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Document Title : *Physiological and histopathological alterations of the fish, cyprinion mhalensis after chronic copper exposure*
التغيرات الفسيولوجية والنسجية المرضية في سمكة سيبرينيون مهالينس بعد التعرض المزمن للنحاس

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Abstract : The acute toxicity to the freshwater fish Cyprinion l1/zalel1Sis of copper was 0.214 ppm. A sublethal concentration of copper equivalent to 0.2 of the 96-hr TL. was chosen for chronic exposure (112 days). Changes in growth, behaviour, copper uptake, mineral contents, biochemical composition and histological structures were the responses used for ~ measuring toxicant effects. The results clearly show that the tested concentration of copper was high enough to produce toxic effects in the tested fish. All the parameters indicated deviation from the controls. signs of copper poisoning can be summarized as modifications of the body pigmentatio.n, hyper excitability and excessive mucus secretion. Following chronic exposure to copper fj.sh displayed decreased growth rate and total tissue levels of proteins lipids and carbohydrate, and increased muscle glycogen. Results suggest an increased and altered use of body energy reserves. These results were further confirmed by growth and behavioural data. Compared to the controls, copper, zinc and lead were highest in muscles of the test fish. This represents a potential public health problem. However, muscle samples of the copper treated fish contained depleted levels of cadmium, cobalt and mercury. Copper had no effects on hepatic levels of zinc, cobalt and mercury; gill levels of lead, cadmium and cobalt: gonad levels of zinc, lead and mercury, intestine levels of zinc, cadmium and mercury; and cobalt levels in both brain and muscle. Microscopic examinations showed that chronic copper exposure resulted in damages to the gill and mucosal epithelia and degeneration to the somniferous tubules. These pathological changes may be responsible for the metabolic effects.

Supervisor : د. طلال علي زراع