

Introduction

Colostrum administration is vital for newborn (Du *et al.*, 2011; Khul *et al.*, 2011). Heterologous administration of colostrum has been yet experienced pig (Boudry *et al.*, 2010). This study evaluated the impact of Azawak colostrum offered to newborn red kids on plasma protein profile, in Niger.

Material and methods

Forty (40) newborn kids were affected either to a control group (access to water and the mother) or a colostrum group (access to the mother, water and additional 50 ml of colostrum Azawak/animal the day of birth, and then 25ml/animal/day from the 2nd to 15th day). Blood samples (10ml/animal) were obtained at the age of 10 and 30 days by jugular puncture into EDTA vacutainer tubes. The quantification of total protein was performed by the Biuret method. The agarose gel electrophoresis was used to determine serum levels of albumin, α -globulin, β_1 -globulin, β_2 -globulin, and γ -globulin. Figure 1 shows the materials used.

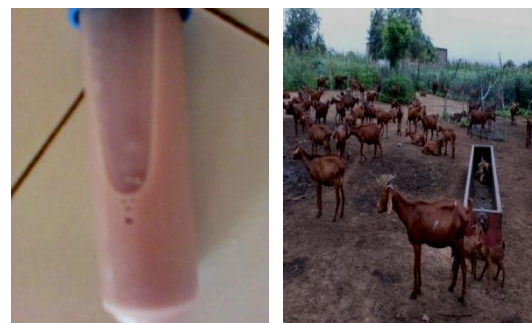


Photo 1: Colostrum Photo 2: Kids and Goats

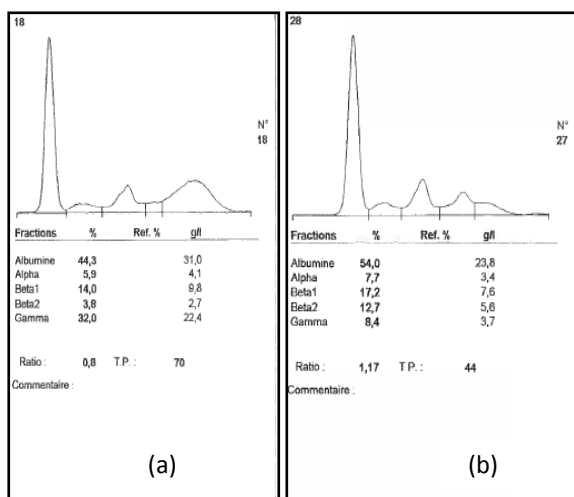
Figure 1: Materials used

Results

The average concentrations of protein fractions obtained at both ages reached generally higher values in colostrum than in control group (table 1). At day 10, the colostrum group tended to show ($P < 0.07$) higher levels for α -globulin and showed higher values ($P < 0.04$) for β_1 -globulin. At day 30, total protein and β_2 -globulins were higher in colostrum group. Figure 2 presents electrophoresis curve for one kid of colostrum group (a) and one of control group (b) of sample.

Table 1: Plasma total proteins and fractions proteins (g/l) at d10 and d30 of age in kids that received or not a supplement of bovine colostrum at birth.

Plasma fractions	10 days old			30 days old		
	Colostrum n=18	Control n=16	Significance	Colostrum n=18	Control n=16	Significance
Protein (g/l)	58.3 \pm 7.5	57.2 \pm 7.8	$P < 0.71$	58.1 \pm 4.5	52.9 \pm 7.2	$P < 0.01$
Albumin (g/l)	28.0 \pm 3.5	28.6 \pm 3.2	$P < 0.91$	24.6 \pm 7.5	23.6 \pm 5.6	$P < 0.68$
α -globulin (g/l)	4.5 \pm 0.6	4.1 \pm 0.7	$P < 0.07$	4.7 \pm 0.7	4.3 \pm 1.3	$P < 0.25$
β_1 -globulin (g/l)	9.7 \pm 1.4	8.7 \pm 1.0	$P < 0.04$	11.1 \pm 3.7	10.5 \pm 3.7	$P < 0.63$
β_2 -globulin (g/l)	2.8 \pm 1.0	2.3 \pm 0.7	$P < 0.17$	4.7 \pm 3.8	2.2 \pm 0.7	$P < 0.01$
γ -globulin (g/l)	13.6 \pm 3.4	13.9 \pm 4.7	$P < 0.71$	13.2 \pm 4.8	11.8 \pm 4.6	$P < 0.38$
Alb. /Glob.	0.9 \pm 0.1	1.0 \pm 0.1	$P < 0.13$	0.8 \pm 0.4	0.85 \pm 0.3	$P < 0.87$



Discussion and prospect

The administration of heterologous colostrum from Azawak cows to kid seems to have positive effects on some plasma parameters, as yet reported by Boudry *et al.* (2010) in pigs. It is however surprising that no effect was observed on γ -globulin levels. It would be worth to discriminate the plasma proteins derived from bovine and maternal colostrum.

References:

- Boudry C., Dehoux J-P., Frédéric G., Colinet F., Wavreille J., Portetelle D., Beckers Y., Théwis A. Effect of bovine colostrum on the serum insulin-like-growth factor-I (IGF-I), the IGF binding proteins-2 and -3 and the thyroid hormones in weaning piglets. *Archiv Tierzucht*, 2010, 53, 677-690.
- Du M., Xu W., Yi H., Han X., Wang C., Zhang L. Protective effects of bovine colostrum acid proteins on bone loss of ovariectomized rats and the ingredients identification. *Mol Nutr Food Res.*, 2011, 55, 220-228.
- Kuhl J., Aurich J.E, Wulf M., Hurtienne A., Schweigert F.J., Aurich C. Effects of oral supplementation with beta-carotene on concentrations of beta-carotene, vitamin A and alpha-tocopherol in plasma, colostrum and milk of mares and plasma of their foals and on fertility in mares. *J Anim Physiol Anim Nutr.*, 2011, 4, 1439-0396.

Figure 2: The electrophoresis curve for one kid of ColG (a) and one of Cong (b) of sample.