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'Genetic proof for domestication of sheep'

Study finds evidence that Indian subcontinent was one of domestication centres

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Researchers at the Central University of Kerala (CUK) have found that domestication of sheep had taken place in the Indian subcontinent, especially in Indus Valley civilisation regions in the 6th or 7th millennium BC.

The study, led by M. Nagarajan, Assistant Professor, Department of Genomic Science, CUK, found genetic evidence that sheep had been domesticated in the region in contrast to the general belief that they were domesticated then in West Asia alone, and that they had arrived in the Indian subcontinent through migration.

Even though India ranks second in terms of sheep population, represented by as many as 44 well-described breeds, genetic diversity and phylogeography of Indian sheep breeds remained poorly understood, particularly the south Indian breed, Dr. Nagarajan told *The Hindu*. However, the study provided strong genetic evidence that the Indian subcontinent was one of the domestication centres of the lineage A sheep.

When DNA sequences were compared with other breeds across the world, it was found that the Indian sheep haplotypes were unique and highly diverse. The high genetic diversity and statistical analysis suggest that sheep was domesticated in the country.

"We are proposing that wild Sheep, O. vignei blanfordi in Mehrgarh [Pakistan], may be a potential progenitor of domestic sheep lineage, and detailed genome sequencing of this wild sheep may further contribute to our understanding of the genetics of domestic sheep," said Dr. Nagarajan.

He added that the study also found that the introduction of sheep 'lineage B' into the Indian subcontinent had been through sea route, and not from the Mongolian plateau, as proposed by researchers in China.

Researchers also retrieved the mitochondrial DNA sequences of another 11 breeds for analysis, which further strengthened their study, Dr. Nagarajan added.

He said among the south Indian breeds, except for Mandya, all others, notably Bellary, Coimbatore, Hassan, Katchaikatty Black, Nilgri, Ramnad White, and Vembur, were fully encompassed with lineage A, while Kenguri Kilakarsal, Madras Red, Mecheri, and Tiruchy Black breeds, had very low occurrences of lineage B mitochondria.

In contrast, a majority of sheep belonging to Mandya and Sonadi breeds carried a relatively high frequency of lineage B.

"Our study will be useful in understanding the history of agriculture in Indus Valley Civilisation," Dr. Nagarajan added.

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