

“VACCINATION CAN CERTAINLY PLAY AN IMPORTANT ROLE AS ONE OF THE COMPONENTS OF A MASTITIS CONTROL PROGRAM.”

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- ▶ **The results of your study refer, in particular, to the efficacy of the vaccine against environmental bacteria like E.coli and coliforms. What impact do these mastitis agents?**

The particular impact of these pathogens varies between different farms. It tends to be more important in herds with good control of contagious pathogens that spread from cow to cow. Here in the UK, there is a lot of variation between different herds but, certainly, vaccination has an important impact in some herds and there are often positive impacts on severe cases of mastitis.

- ▶ **What are the objectives of your study?**

The objectives of our study were to examine the use of STARTVAC® in a commercial context; being used on commercial farms and in the way that farmers would use it. This is a very different situation from a controlled study for registration purposes. We wanted to look at the efficacy of the vaccine when used on the label protocol and at the commonly used practical protocol on farm, which is to vaccinate every three months.

- ▶ **What components does STARTVAC® have and against what agents does it provide protection?**

In terms of our study, we were particularly interested in the use of STARTVAC® in assisting control of environmental mastitis, E. coli in particular. We went to herds with relatively low bulk tank somatic cell count and herds with problems with environmental coliform mastitis. In those farms, E. coli was the main pathogen (21%), but other bacteria such S. uberis (20%) and S. aureus (2%) were also isolated. We were particularly interested on the J5 component of the vaccine: its ability to protect against infection and to mitigate the effects of infection caused by Gram negative bacteria such as E. coli, Klebsiella spp, Serratia spp and similar pathogens.

STARTVAC® also contains components active against Staphylococcus spp, of most interest S. aureus. Although that wasn't a particular focus of our study, it has been studied elsewhere and efficacy has been shown by Professor Ynte Schukken.

- ▶ **Can you tell us what the main findings of your study were?**

The key finding of our study on the use of STARTVAC® - a very large efficacy study in the UK – was the reduction in the severity of the mastitis cases. We found that STARTVAC® reduced the severity of clinical mastitis. On top of that, it reduced the amount of culling associated with clinical mastitis. Interestingly, it was also related to an increase in milk production.

- ▶ **As you mentioned previously, the vaccine resulted in increased milk production in vaccinated animals. Based on that increase, what was the economic Return of Investment (ROI) of the vaccine?**

We did a calculation based on cost of the vaccine and milk prices in the UK at the time, and this demonstrated a return on investment of between 2.5 and 2.6 to 1, in terms of just the increase in milk yield. Data suggested that when using the vaccine on the label protocol, almost 2L extra milk were produced per cow and day in the first 120 days of lactation. For the rolling protocol (known as 3-3-3 protocol) the increased production was of around 1L per cow and day.

- ▶ **In your opinion what has brought about this increase in milk yield?**

This is actually a really interesting question because the majority of the effect is not directly related to the reduction in the clinical mastitis or reduction in Somatic Cell Count (SCC). In our analysis, we controlled for the impact of vaccination on the culling, severity of disease, sub-clinical mastitis and on SCC. However, we were still left with a big impact on production. Because of this, we think this extra milk yield is in part explained by extra-mammary or outside the mammary gland effects. We do not know exactly why we have these effects on production, but we do know that we cannot explain them purely through the control of mastitis.

- ▶ **The results of this study show that the vaccine has an effect on the milk composition as well, particularly by the increasing of protein and fat. Does this fact position the vaccination as a product of interest for the dairy industry?**

Obviously that was an area that we investigated further. It is one thing to produce more litres of milk but another to get not just more litres but also more milk solids. Having more fats and proteins is of interest, particularly, for milk manufacturers. For liquid milk consumption it is not so interesting, but for cheese manufacture and other products, if we get more solids we can expect to produce more milk products from these cows. Certainly it is of interest that the increase on production is not just in volume of milk, but also in the quality of this milk.

- ▶ **Coliforms are the main reason behind toxic mastitis. Where the fatal cases reduced in your study?**

In our study we didn't have that many fatal cases of mastitis. We had severe cases, but not fatal cases. No fatal cases occurred in any of the cows that received the vaccine, whilst there were fatal cases in cows that did not receive the vaccine.

- ▶ **What was the impact of vaccination in the culling rate?**

We looked at that both in the first 120 days in milk (DIM), when there was less culling in the cows that received vaccination but it was not a significant reduction. This is not unexpected because farmers tend not to cull cows in early lactation. We extended the analysis to look at the impact on culling in the first 305 DIM. We saw that the vaccinated cows are significantly less likely to leave the herd than the cows that didn't receive the vaccine.

- ▶ **How important is the maintenance of vaccination over time in order to increase the cow's immunity?**

Certainly this is important, we actually did analyze for that effect in both protocols. In the 3-3-3 protocol in particular, we found that an increased number of vaccinations were associated with an increased impact against the severity of disease. I believe that farmer's expectations should be centered on the fact that there is a cumulative effect of the vaccine. You don't expect to start vaccinating today and immediately see all of the benefits. It takes time, as you increase number of vaccinations over time, you decrease the severity of disease. This was a clear effect.

- ▶ **Some studies have found a relation between the impact of mastitis and reproduction: Conception rate, Days Open... and others. Did you study these effects?**

Unfortunately we have yet to analyze these effects in our study. We have the data but today we have not actually assessed it in any great detail. We intend to investigate these facts. One could speculate that there might be an effect, as the decrease in culling by 305 days that we saw, could not be explained solely by the reduction on mastitis.

- ▶ **Finally, in your opinion what is the role of vaccination in a mastitis control program?**

Vaccination has got an important role to play on some farms. You are unlikely to vaccinate your way out of a mastitis control program. What is important is to have a holistic approach to mastitis control and you need numerous building blocks in that control program. Vaccination can certainly play an important role as one of the components of that mastitis control program. It is about having it as part of a control program. If the farmer thinks they can take vaccination and stop their other control practices, then vaccination will fail. It needs to come as part of a focused control program which covers all aspects of mastitis control.

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