
Evaluation of Cadmium Level in Different Organs of *Channa punctatus* in Order to Assess Human Health Risk due to Consumption

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ABSTRACT

Fishes are bio-markers of pollution in aquatic environment hence tend to accumulate the pollutants such as heavy metals in their tissues, therefore considered health hazard for human because they are widely used in the form of edible diet. The present study investigate the toxicity level of the heavy metal cadmium in edible teleost fish, *Channa punctatus* available in local fish market and used for commercial purposes. The results revealed the cadmium concentration was above the tolerance limit. The dried samples of gills, muscles, liver and kidneys were digested and analyzed by Atomic Absorption Spectrophotometer (AAS). After the measuring of concentration of metal by aforesaid process, the collected data revealed that the cadmium content in water was found in the range of 0.057-0.062mg/l, which is very high while in the digested organs of fish were also elevated in the order of kidneys>gills>liver>muscles. The concentration of cadmium was high in all samples are above the permissible limit set by the regulatory threshold (World Health Organization); the elevated results showed the aquatic system is highly polluted by the toxic metal. Moreover the aquatic organisms mainly fish are also possess the toxicity of these metals which eventually ended up in the food chain and cannot be considered as the healthy diet source for the humans.

Keywords: Cadmium toxicity, *Channa punctatus*, Human health

INTRODUCTION

Anthropogenic activities have distorted the quality of environment particularly the aquatic environment. The release of heavy metals by these activities as well as from natural sources contaminated water, air and soil impacts the devastating effects on human health hence prove lethal even at low level of exposure. Unlike some organic materials, heavy metals do not vanish with time and some of them essential for living but mostly non-essential elements show toxic effect if they exceed the limit values (Kotteeswaran et al., 2015). Cadmium is one of the toxic heavy metal which is a non-essential element in organisms and does not possess any biological process. The main sources of cadmium are discarded Ni-Cd batteries, mining and cadmium salts presence in colours etc. In last

decades the contamination of the metal is increased exponentially, resulting in an increase of cadmium deposits in tissues of aquatic organisms in all food chain systems. Fish mainly *Channa punctatus* because of its mud-dwelling nature is a significant source of evaluation of the pollution levels and health of aquatic ecosystems (Farkas et al., 2002). In fish, cadmium can cause patho-morphological and number of structural and changes in various organs. The highest level cadmium concentrations were generally detected in the kidneys and liver of fish (Thophon et al., 2003). Although the main target of the metal is kidney but it may exert immunosuppressive effects of cadmium exposure in both fishes and mammals (Kim et al., 2000) and also creates disturbances of calcium metabolism, hypercalciuria as well as takes part in the formation of stones in the kidney. Heavy metals may alter the

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