Preliminary Results Concerning the Effect of $\alpha_{S1}$-casein Polymorphisms on Cheesemaking Efficiency in Carpathian Goat Breed

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SUMMARY

In goat milk, among the four caseins, $\alpha_{S1}$-casein ($\alpha_{S1}$-CN) locus is the most polymorphic. Eighteen alleles with four different expression levels have been identified so far in different goat breeds (reviewed by Caroli et al., 2006), having a significant influence on milk quality and its manufacturing properties (Grosclaude et al., 1994). In Carpathian goat breed we already reported a high degree of $\alpha_{S1}$-CN polymorphisms in Carpathian goat breed (Bâlteanu et al., 2007). However, no studies were done so far to quantify its effect on milk manufacturing properties and specific goat flavour. To correctly quantify the effect of this polymorphism, six different goat populations from central part of Romania were genotyped by IEF and PCR-RFLP, as described before (Pop et al., 2008). Three different experimental lots each consisting of 50 homozygous individuals in $\alpha_{S1}$-CN locus (AA, EE and FF) were organised and tagged with 3 different colours. Twenty litres of milk from each genotype group (AA, EE and FF) were processed in green cheese in the same conditions. Differences were observed concerning milk quality (whole protein content AA=3.71%, EE=3.26%, FF=3.40%; fat content: AA=3.99%, EE=3.52%, FF=3.57%; dry matter: AA=11.97 %, EE=11.04 %, FF=11.37 %), coagulation time (AA=16 minutes, EE=25 minutes, FF=40 minutes) and cheese yield (AA=2400g, EE=2060g, FF=2085g). EE cheese type was judged as having the stronger specific goat flavour, AA the weakest, FF being intermediate. The results are pretty similar with those obtained in French and Italian goat breeds. Surprisingly in our study EE type milk had lower quality and the lower cheese yield as compared with AA or FF milk and the strongest goat flavour. Further studies are in progress to exactly quantify the effect of this polymorphism in Carpathian goat breed (PN II Project no. 52104/2008).

REFERENCES