

Short term starvation and re-feeding in juvenile Persian sturgeon (*Acipenser persicus* Borodin 1897): Growth performance and plasma biochemical parameters

Mahbod Zeyghamy¹

Abbas Bozorgnia²

Kaivan Hazaie³

Seyed Mehdi Hosseinifard⁴

Somayeh Bahram⁵

1, 2, 3, 5. Department of Fisheries,
Faculty of Natural Resources
sciences, Islamic Azad University,
Qaemshahr Branch, Qaemshahr,
Iran

4. Faculty of Veterinary Medicine,
Islamic Azad University, Babol
Branch, Babol, Iran

***Corresponding author:**

a.bozorgnia@qaemiau.ac.ir

Received date: 2022.05.02

Reception date: 2022.09.13

Abstract

Many fish are able to tolerate feed deprivation, and often a post-starvation re-feeding strategy can cause rapid weight recovery and fish return to previous conditions. Therefore, this feature has been considered today in order to reduce water quality problems and save on feeding costs and increase profitability in the aquaculture industry. The main objective of this study was to evaluate the effects of short periods of starvation and re-feeding on growth performance and biochemical parameters of plasma in juvenile Persian sturgeons. Overall, 120 fish specimens with a mean weight of 33.9 ± 14.05 g were subjected to four different feeding strategies for 40 days in the summer of 2019. Control group (Ctrl): continuously fed with the experimental diet; Treatment1 (T1): four intermittent periods of two days starvation and eight days feeding immediately after each starvation period; Treatment2 (T2) two intermittent periods of four days starvation and 16 days feeding immediately after each starvation period; Treatment3 (T3): eight days starvation followed by 32 days feeding. The results indicated that periods of starvation and re-feeding significantly ($P < 0.05$) affect the growth performance of juvenile Persian sturgeon, as growth indices in experimental treatments showed a decreasing trend and the lowest value occurred in T3 treatment. Also, a decreasing trend in the values of liver and gastrointestinal indices was recorded, but no significant difference ($P < 0.05$) in the amount of these indices is observed between the treatments. In addition, cortisol levels in the treated fish increased significantly compared to the control fish ($P < 0.05$) and a slight decrease in glucose levels was observed in treatment T3. According to the findings of the present study, short-term starvation has no significant effect on the growth performance and biochemical parameters of plasma in juvenile Persian sturgeon and after re-feeding, the fish will be able to regulate their metabolism. However, the compensatory growth response depends on the length of the starvation period and subsequent refeeding.

Keywords: Starvation, re-feeding, Growth performance, Plasma biochemical parameters, Persian sturgeon.