STARTVAC® VACCINATION FIELD TRIAL IN THE NORTHERN REGION OF SPAIN

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OBJECTIVE

The objective of the present study was to evaluate the efficacy of a bovine mastitis vaccine against *Staphylococcus aureus*, coagulase negative staphylococci (CNS) and coliform bacteria, including *Escherichia* coli.

INTRODUCTION

HIPRA bovine mastitis vaccine STARTVAC® is the first vaccine registered by the European Medicines Agency (EMA). The application of a vaccination control program to prevent mastitis using STARTVAC® results in enhanced immunization on herd level, both heifers and cows, individual cell count reduction, lower risk of new infections caused by *S. aureus* and CNS, and decrease of mastitis severity caused by coliform bacteria.
Herd management is crucial when dairy producers, together with the herd veterinarian, decide to implement a vaccine.
Even when good herd management is evident and together with a vaccination protocol to prevent mastitis, it is not possible to get a totally free of infection herd, but at least it is possible to get total number of infected animals below 5%.

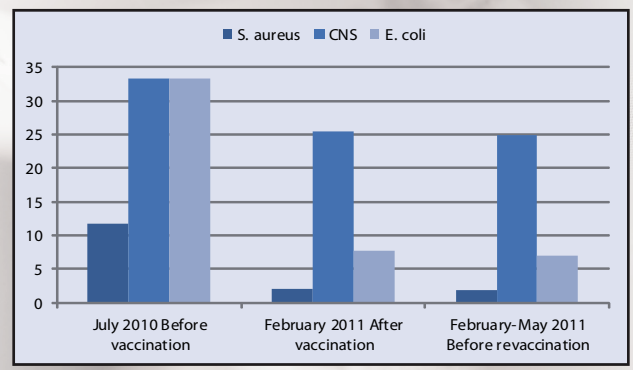
MATERIAL AND METHODS

The field trial took place in Asturias (Northern region of Spain). A total of 50 cows were monitored with 25.5L average of milk production and 600,000 cells/ml of bulk tank somatic cell count (BTSCC) average.
30 cows were housed in free stall (cubicles) and sand was used for bedding. Another 20 cows were housed also in cubicles with no bedding and had access to pasture.
After herd veterinarian audit to milking facilities as well as milking routine and before starting vaccination, some improvements were introduced like pre dipping twice, forestrip and renew jetters cups.
All animals in the herd were vaccinated at same day in three occasions: 1st July of 2010, 1st October of 2010 and 3rd January of 2011. After third dose application every 4 months revaccinations took place to boost the vaccine's immunity.
Bacterial growth was used to determine different pathogens prevalence.
No data on costs of antibiotic use were available.

RESULTS AND DISCUSSION

1. Pathogens prevalence:
After the vaccination period the prevalence of *S. aureus* decreased from 11.7% (before vaccination period) to 2% (after vaccination period finished). Four months later, before revaccination *S. aureus* prevalence registered 1.8%.
The prevalence of *E. coli* on July 2010, just before vaccination period started was 33.3% and after it finished was 7.8%. On May 2011 *E. coli* prevalence registered 7%.
The infection caused by CNS before vaccination was 33.3% and decreased after first application to 25.4% and maintained during the next four months.

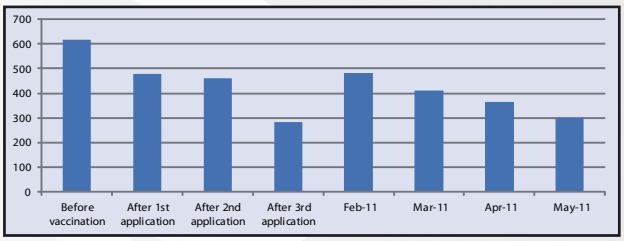
Figure 1. Prevalence of different mastitis pathogens (in percentage).



From July 2010 to May 2011 prevalence of *Streptococcus spp.* was below 10% (data not shown on graph).

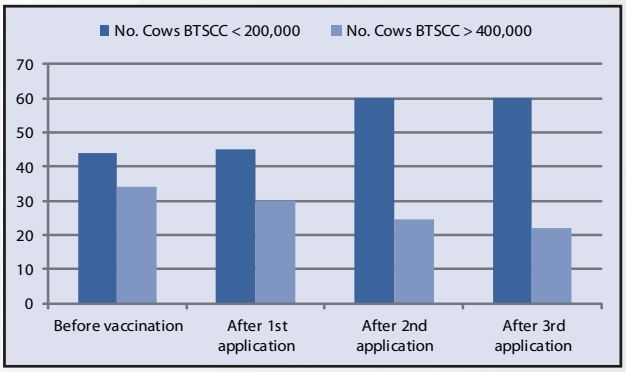
2. Evolution of SCC in Bulk Tank:
Periodical bulk tank milk testing registered a marked BTSCC decrease from July 2010 to January 2011. When the vaccination period finished BTSCC decreased to almost its half (283.000 cells/ml), comparing to the testing results before vaccination.
In February, there was an increase regarding BTSCC. Between February and May 2011 the decrease tendency continued.

Figure 2. BTSCC average registered form July 2010 to May 2011 (x 1,000 cells/ml).



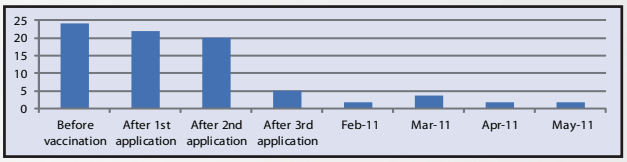
3. Number of dairy cows < 200,000 cells/ml and > 400,000 BTSCC:
Percentage of number of cows below 200,000 cells/ml BTSCC increased during the vaccination period. On the other hand, percentage of number of cows with more than 400,000 cells/ml decreased for the same given period.

Figure 3. Percentage of number of cows with BTSCC < 200,000 cells/ml and number of cows with BTSCC > 400,000 cells/ml during vaccination period.



5. Evolution of Clinical Mastitis (CM) cases:
CM decreased slightly comparing the percentage before vaccination and after second vaccine application. After third application, the percentage of CM decreased drastically. For the following four months, the percentage also decreased with a slightly increase only in March 2011 but then the percentage continued falling to less than 5%.

Figure 4. Percentage of clinical mastitis registered from July 2010 to May 2011.



CONCLUSIONS

1. Vaccination with STARTVAC® showed to be effective in reducing the percentage of CM cases in the herd.
2. STARTVAC® was also effective by reducing the BTSCC:
   a. It reduced the number of dairy cows with BTSCC > 400,000 cells/ml.
   b. It increased the number of dairy cows with BTSCC < 200,000 cells/ml.
3. This HIPRA vaccine was also effective in reducing the prevalence of different pathogens causing bovine mastitis.
   a. It reduced the prevalence of coliform bacteria and prevented cases of severe mastitis leading to death.
   b. It also reduced the prevalence of *S. aureus* and subclinical mastitis.
   c. The prevalence of CNS after first application decreased slightly and then was maintained for the next months.
4. There were no side effects related to the three different vaccine applications.

BTSCC increased in February 2011 for no apparent reason, since BTSCC continued falling for the next four following months.
The use of STARTVAC® vaccine can be a powerful tool by helping in reducing CM cases and in reducing BTSCC in dairy herds too.

ACKNOWLEDGEMENTS

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