عنوان مقاله:

Association of PIT1 gene and milk protein percentage in Holstein cattle

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خلاصه مقاله:

The pituitary-specific transcription factor (PIT-1) gene is a candidate gene for growth, carcass and also for milk yield traits. In dairy farm animals, the main goal of the selection is the improvement of milk yield and composition. The genes of milk proteins and hormones are excellent candidate genes for linkage analysis with quantitative trait loci (QTL) because of their biological significance on the quantitative traits of interest. Thus, the objective of this study was to analyze the association between polymorphism of the PIT1 gene and milk protein percentage in Holstein cattle sampled from a dairy farm included 1000 animals in Khorasan Razavi province, east of Iran. A total of 100 cattle were randomly sampled in the study. Genomic DNA was extracted from the whole blood. One pair primers was used for amplification of PIT1 gene and PCR products were electrophoresed on 1% agarose gel. Then PCR products were digested with HinfI restriction enzyme. The genotypic data were analyzed using PopGene software. Allelic frequencies of A and B were 0.25 and 0.75, respectively. Frequencies of AA, AB and BB genotypes were 0.06, 0.40 and 0.54, respectively. The number of observed alleles, number of effective alleles, expected heterozygosity, observed heterozygosity, mean of heterozygosity, expected hemozygosity, observed hemozygosity, Nei's index and Shanon's index were 2.00, 1.66, 0.37, 0.40, 0.38, 0.62, 0.59, 0.37 and 0.56, respectively. Results of Chi-square test showed that the population is in Hardy-Weinberg equilibrium. The results of the association study between milk protein percentage and the observed genotypes indicated that the effect of genotype on protein percentage was significant ($P<0.01$) and AB genotype had the most effect on milk protein percentage suggesting that this polymorphism can be .used as a molecular marker for this trait

کلمات کلیدی:

polymorphism, PIT1 gene, PCR, Holstein cattle, milk protein