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Monitoring synergy between Rotavec® Corona and Bovilis® Bovipast® RSP - Tech Bulletin

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TECHNICAL BULLETIN

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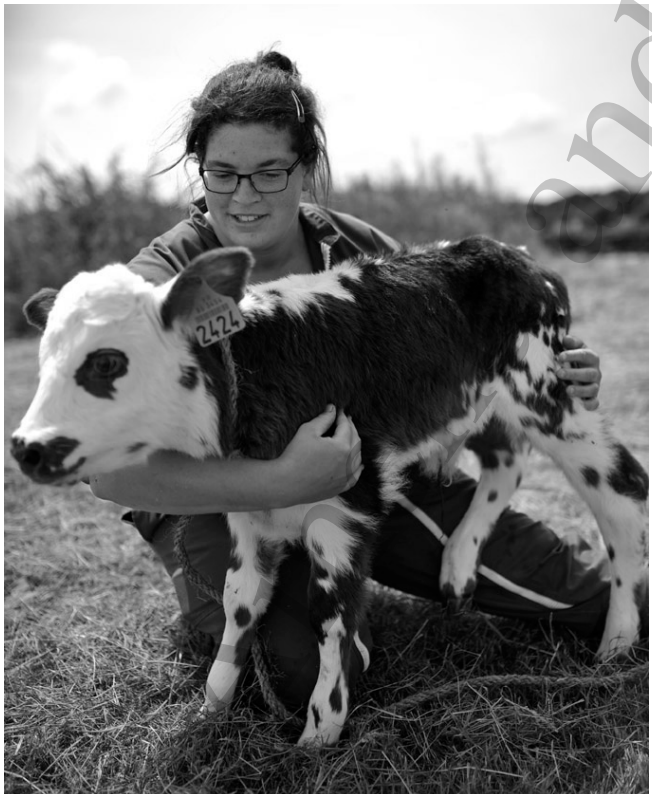
INTRODUCTION

Healthy, productive herd replacement is the result of a good young stock management. Neonatal diseases have a short term effect such as mortality, as well as a long term negative effects such as reduction in calf growth rate or decrease in future milk productivity (Dunn et al., 2018; VanAmburgh et al., 2014; Furman-Fratczak et al., 2011; Van der Fels-Klerx et al., 2002).

On the other hand, it has been shown that morbidity and mortality due to neonatal diarrhea in calves can be reduced by vaccination of dams during the last third of pregnancy (Meganck et al., 2015) which increases the levels of specific immunoglobulins against the antigens present in the vaccine. These immunoglobulins are transferred to the calves through the colostrum (Crouch et al., 2001). However, to our knowledge, the potential positive effect of cow vaccination against scour on morbidity and mortality, related to pneumonia in early age has never been evaluated.



OBJECTIVE

The objective of this study was to evaluate the synergistic effect of vaccinating dams with a scours vaccine together with a pneumonia vaccine on calf morbidity and mortality, not only due to scour, but also due to early pneumonia affecting calves before weaning.

MATERIALS AND METHODS

The study was blinded and randomized. Forty dams were randomly assigned to two study groups: one group vaccinated to prevent scour with a multivalent inactivated vaccine against neonatal calf diarrhea (Rotavec® Corona, MSD Animal Health) according to manufacturer's instructions (vaccinated group) and the other group was not vaccinated being the negative control group. Twenty-three female calves born from these dams were included in the study as male calves were sold around 2 weeks of age and 1 female calf in the control group was removed as it was born with a cleft palate. Finally, as shown in Table 1, there were 12 calves in the vaccinated group and 11 in the negative control group.

The newborn calves were fed at least 2 liters of colostrum in the first 6 hours after birth (mainly freshly milked from their dams); and colostrum intake was individually monitored in calves measuring total proteins in serum 1-5 days old. Additionally, at 2 and 6 weeks of age, calves from both groups were vaccinated to prevent pneumonia after weaning with an inactivated multivalent respiratory vaccine (Bovilis Bovipast® RSP, MSD Animal Health). Disease occurrence and treatments were monitored. For etiologic diagnosis of neonatal diarrhea, the Rainbow CalfScour K288 (Bio-X Diagnostics, Belgium) was used in some cases. Calves were individually scored every 10 to 15 days by lung ultrasound (see Figures 1 & 2) using the technique as described by Ollivett and Buczinski (2016).

RESULTS

Thirty-three percent of calves born from vaccinated dams suffered from diarrhea compared to 90% in the control group (see Table 2). On three calves, the BioX kit was performed: two calves from the vaccinated group were positive for cryptosporidiosis and one control group calf was positive for rotavirus.

None of the calves born from vaccinated dams had early pneumonia during the first month of life, while 27% of the control group presented early lung lesions in the control group. Follow up until weaning (around two months of age), revealed only one calf from the vaccinated cow group with pneumonia lesions (8.35%), while 63.6% had early lung lesions in the control group.

Calves from unvaccinated dams had 2.72 higher risk for neonatal diarrhea compared to calves from vaccinated dams (confidence level of 95%). To a greater extent, the risk of getting pneumonia lesions at early age was 7.63 times higher in the calves in the negative control group compared to calves from vaccinated dams.

Additionally, as expected based on previous studies, heifers not suffering from BRD showed an increased growing pattern (see Figure 3). Although the study was randomized and blinded, the calves in the control group suffered a higher percentage of failure of passive transfer (50 % versus 25 %) which possibly had adversely affected the morbidity of this group. However, this might also be explained by the fact that calves receiving colostrum from vaccinated cows have less chance to get failure of passive transfer as the quality of colostrum from vaccinated cows might be better. Denholm et al. (2018) described that vaccinating pregnant cows against calf diarrhoea is associated with a higher proportion of colostrum samples with adequate quality.

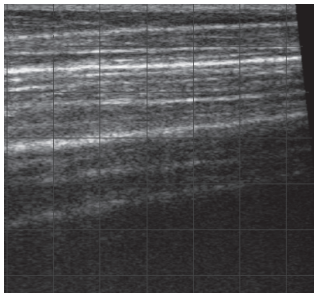
Table 1.
Study groups

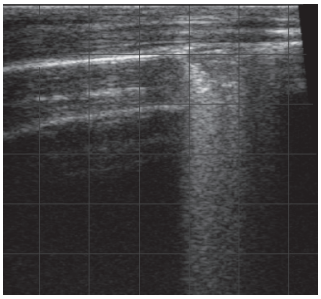
Group		Protocolo vacunación	Nº calves
1	Rotavec Corona	Rotavec Corona in dam (3 month-4 weeks precalving) Bovipast (starting in groups 15-30 days old)	12
2	Negative Control	Control negative dam Bovipast (starting in groups 15-30 days old)	11

Table 2.
Results obtained on heifer health monitoring until weaning

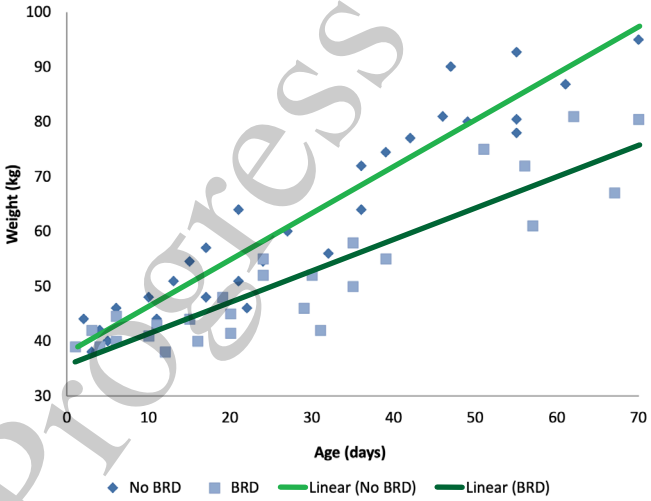
	Diarrhea < 30 days old	Pneumonia < 30 days old	BRD Before weaning
Rotavec	**33%**	**0%**	**8%**
Negative control	**91%**	**27%**	**64%**

Figures 1 & 2.
Ultrasonography showing a healthy lung (left) versus lung consolidation (right)





Growing patterns in the heifers with or without BRD before weaning



CONCLUSION

The use of Rotavec® Corona in dams and Bovilis® Bovipast® RSP in the young calves, has a synergistic result improving health indicators of calves, and leading to better health outcomes reducing the morbidity of both neonatal diarrhea and pneumonia.

The study has been presented on the World Buiatrics Congress in Sapporo Japan, August 2018.

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Bovilis® IBR marker live contains BHV-1 strain GK/D (gE⁻). Bovilis® IBR marker inac contains inactivated antigen of BHV1 strain GK/D (gE-). Bovilis® Bovipast RSP contains inactivated Bovine Respiratory Syncytial Virus (strain EV908), Parainfluenza 3 virus (strain SF-4-Reisinger) and inactivated *Mannheimia (Pasteurella) haemolytica* (serotype A1) for the active immunisation of cattle against BRSV, Pi3 virus and *M. haemolytica*. Bovilis® BVD is an inactivated vaccine containing 50 ELISA units (EU) and inducing at least 4.6 log2 VN units per dose of cytopathogenic BVD virus strain C86. Bovilis® Ringvac contains viable microconidia of Trichophyton verrucosum strain LTF-130 after reconstitution in the solvent provided. Bravoxin® 10 contains *C. perfringens* type A toxoid, *C. perfringens* type B and C toxoid, *C. perfringens* type D toxoid, *C. chauvoei*, *C. septicum* toxoid, *C. haemolyticum* toxoid, *C. novyi* type B toxoid, *C. sordellii* toxoid, *C. tetani* toxoid. Rotavec® Corona contains inactivated Rotavirus and Coronavirus and E. coli K99 antigens.

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