APOPTOSIS IN OVARIAN CELLS OF NILE TILAPIA (*Oreochromis niloticus)* CHRONICALLY EXPOSED TO PYRETHROID

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Abstract

Environmental stressor influences the extent of ovarian cell apoptosis. Exposure to pyrethroids may disrupt the gonadal-endocrine axis of *Oreochromis niloticus*. Gonado-somatic index (GSI) and histological changes in the ovarian cells of pre-spawning *Oreochromis niloticus* exposed to 0%, 25%, 50%, and 75% sublethal concentrations (LC50 = 0.10 mg/L) of pyrethroid were measured weekly for a month.

The GSI of *O. niloticus* was not influenced ($P > 0.14$) by the interaction of different concentrations and exposure time to the pyrethroid but the different sublethal concentrations of the pyrethroid significantly ($P < 0.03$) affected GSI. Gonad weight and GSI were highly correlated (r = 0.896) and gonad and body weight showed a low correlation (r = 0.291) while GSI and body weight were negatively correlated (r = -0.124). Histological signs of apoptosis observed in all of the treatment groups were blebbing membrane, chromatin aggregation at the nuclear membrane and nuclear and/or cytoplasmic condensation with subsequent shrinkage of the plasma membrane. Fragmentations of cells into smaller bodies by forming membrane-bound vesicles or apoptotic bodies were also present in these groups. The extent of histological changes observed in ovarian cells of *O. niloticus* depended more on the length of exposure time than on the different concentrations of treatments used to induce apoptosis.