

ASSOCIATION OF KAPPA CASEIN POLYMORPHISM WITH MILK YIELD AND MILK PROTEIN GENOMIC VALUES IN COWS REARED IN LITHUANIA

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Summary. Aim of the study was to investigate polymorphism of bovine kappa casein gene in Lithuanian milk cattle population and to evaluate relation of certain genotypes with milk production traits expressed by genome scores. DNA samples were collected from 189 milk breed cattle reared in Lithuania. DNA was extracted from blood by salt method (Miller et al., 1998). Bovine kappa casein gene polymorphism study was performed by PCR-RFLP method (Soria et al., 2003). After PCR 935 bp fragment was received, which was digested with restriction enzymes HaeIII / HindIII and the fragments were separated in the 3% agarose gel, what allowed to identify the kappa casein A, B, E alleles. A allele with frequency 0.72, E allele with frequency 0.05. B allele, which can be used to carry out selection to improve milk processing properties was found 0.23 frequency. Six genotypes were identified: AA, AB, AE, BB, BE, EE at different frequencies. The most common was the AA genotype, which had 49.2 % of the tested animals. EE was least frequently occurring genotype, which had only 0.5% of the tested animals. The biggest influence on the milk processing properties having BB genotype was found in 2.1% of the cows. Cows with kappa casein AA genotype had the highest genomic scores for milk yield (6.05), observing statistically significant difference between kappa casein AA and AB genotypes ($P < 0.05$); the highest protein amount genomic values had kappa casein BB genotype cows (6.25), the highest protein percent genomic scores had BB and BE genotype cows. Dispersion analysis showed that 2.8 % of milk yield variation expressed by genomic scores, 0.2% of protein amount variation and 3.3 % of protein percent variation ($P < 0.05$) are dependent from kappa casein gene genotype. These results create opportunities to improve the properties of milk processing in Lithuanian dairy cattle population.

Keywords: kappa casein, polymorphism, cattle, PCR-RFLP