THE OCCURRENCE OF SILVER DILUTION IN HORSE COAT COLOURS

Erkki Sild, Sirje Värv and Haldja Viinalass
Institute of Veterinary Medicine and Animal Sciences, Estonian University of Life Sciences
Kreutzwaldi 1, 51014 Tartu, Estonia; Tel: +372 731 3469; Fax: +372 742 2344; e-mail: erkki.sild@emu.ee

Abstract. The *MC1R* allele "e" in the homozygous state leads to the production of pheomelanin and is responsible for inhibition of expression of the silver dilution gene (*PMEL17* "Z" allele). Horse coat colour is one of the traits breeders select for. A total of 133 horses representing Estonian Native (48), Estonian Heavy Draught (40) and Tori (45) breeds were genotyped for key polymorphisms at C901T in *MC1R*, the 11 bp deletion in *ASIP* and C1457T in *PMEL17* to determine horse coat colour variation and selection possibilities to increase silver-diluted colours. Our genotyping results showed the "ee" genotype frequency in the *MC1R* gene to be as follows: Estonian Native 45.8%, Estonian Heavy Draught 65.0%, and Tori 77.8%, and the "Z_" genotype in *PMEL17* to be 10.4%, 12.5%, and 0.0%, respectively. Six of total 133 horses with silver dilution were examined for MCOA. No eye abnormalities were detected. Considering the *PMEL17* gene singly, silver coat colour could be expressed phenotypically in 12% of genotyped Estonian Heavy Draught horses, but due to unfavourable covariation with the *MC1R* "e" allele, it only occurred in two per cent of horses.

Keywords: *ASIP*, horse coat colour, *MC1R*, MCOA, *PMEL17*, silver phenotype.