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Survey of Heavy Metals (Ni, Pb, Cu and Zn) Accumulation in Muscle, Liver, Kidney, Gill and Scales of *Hipophthalmichthys molitrix* of Sistan' s Chahnimeh

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Abstract

Heavy metals in aquatic ecosystems accumulating in the tissues of aquatic biota will enter the human body through the food chain. Depending on the concentration and toxicity of absorbed heavy metals, the clinical effects are observed. The aim of this study was to survey metals accumulation pattern including Ni, Pb, Cu and Zn in muscle, gill, scale, liver and kidney tissues of *Hipophthalmichthys molitrix* of Sistan Chahnimeh reservoirs.

Also, the heavy metal concentration in fish muscle was compared to food standards. After sampling, preparation of tissues and digestion with Nitric acid, the concentration of each element was measured by using atomic absorption spectrophotometer Konik model Novaa 300 in µg/g d.w. The pattern of essential metals accumulation (Zn and Cu) was measured in liver and gills and of nonessential metals like Ni was found in liver and kidney. The high accumulation of Cu was obtained in liver (63.42 µg.g), Zn in gills (74.40 µg.g), Ni in kidney (0.41 µg.g) and Pb in liver (0.19 µg.g). Due to the needs of aquatic organism to the above mentioned heavy metals for metabolism activities, the high accumulations of essential metals (Cu and Zn) are in liver and gills.

The Ni had high level in kidney due to the disposal mechanism of this element form fish body. The pattern of nonessential metals accumulation in kidney and liver tissues was similar to scales. Therefore, the scale can be a useful bioindicator for the accumulated metals in aquatic organisms. The concentration of metals in muscle was lower than the standards and therefore, is not dangerous for fish consumers.

Keywords: *Heavy metals, Hipophthalmichthys molitrix, Gill, Liver, Kidney, Scale, Muscle, Chahnimeh Reservoirs.*