The effect of repeated implantation of Triiodothyronine on the performance of physiology of cultured female great sturgeon (*Huso huso*)

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Abstract:

The objective of this study was to examine the effects of triiodothyronine (T_3) implantation on the performance of physiology of cultured great sturgeon (*Huso huso*). Three treatments with 5 fish for each treatment were considered. The experimental treatments included: control (capsules containing cocoa butter alone), low level of T_3 (T_1; 1 mg T_3/kg body weight + cocoa butter), and high level of T_3 (T_{10}; 10 mg T_3/kg body weight+ cocoa butter). The capsules containing hormones and cocoa butter were intraperitoneally implanted to 3-year-old pre-vitellogenic stage female fish (mean initial body weight 6999.7±100.9 g) every 6 weeks over a six month period from January 2009 to June 2010. The serum levels of some hormone (T_3, cortisol, ACTH) and biochemical parameters (glucose, cholesterol and calcium) were determined at the initial time and three weeks after each implantation. Growth indices (WG, SGR and CF) were determined at the end of the experiment. The results showed that fish treated with the high and low T_3 doses produced significant changes in thyroid hormone levels ($P<0.05$). Serum cortisol was significantly higher in T_3-implanted fish than in control fish ($P<0.05$). Serum glucose and calcium concentrations were significantly greater in fish treated with the high T_3 doses compared to the other two experimental groups ($P<0.05$). Significant differences were observed in serum ACTH and cholesterol concentrations among treatments in the last and second sampling time, respectively ($P<0.05$). Final weight was the highest in T_1-implanted fish; intermediate in those implanted the high T_3 dose, and lowest in controls ($P<0.05$). These results indicated that the long-term implantations of T_3 hormone influence the physiological parameters of great sturgeon and promote the somatic growth in a physiological dose.

Key word: Triiodothyronine hormone, Implant, Growth, Great Sturgeon