The effect of hydrocortisone treatment by bathing and daphnia enrichment on the salinity stress in Persian sturgeon *Acipenser persicus* juvenile

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Abstract

This study was investigated the effect of corticosteroid hormone treatments (hydrocortisone sodium phosphate) on induced salinity stress in Persian sturgeon (*Acipenser persicus*) juveniles (2 ± 0.6 g). The experiment was conducted using a 2 × 3 factorial experimental design

with 2 hormonal treatment methods (daphnia enrichment and hormonal bathing) and three hormonal concentrations (3, 5, and 7 ppm). After the hormonal treatment, juvenile fish were encountered to salinity stress (7 ppt) for 24 h. Then blood cortisol and glucose levels, hematocrit value and mortality rate were measured. The hematocrit value was significantly (*P* < 0.05) higher in fish treated with the enrichment method. However, cortisol and glucose levels and mortality rate were similarly affected by two treatment methods. Increased hormonal concentration significantly lowered the glucose level, while this phenomenon led to a significant increase in the hematocrit value (*P* < 0.05). An interaction observed between hormonal treatment method and hormonal concentration for glucose, hematocrit and mortality indices (*P* < 0.05). After inducing the stress, the mortality rate was significantly lower (*P* < 0.05) in juveniles treated with daphnia enrichment method. Treatment 3 (daphnia enrichment with 7 ppm hormanoal concentration) led to a significantly higher (*P* < 0.05) blood cortisol level and hematocrit value after the hormonal treatment and just before the stress. Meanwhile, no mortality was observed in treatment 3. The results showed that treatment 3 was the best treating method for lowering the salinity stress in juveniles.

Keywords: Salinity stress, Hydrocortisone, Daphnia enrichment, Hormonal bathing, Persian sturgeon

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