

## Alterations in the patterns of plasma thyroid hormones in Yellowfin Seabream, *Acanthopagrus latus*, following short and long term chemical stresses of Benzo (a) pyrene

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### ABSTRACT

Thyroid hormones may be considered as a biomarker due to their importance in metabolism, homeostasis, and high sensitivity to pollutants. The present research was conducted to study the effect of benzo alpha pyrene (BaP) on the plasma levels of thyroxin ( $T_4$ ), triiodothyronine ( $T_3$ ) hormones, and  $T_3/T_4$  ratio in Yellowfin Seabream, *Acanthopagrus latus*. Therefore, peritoneal injection of BaP dissolved in vegetable oil (50mg/kg body weight in 2 $\mu$ l/g oil according to their body weight) was performed on a group of fish. The control group received only 2 $\mu$ l/g vegetable oil based upon their body weight. Blood sample was taken from both groups after three hours. In order to study its long-term effects, an implant of 10 $\mu$ l/g vegetable oil, containing 50mg/kg BaP according to body weight, was used. For the control-group fish, a peritoneal implant with oil in amount of 10 $\mu$ l/g was performed. Blood sample was taken 72 hours after implantation. Results showed that plasma  $T_4$  levels in *Acanthopagrus latus* decreased in both short and long-term stresses with BaP exposure. However,  $T_3$  hormone levels and  $T_3/T_4$  ratio showed a significant difference just after the chronic stress. By directly affecting on synthesis, secretion, deiodination and changes in the gene expression pattern of thyroid hormones or releasing thyroid hormones, BaP may have decreased them in plasma. Reduction in thyroid hormones may cause an imbalance in the endocrine system and energy drop in fish, decreasing their survival.

**Key Words:** Polycyclic Aromatic Hydrocarbon, Thyroxin, Triiodothyronine, *Acanthopagrus latus*, Ecophysiology