.6%) in lung damage compared to animals receiving a placebo. Immunogenicity of the clostridial fractions was confirmed by serologic studies.

### **DIRECTIONS:**

1. *General Directions:* Vaccination of healthy cattle is recommended. Aseptically rehydrate the freeze-dried bacterin-toxoid (One Shot Ultra 7) with the accompanying vial of diluent (UltraChoice® 7), shake well, and administer 2 mL subcutaneously. In accordance with Beef Quality Assurance guidelines, this product should be administered subcutaneously (SC) under the skin.

2. *Primary Vaccination:* Administer a single 2-mL dose to healthy cattle, followed by a second 2-mL dose of UltraChoice 7, 4–6 weeks later.
3. *Revaccination:* Annual revaccination with a single dose of UltraChoice 7 is recommended. Good management practices support revaccination with One Shot® whenever subsequent stress or exposure is likely.
4. Good animal husbandry and herd health management practices should be employed.

**PRECAUTIONS:**

1. Store at 2°–7°C. Prolonged exposure to higher temperatures may adversely affect potency. Do not freeze.
2. Use entire contents when first opened.
3. Sterilized syringes and needles should be used to administer this vaccine.
4. Do not vaccinate within 21 days before slaughter.
5. Not for use in sheep.
6. Contains formalin as a preservative.
7. Temporary local swelling at injection site may occur after administration.
8. Field reports and a clinical study indicate that a transient reduction in milk production may occur following vaccination of lactating dairy cattle.
9. As with many vaccines, anaphylaxis may occur after use. Initial antidote of epinephrine is recommended and should be followed with appropriate supportive therapy.
10. This product has been shown to be efficacious in healthy animals. A protective immune response may not be elicited if animals are incubating an infectious disease, are malnourished or parasitized, are stressed due to shipment or environmental conditions, are otherwise immunocompromised, or the vaccine is not administered in accordance with label directions.

**REFERENCES:**

1. Martin S, Meek A, Davis D, *et al*: Factors associated with mortality and treatment costs in feedlot calves: The Bruce County Beef Project. *Can J Comp Med* 46:341–349, 1982.
2. Berggren K, Baluyut C, Simonson R, *et al*: Cytotoxic effects of *Pasteurella haemolytica* on bovine neutrophils. *Am J Vet Res* 42(8):1383–1388, 1981.

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