

GENETIC DIVERSITY IN MILK PROTEINS AMONG ESTONIAN DAIRY CATTLE

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Summary. The aim of the study was to determine the main polymorphisms in casein beta (*CSN2*), casein kappa (*CSN3*) and lactoglobulin beta (*LGB*) genes in Estonian dairy cattle and compare these among breeds. The study was based on 7 single nucleotide polymorphisms among 122 individuals from three cattle breeds. Allele and genotype frequencies were calculated, and Hardy-Weinberg equilibrium and genotypic disequilibrium tests were performed.

Genotypic differentiation was statistically significant between Estonian Red and Estonian Native cattle and between Estonian Red and Estonian Holstein cattle. Regarding *CSN3*, Estonian Holstein were characterized by a high genotype AA frequency in comparison with the other common AB genotype and higher A-allele and AB genotype frequency for *LGB*. The proportion of uncommon *CSN3* B-allele (BB and BE genotypes) in the studied breeds was higher in the Estonian Red. For *CSN2*, the A2 allele occurred more frequently in Holstein and Estonian Native cattle than in Estonian Red.

The studied genetic variants of milk proteins influence milk yield, milk composition and may have a range of implications for human health. Utilization of natural genetic resources represented by local breeds is helpful in cattle breeding, and in sustaining the breeds.

Key words: dairy breeds, casein beta, casein kappa, lactoglobulin beta, SNP, ASO-PCR.