

# VACCINATION AS A TOOL TO PREVENT INTRAMAMMARY INFECTION: FIELD STUDY

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## INTRODUCTION

Mastitis is a disease with high cost in dairy farms around the world; many microorganisms cause intramammary infections like coagulase negative staphylococci (CNS), *Escherichia coli* and *Staphylococcus aureus* among others. In many farms the fight against mastitis has been in the past and it is yet in several countries against major contagious pathogens. In the last years environmental microorganisms and minor pathogens are the responsible for causing subclinical and clinical mastitis and for significant losses. We use measures to prevent mastitis like dry-off treatment, milking machine performance, milking hygiene, etc. We need some tools to improve better milk quality and vaccination can be a good tool for this purpose.

The objective of this trial is determining the efficacy of vaccination (STARTVAC<sup>®</sup>), repercussion on mastitis epidemiology, monthly clinical mastitis rate and milk production in a farm with good Milk Quality.

## MATERIAL AND METHODS

The study was developed on a farm in Spain with 250 milking cows, without visible signs of mastitis and without somatic cell count problems, average of bulk milk somatic cell count in 2009 was 161,000 cells/ml and in 2010 was 193,000 cells/ml.

Intramammary infections are caused by *E. coli*, CNS and streptococals like *Streptococcus uberis* and *Streptococcus dysgalactiae*. The milking system is a parallel parlour with 8x2 points with two milkers. Each milker does a sequential milking with 8 cows, applies predipping, fore-stripping, drying with paper and attach. The postdipping is lactic acid.

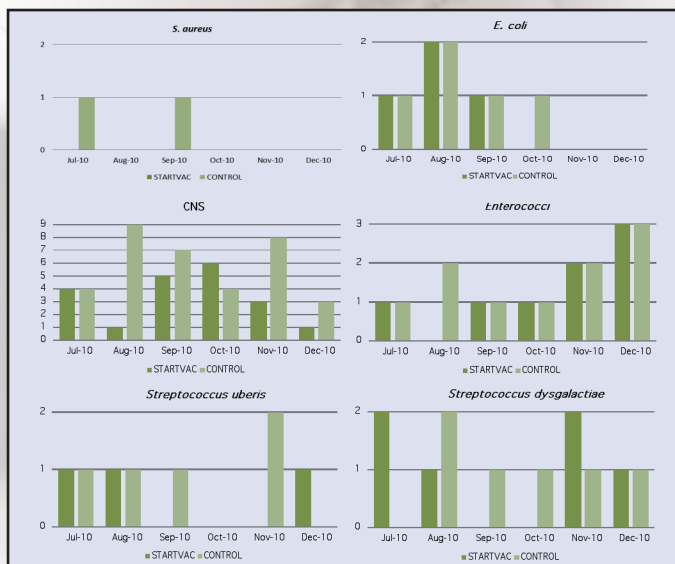
The facilities are free stalls with cubicles with bedding of manure, the bed is added one time per week and the cubicles are arranged 2 times per day.

From July to December 2010 were selected 222 animals (cows and heifers). Animals were divided in two groups; 110 cows were vaccinated and called Vaccinated Group (VG) and 112 cows were called Control Group (CG). VG were vaccinated with STARTVAC<sup>®</sup>, with inactivated J5 and inactivated strain of *Staphylococcus aureus* SP140 (Slime Associated Antigenic Complex, SAAC), the animals received three doses, one dose in day 0, second dose in day 35 and third dose day 97. California Mastitis Test was done in all animals and positive cows were sampled to culture and identification to determine the epidemiology of intramammary infections. New Infection Rate of mastitis, Clinical Mastitis and milk production yield were monthly determined during the following six months.

## RESULTS

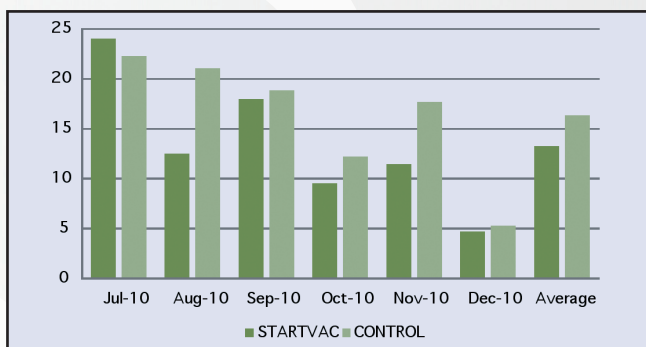
All cases of subclinical mastitis were sampled to determine the epidemiology; the following six figures show the epidemiology infections with microorganisms causing mastitis during the following months (Figure 1).

Figure 1. Prevalence of different mastitis pathogens (number of dairy cows).



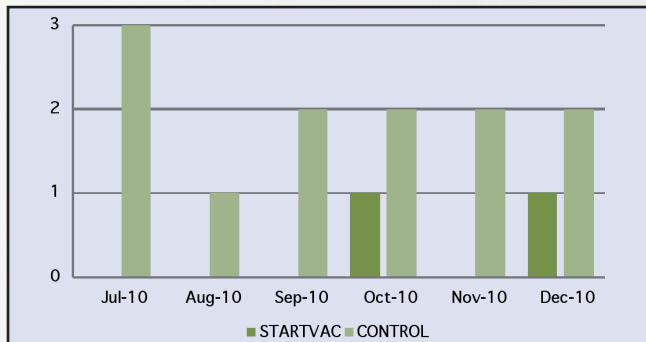
VG than CG. Average of NIR in six months was 13.3% in VG and 16.3% in CG (Figure 2)

Figure 2. New Infection Rate (number of dairy cows).



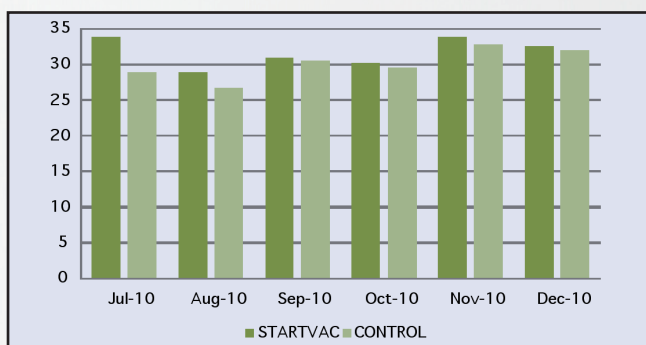
The clinical mastitis cases were less in VG than CG (two cases vs. twelve cases). Two cases appeared in VG, one caused by *E. coli* and other by *Strep. uberis*, twelve cases appeared in CG, were caused by *E. coli* (5 cases or 41.6%) (Figure 3).

Figure 3. Clinical Mastitis (number of cases).



Milk Production yield was higher in VG than CG (31.8 vs. 30.1 litters) (Figure 4).

Figure 4. Milk Production yield (L).



## CONCLUSIONS

Cows of VG group had less intramammary infections than CG, less percentage of isolates infections caused by *Escherichia coli*, CNS and less infections caused by *Staphylococcus aureus*. Less New Infection Rate of infections in VG than CG and less Clinical Mastitis cases in vaccinated animals. Vaccinated cows produced more milk than non-vaccinated cows.

STARTVAC<sup>®</sup> reduces subclinical mastitis infections and it is an excellent tool to reduce intramammary infection and improve Milk Quality in dairy herds.