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# **Phytoremediation Technology and Contaminated Water Purification by Macrophyte, Free Floating, Aquatic Plants**

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## **ABSTRACT**

Purified Water is very necessary for drinking, cooking etc. Aquatic plants present in lakes, ponds, river, seas etc are very important for water purification. Heavy metal present in water are hazardous for living beings. *Eichhornia crassipes* is a hyperaccumulator and a aquatic and by Phytoremediation technique remediate heavy metals which are dumped by anthropogenic sources and industrial wastes in river, ponds, lakes, kitchen making water unfit for drinking. Absorption of water is more in aquatic plants. Higher remediation of heavy metals is observed with these increase and decrease of root length of plants suggesting remediation is taking place. Phytoremediation technology consists of the processes and mechanisms. Heavy metals like Pb, Cd, Cr are harmful for living beings. Click here and insert your abstract text.

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**Keywords:** Phytoremediation, Water, Remediation, Heavy Metals, Aquatic

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## **1. INTRODUCTION**

Phytoremediation technique consists of mechanisms and processes for remediation of heavy metals. Consists of the processes Phytoextraction-Phytoaccumulation-When the soil absorbs the water pollutants by precipitation or formation of metal complexes and metal transference takes place and water pollution is reduced. Phytostabilization-Immobilization of pollutants. Phytovolatilization-By transpiration process. Phytostimulation and Phytofiltration is filtering of the pollutants takes place. Phytodegradation -Degradation by microbes. (1-6).

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## **2. AIMS AND OBJECTIVE**

**Aim** is to remediate heavy metals at a high rates in % form from water by aquatic plants (*Eichhornia crassipes*) and *lemna* sp. etc.

**OBJECTIVE** is to clean contaminated water and heavy metal remediation by aquatic plants.

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## **3. METHODOLOGY**

Aquatic plants are treated with heavy metals in separate pots with water. After few days solution of roots and aerial parts of plants are made and observed with AAS (atomic absorption spectrophotometer). Root length, shoot length is measured on treatment with heavy metals.

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## **4. REVIEW OF THE LITERATURE-**

**Phytoextraction-Phytoaccumulation**-When the soil absorbs the water and air pollutants by precipitation or formation of metal complexes and metal transference takes place and water, air pollution is reduced. Phytostabilization-Immobilization of pollutants. Phytovolatilization-By transpiration process. Phytostimulation and Phytofiltration is filtering of the pollutants takes place. Phytodegradation -Degradation by microbes. (1-6).

\*Eicchornea crassipes gives maximum heavy metal remediation ie 69-96%

\*Lemna sp.also shows higher remediation of heavy metals.

Plants involved in Phytoremediation-Eicchornea crassipes(Phytoremediator) , lemna sp.,water lillies,Nymphea crucifers etc.(1-6).

4.1. Tables

<p><b>Eicchornea root length</b></p> <p><b>Eicchornea crassipes Cadmium &amp; Chromium remediation</b></p>	<p><b>Lead conc</b></p> <p><b>100mg/l</b></p> <p><b>22cm initial length,20cm</b></p> <p><b>length,10cm,9cm,8cm.</b></p> <p><b>6.2ug/l ,5.1removed</b></p> <p><b>82.2%(Cr)</b></p> <p><b>Cd-8.6ug/l-6.13removed=71.2%</b></p>	<p><b>Lemna sp.lead Remediation</b></p> <p><b>3mg/l-0.46left,84.7%</b></p>
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1Eicchornea crassipes and lemna sp.heavy metal remediation %and root length affected by heavy metal and Phytoremediation.

5. Graph of heavy metals reduction by eicchornea crassipes and lemna sp.

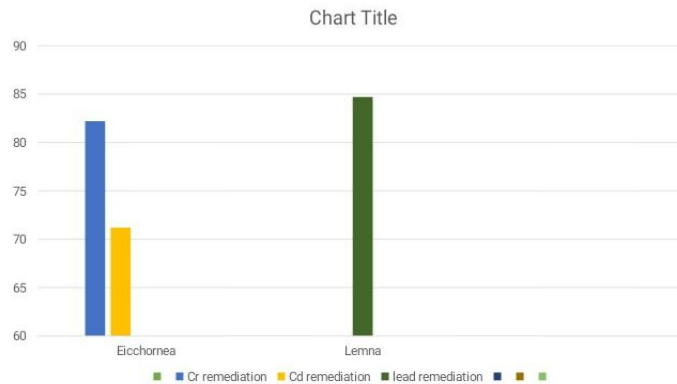


Fig. 1 - (a) first picture; (b) second picture.

6.CONCLUSION

Increase and decrease of root length at lower and higher concentration suggest remediation of heavy metal is going on by precipitation and complexation.Increase in root length suggests the remediation of heavy metals by precipitation and complexation and decrease in root length suggests the surrounding has slight higher level of heavy metals which is remediating at a large amount by green plants.Eicchornea crassipes is a and aquatic macrophyte plant remediating heavy metals at a high % form.

Future prospects-

Phytoremediation is a cost effective technology and has wide applications.The processes is helpful in cleaning of environment. Transgenic plants are helpful in technology and helpful in near future.

**Application-**

Helpful in cleaning soil ,water,air,land and also remediation of heavy metals and other contaminants.

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**7. RESULTS AND DISCUSSION-**

Remediation of heavy metals at a high rates in % form. Effect of heavy metal on root length. -Increase and decrease of root length at lower and higher concentration suggest remediation of heavy metal is going on by precipitation and complexation. Increase in root length suggests the remediation of heavy metals by precipitation and complexation and decrease in root length suggests the surrounding has slight higher level of heavy metals which is remediating at a large amount by green plants. *Eichhornia crassipes* is a and aquatic macrophyte plant remediating heavy metals at a high % form.

**ACKNOWLEDGEMENT-**

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