

DISTRIBUTION OF ALLELE FREQUENCIES IMPORTANT TO MILK PRODUCTION TRAITS IN LITHUANIAN BLACK & WHITE AND LITHUANIAN RED CATTLE

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Summary. Lithuanian Black & White (LBW) and Lithuanian Red (LR) cattle belonging to the modern breeds form 99% of the total Lithuanian cattle population. These breeds have been intensively selected for milk production during the last 50 years. Associations were analysed between polymorphisms localized in six different polymorphic sites: four polymorphisms in the 5'-noncoding region of GHR gene: RFLP-*AluI*, -*AccI* and -*Fnu4HI* (located within the 1,206-bp LINE-1 element) and -*Sau96I* (located within the P1 promoter); one polymorphic site located in exon V of GH gene – RFLP-*AluI*, and *RsaI* polymorphic site located in exon 3 of the bovine PRL gene, including 52 LBW and 136 LR cattle. Genomes were identified by the PCR-RFLP method.

The relative frequencies of alleles were determined for Lithuanian Black & White and Lithuanian Red cattle: *GHR*^(*Alu*⁺) and *GHR*^(*Alu*⁻) alleles – 0.45, 0.55 and 0.64, 0.36; *GHR*^(*Acc*⁺) and *GHR*^(*Acc*⁻) alleles – 0.62, 0.38 and 0.53, 0.47; *GHR*^(*Fnu4H*⁺) and *GHR*^(*Fnu4H*⁻) alleles – 0.87, 0.13 and 0.90, 0.10; *GHR*^(*Sau96*⁺) allele – 1.00 and 1.00, *GHR*^(*Sau96*⁻) allele were not found in both breeds; *GH*^L and *GH*^V alleles – 0.70, 0.30 and 0.77, 0.23; *PRL*^A and *PRL*^B alleles – 0.79, 0.21 and 0.87, 0.13, respectively. Except for *GHR-Fnu4HI* and *GH-AluI* loci, significant differences between the allele frequencies of LBW and LR cattle were found of *GHR-AluI*, -*AccI*, and *PRL-RsaI* genes.

Keywords: gene, polymorphism, polymerase chain reaction, GH, GHR, PRL.