Effect of thyroxine injection on female growth and reproductive performance of sterlet sturgeon (*Acipenser ruthenus*)

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Abstract

Thyroid hormones [Triiodothyronine (T3) and thyroxine (T4)] are also known to play an important function in biological processes such as growth, sexual development, osmoregulation, metamorphosis, temperature tolerance, migration, oxygen consumption, and metabolism in different fish species. The objective of this study was to examine the effects of T4 injection on growth performance, and reproduction performance in sterlet sturgeon (*Acipenser ruthenus*). Three treatments with two replicates and 5 fish (initial weight 707.97 ± 37.15 g) for each group were considered. The experimental treatments included: control (coconut oil), low dose of T4 (T1; 1 mg T4/kg body weight + coconut oil) and high dose of T4 (T10; 10 mg T4/kg body weight + coconut oil). Four intraperitoneally injections of sterlet sturgeon female were performed every 2 months over a 170 days period. Growth performance, reproductive parameters and larval growth performance were measured at the end of the experiment. The results showed fish treated with high dose of T4 were noted higher growth rate compare to other groups. Fish in T_{10} had higher fertilization rate (73.4 ± 0.6%) compared to control group (46.1 ± 2.2%) ($P < 0.05$). Greater number of eggs per gram was achieved in control group (134.3 ± 8.6). Also, higher hatching rate was obtained in T_1 (82.00 ± 2.2%) and T_{10} (72.3 ± 5.0%), respectively ($P < 0.05$). Higher larval weight gain showed in T_{10} (0.052 ± 0.0 g) and control group (0.027 ± 0.0 g), respectively.. In conclusion, injection of 10 mg T4/kg body weight in sterlet sturgeon can perform positive effects on reproduction in broodstock and larval growth performance.

Keywords: Thyroxine, Injection, Growth, Reproduction, *Acipenser ruthenus*.

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