

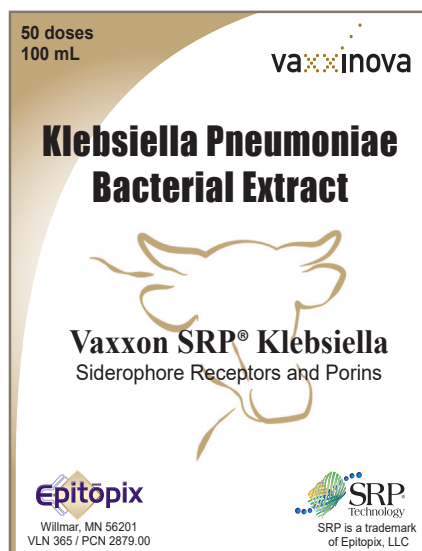
KEEP COWS IN THE HERD LONGER.

60-80% of cows diagnosed with *Klebsiella* mastitis leave the herd within that same lactation period.¹

Klebsiella mastitis is one of the most devastating emerging diseases in the dairy industry. *Klebsiella* is a Gram-negative bacteria associated with environmental mastitis in cattle, which means it can be found almost anywhere and can cause infection through contact. Fecal shedding into the environment coupled with various types of bedding create an ideal growing condition for the survival and transmission of *Klebsiella* bacteria. Dairy cattle that are not culled from the herd due to *Klebsiella* mastitis typically have recurring infections that are costly to the dairy.

References

- ¹Cornell University and Iowa State University research, Patrick Gorden, DVM, Ph.D. Ruth Zadoks and Marcos Munoz, National Mastitis Council Annual Meeting, 2007
²Antigenic Homology of the Inducible Ferric Citrate Receptor (FecA) of Coliform Bacteria Isolated from Herds with Naturally Occurring Bovine Intramammary Infections, Jun Lin, Joseph S. Hogan, and K. Larry Smith, 2009



INDICATIONS: This product has been shown to be effective for vaccination of healthy cattle 22 months or older against mastitis caused by *Klebsiella pneumoniae*. For more information regarding efficacy and safety data, see productdata.aphis.usda.gov.

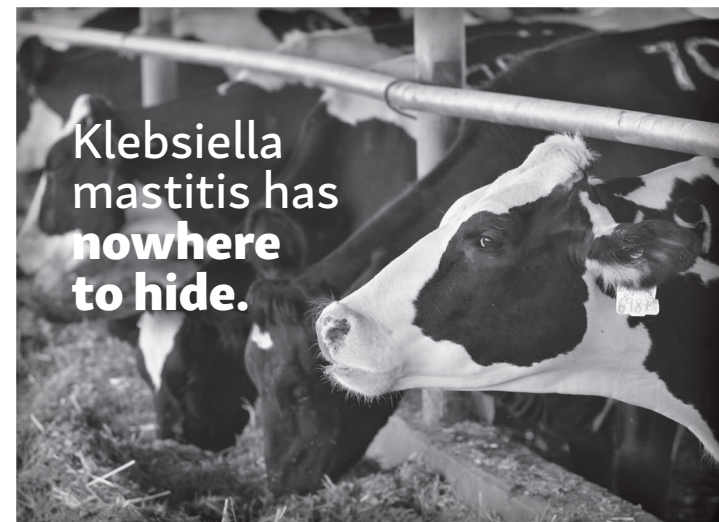
DIRECTIONS: Shake well before use. Administer 2 mL (1 dose) subcutaneously. Re-vaccinate in 2-4 weeks. Heifers should receive their first dose 30 days after calving. Dry cows should be vaccinated twice before calving. Whole-herd vaccination may be done at any stage of lactation. The need for annual booster vaccination has not been established for this product; consultation with a veterinarian is recommended.

CAUTIONS: Store at 35° to 46° F (2° to 8° C). DO NOT FREEZE! Use entire contents when first opened. Do not vaccinate within 60 days of slaughter. Transient swelling at the injection site >5 cm may occur. Heifers <22 months of age should not receive this product until 30 days after calving. In case of allergic response, administer flunixin meglumine and/or epinephrine. Contains formaldehyde and polymyxin-B as preservatives. In case of human exposure, contact a physician. Do not mix with other products. For animal use only.

For more information on Vaxxon SRP Klebsiella, please visit our website at www.vaxxinova.com

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Vaxxon® SRP® Klebsiella Siderophore Receptors and Porins



vaxxinova®

A klebsiella vaccine with SRP[®] technology keeps cows healthy and productive.

Vaxxon SRP Klebsiella from Vaxxinova[®] is the only USDA licensed vaccine for use in the management of mastitis infections caused by Klebsiella – an increasingly challenging disease in dairy cattle. Based on Siderophore Receptor and Porin (SRP[®]) technology, Vaxxon SRP Klebsiella is an exciting new tool to fight Klebsiella mastitis.

71%

REDUCED PREVALENCE OF KLEBSIELLA MASTITIS*

42%

REDUCTION IN SOMATIC CELL COUNT*

+2 lbs per cow per day

INCREASED MILK PRODUCTION*

*IOWA STATE UNIVERSITY RESEARCH, PATRICK GORDEN, DVM, PH.D.



Vaxxon[®] SRP[®] Klebsiella

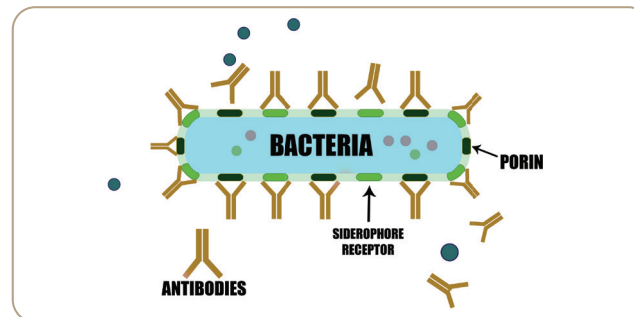
Siderophore Receptors and Porins

KEY FEATURES & BENEFITS

- Vaxxon SRP Klebsiella has been shown to reduce the prevalence of mastitis in the herd by 71%
- The incidence rate of a cow getting mastitis one or more times due to Klebsiella was reduced by 76%
- Vaccinated cows stay in the herd longer; regardless of mastitis infections
- Somatic cell count, an indicator of udder inflammation, was reduced by 42% in the vaccinated cattle
- 2 lb/day gain in milk production per cow, compared to non-vaccinated cows

SRP VACCINE TECHNOLOGY

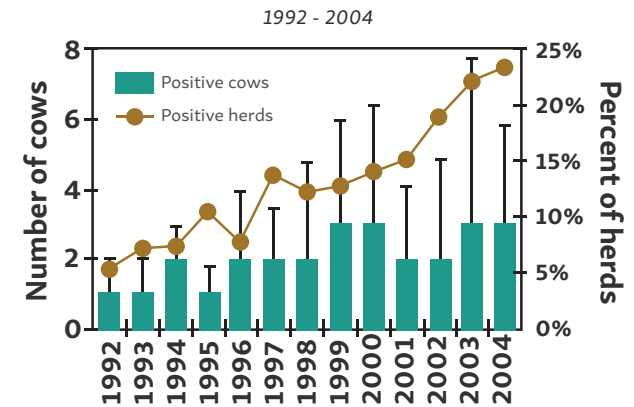
Bacteria require iron to survive. Since most iron in a host is tied up, bacteria produce and release siderophore proteins, which scavenge iron from the local environment. These “siderophores” then bring the iron back into the bacteria through protein pores (porins) specialized for iron acquisition. These pores are referred to as siderophore receptors, or SRP proteins. A vaccine made from SRP proteins will generate antibodies that block the uptake of iron into the bacterial cell.²



HOW COMMON IS KLEBSIELLA MASTITIS?

More herds and more cows within those herds are experiencing cases of Klebsiella mastitis. The prevalence of *Klebsiella pneumoniae*- positive fecal samples from surveys done over a **12 year period** in Northeast herds, have shown a **23% increase** in infection detection. The number of reported cases has been **steadily growing over the past 15 years**, which can be attributed to the usage of recycled manure bedding, although Klebsiella can be found in sand bedding as well.

KLEBSIELLA INFECTED COWS AND HERDS



Source: Ruth Zadoks and Marcos Munoz, National Mastitis Council Annual Meeting, 2007

Klebsiella infections can occur at any time during the lactation period and may also occur during the dry period. Cows in early lactation are at an increased risk for new infections due to the increased stress and immune suppression associated with the postpartum period. Additionally, cows are at an increased risk for mastitis immediately after the dry off period.