

APPLICATION OF ESTERASES AS GENETIC MARKERS FOR THE DIFFERENTIATION OF GEESE

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Abstract. The polymorphic systems are widely used in selection processes for observation of the variability of genetic structure in lines. In this connection the objective of our work was the investigation of the polyenzymatic system of esterases and identification of its isoforms (carboxylesterase and cholinesterase) in domestic and wild geese. The blood sera of graylag (*Anser anser*), blue (*Chen caerulescens*), bar-headed (*Anser indicus*) and domestic Pomeziansko and Rheinische geese have been used in our work. The analysis of isoenzymes has been carried out by using the method of double layer vertical electrophoresis in the polyacrilamide gel with the application of specific substrates (1-naphthyl acetate, 2-naphthyl acetate, 1-naphthyl propionate) and inhibitors. The results show that polymorphism has not been detected only in the enzymatic system of cholinesterase from graylag (*Anser anser*) goose. Both enzymatic systems of esterases from the blue (*Chen caerulescens*) and bar-headed (*Anser indicus*) species of geese and also carboxylesterase from graylag (*Anser anser*) showed 1 or 2 polymorphic loci. Maximum 5 isoenzymes fractions of cholinesterase and 10 of carboxylesterase have been observed in the domestic and wild geese. The data obtained show that genetic variability is characteristic to the enzymatic system of carboxylesterase and cholinesterase in the genus *Anser* from the order Anseriformes. Those systems can be used as markers in calculation of genetic distances and identity. Persistent analysis of genetic distances allows monitoring trends of the selection process in a population.

Keywords: Selection, geese, genetic markers, esterases.