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Genetic diversity and differentiation in Iberian goat breeds

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This work was carried out in the framework of the CONBIAND network, which is a scientific society aimed at studying and promoting the genetic diversity of different livestock species in Iberoamerica. A set of 22 microsatellite genetic markers recommended by FAO/ISAG for genetic diversity studies with goats were used to analyze a comprehensive sample of the goat breeds currently recognized in Portugal and Spain. Overall, 27 Iberian goat breeds were analyzed, including 8 breeds from the Balearic and Canary islands. The mean number of alleles/locus was lowest in the Formentera breed and highest in Mallorquina and Florida. The expected heterozygosity/locus/breed ranged from about 0.6 to 0.71, except for the Palmera breed, where it was 0.51. The proportion of genetic variability accounted by breed differences was 0.077, while the within-breed deficit in heterozygosity was above 0.1 in the Blanca Celtibérica, Pitiüsa, Mallorquina, Serrana and Preta de Montesinho. The diversity among breeds, assessed by Nei's DA genetic distances, indicates the existence of an isolated cluster of Canarian breeds, while the other breeds tend to cluster with those with a close geographical distribution. Our comprehensive study of Iberian breeds indicates that the existing levels of genetic diversity are high in the majority of the breeds, but several breeds show levels of inbreeding which suggest that there is the need for programs aimed at management of their genetic diversity, to avoid further genetic erosion.