Bioaccumulation Of Heavy Metals In Carp Fish (Cyprinus Carpio L.) Cultured In Earthen Ponds In Sites Of Basrah University

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Abstract. In this study concentration of heavy metals; Cadmium, Lead, Zinc and Ferrous (Cd, Pb, Zn and Fe) were studied in tissues (muscles, gills, gonads and liver) of cultured carp fish (Cyprinus carpio L.) of the earthen ponds belonged to Basra University. Two stations were selected, the first was for the ponds of Marine Sciences Center and the second one was for the ponds located in the Al-Hartha Station for Agricultural Research. The results showed that the iron element recorded the highest concentrations in all the studied tissues in rang (8.22-53.81 mg/kg), while the cadmium element showed very slight detected. The liver organ showed the highest levels of cadmium and lead (0.0047 and 0.186 mg/kg) respectively, while the gill organ showed the highest level for zinc and iron (5.73 and 53.81 mg/kg). All concentrations of the elements were within the permissible level.

Keywords. Heavy metals, Bioaccumulation, Earthen pond, Cyprinus carpio

INTRODUCTION

Many Asian countries and some European countries paid much attention to fish farming, common carp fish (Cyprinus carpio) were considered as significant species for aquaculture [1]. These fish were able to take advantage of the nutrients available from the aerobic decomposition of organic matter by the bioturbation in bottom sediments during feeding on benthic organisms. It could bear better the low density of oxygen and high density of Carbon dioxide dissolved in the water than any other Carp [2]. The daily growth of carp can be 2 to 4 percent of body weight. Carps can reach 0.6 to 1.0 kg body weight within one season in the poly cultural fish ponds of subtropical/tropical areas [3]. (C. carpio) belongs to the family Cyprinidae, which is considered the largest family of freshwater fish, it generally inhabits freshwater environments, especially ponds, lakes and rivers. In Iraq, the aquaculture depends on the availability of water, as well as, good soil and adequate sites. Moreover, there are public and private aquacultures, and these are widely distributed in the middle and southern parts of Iraq; common carp is became the most popular species for fresh water aquaculture in Iraq [4]. Fish had important role in several food chains and it is considered as an essential food resource because it is contained in high proteins, fats, amino acids, omega-3 fatty acids and vitamins in addition to vital minerals such as Cu, Zn, Ca and Fe [5].

The increased pollutants particularly heavy metals which have capable to bioaccumulate in fish tissues and subsequently lead to health deterioration for these fish and then it cause health dangers for humans through food chain [6]. Aquatic ecosystems suffered from water pollution with toxic heavy metals which came from the dispersal and disposal wastes generated from industrial, agricultural and urban activity and these contaminants described as critical hazards for environment [7].

The bioaccumulation in tissues resulted in cellular and tissue damage, subsequently, dysfunction of variety of fish organs. These damages depended on type of subjected organism, levels of contaminants, environmental

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