

Fecal microbiome of dairy calves fed with fresh or frozen maternal colostrum or colostrum powder

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INTRODUCTION

Colostrum accelerates the bacterial colonization of the calf small intestine by providing nutrients, that will function as bacteria growth substrate, as well being a microorganism inoculum source. However, it is not known whether the effect is maintained when the calves are fed with frozen colostrum or colostrum powder.

The objective of this work was to evaluate the microbiome of dairy calves fed with different colostrum sources.

MATERIAL E METHODS

- 15 Holstein newborn calves housed in tropical shelters, and fed with:
 - fresh colostrum from the dam;
 - frozen colostrum;
 - colostrum powder (150g of IgG).
- Calves were fed 6L/d of whole milk and had free access to water and concentrate;
- After weaning (8th wk of age), calves were group housed;
- Fecal samples: collected at birth (0) and at days 07, 14, 28, 56 and 70.
- Extracted DNA → V3 and V4 region amplicons of the 16S rRNA gene → Amplified by PCR → Sequenced by the Illumina MiSeq platform.

Table 1 Fecal microbial diversity of calves fed different colostrum sources

Indices	Diet			p-value		
	Fresh colostrum	Frozen colostrum	Colostrum powder	D ¹	A ²	D x A ³
Shannon	2.61	2.51	2.63	0.718	< 0.001	0.348
Simpson	0.86	0.83	0.86	0.462	0.048	0.386
Chao1	53.87	51.02	53.69	0.852	< 0.001	0.758
Pielou	0.67	0.67	0.68	0.596	0.165	0.403

^{a, b} Values within a row with different superscripts differ significantly at $P < 0.05$. ¹ D = diet. ² A = age. ³ Dx A = Interaction between diet and age.

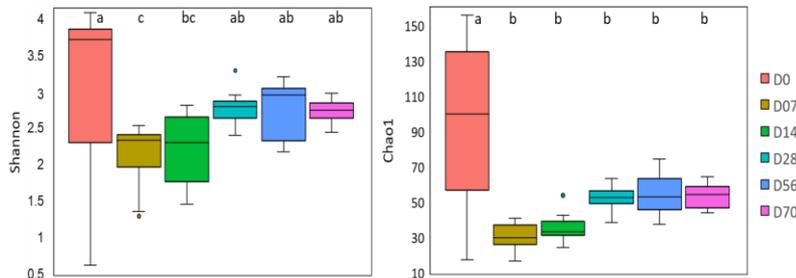


Figure 1 Diversity indices in fecal samples from calves fed different colostrum sources.

RESULTS

Bacterial composition

31 bacterial phyla were identified, and the most abundant in were:

- Bacteriodota, 34.07%
- Firmicutes_A, 25.37%
- Proteobacterias, 13.01%
- Fusobacteriota, 8.81%
- Firmicutes, 8.23%

CONCLUSIONS

Different sources of colostrum can be used to feed dairy calves, without affecting the diversity in the colonization of the intestinal tract.

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