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## **Protein Polymorphism as indicator of Influence of Diluvial Ancestry on Domesticated Mountain Pony Population in Serbia**

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**INTRODUCTION:** Yugoslav mountain pony is an autochthonous horse breed developed on the mountainous region of Serbia and Montenegro. It was assumed that the breed descended from Tarpan (*E. Ferus ferus*) and Przewalskii (*E. Przewalskii*). The lack of interest for these animals is reflected in few scientific data about the breed characteristics and in breeding recording founded in the last decade. Recent monitoring revealed some physiological, morphological, and reproductive characteristics. Some studies of biochemical polymorphism showed variability within several plasma protein systems. The functional polymorphism within the breed was evaluated in aim to establish the data for further evaluation of physiology of the breed and to evaluate functional variability in aim to promote conservation.

**MATERIAL AND METHODS:** Blood samples from 77 Yugoslav mountain pony of both sexes were evaluated. The polymorphism of albumin (Al), transferrin (Tf) and esterase (Es) was investigated by standard acryl-amid gel electrophoresis. The allelic frequencies were determined by simple gene counting.

**RESULTS AND DISSCUSSION:** Four Al phenotypes: AA, BB, AB and BI controlled by Al<sup>A</sup>, Al<sup>B</sup> and Al<sup>I</sup> alleles were segregated in the tested population with frequencies 0.390, 0.597 and 0.013, respectively. Functional alleles Tf<sup>D</sup>, Tf<sup>F</sup>, Tf<sup>H</sup>, Tf<sup>M</sup>, Tf<sup>O</sup> and Tf<sup>R</sup> are segregated in Yugoslav Mountain pony in frequency 0.416, 0.417, 0.125, 0.021 and 0.021, respectively. Electrophoresis revealed Es<sup>F</sup>, Es<sup>G</sup>, Es<sup>I</sup>, Es<sup>S</sup> and Es<sup>O</sup> with allelic frequencies 0.143, 0.039, 0.708, 0.097 and 0.013, respectively segregating in the population tested. The finding of Tf<sup>R</sup> and Es<sup>G</sup> speak for historic influence of Tarpan and Oriental horses, while Al<sup>I</sup> described only in Swedish trotter, in Nordic ponies and in Italian trotters indicates diluvial ancestry of the breed.

**CONCLUSION:** The finding of diluvially speciphic protein forms in population of Yugoslav mountain pony speaks for ancestral influence of diluvial horses on locally adapted population which has never been described in literature. The diluvial horses could influence local population during the Roman Empire and later during the Crusade Campaigns.