Analytical Study of Heavy Metals content in Fresh water and Deposition in Organs of Fresh water Fishes in the Region of Godavari River

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***Abstract*: Study is specially carried out on the water samples and fishes present in those selected site. Analysis of heavy metals contents in both water samples and organ samples of fishes are carried out in Scientific methods. The study of heavy metals is targeted because of toxicity of these heavy metals can affect the fishes and water resources and consumers of fishes.The concentration of heavy metals accumulated in gills and liver was found in the order Pb>Cd>Ni>Zn>Cr and in the muscles, it was found in the order Pb>Cd>Ni>Cr>Zn. As the fish *Cirrhinamrigala* is largely consumed by people, it is essential to make awareness about water pollution and effects of heavy metals on human body.Total lipids, proteins, amino acids and glycogen were estimated by Spectrophotometery, whereas Atomic Absorption Spectrophotometer was used for metals detection. High concentrations of contaminants were found in tissues of fishes collected from fresh water.**

***Keywords*: Heavy metals, Fresh water fishes, Fish organs, Fish contamination.**

Introduction:

Crude wastes of mechanical, technological and. agricultural origin containing chromatic metallic admixtures hourly befoul natural waters [1]. Heavy matter due to their bio-accumulative and non-biodegradable nature lots constitute a major group of submarine adulterants[2,3]. These matter particulates enter the submarine medium through distributaries discharged from tanneries, cloths, matter finishing, mining, dyeing and printing assiduity, ceramic and pharmaceutical sectors etc [4]. They concentrate in the aqatics of submarine biota and are known to produce adverse belongings. Heavy material attention in the serviettes of fish enter into mortal beings through food chain and causes implicit health hazards sometimes yet fell. Heavy material attention in the serviettes of fish enter into mortal beings through food chain and causes implicit health hazards sometimes fatal [5, 6]. In this environment, an attempt was made to probe bio accumulation of heavy material in fresh water fishes and their acute holdings on the submerged food chain.in this work the research is aimed to analytical study for the accumulation of the heavy metals Cd, Cr, On, Mi, Zn, etc [7, 8]. in fresh water and their accumulation on organs of fishes found in these localities.

Methods and Materials:

The different Water samples and fish samples (Cirrhinamrigala Cirrhinamrigala) were collected from two different emplacements of stream Godavari in August 2021. Site I was near to the local Dam and Site II was 2 Km out from first site, at upstream water of stream Godavari. Water samples were collected in the middle of the stream at 50 cm below the exterior, using 1 liter capacity polythene bottles with screw caps. The bottle had been washed and soaked in 5 nitric acid and flushed with deionised water before use. The water samples were acidified in quickly after collection by adding 5 ml nitric acid to minimize adsorption of heavy matter onto the walls of the bottles (APHA APHA, 1998). Water samples were anatomized in AAS (Atomic Absorbtion Spectrophotometer) for discovery of heavy matter present in water samples.

The samples of the fishes are collecTed seperatly, total five samples were collected of moderately equal size. Their organs like muscles, gills and liver are separated after dissection..Organs are put aside and dried at above 100 degree temperature.. The organs were placed into digestion flasks and ultrapure Con. Nitric acid and hydrogen peroxide (1:1 v/v) was added. The digestion flasks were then heated to 1300C until all the materials were dissolved. Digest was diluted with double distilled water appropriately. The heavy metals Cd, Cr, Pb, Ni and Zn were assayed using Atomic Absorption Spectrophotometer and the results were given as µg/g dry weight. Data obtained from the experiments were analyzed and the results were expressed as mean of all five.

Result:

Heavy metals concentration water samples were averagly collected from two sites are given in Table-1. The proportion of heavy metals found in these sites are as Ni>Pb>Cd>Zn>Cr. Maximum quantity among all metals was of Ni. The reason behind the Pb, Cd and Zn metals to be found in these sites are due to high use of the Chemicals in the form of Pesticides and fertilizers in the area of agriculture which are nearby to the region of River.

The analysis of Heavy Metals deposition in organs of Fish samples is presented in Table-2. The range of deposition of these components are different in different organs. We studied mainly three organs Liver, Gills and Muscles. Gills show higher level of metals succeeded by muscle and liver. In the gills, the sequence of trace metals is Pb>Cd>Ni>Zn>Cr. It is observed that the sequence of trace metals is Pb>Cd>Ni>Cr>Zn in muscles and Pb>Cd>Ni>Zn>Cr in liver. Lead is the highest deposited metal component in all three organ samples.

Discussion:

The values and sequence of heavy material inaugurate in different organs are connected with the results presented by Abida Begum etal., 2009. Accumulation of bioactive material like cadmium, chromium, lead, nickel and zinc was laboriously controlled by fish through different metabolic processes and the position of accumulations normally depend on ambient attention. In the literature, heavy material attention in the serviettes of pure fish vary enormously among different studies (Chattopadhyayet Chattopadhyayetal., 2002; Papagiannisetal., 2004), perhaps due to chemical characteristics of water, ecological must-haves, metabolism and feeding patterns of fish.

Conclusion:

Result of this study gives valuable information about the content of heavy metals present in both water samples and the Organs of fish Samples which were collected form the sites selected near Godavari River. Fish gills and muscles represent highest capacity to deposit both lead and cadmium, while accumulation of heavy metals is less in liver. So this can be severe to take take care while consuming such fishes from such water sites.

Table – 1: Average heavy metal concentrations (µg/l) in sample water collected from two sites of Godavari River.

Metals	Site-1	Site-2
Cd	5.86	4.39
Cr	1.94	2.36
Pb	7.32	6.45
Ni	4.57	4.78

Table - 2: Average heavy metal concentrations (µg/g dry weight) in different organs of fish collected from Godavari River.
Organ Site I Site I

Organ	Site-1					Site-2				
	Cd	Cr	Pb	Ni	Zn	Cd	Cr	Pb	Ni	Zn
Muscle	3.21	1.33	3.55	2.46	1.28	3.16	1.12	3.35	2.18	1.14
Gill	3.11	0.92	3.73	3.11	1.47	2.98	0.86	3.83	2.89	1.34
Liver	2.21	0.46	2.34	1.36	0.78	2.16	0.37	2.17	1.06	0.56

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