

Nutrional Values of Bovine Colostrum : Charolaise Field Study

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Introduction

The colostrum of a cow is vital and its role in the immune transfer to the calf is well-known. It also represents the first and unique food of the new-born. Thus, its nutritional role is also essential, even if few studies have been done previously, especially on sucklers. In this manner, the study performed here allows a better knowledge of the nutritional composition of the colostrum in the Charolaise breed. The aim is to ensure a better control of the calf's feeding during the first days after birth, allowing to fully optimize its development.

Material and methods

The colostrum samples have been collected on 23 multiparous Charolaise cows. This has been done during a caesarean in order to obtain the colostrum from the first milking straight after parturition. The samples were kept frozen until being analysed by two types of chromatography: by gas chromatography (GC/FID) in order to individually identify and quantify the fatty acids; by liquid chromatography of ions (HPAEC-PAD) in order to obtain the sugar content. The level of total proteins has been obtained with the Kjeldahl method, the antibodies concentration using the Single Radial Immuno Diffusion (SRID), and fat determined by the gravimetric method after acid hydrolysis followed by extraction in Soxtherm® with petroleum ether.

Results

The colostrum of a Charolaise cow contains mainly proteins, then fat and finally lactose. Compared to the colostrum of a Prim Holstein cow, the colostrum of a Charolaise cow is poorer in energy, probably because of its lower level of fatty acids. However, the content of proteins is higher for the Charolaise cows and the quantity of antibodies is doubled. The study of the lipid fraction shows that the colostrum of Charolaise cows mainly contains long (more than 10 carbon atoms) and saturated fatty acids as does the one from dairy cows.

	Colostrum of the study (suckler)			Dairy cow colostrum*
	Quantile 0.25	Median	Quantile 0.975	
Dry matter (g/100g)	16.84	24.6	31.68	27.64
Total fat (g/100g)	1.985	4	9.15	6.7
Total proteins (g/100g)	10.1	17	21.53	14.92
Lactose (g/100g)	1.472	2.17	3.053	2.49
Crude ash (g/100g)	0.8	1	1.2	0.05
Immunoglobulin G (mg/ml)	44.64	98.85	158.2	40.9
Energy value (kcal/100g)	78.3	113.8	160.7	129.94

Conclusion

These results allow to have a better knowledge of the colostrum of Charolaise cows. Furthermore, it helps to understand the challenges of the colostrum intake depending on the type of farm activity: **risk of energy deficit in suckler farms**, while the **immunity transfer** remains the main problematic in **dairy farms**. These results help to provide a better guidance in the colostrum supplementation depending on the type of farm, and, thus, enhance the veterinarian's advisory role.