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التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

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في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائـــــــق الاصليـــــة تالفـــة

بالرسالة صفحات لم ترد بالاصل

A STUDY OF THE BIOLOGICAL CHANGES OF *OREOCHROMIS NILOTICUS* DUE TO LEAD TOXICITY APPLICATIONS

A Thesis

Submitted to Zoology Department, Faculty of Science, Almenofeya University in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Science

In

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BY

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جامعة المنوفية

كلية العلوم

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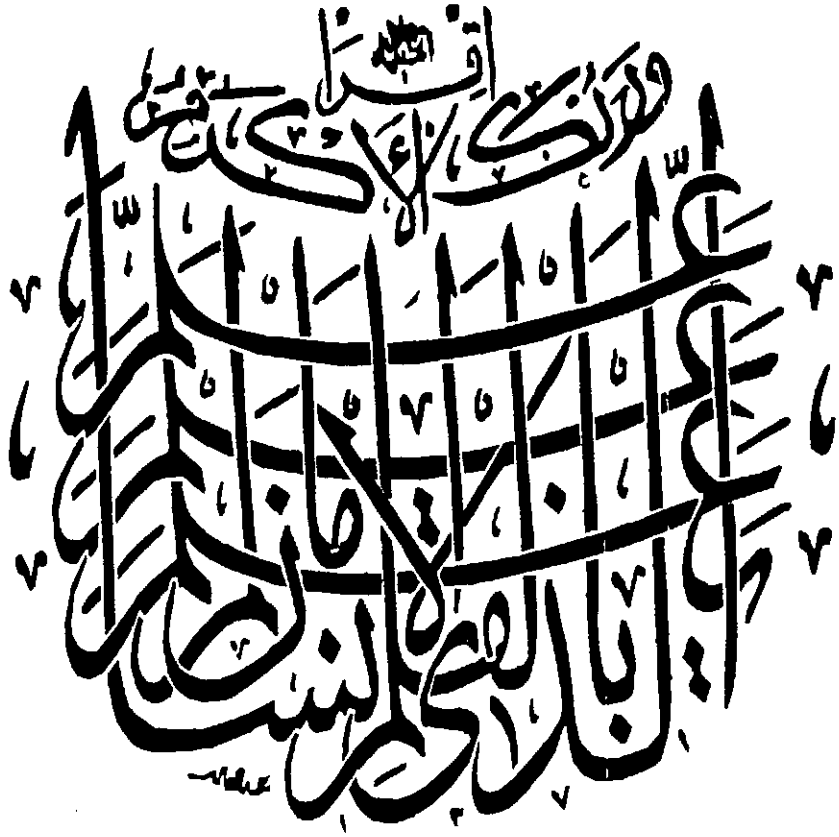
اقرأ باسم ربك الأكرم
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NTRODUCTION

INTRODUCTION

Since the beginning of the century, urban, industrial and agricultural development has caused a deterioration of water quality in the majority of the world. However, in recent years, there has been an increasing awareness that the aquatic pollution and other anthropogenic impact on water resources may have the potential to damage natural fish stocks. Consequently, the effect of various contaminants on fish populations has become an area of active research. This includes the impact of contaminants and water quality on survival of fish larvae in the natural habitat (Lenwood *et al.*, 1985); the effect of heavy metals on fish health (Pelgrom, *et al.*, 1995); the effect of organic contaminants on fish reproduction (Hansen *et al.*, 1985); the impact of halogenated organic substances on ovarian development of fish (Holm, *et al.*, 1994); the impact of domestic sewage on fish organs (Narain, 1990 and Bucher and Hofer, 1993); the effect of petroleum pollutants to fish and benthic organisms (Panigrahi and Konar, 1989 and Saha and Konar, 1990) and the impact of different pesticides on fish biology (Newsome and Andrews, 1993 and Khallaf *et al.*, 1994).

The histological effects of pesticides and related chemicals in livers of fishes was studied by (Couch, 1975).

Heavy metals are evidently habitual pollutants of aquatic environments (Dallinger *et al.*, 1987 and Atchison *et al.*, 1987). They are particularly threatening because they are highly toxic, they persist over a long period in the environment, and they favour bioaccumulation, thus constituting a potential source of direct pollution for man (Atchison *et al.*, 1987).

The impact of heavy metals on fishes are diverse so that it can be classified into different items including the accumulation of heavy metals in fish organs and their direct or indirect influences on human health; the impact of hazardous metals on fish health and the ecological influences of the heavy metals on wild fish, and the consequent damages of the natural habitats (Alne-na-ei, 1998).

On the other hand, the effect of anthropogenic emissions (such as domastic sewage) on gills, kidney and liver of brown trout (*Salmo trutta*) was reported by (Franz and Rudelf, 1993).

Environmental exposure to heavy metals has been shown to have a pathological effect on calcified tissues in teleost fish (Muramoto, 1981, Sauer and Watabe, 1984 and Abdel-Moneium, 1996). Hilmy *et al.*, (1987), studied the toxicity in *Tilapia zillii* and *Clarias lazera* induced by zinc, seasonally. In some species, adult fish exposed to metals showed a loss of calcium from the bones presumably caused by a disruption in calcium metabolism (Larsson, 1975).

The impact of various heavy metals on the histological lesions of different fish species, both in the field and in the laboratory, were investigated, in a wide scale, using light and electron microscopy (Alne-na-ei, 1998).These include studies restricted to examination of the effect of metals based on the cytological changes (Segner, 1987; Braunbeck *et al.*, 1990 and Roncero *et al.*, 1992) and the alterations of tissue integrity (Wong, *et al.*, 1977 and Lacroix, *et al.*, 1993). Kholar and Holzel (1980) investigated the health condition of flounder and smelt by inspecting liver, kidney, spleen and gastrointestinal tract, and they recorded influnce of toxic industrial compounds on the health of both species.

Lead (Pb) is a trace constituent in minerals, water, plants and animals, as well as air. Much of the inorganic lead is found to oxides, sulfides, hydroxides and carbonates, soil water or in the water column (Weber, 1993).

Depending upon pH, temperature and available ligand concentrations, the solubility of lead in water may vary. Lead losses solubility rapidly above pH 6.5 (Nriagu, 1978).

The toxicity of metals to aquatic biota depends on the bioavailable fraction of the metals in the environment. The bioavailable fraction of lead in water is modified by a biotic factors including pH; the concentration of divalent cations, such as Ca^{2+} and Mg^{2+}; and the concentrations and binding strengths of organic and inorganic ligands (Wang, 1987).