SMALL RUMINANTS

# Vaccinating pregnant ewes with an iron regulated protein (IRP) vaccine could be a suitable strategy to control ovine respiratory complex.

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## INTRODUCTION

Ovine Respiratory Complex (ORC) is a result of a complex interaction between host, environment, and different infectious agents[1]. *Mannheimia haemolytica* is involved in serious outbreaks in neonatal lambs. They are too young to be vaccinated themselves and limited information is available about perinatal protection afforded by maternal vaccination with Iron Regulated Proteins (IRP) vaccines against *M.haemolytica*[2].

## OBJECTIVE

Therefore, the purpose of this study was to evaluate the titers of specific antibodies against *M. haemolytica* in the colostrum and its passive transfer to the lamb's serum to protect them for the first weeks of life.

## MATERIALS AND METHODS

A blinded randomized study was performed in a farm with 4,300 Lacaune dairy sheep. 59 pregnant ewes were randomly allocated to: Vaccinated (28, Ovilis® Ovipast Plus) and Negative Control (31, PBS administration). Through the study serum of ewes and lambs, and colostrum were sampled as illustrated in **Fig. 1**.

To monitor the immune response, specific antibodies against *M.haemolytica* was quantified using an in-house test (Centre for Diagnostic Services, Boxmeer, MSD Animal Health, NL). Additionally, colostrum quality and passive transfer in lambs were assessed with a Brix refractometer.

A non-parametric means comparison test was used (Wilcoxon and Kruskal-Wallis test) to compare the antibody titers between experimental groups (vaccinated versus control) in both colostrum and serum with p=0.05.

Ewe vaccination during pregnancy could be a promising strategy to protect the lambs against respiratory diseases during their first weeks of life, before they can be protected through their own vaccination.

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## RESULTS

Serum *M. haemolytica* antibody levels at lambing were significantly higher in vaccinated ewes than in the control group (p<0.0001) **(Fig. 2)**.

Although no significant difference was found in the Brix measured colostrum quality **(Fig. 3)**, the level of *M. haemolytica* antibodies was significantly higher in vaccinated ewes (p<0.0001) **(Fig. 4)**.

Level of antibodies against *M. haemolytica* in serum of lambs from vaccinated dams was significantly higher at the age of 48h and at weaning and correlated **(Fig. 5)**.

There was a correlation between M.haemolytica antibody titers at dam and lamb level **(Fig. 6)**.

**FIGURE 1.** Scheme of the trial design.

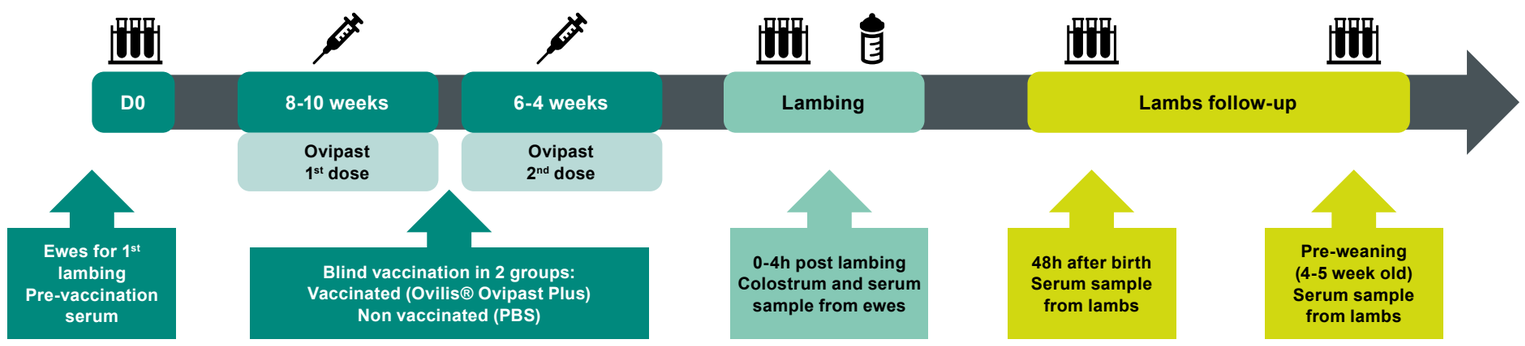



**FIGURE 2.** Variation of serum *M haemolytica* antibody level in the ewes before vaccination and after lambing.

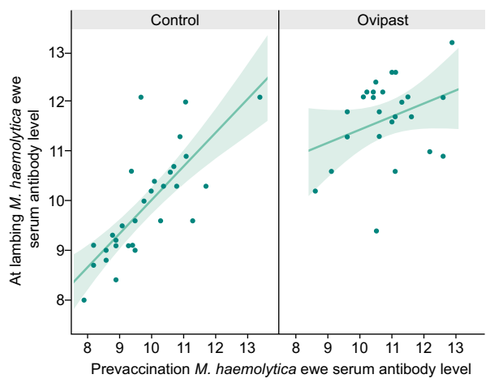



**FIGURE 3.** Colostrum quality from ewes of different study groups measured by Brix refractometer.

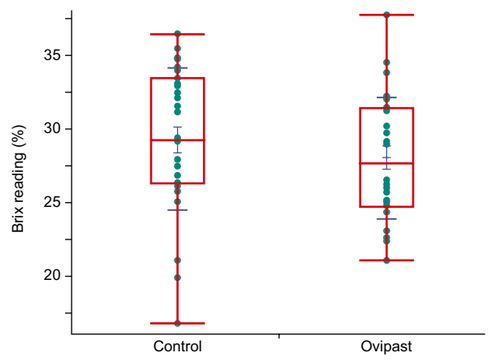



**FIGURE 4.** Antibody levels against *M haemolytica* in the colostrum of ewes of the different study groups measured by ELISA.

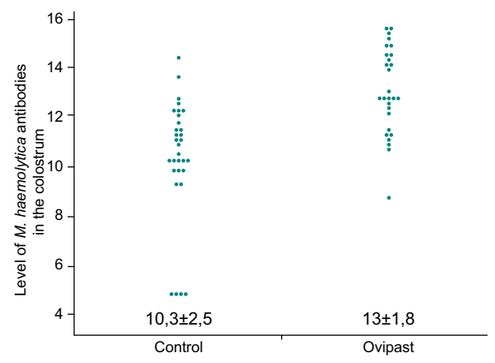



**FIGURE 5.** Specific *M haemolytica* antibody levels in the lambs 48h old and weaned, fed colostrum from ewes of different study groups measured by ELISA.

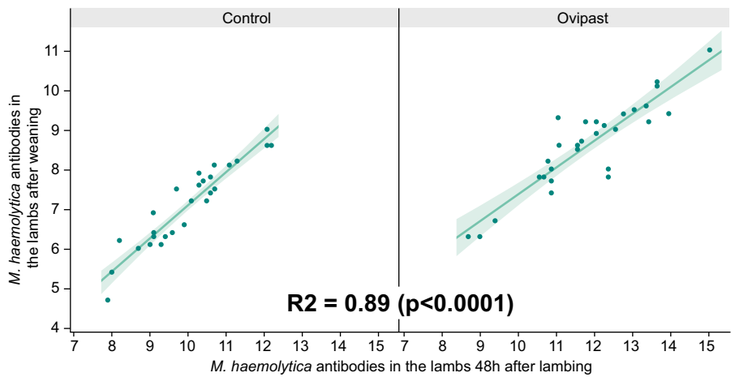
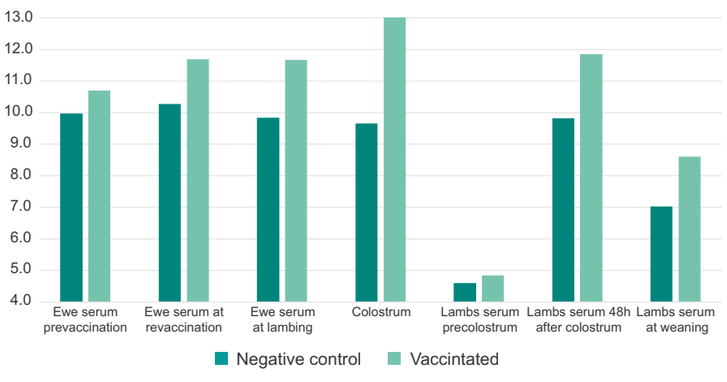



**FIGURE 6.** *M haemolytica* antibody through at all sampling points for the ewes and lambs of the different study groups measured by ELISA.

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## REFERENCES

1. Ackermann & Brogden. Microbes and Infection 2000;2:1079–1088
2. Lacasta et al. Vet Microbiol 2015;181:34–46





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