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Detection of Heavy Metals Absorbed by Water Hyacinth Growing in Godavari River near Saikheda

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ABSTRACT

The aim of present study was to find out toxic heavy metals absorbed by Water Hyacinth (Binomial name : <u>Eichhornia crassipes</u>). It has been reported that roots of Water Hyacinth naturally absorbs heavy metals from water bodies (Shao S.W. et al 2004). The analysis of roots of Water Hyacinth grown in Godavari river near Saikheda shows the presence of toxic heavy metals like copper (Cu), Nickel (Ni), Zinc (Zn) & Lead (Pb). This study shows Water Hyacinth can be used for phytoremediation of waste water polluted with Cu, Ni, Zn & Pb (Shao S.W. et al 2004).

Key Words: Water Hyacinth, Heavy Metals, Phytoremediation and Water Pollution.

INTRODUCTION

Saikheda village is situated on the bank of river Godavari. Godavari River has its origin at Trambakeshwar. Before reaching to Saikheda it is flowing through the Nashik city & waste water from the city added to the river which is the cause of water pollution. The present study was to identify heavy metals absorbed by Water Hyacinth growing in the Godavari river near Saikheda. It has been reported that roots of Water Hyacinth naturally absorbs metal ions (Shao S.W. et al 2004). The analysis of roots of Water Hyacinth was carried out & it shows the presence of toxic heavy metals like Cu, Ni, Zn & Pb.

The cost effective & eco friendly method to reduce the water pollution is a topic of global interest. The heavy metal absorption capability of aquatic macrophytes (*Eichhornia Crassipes*) is useful in removing toxic heavy metals from contaminated water bodies is referred as phytoremediation.

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Water Hyacinth is the vascular aquatic plant which is commonly found in tropical & subtropical region of the world2. Water Hyacinth is a fast growing floating plant with a well developed fibrous root system & large biomass. It adapts easily to various aquatic conditions & plays an important role in extracting & accumulating metals from water3.

MATERIALS AND METHOD

Water hyacinth plants were collected from Godavari River near Saikheda in the month of Feb. 2014. There are two to three spots were selected for collection of Water Hyacinth. It was collected into clean plastic bags previously soaked in dilute nitric acid & thourghly rinsed with distilled water.

In the laboratory, the plants were carefully washed with distilled water and then divided into tops & roots. Roots were dried under the shade & then it was ground to a fine powder using a silica pestle & mortar. Then heavy metals were digested & analysed by ICP-AES at NHRDF Chitegaon.

RESULTS AND DISCUSSION

The toxic heavy metals present in the roots of Water Hyacinth was detected & listed in table1. The result shows the higher concentration of Zn was present in the roots of Water Hyacinth. While the concentration of Pb was low. Presence of Cu, Ni, Zn & Pb indicates that river water is polluted with these heavy metals. Water Hyacinth grown in this river water absorbs these heavy metals & accumulates them in its roots.

Sr. No.	Metals detected	Concentration in ppm
1	Copper	54.89
2	Lead	11.72
3	Zinc	222.4
4	Nickel	63.68

Table 1. Heavy metals detected in the roots of water hyacinth.

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