



# Microbiota and inflammation - do they tell the same story?

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## Background and objective

Microbiota can tell much about the health of the individual. Even more so, when it is combined with inflammatory markers! The neonatal period is the foundation for future performance. In this study, we explore associations and possible effects of microbiota and inflammation during chronic cryptosporidiosis.

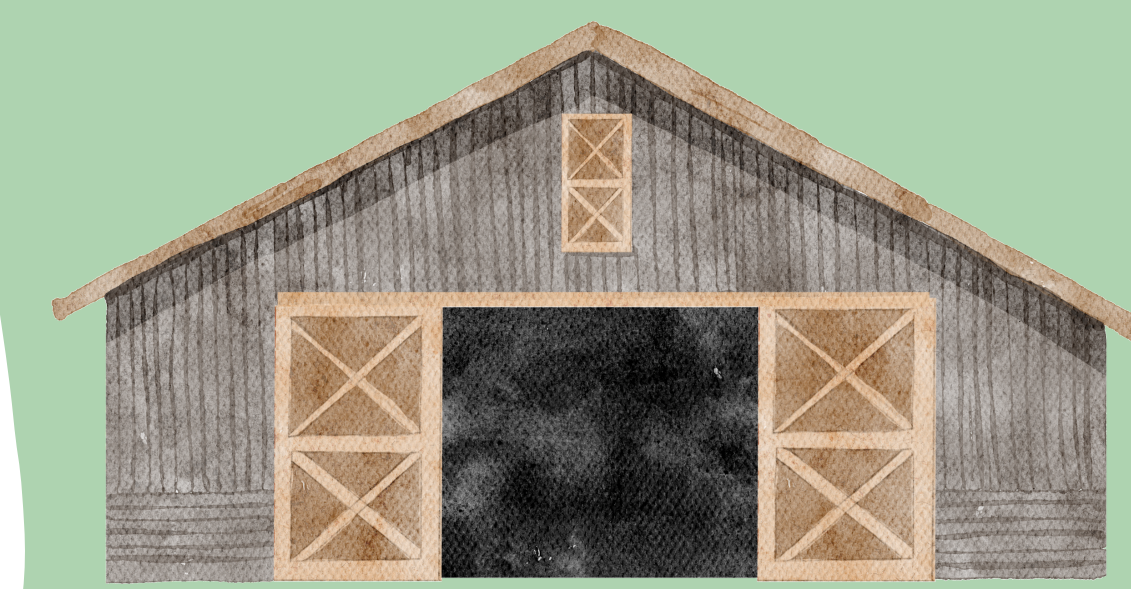
## Statistics

**Outcomes:** haptoglobin (Hp), serum amyloid A (SAA), interleukin 6 (IL-6), calprotectin (cp), 3-month average daily weight gain (ADWG)

**Predictors:** 7, 10, 14 and 21-day microbiota, Shannon index

**Analysis methods:** stabiliser (elastic net), random forest

## Materials & methods



One farm with chronic cryptosporidiosis



64 female dairy calves



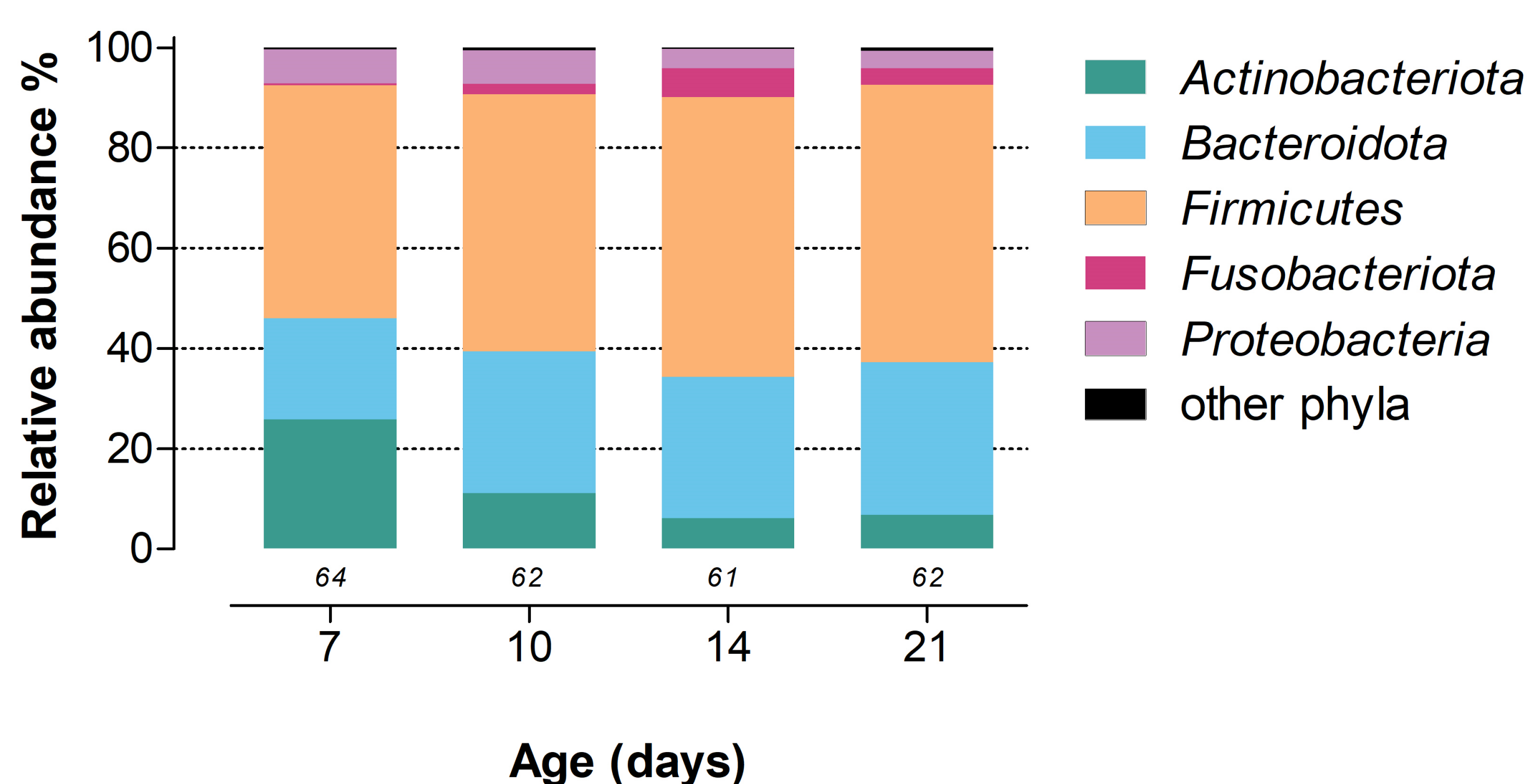
Faecal and blood samples day 7, 10, 14 and 21



16S rRNA sequencing and ELISA

## Results

	Day 7 (n = 64)	Day 10 (n = 62)	Day 14 (n = 61)	Day 21 (n = 62)
<b>SAA</b>	<i>Mitsuokella</i>	<b><i>Ruminococcus [torques] group</i></b>	<i>Gallibacterium</i>	
		<i>Peptostreptococcus</i>		
<b>Hp</b>	<i>Eubacterium [fissicatena] group</i>	<i>Lactobacillus</i> , <i>Megamonas</i> , <i>Cryptosporidium spp</i>		<i>Acidaminococcus</i> , <i>Lachnospiraceae NC2004 group</i> , <i>Acetitomaculum</i>
		unclassified <i>Muribaculaceae</i> , <i>Eysipelotrichaceae UCG-006</i>		<i>Succiniclaticum</i> , <i>Clostridium sensu stricto 1</i>
<b>cp</b>	Unclassified <i>Clostridia</i>	<i>Coprococcus</i>	unclassified <i>Ruminococcaceae</i>	<i>Megapshaera</i>
<b>IL-6</b>	unclassified <i>Coriobacteriales</i>	<i>Lactobacillus</i>		
<b>ADWG</b>	<i>Prevotella</i>		<i>Phascolarctobacterium</i>	
<b>Shannon index mean</b>	2.21	2.57	2.97	3.2
<b>Shannon index SD</b>	0.37	0.34	0.31	0.39



**Figure 1:** Composition of faecal microbiota of neonatal dairy calves at phylum level. Italic numbers above the x-axis indicate the number of samples.

**Table 1:** The green background indicates statistically significant positive association, purple indicates statistically significant negative association. Black text not in bold indicates trend toward the association in the respective background colour.

## Conclusions

Differs from other farm with acute cryptosporidiosis that caused deaths and was treated (Niine *et al.*, 2018, Loch *et al.*, 2023), although *Peptostreptococcus* showed a similar trend.

Relationships between microbiota, immune response, and performance depend on many factors, including farm, and results should be generalized with great caution.

Random forest and stabiliser identify the same genera.

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