LEPTIN GENE EXON-3 POLYMORPHISM IN GIR CATTLE AND MEHSANA BUFFALO

N.B. Jhala¹, P.H. Vataliya², D.N. Rank³, U.V. Ramani⁴

ABSTRACT

Leptin gene, located at BTA 4q 32 on chromosome 4 in bovines codes a 16 kDa 167 amino acid protein hormone, which modulates energy metabolism, immune functions, and fertility, acting through a neuroendocrine pathway, is associated with several economic traits, such as, growth, feed intake, reproduction, and milk yield in cattle and buffaloes. Polymorphism of leptin gene has been sparsely studied in dairy livestock in India. Moreover, there is no report on leptin gene polymorphism of exon-3 locus in Gir cattle and Mehsana buffalo. Both are dairy animals, native to the state of Gujarat, India. The present study describes polymorphism in Gir cattle and Mehsana buffalo at respective restriction sites in exon-3 locus of leptin gene by PCR-RFLP, based on the blood samples collected from 50 Gir cattle and 50 Mehsana buffaloes from their respective breeding tracts. Amplification of 538 bp leptin gene fragment of exon-3 region by leptin gene specific primers, and digestion of the amplicon with Hinfl restriction enzyme revealed that it was monomorphic with only one genotype (AA) in both Gir cattle and Mehsana buffalo. Obviously, the allelic frequency of A was 1.0. This study implicates the prospective use of leptin gene exon-3 polymorphism to prevent genetic adulteration in breeding populations of Gir cattle and Mehsana buffaloes.

KEY WORDS

Exon-3, Leptin gene, Polymorphism, Gir, Mehsana, PCR-RFLP

Author attribution: ¹Veterinary Officer, Veterinary Dispensary, Nandol, Gujarat, India- 382305, ²Professor, Department of Animal Genetics and Breeding, College of Veterinary Science and Animal Husbandry, Junagadh Agricultural University, Junagadh, Gujarat, India- 362001, ³Professor and Head, ⁴Research Associate, Department of Animal Genetics and Breeding, College of Veterinary Science and Animal Husbandry, Anand Agricultural University, Anand, Gujarat, India- 388001. ⁵Corresponding author: dnrank@gmail.com Date of Receipt: 07/10/2010, Acceptance: 20/03/2011.