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Association of SNPs in exon 3 of leptin (LEP) gene with growth traits in Nilagiri Sheep of Tamil Nadu

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Nilagiri sheep, a dual purpose breed used for meat and fine wool production, was evolved during 19th century and contains unknown levels of inheritance of Coimbatore, Tasmanian Merino, Cheviot and South Down breeds of sheep. LEP gene is one of the potential genes involved intricately in the metabolism and growth of animals association of polymorphic candidate genes with economic traits will help breeders to search for some genetic marker. The LEP gene consists of three exons and two introns. The Exon 3 is 2731 bp length (Gene Accession Number NC_019461 and Gene ID 443534). Characterization of Exon 3 of LEP gene in Nilagiri sheep revealed two SNPs, 16973 G>A (SNP-L1) and 17476 C>T (SNP-L2). Both SNPs were transitions identified in the untranslated region. For the SNP-L1, all the animals screened were of AA genotype. The SNP-L2 showed a restriction site for the enzyme BsrDI, and PCR-RFLP was used for genotyping the Nilagiri population. The frequency of CC and CT genotypes were 0.73 and 0.27 respectively. TT genotype was absent. The C allele had a frequency of 0.87 and T allele 0.13. Data pertaining to growth traits viz., birth weight, weaning weight, 6-months weight, 9-months weight and yearling weight were collected and pre-weaning and post-weaning ADG calculated. Using the least-squares analysis of variance, it was found that the post-weaning ADG in Nilagiri sheep was significantly ($P<0.05$) associated with this SNP. Animals with CC genotypes had a higher post-weaning ADG of 46.88 ± 2.28 g as compared to the animals of CT genotypes with 36.63 ± 3.62 g suggesting that most of the impact of LEP is realized after weaning.

Biography

D Cauveri is working as Assistant Professor in the Department of Animal Genetics and Breeding, Madras Veterinary College, TANUVAS for the past eight years. She has submitted her PhD thesis on genetic variability of growth hormone (GH) and Leptin (LEP) genes in sheep breeds of Tamil Nadu. The abstract is part of the thesis of the first author and she has 10 research publications and 20 research abstracts to her credit. She has served in various Committees in organising Seminar/Symposium/Workshops conducted in TANUVAS.

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