EVALUATION OF PASSIVE IMMUNITY TRANSFER AND PERFORMANCE OF CALVES RECEIVING DIFFERENT SOURCES OF IMMUNOGLOBULINS

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INTRODUCTION

The efficiency in the passive immune transfer (PIT) is directly associated with the production cost and productivity of the animals. When fresh maternal colostrum (MC) is not available, frozen colostrum or colostrum replacer (CR) is an alternative to avoid failures in PIT. The objective of this work was to evaluate the transfer of passive immunity, health, performance and metabolism of calves receiving different colostrum sources (fresh, frozen or colostrum replacer).

MATERIAL E METHODS

- 39 newborn dairy calves individually housed;
- Randomized block design according to sex, weight and date of birth;
- Colostrum feeding:
  1) 10% BW of fresh maternal colostrum (MC);
  2) 10% BW of frozen colostrum (FC);
  3) 1.5 doses of colostrum replacer (CR);
- Starter concentrate (23.43 % CP; 16.52% of NDF) and water free-choice;
- 6L/d of milk until 56d of age, when they were subjected to gradual weaning until the end of the experimental period (63d).

Figure 1. Colostrum storage (A), preparation (B) and supply (C)

RESULTS

Table 1. Evaluation of immunoglobulin consumption and passive immune transfer of calves fed different colostrum sources

	Treatments				P-value
Item	Fresh	Frozen	CR	SEM	T
Ig, Intake g	304.77[a]	292.57[a]	150.25[b]	13.38	<0.01
Serum IgG, g/L at 24h	26.65[b]	35.69[a]	16.93[c]	1.97	<0.01
Brix[1], % at 24h	9.52[a]	10.68[a]	8.23[b]	0.33	<0.01
AEA[2], %	25.43[b]	34.41[a]	31.66[ab]	2.11	0.02
FPIT[3], %	0	0	7.69 (1/13)	-	-

[1] Brix Refractometer; [2] apparent efficiency of absorption; [3] failures of passive imune transfer

Table 2. Intake and performance of calves submitted to different colostrum protocols

	Treatments				P-value		
Item	Fresh	Frozen	CR	SEM	T	S	T×S
Preweaning, 0-56d							
Concentrate, g/d	138.18	147.87	118.65	29.24	0.75	<0.01	0.34
Average gain, kg/d	0.613[a]	0.551[ab]	0.473[b]	0.029	0.01	<0.01	0.17
Body weight, kg							
Birth 0d	32.42	32.23	31.84	1.40	0.63	-	-
Final 56d	65.72[a]	61.76[ab]	60.37[b]	2.13	0.07	-	-
Weaning 56-63d							
Concentrate, g/d	965.20	749.40	733.29	127.99	0.24	-	-
Average gain, kg/d	0.673	0.449	0.584	0.101	0.14	-	-
Body weight, kg							
Final 63d	71.17[a]	65.03[b]	64.36[b]	2.46	0.04	-	-

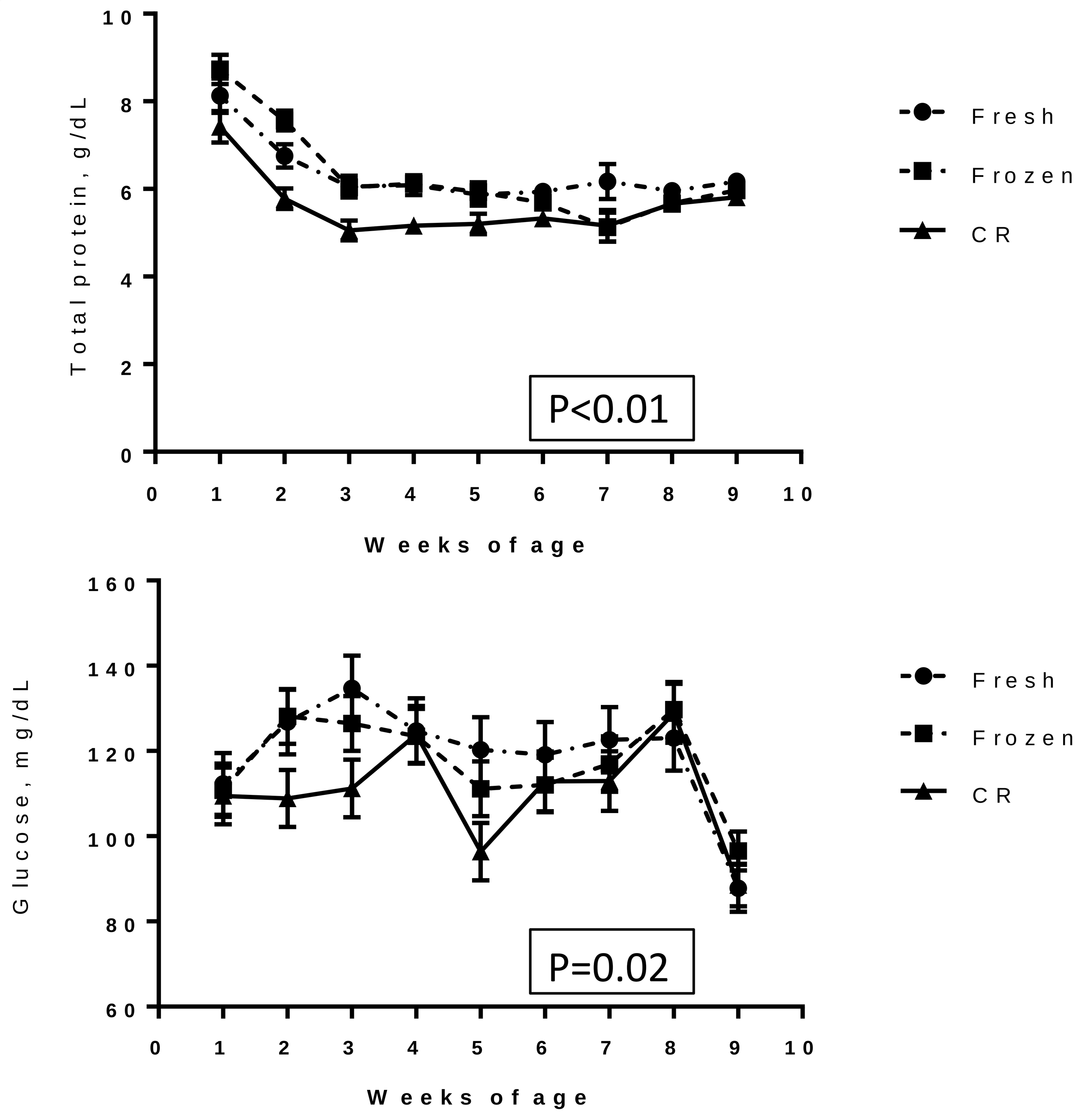

Figure 2. Total protein and glucose of calves submitted to different colostrum protocols

CONCLUSIONS

Feeding MC resulted in higher ADG preweaning and heavier animals at weaning. However, FC and CR used in this study are alternatives to their replacement, since they were efficient in PIT.