Genetic characterisation of autochthonous horse breeds in Croatia

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Abstract
Croatian autochthonous horse breeds are a part of domestic animal genetic resources. They belong to the group of endangered breeds. The objective of this study was to analyze genetic structure and genetic distance of three autochthonous horse breeds. Genetic variation of the autochthonous horse breeds in Croatia was analyzed using polymorphic blood proteins, microsatellite loci and mtDNA. Allele frequencies, genetic distances, heterozygosity were computed using Arlequin programme. The results of polymorphic blood proteins analysis indicated a close relationship between Croatian coldblood and Murinsulaner horse. The average observed microsatellite heterozygosity was 0,697 (Posavina horse) to 0,705 (Murinsulaner horse). Genetic distance reveals a close relationship between Croatian coldblood - Murinsulaner horse (0,0113), while the distance between Posavina - Murinsulaner horse and Posavina - Croatian coldblood horse is greater (0,0172; 0,0122). The results of sequences D-loop regions mtDNA analysis point to the fact that a Murinsulaner horses are closer to the Croatian Coldblood, than the Posavina horses. The results of three marker system suggest that Croatian coldblood and Murinsulaner horse are phylogenetic closely related, whereas their estimated genetic distances to the Posavina horses are significantly higher. Genetic characterization is the first step in breed conservation and may have implications for future breeding strategies.

Key words: autochthonous, Croatia, genotyping, horse