

Determination of normal values of some blood serum enzymes in *Acipenser stellatus* Pallas

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Abstract Hematological studies on fishes have assumed greater significance due to the increasing emphasis on pisciculture and greater awareness of the pollution of natural water resources. Such studies have generally been used as an effective and sensitive index to monitor physiological and pathological changes in fishes, especially in the management of endangered species. This study was undertaken to establish a reference range for six important blood serum enzymes. Serum samples of 40 *Acipenser stellatus* (20 female and 20 male) were analyzed, and serum enzyme values were determined. The reference ranges for the total samples and also for each sex were determined. The activities of measured enzymes in serum were: aspartate aminotransferase (AST) 265.60 ± 56.55 IU/l, alanine aminotransferase (ALT) 5.65 ± 1.18 IU/l, acid phosphatase (ACP) 15.63 ± 2.59 IU/l, lactate dehydrogenase (LDH)

2007.15 ± 521.97 IU/l, creatine kinase (CK) $6,596.05 \pm 1,807.19$ IU/l, and alkaline phosphatase (ALP) 69.05 ± 13.04 IU/l. There were significant differences between male and female fish in terms of AST and CK activity ($P < 0.05$). These may be related to the season of sampling and changing physiological cycles during spawning during which period the sexual hormones and stress are more obvious. However, there were no differences in the activity of ALP, ACP, LDH, and ALT between sexes. The correlations between measured enzymes were also determined.

Keywords Blood parameters · Enzyme · Sturgeon

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Introduction

Sturgeons are anadromous and potamodromous species native to the northern hemisphere. They are known as living fossils. There are 28 species, six of which live in the Caspian basin. One of them is *Acipenser stellatus* Pallas, which has unfortunately become endangered due to overharvesting, dam construction on rivers, urban and agricultural pollution, illegal trade in sturgeon, demand for caviar, and loss of habitat (Speer et al. 2000; Moghim et al. 2002). In order to protect this species from extinction, it is