

Intranasal vaccination for pneumonia viruses in calves

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Summary

- Pneumonia is one of the main causes of death in young calves.
- Bovilis IBR Marker Live®, and Bovilis Intranasal RSP Live® vaccines can be safely administered together intranasally at three weeks of age.
- Calves vaccinated intranasally for RSV and PI3 showed an improved response to a booster vaccination at 15 weeks of age when compared to calves vaccinated later with parenteral injections for RSV and PI3.

Introduction

According to data from Regional Veterinary Laboratories, pneumonia is the single largest cause of death in cattle aged from 1-12 months in Ireland. Rather than treating already sick calves for pneumonia and contributing to antimicrobial resistance, farmers and vets are now focussing on disease prevention and the role vaccination can play. Intranasal vaccines contain live attenuated viruses to allow for localised immunity to develop in the calf's airways. The aim of this study was to investigate the safety of administering multiple vaccines for RSV, PI3 and IBR at the same time, in addition to measuring the antibody response the vaccines would elicit.

Study

In spring 2021, 40 calves from the Teagasc Dairygold farm, were assigned to a trial which aimed to investigate the effects of simultaneous administration of intranasal vaccines for the viruses most commonly associated with pneumonia; IBR, BRSV, and PI3. The calves (both dairy and dairy-beef breeds) were vaccinated at three weeks of age. The four experimental treatments were; Bovilis IBR Marker Live® only (IO), Bovilis INtranasal RSP Live® only (RSV and PI3)(RPO), vaccinated concurrently with both Bovilis INtranasal RSP Live® and Bovilis IBR Marker Live® (CV), and the controls (CONT) that were not vaccinated at three weeks old. Calves were penned separately in groups of 10 according to their treatment.

The calves were blood sampled before vaccination to detect their immune status for these diseases and then again after vaccination to detect changes in antibody levels. In addition to this, health scores, temperature checks, and weight was measured throughout the study. Eighty days after the initial (IN) vaccination all calves enrolled in the study received parenteral vaccinations for all three viruses. This consisted of an intramuscular dose of Bovilis IBR Marker Live® and additionally a subcutaneous dose of Bovilis Bovipast RSP®.

Results

Vaccination with these live virus vaccines did not affect weight gain, or lead to an increased rectal temperature post vaccination, it also did not induce any virus like symptoms. Intranasal vaccination for RSV and PI3 with Bovilis INtranasal RSP Live® at three weeks of age, whether on its own or with Bovilis IBR Marker Live®, resulted in a better antibody response to the booster vaccine injections (Figure 1).

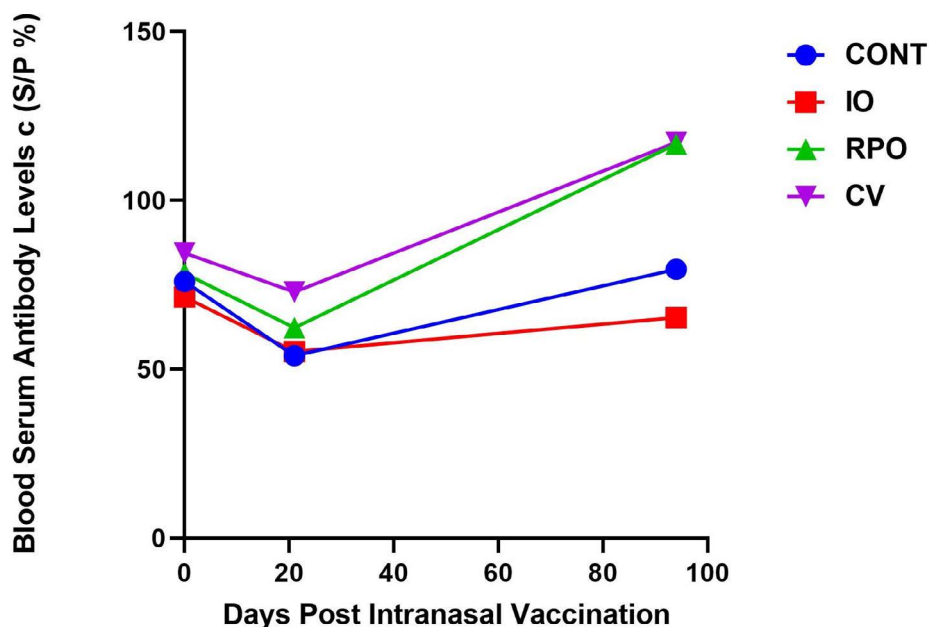


Figure 1. PI3 antibody levels measured as OD c (S/P %) units at day 0, 21 and 94 days post vaccination at three weeks of age

Conclusion

Risk of pneumonia can be mitigated through optimal colostrum management, good nutrition, proper hygiene, and appropriate housing. Vaccination is an additional factor in ensuring a calf's immune system is fit to tackle disease, and should be a key consideration of farmers going forward and a topic for discussion with their vet. In herds at risk from RSV and PI3, intranasal vaccination followed by an additional booster vaccine post-weaning may provide enhanced protection against these viruses in calves.

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