

Lysigin® Staph Bacterin in Dairy Heifers Case Study

Key Points

- Somatic Cell Counts (SCC) during first week of lactation, for infected and non-infected udders, were 50% lower for heifers vaccinated with Lysigin.
- Lysigin reduced the number of heifers freshening with *Staphylococcus aureus* infection by 60.9%.
- Vaccination of heifers with **Lysigin® Bacterin** reduced the percentage of heifers culled for any reason by 31.1%.

Study Background

- James River Correctional Center Dairy in central Virginia had a 22,000 lb. rolling herd production average in spring of 2002.
- The SCC average ran about 200,000/mL.
- Milk culture indicated *S. aureus* was present in the herd.
- 46 pregnant heifers were cultured in spring of 2002 and 35.3% were infected with *S. aureus*.

Study Design

Dr. Steve Nickerson and Dr. Ernest Hovingh, who were at Virginia Tech University at the time, set up a Staphylococcus control program working with Shane Brannock and Carolyn Peterson of the dairy.

- They began a culture based therapy program for lactating cows.
- Pregnant heifers were cultured and quarters that were positive for *S. aureus* were treated 60 days (or more) prior to freshening with Cefa-Dri®.
- At freshening, heifers with *S. aureus* positive quarters were treated with Cefa-Lak®.
- Fly control measures were improved.
- Lysigin Staphylococcus Aureus Bacterin study was initiated in heifers.
 - 106 heifers, 6-18 months of age, were qualified for the study.
 - Half of heifers were non-vaccinated controls.
 - Half of heifers received Lysigin twice, 2 weeks apart, and were boosted every six months per label directions.

Samples Collected

- Quarter samples were cultured prepartum and again at freshening.
- SCC were analyzed prepartum and again during the first week of lactation.
- Heifers freshened and results were collected through fall of 2004.

Results

Figure 1. Percentages of heifers and quarters infected from 4/19/02 through 10/5/04

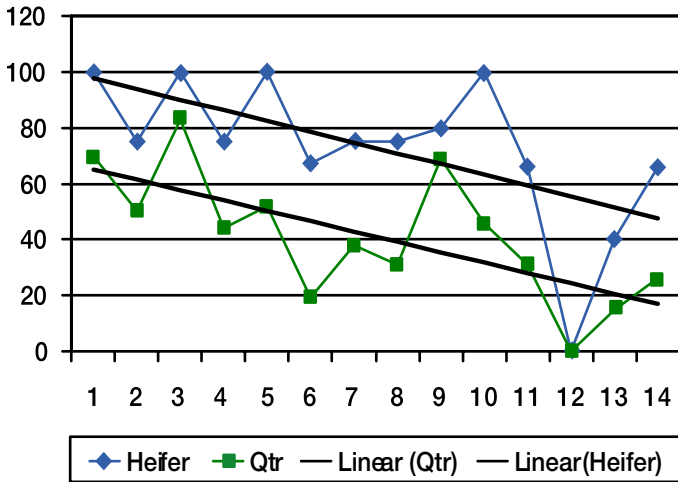


Figure 1 shows the decreasing linear trend of overall bacterial infections in heifer udders from April 2002 through October 2004. Keep in mind an overall program was put in place to reduce infection. Lysigin vaccination on half the heifers most likely contributed to the linear decrease, as further results will show.

Figure 2. Frequency distribution of bacterial species among heifers and quarters

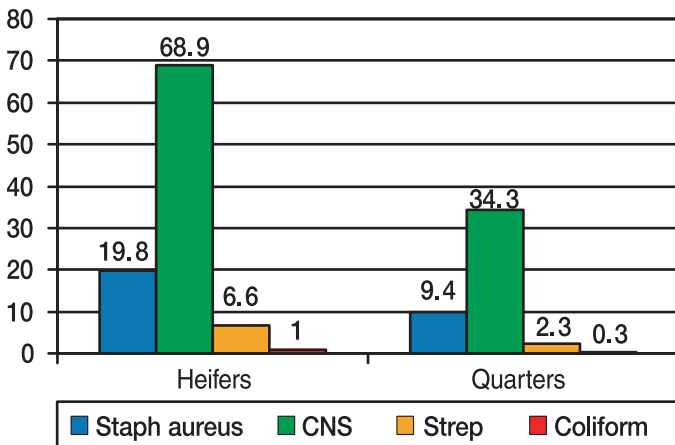


Figure 2 shows the frequency of distribution of bacterial species cultured from heifer udders during the trial period. *S. aureus* was cultured from 19.8% of heifers while 68.9% had coagulase-negative Staphylococcus, and 6.6% had Streptococcus. Only 1% showed any coliforms cultured from the udder.

Figure 3. Percentages of heifers freshening free of *S. aureus* and CNS infections

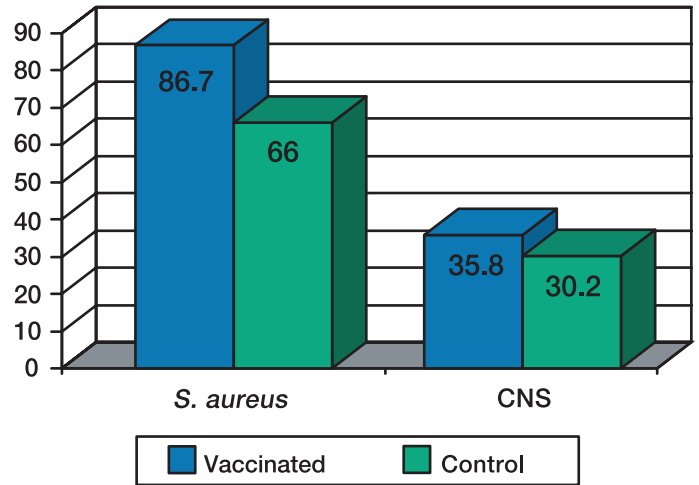


Figure 3 shows a comparison of vaccinated heifers versus controls in percentages free of *S. aureus* and CNS infections at freshening. Nearly 87% of the heifers were free of *S. aureus* at freshening, while only 66% of the non-vaccinates were free.

Figure 4. Percentages of heifers freshening with *S. aureus* and CNS infections

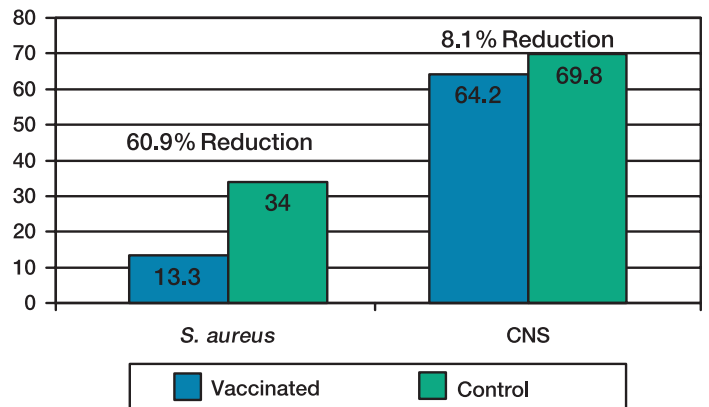


Figure 4 shows what percentage of heifers was infected with *S. aureus*. Of the non-vaccinates, 34% were infected with *S. aureus* while only 13.3% of the vaccinates were infected. This is a 60.9% reduction of *S. aureus* infection in the vaccinates versus non-vaccinates.

Figure 5. Percentages of heifers that were culled or died during the trial

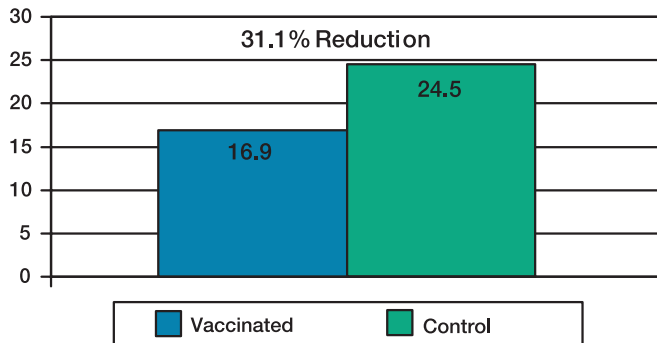


Figure 5 shows the percentage of heifers culled for all causes. The vaccinates showed a 31.1% reduction versus non-vaccinates.

Figure 6. Somatic cell counts in samples collected during first week of lactation of uninfected heifers

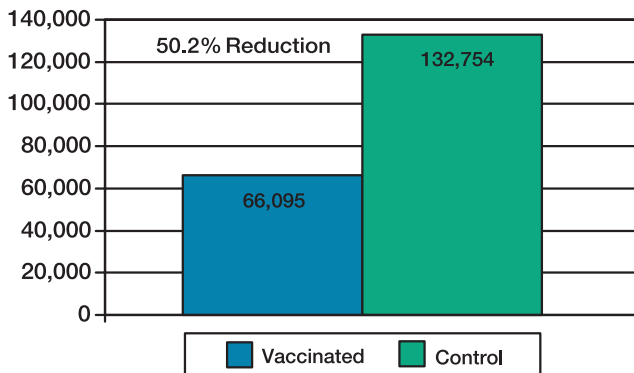


Figure 6 shows the SCC in samples collected the first week of lactation from uninfected heifers. The vaccinates show a 50.2% reduction in SCC versus non-vaccinates.

Figure 7. Somatic cell counts in samples collected during first week of lactation for infected heifers

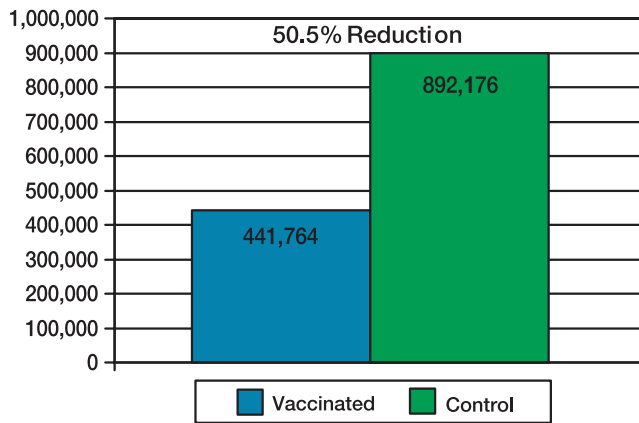


Figure 7 shows the SCC for infected heifers collected during the first week of lactation of the trial period. The vaccinates show a 50.5% reduction in SCC compared to the non-vaccinated control heifers.

The Bottom Line

- Lysigin bacterin can be a good “tool” to help in overall *S. aureus* control program, by reducing SCC and Staph infected udders as well as decreasing the cull rate.
- In this case study, vaccination with Lysigin reduced number of heifers with *S. aureus* infections at freshening by 60.9%.
- Vaccination with Lysigin reduced the percentage of heifers culled by 31.1%.
- Vaccination with Lysigin reduced the SCC in infected and uninfected heifers by approximately 50%.

Update on Performance at James River Dairy

At the 2004 World Dairy Expo in Madison, Wisconsin, the James River Dairy was awarded the Milk Quality Award for the Southeast region of USA. In fall of 2004, their SCC was running about 70,000 versus the 200,000 SCC they were showing in 2002.

They credit the overall Staph control program put in place, including the heifer vaccination program with Lysigin® Staphylococcus Aureus Bacterin.