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قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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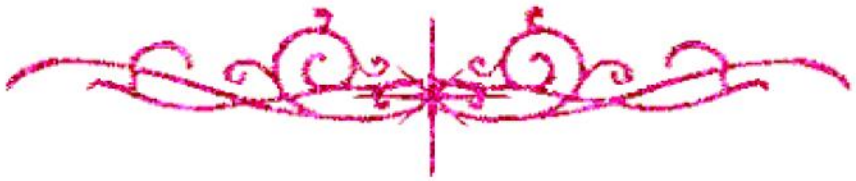
بعض الوثائق الأصلية تالفة



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بالرسالة صفحات

لم ترد بالأصل

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FISH PARASITES AS BIOLOGICAL INDICATORS OF POLLUTION WITH HEAVY METALS

A Thesis Submitted

By

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ABSTRACT

The River Nile and its branches are exposed to many kinds of chemical and biological pollutants as a result of increasing industrial and other urbanization activities where effluents are discharged directly into the water without prior treatment. Therefore, fish health may suffer unless the water quality is fully evaluated by chemical analyses to asses the levels of heavy metals that could be incorporated into fish tissues and hence become a threat to man.

The present study aims to determine the effect of heavy metals on some physiological and biochemical aspects of two important fish species in Egypt: the Nile tilapia; ***Oreochromis niloticus*** and the Nile catfish; ***Clarias gariepinus*** collected from three different localities. Two are located along the River Nile (Helwan, polluted area and El-Zamalek, unpolluted area). The third locality is the agricultural drainage canal at El-Fayoum Governorate, Egypt.

The data declared that the percentage distribution of heavy metals in the intestinal parasites of the studied fish were much higher than those accumulated in fish tissues. Moreover, the acanthocephala; ***Acanthosentis tilapiae*** accumulate much higher heavy metals than the cestode; ***Polyonchobothrium clarias*** and the trematode; ***Orientocreadium lazeri.***

The study detected a significant decrease in the growth indices and meat quality of fish collected from the polluted area with a disturbance in some physiological and biochemical parameters associated with a clear damage in fish tissues.

Finally, the present investigation focused on the role of the water hardness in modifying the toxic effect of heavy metals on fish collected from the agricultural drainage canal.

Key words: Pollution, parasitism, heavy metals, water hardness, bioindicators.

CONTENTS

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Non. T : Non- infected Nile tilapia; ***Oreochromis niloticus.***

Inf. T : Infected Nile tilapia; ***Oreochromis niloticus.***

Non. C : Non- infected Nile catfish; ***Clarias gariepinus.***

Inf. C : Infected Nile catfish; ***Clarias gariepinus.***

(E& H) : Eosin and Haematoxylin.

E. C. : Electric conductivity.

K factor: Condition factor.

HIS : Hepatosomatic index.

MCV : Mean corpuscular volume.

MCH : Mean corpuscular haemoglobin.

MCHC : Mean corpuscular haemoglobin concentration.

P.l. : Permissible limit