

Endocrine disruptive effects of naphthalene in immature and mature females of *Liza klunzingeri*

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Abstract

This research intends to study on effects of naphthalene (NAP) on the plasma levels of cortisol, thyroxin (T_4), and triiodothyronine (T_3) on female immature and mature *Liza klunzingeri* at two exposing durations. In the first experiment, female fish were divided into control and treatment groups. A peritoneal injection of 50mg/kg of NAP in 2 μ l/g vegetable oil was performed on the treatment group according to their body weight. The control group received only 2 μ l/g vegetable oil based upon their body weight. Blood and gonad samples were taken from both groups after three hours. In the second experiment, Implants of 50mg/kg NAP in 10 μ l/g coconut oil were used. Samples were collected 72hours after the implant. Fish gonadal phase were identified by histological study of the sampled ovaries, and plasma levels of cortisol, T_3 and T_4 hormones were measured. The results showed a significant increase and decrease of cortisol and T_4 levels, respectively, in both mature and immature groups in 3 and 72hours exposures. Following the 72hours-long stress, T_3 levels significantly reduced. In both experiments, a significant change of T_3/T_4 ratio was observed only in the immature group. By activating aryl hydrocarbon receptors, causing disorder in the functions of hypothalamic-pituitary-interrenal and hypothalamic- pituitary -thyroid axes, disorder in synthesis and secretion of hormones, NAP changes their plasma levels; therefore, it decreases the physiological capacity and survival of fish when facing chemical stress.

Keywords: Vitelogenesis, 17 β -estradiol, Cortisol, Triiodothyronine, Polycyclic Aromatic Hydrocarbon

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