

# A CLINICAL REPORT OF HIGH MASTITIS PREVALENCE CAUSED BY *S. aureus* IN A DAIRY COW FARM

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## OBJECTIVE

The objective of the present study was to increase udder health by using a bovine mastitis vaccine (STARTVAC®) as part of a Milk Quality Program and control the spread of *S. aureus* contagious agent, and as a consequence decrease the number of clinical mastitis cases and increase the number of healthy animals, avoiding culling a large number of dairy cows.

## MATERIAL AND METHODS

This study is about a report on severe bovine mastitis in a dairy herd where there was a problem of mastitis infections caused by different contagious pathogens, mostly *S. aureus*, and other environmental pathogens.

The farm is located in North-East region of Spain, has 53 milking cows, currently milking twice per day, 2.6 calving average per cow and milk production average of 29 L/day/cow. The rate of clinical mastitis was 12 % and 560,000 cells/ml of bulk tank somatic cell count (BTSCC) average. The milking parlour consists of 4x2 points and milking is performed by two milkers.

Milking cows were housed in free stall with cubicles with mattresses and straw bedding. However heifers and dry cows were housed in free stall with no mattresses. The study was carried out from January to December 2010. In January, the first Milk Quality visit and audition to the dairy herd took place. The microbiologic cultures showed that the predominant pathogens causing intramammary infections were the following:

1. Contagious agents: *S. aureus* 41%, *Prototheca* 4%, *A. pyogenes* 4%, *S. uberis* 2%
2. Environmental agents: *S. dysgalactiae* 34% and CNS 4%

Previous months to the beginning of the Milk Quality Program on the dairy herd, a high increase for *S. aureus* positive samples was detected. The dairy farm activity was in risk due to high BTSCC.

The priority was to decrease BTSCC, decrease the spread of *S. aureus* and other major pathogens and control new infections risk. At the same time, a program to monitor the farm was performed on a monthly basis, to evaluate the effectiveness of the different actions.

## MILK QUALITY PROGRAM

### 1. Mastitis control program and vaccination:

Actions to control the spread of *S. aureus* and lower the BTSCC were implemented within a monthly control program to monitor the dairy farm status evolution. Different parameters were monitored: BTSCC, clinical mastitis rate, healthy cow rate (two consecutive controls below 200,000 cells/ml) and chronic cows rate (two consecutive controls above 200,000 cells/ml).

STARTVAC® blanket vaccination was performed (cows in lactation, dry cows and 7 month pregnant heifers). All animals were vaccinated on the same day in three occasions with a 15 days interval. After the third dose, application booster vaccination was performed every 4 months.

### 2. Herd management:

Identify and separate contagious animals in order to milk them at the end of the milking. The contagious animals were kept in independent enclosures apart from healthy animals until they had 4 consecutive negative control test results. Calves were also kept in independent boxes and they were not allowed to suckle on infected cows.

Keeping a dry, clean and disinfected environment in the different enclosures and fly control plan were determinant.

### 3. Changes to improve milking routine and the milking parlour.

### 4. Gradual elimination of chronic cows.

It was performed gradually. Firstly, only 3 animals that were positive for *S. aureus* and at the same time positive for *Prototheca* and *A. pyogenes* were culled.

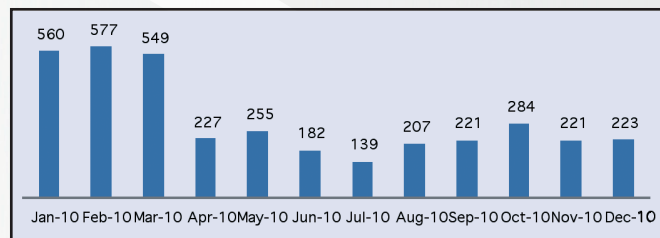
All animals were monitored and sampled after calving for microbiological culture. Gradually, we introduced healthy cows into the enclosure and phased out the unhealthy ones.

### 5. Change in antibiotic therapy.

## RESULTS AND DISCUSSION

One year after the mastitis control program and vaccination, the prevalence of *S. aureus* decreased from 41% to 6%. The farm was also free from other contagious agents found in the beginning like *A. pyogenes*, *S. uberis* and *Prothoteca*. Moreover environmental pathogen *S. dysgalactiae* was also eliminated from the dairy herd. Within one year (from January to December 2010) BTSCC decreased from 560,000 cells/ml to 223,000 cells/ml.

Figure 1. Evolution of BTSCC from January to December 2010 (x 1,000 cells/ml).



The number of healthy animals has increased from 44% to 73% and the number of chronic animals has decreased from 32% to 10%. Reduction from 12% to 2% of clinical mastitis cases was also shown.

Figure 2. Percentage of healthy animals from January to December 2010

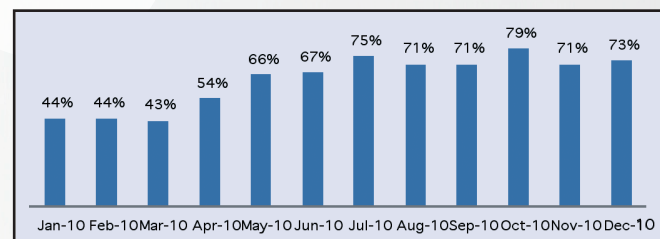
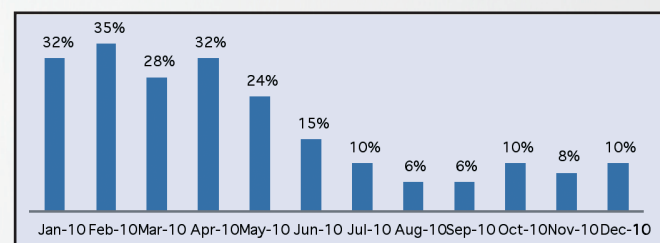


Figure 3. Percentage of chronic cows from January to December 2010.



## CONCLUSIONS

1. A Milk Quality Program together with vaccination (STARTVAC®) showed to be an effective approach to a dairy farm with high mastitis prevalence caused by *S. aureus*.
2. One year after the implementation of the Milk Quality Program the prevalence of *S. aureus* decreased drastically as well as other mastitis causing pathogens.
3. The percentage of clinical mastitis cases decreased in 10%.
4. At the same time, the percentage of chronic animals decreased and the percentage of healthy animals increased.
5. After a mastitis control program and vaccination, an important decrease in BTSCC to less than half of the initial value was shown.

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