

PSVIII-2 Genetic diversity analysis of hybrid Karachaev goats (*Capra hircus*) population using microsatellite marker data

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Objectives: We focused on examination of the genetic diversity and population structure of hybrid animals between domestic Karachaev goats (*Capra hircus*) and The West Caucasian tur (*Capra caucasica*) using microsatellite markers data.

Materials and methods: A total of 143 individuals were analyzed using the panel of 10 microsatellite loci. Samples were analyzed according to the manufacturer's recommendations on an automatic sequencer ABI 3130XL genetic analyzer (Applied Biosystems). Genetic diversity was calculated using GenAEx 6.503 software.

Results: genotyping of ten microsatellite loci in hybrid forms of Karachaev goats and turs detected 106 alleles in total. Na values ranged from five (INR063) to seventeen (SRCRSO008), averaging 10.6 alleles per locus across the 10 loci. All loci were polymorphic. This is higher than the similar indicator obtained by Kharzinova et al. (2019) in populations of Soviet wool, Tajik wool, Orenburg downy, Alpine and Zaanen dairy breeds of goats, studied using the panel of same 10 STR-markers (9.3 loci). Other key indexes of genetic diversity could be found in table 1. The values of the coefficient F_{IS} suggest the absence of related mating in the herd.



Fig. 1. Indigenous Karachaev goat breed possesses unique features including significantly less fat deposition in the body compared to sheep and cattle, ability to graze at an altitude of up to 1200 meters and to produce fertile hydrides with wild relatives

Table 1. Genetic diversity of 10 microsatellite markers among hybrid Karachaev goats (*Capra hircus*)

Locus	Indicator							
	n	Na	Ne	I	Ho	He	uHe	F_{IS}
INRA006	143	11	6.698	2.051	0.902	0.851	0.854	-0.060
ILSTS087	143	10	4.357	1.773	0.734	0.771	0.773	0.047
INR063	143	5	2.220	1.099	0.448	0.550	0.552	0.186
CSRD247	143	12	7.322	2.178	0.867	0.863	0.866	-0.004
OARFCB20	143	10	3.888	1.641	0.601	0.743	0.745	0.190
ILSTS019	143	9	6.316	1.936	0.552	0.842	0.845	0.344
MAF065	143	14	6.111	2.049	0.797	0.836	0.839	0.047
INRA005	142	8	3.362	1.488	0.648	0.703	0.705	0.078
ILSTS008	143	10	1.557	0.845	0.350	0.358	0.359	0.022
SRCRSO008	143	17	6.168	2.153	0.776	0.838	0.841	0.074
Mean	142.9	10.6	4.800	1.721	0.668	0.735	0.738	0.092
SE	±0.1	±1.035	±0.633	±0.144	±0.057	±0.052	±0.052	±0.037

Note: n – number of genotyped individuals; Na – number of alleles per locus; Ne – number of effective alleles per locus; I – Shannon's information index; Ho – observed heterozygosity; He – expected heterozygosity; uHe – unbiased observed heterozygosity; F_{IS} – inbreeding coefficient.

Conclusion: Information on genotypic variability of Karachaev goats hybrid forms obtained here will contribute into the breeding programs improvement and to preservation of existing native breeds.