

Short communication

Genetic variability and bottleneck studies in Zalawadi, Gohilwadi and Surti goat breeds of Gujarat (India) using microsatellites

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Abstract

Indian goat breeds are recognized as an invaluable component of the world's goat genetic resources. Microsatellite pairs were chosen from the list suggested by International Society for Animal Genetics (ISAG) and amplified in two multiplexes (Set-I: 7 microsatellites and Set-II: 11 microsatellites) for automated fluorescence genotyping to assess bottleneck and analyze genetic variability and genetic distances within and between three goat breeds viz. Zalawadi, Gohilwadi and Surti. The observed number of alleles ranged from 4 (Oar JMP-29) to 15 (ILSTS-030 and -034) with a total of 178 alleles and mean of 9.89 alleles across the three breeds. The overall heterozygosity, PIC and Shannon index values were 0.61, 0.60 and 1.50 indicating high genetic diversity. The maximum observed heterozygosity was found in Gohilwadi and minimum in Surti goat breed. The Nei's standard genetic distance was minimum between Zalawadi and Gohilwadi, and maximum between Gohilwadi and Surti. Non-significant heterozygote excess on the basis of IAM, TPM and SMM models, as revealed from Wilcoxon sign-rank tests, along with a normal 'L'-shaped distribution of mode-shift test, indicated no bottleneck in Zalawadi and Gohilwadi goat populations, whereas mild bottleneck in the recent past for Surti breed. This research on goat genetic diversity in Gujarat state provides valuable information on Zalawadi, Gohilwadi and Surti goat genetic resources, and will assist in developing a national plan for the conservation and utilization of indigenous goat breeds.

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1. Introduction

The domestic goat (*Capra hircus*) is known for its ability to thrive on paltry fodder and to withstand harsh environments. From an agricultural standpoint, the

world's 700 million goats provide reliable access to meat, milk, skin, and fibre for small farmers particularly in developing countries like India. India is bestowed with 17% of total world's goat population comprised of 21 recognized and many non-descript breeds. Among them, Zalawadi, Gohilwadi and Surti are the three major goat breeds of Gujarat state and are known for meat quality and milk production. Molecular genetic characterization of these breeds has not been carried out. Hence, it is essential to genetically characterize and unfold the genetic diversity of indigenous breeds.

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Plate 1. Map of Gujarat showing breeding tract of Zalawadi, Gohilwadi and Surti breeds of goat.

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