Determination of Genetic Polymorphisms Of Leptin, Ghrelin and Insulin Like Growth Factor-1 (Igf-1) Genes in Beef Cattle Raised in Turkey

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Abstract

This study was performed to determine polymorphisms in leptin, ghrelin and insulin like growth factor-1 (IGF-1) genes and to identify genotype and alleles frequencies in beef cattle raised in Sanliurfa province of Turkey. A total of 450 male beef cattle raised in Harranova Livestock and Agricultural Enterprise in Sanliurfa and selected by phenotypic evaluation, were included in to the study. The animal material consisted of 112 Hereford, 145 Angus, 54 Charolais, 36 Black Hereford, 24 Brahman and 34 Limousin cattle. After DNA isolation from meat samples, leptin, ghrelin and insulin like growth factor-1 (IGF-1) gene polymorphisms were determined by using PCR-RFLP method. All three possible genotypes of BB, AB and AA were observed in IGF-1/SnaBI gene AB and AA having the highest and the lowest frequency respectively. The frequency of B allele (0.600) was higher than that of A allele (0.400). With respect to PstI polymorphism at the leptin gene, three possible genotypes were also observed. In this locus; genotypes having the highest and the lowest frequency were CT and TT respectively and the frequency of C allele was 0.571 while frequency of T was 0.429. At the BfaI polymorphic site of Ghrelin gene in AA and AG genotypes were observed while GG genotype was not observed. Accordingly, the frequency of the A allele was found to be high (0.938) and the frequency of the G allele was found to be quite low (0.062). As a result, it was determined that the examined beef cattle herds were in the Hardy-Weinberg equilibrium in terms for IGF-1 / SnaBI and Ghrelin / BfaI polymorphisms and not for Leptin / PstI polymorphism.

Keywords: Genetic Polymorphisms, Beef Cattle, Ghrelin and Insulin