

The effect of colostrum supplementation from Rotavec vaccinated dams during the first 5 days of life on calf health, enteric pathogen shedding and immunological response

Anna Catharina Berge¹, Pleun Penterman², Iris Kolkman³, Geert Vertenten²

INTRODUCTION

Post-closure colostrum supplementation and transition milk feeding in the neonatal calf has shown potential to optimize gut immunity and development, reduce disease and improve preweaning calf performance. The use of colostrum from dams vaccinated against calf enteric diseases may provide local protection from the colostrum maternal antibodies.

OBJECTIVE

To investigate the preweaning health, performance, immunity, and enteric pathogen shedding in calves supplemented with colostrum from dams vaccinated against rotavirus, coronavirus, and *Escherichia coli* F5 and F41 during five days after birth compared to non-supplemented calves.

MATERIALS AND METHODS

On a commercial dairy farm, healthy new-born calves from vaccinated (Bovilis® Rotavec® Corona) dams were assigned to a colostrum supplementation treatment (39 calves) or control treatment (36 calves). The colostrum supplementation was previously frozen colostrum added to the milk replacer, one Liter on day 2 and 0.5 Liter on day 3, 4 and 5 of life. Control calves similarly received a nutritional equivalent milk-derived supplement. Milk intake and health parameters were evaluated daily. Calves were weighed at birth, on day 28, and at weaning. Fecal samples were taken on day 7, 14, and 21. The presence of rotavirus, coronavirus, *Cryptosporidium parvum*, *Clostridia*, *Escherichia coli* F5 were evaluated using a rapid ELISA kit. Outcomes were analysed in stratified analysis and multivariate models and levels of significance was set at $\alpha=0.10$.

Post-closure colostrum supplementation in calves for 4 days reduces *Cryptosporidium parvum* and rotavirus shedding in calves at 2 weeks of age and respiratory disease symptoms in the preweaning period.



To download this paper, scan the QR code!

RESULTS

- ▶ There was no significant difference between Colost-suppl. and Control calves in diarrhea, weight gain or serum antibody levels to enteric pathogens.
- ▶ There were marginally non-significantly less respiratory clinical signs, days with depressed attitude, days with elevated temperature in Colost-suppl. compared to Control calves.
- ▶ The fecal samples collected were all negative for coronavirus and *E. coli* F5.
- ▶ At 14 days of age, there were significantly less *C. parvum* positive samples and less rotavirus-positive samples in Colost-suppl. calves compared to Control calves.
- ▶ The *Clostridium perfringens* log counts were lower in Colost-suppl. compared to control calves.

FIGURE 1. Percentage fecal samples positive for *Cryptosporidium parvum* in calves on day 7, day 14 and day 21.

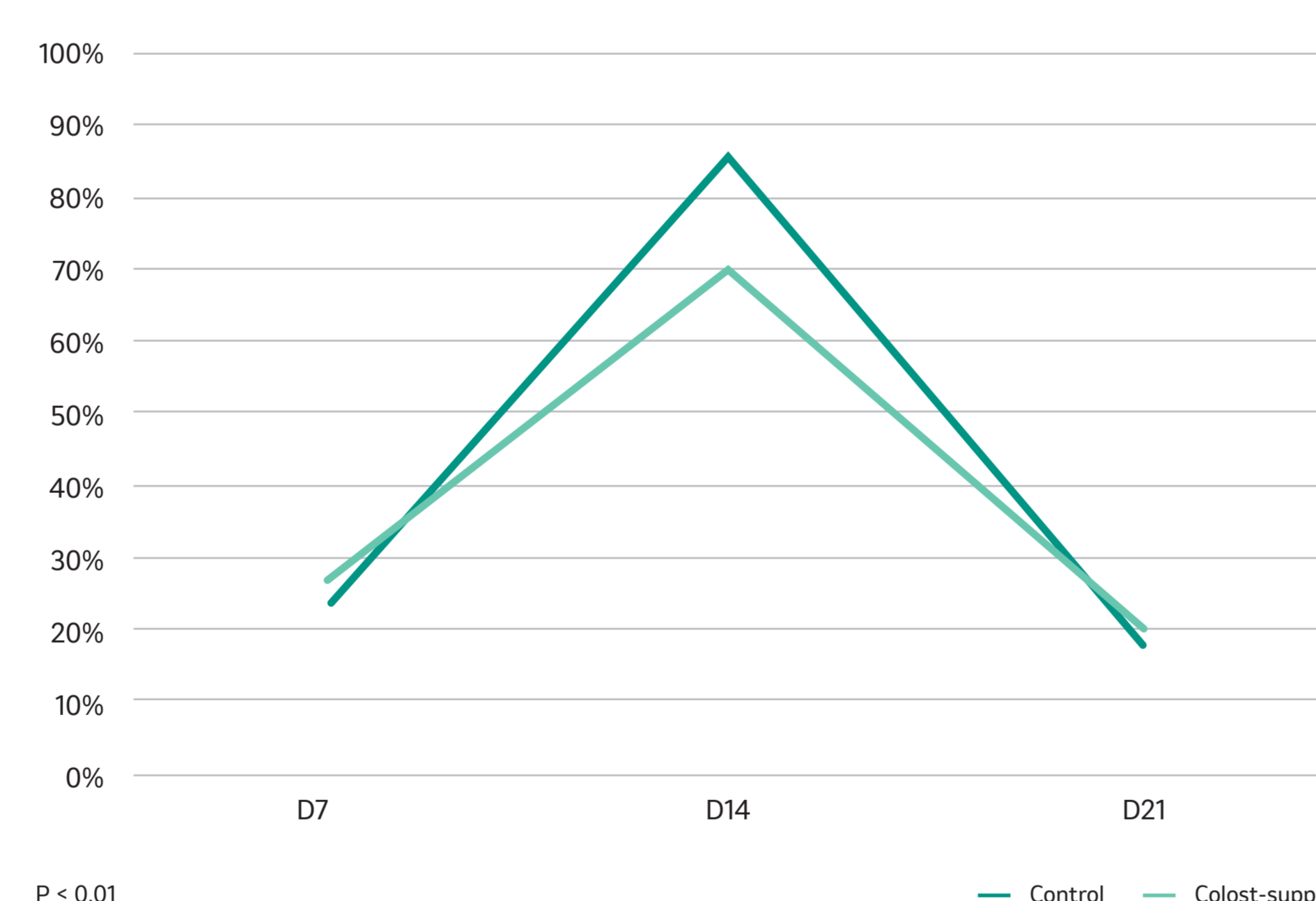


FIGURE 3. Average fecal log counts of *Clostridium perfringens* in Colostrum-supplemented calves compared to control calves.

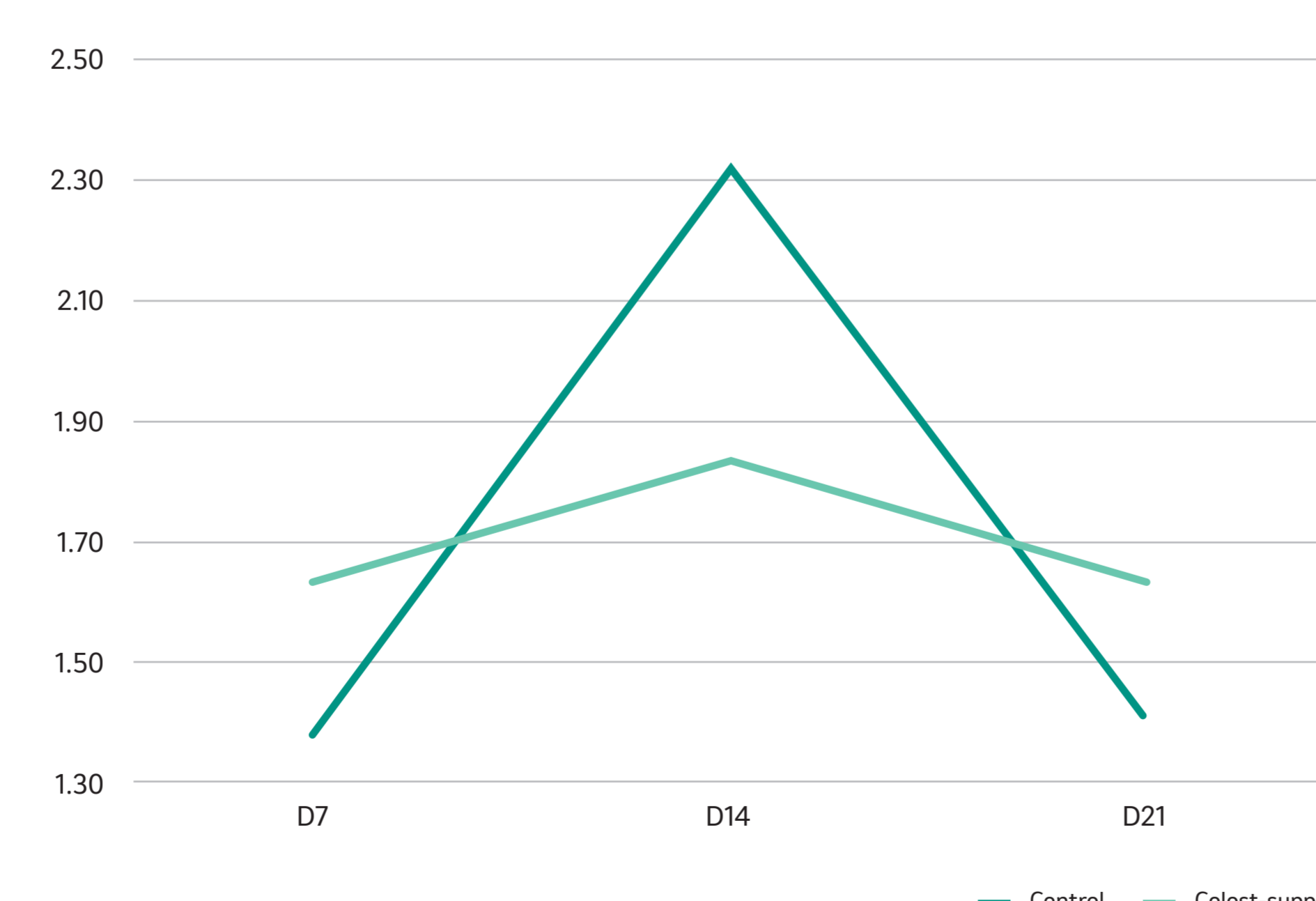


FIGURE 2. Percentage fecal samples positive for rotavirus in calves on day 7, day 14 and day 21.

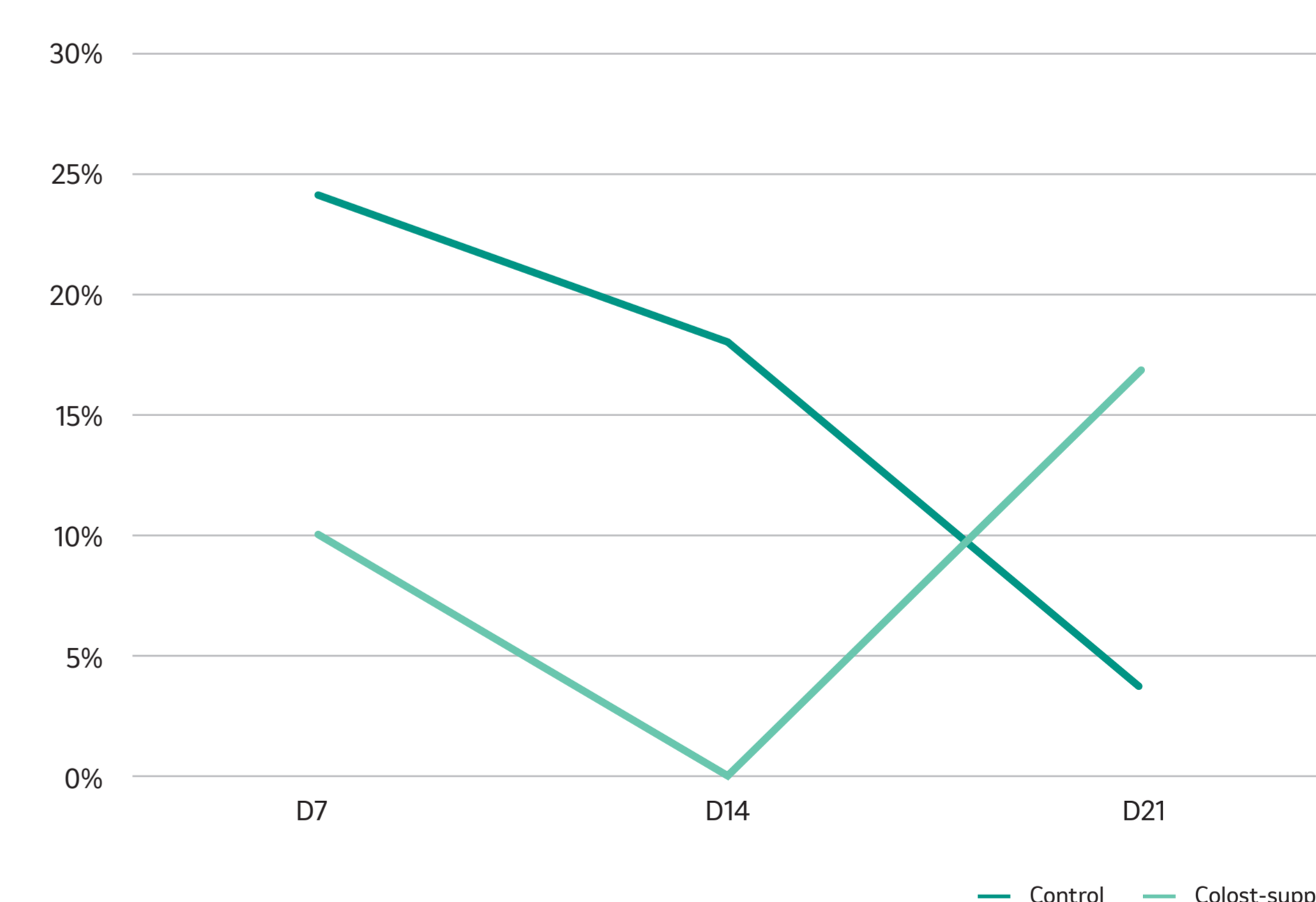


TABLE 1. Multivariate logistic models with a repeated measures on calf evaluating daily health observations.

Model	Treatment	OR	Lower CI	Higher CI	P-value
Resp signs first week	Colost-suppl.	0.28	0.05	1.54	0.14
Resp signs preweaning	Colost-suppl.	0.27	0.05	1.35	0.11
Attitude preweaning	Colost-suppl.	0.45	0.17	1.19	0.11
	Control	1.00	1.00	1.00	ref

The table shows the odds (OR) of Colost-suppl. compared to control calves for having respiratory signs the first week, respiratory signs in the preweaning period and depressed attitude in the preweaning period from 3 separate GEE logistic models.

AUTHORS' AFFILIATION

1. Berge Veterinary Consulting BV, Vollezele, Belgium & Ghent University, Merelbeke, Belgium
2. MSD Animal Health, Boxmeer, The Netherlands
3. A7Noord Dierenartsen, Drachten, The Netherlands