

Putative Genetic interactions of exon 4 of K-casein gene on Milk production and Casein-fraction variability in goats

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Genes for all caseins are located altogether in a cluster on **q**-arm of chromosome 6 (bovines) or 4 (humans and others), presenting some particularities of organization. Genotyping associated to quantitative studies is allowing to observe the existence of possible amplification / depressing mutual effects on gene expression over the all casein genes, as well as interactions on the total amount of casein and milk excreted.

Lactation of 11 “Serranas Ribatejana” goats and 3 Saanen-crossed was studied along 25 weeks. Intending specie comparison data from 5 ewes were also taken. Protein content of individual milk sample was withdrawn weekly from the morning milking and its protein content was quantified in spectrophotometer, and the casein differential composition was quantified by ImageQuant® after reading gels under Comassie BBG250 coloration from SDS-PAGE electrophoresis carried out with 3 repetitions. These animals were genotyped for exon 4 of **k-cas** (**k-cas.E₄**) through automatic sequencing (Beckman Counter-CEQ 8000®).

Least square analysis was carried out. Sheep milk was richer ($P<0,001$) in protein content than goat's milk (4,97% vs 3,07%, respectively). The proportion of the 3 caseins depended on the specie ($P\leq 0,01$), except for **k-cas** with identical values between the 2 species, on the female itself ($P<0,001$) and on the week of lactation ($P<0,001$). **a-cas** showed an wavy but steady excretion profile, **b-cas** decreased and **k-cas** proportional excretion increased from 7,5% to 17,5%, at the end of lactation period.

Data, and the corresponding standard deviations, were submitted to longitudinal hierarchical fixed effects analysis (SAS) which showed that genotype influenced Total Protein [PT] ($P<0,05$), **a-cas** and **b-**($P<0,001$) as well as **k-cas** ($P<0,01$) excretion. Allele **B^{k-cas.E₄}** seems to increase PT, **a-cas** and **k-cas** and to decrease **b-cas** excretion.