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STUDIES ON HEAVY METALS IN GASTROPODS; BASE LEVELS OF ZN, CD AND HG IN MANTLE AQUATIC SNAIL *BELLAMYA BENGALENSIS (LAMARCK)*

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ABSTRACT

Most of heavy metals are constituents of aquatic environment and some of them are biologically essential. Interestingly, heavy metals are very persistent in nature and after their release into the environment they remain in the biota for very long period. The present paper is concerned with the basic levels of three heavy metals Zinc, (Zn) Cadmium (Cd) and Mercury (Hg) in the mantle of the freshwater snail *Bellamya bengalensis* These heavy metals were analysed by atomic absorption spectrophotometer in the freshly collected snails from the Rankala lake in Kolhapur city (Maharashtra) in the month of December 2005. The concentration of Zn and Cd in the mantle of this snail was $0.060 \pm 0.007 \mu g/gm$ and $0.008 \pm 0.003 \mu g/gm$ respectively. But heavy metal hg was not at detectable level in the mantle. At a comparative level the concentration of Zn was more than Cd in this organ. The difference in the base levels has been discussed in relation to the metabolic efficiency of the mantle in this snail and in relation to the environmental concentration of these heavy metals.

INTRODUCTION

Heavy metal pollution in aquatic ecosystem has been as a serious environmental problem. The term heavy metal refers to any metallic chemical element that has a relatively high density and is toxic or poisonous at low concentration. Heavy metals pollution is global problem our entire environment that is air, water and soil is polluted with large quantities of various heavy metals. some are biologically essential but some are toxic to the plants and animals. When they are released into the environment there remain in the biota for very long period.In aquatic and terrestrial ecosystems here are a number of vertebrate and invertebrate species that respond to physical or chemical changes in an ecosystem [1-3] The examples of heavy metals include Mercury (Hg), Cadmium (Cd), Arsenic (As), Chromium (Cr) and Lead (Pb). Heavy metals are natural components of the earth`s crust. They cannot be degraded. To a small extent they enter our bodies via food, drinking water and air. Heavy metals are natural components of the earth`s crust. They cannot be degraded. To a small extent they enter our bodies via food, drinking water and air. Heavy metals in the aquatic ecosystem occur in the sediments and also in the suspended particulate matter [4] Heavy metal pollution is mainly because of increasing mining operation. But according to [5] it because of industrial pollution. Molluscus are soft body animals. They form a major component of aqatic fauna. The present investigation on the three assessment of toxic heavy metals Zinc, Cadmium and Mercury in the mantle of fresh water snail *Bellamya bengalensis (Lamarck)* collected from the laboratory reared controlled group and from their natural environmental inhabiting experimental group.

MATERIAL AND METHODS

Fresh water gastropod snail *Bellamya bengalensis* ware collected from Rankala lake near Kolhapur city (Maharashtra) They were brought to laboratory. The mantle was quickly excised and cleaned. They were kept in 60 c oven upto complete dryness of the tissue. The dried tissues were kept in muffle furnace at 650°C for about 9-12 hours until the tissues ware converted in to ashes. The 100mg ash was taken to mantle tissue was accurately weighted on one pan balance (K-Roy classic) and it dissolved the ash in 20 ml Hcl. After cooling the solution at room temperature they were filtered through Whatman’s filter paper No.42. The filtrate was diluted upto 100ml with distilled water. The diluted solutions ware analyzed for Zinc, Cadmium and Mercury using Atomic Absorption Spectrophotometer.

RESULT AND DISCUSSION

Heavy metals may occur in the aquatic environment as hydrated ions or they form a number of soluble and insoluble complexes with different organic lengend [6]. The most common heavy metal pollutants are Arsenic, Cadmium, Copper, Zinc, Chromium, Mercury and Lead. There are various types of sources of pollutants. Natural sources like rock, rainfall, forest fire, and windblown solids partials resulting from volcanic activities continually add heavy metals in to water bodies.

The concentration of heavy metals Zn, Cd and Pb in mantle of gastropod snail *Bellamya bengalensis* is shown in table 1.

Table: 1 concentration of heavy metals Zn, Cd and Hg in mantle of control and experimental *Bellamya bengalensis*

Heavy metals	Tissues of control animals (µg/g)	Tissues of experimental animals (µg/g)
Zn	0.048±0.004	0.060 ± 0.006
Cd	0.005 ± 0.001	0.008 ± 0.003
Hg	ND	ND

*ND-Not detected

The concentration of Zn was more in experimental animals and low in control animals.The absence of Hg in control and experimental animals at comparative level the concentration of Zn was more than Cd. The other investigators have shown that the concentration of heavy metals in different tissues of animals depended on the physic-chemical parameters of the surrounding water [7-9].

In laboratory conditions the increase in temperature of water reduced the capacity of dissolved oxygen in summer during which snail *B. bengalensis* was sensitive to mercurial salts more over mercuric chloride is more toxic to snail than mercury sulphate but in the present investigation Hg was not found in any of the tissues [10].

As mercury is not present in the habitat it is not accumulated in the organ. It would be much toxic to *B. bengalensis*. We observed abundant *B. bengalensis* in that habitat therefore it can be concluded that the habitat from the snail were collected in proper for the growth and development.

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