

Genetic diversity in Istrian sheep – preliminary results

Jelena Ramljak¹, Ante Kasap¹, Marija Špehar², Ante Ivanković¹, Ivan Širić¹, Valentino Držaić¹

¹*University of Zagreb Faculty of Agriculture, Svetošimunska cesta 25, Zagreb, Croatia
(jramljak@agr.hr)*

²*Croatian Agency for Agriculture and Food, Svetošimunska cesta 25, Zagreb, Croatia*

Summary

Sheep breeding is one of the most important sources of income in the southern Mediterranean part of Croatia and is based on local breeds. One of them is the Istrian sheep, mainly bred for milk production which is processed into high-quality cheese. In recent decades, the population size of Istrian sheep has decreased, which may lead to an increase in inbreeding and a general loss of genetic diversity. The aim of this study was to estimate genetic diversity and population structure to get insight into the current status of Istrian sheep. 84 individuals from 12 flocks were genotyped with the Ovine SNP50 BeadChip. Quality control was performed with standard thresholds (SNP call rate > 0.9, minor allele frequency > 0.01, and individual genotype call rate > 0.9). Only autosomal SNPs were used for the analyses, resulting in a data set of 84 individuals and 45,806 SNPs. The observed heterozygosity was 0.351, whereas both, the expected heterozygosity and Nei's genetic diversity were 0.365. In the data set used, the coefficient of inbreeding was 0.04. PCA analysis showed the separation of three flocks, with PC1 and PC2 accounting for 6.45% and 5.08% of the genetic variation, respectively. Although Istrian sheep show a considerable level of heterozygosity, the moderate level of inbreeding requires attention in breeding and matting schemes. These preliminary results highlight the importance of monitoring the genetic composition of Istrian sheep and the need for further analysis.

Key words: Istrian sheep, SNP, genetic variability, conservation

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