

An Analysis of EDTA Interaction with Growing Plants within Phytoremediation Technology

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ABSTRACT

Phytoremediation technology is the use of plants and associated soil microbes to reduce the concentration of contaminants in soil, water, air etc. and by the interaction of EDTA ie Ethylenediaminetetraacetic there is enhancement or increased growth of plants is observed at low to medium concentration. EDTA increase the solubility of metals in soil and absorption by plants from roots to shoots. Enhancement of root, shoot length is observed. Phytoremediation may be a cluster of technologies, that use plants to reduce, degrade, or immobilize environmental, toxins. Phytoextractions, conjointly called, phytoaccumulation, phytoabsorption, and Phytosequestration. This method reduces soil metal concentration by cultivating plants with a high capability for metal accumulation in shoots. Plants extract massive concentrations of heavy metals into their roots, translocate, transfer the heavy metals to above than ground shoots or leaves and manufacture great quantity of plant biomass that may simply be harvested. Rhizofiltration technique is used in clean up contaminated waste water or acid mine drainage by absorption or precipitation. Phytostabilization is phytoimmobilization, holding of contaminated soil and sediments in place of vegetation and to immobilized cyanogenic contaminants in soils. It happens through the action, precipitation, complexation or metal valence reduction. Fore grasses, sedges, forage and reeds. Phytovolatalization involves the use of plants to take up contaminants from the soil transforming them into volatile kind and transporting them into the atmosphere. egSe, transpiration. Phytodegr adation conjointly called Phytotransformation, involve sup take, metabolization degradation of contaminants at within the plant or within the soil sediments, sludges, groundwater or surface water by enzymes produced and released by the plant, but on addition of EDTA phytoremediation technology increases at higher rate.

Keywords-Phytoremediation, EDTA, enhancement, mechanism, solubility.

I INTRODUCTION

Phytoremediation technology is the use of plants and associated soil microbes to reduce the concentration of contaminants in soil, water, air etc. Phytoremediation may be a cluster of technologies, that use plants to reduce, degrade, or immobilized environmental, toxins, and by the interaction of EDTA ie Ethylenediaminetetraacetic there is enhancement or increased growth of plants is observed at low to medium concentration.

EDTA increases the solubility of metals in soil and absorption by plants from roots to shoots. Enhancement of root, shoot length is observed. Phytoremediation technology by mechanism and processes remediation of heavy metals takes place.(1-6).

II OBJECTIVES AND METHODOLOGY

(a) Objectives

- (i) To study the analysis of EDTA ie AIMS AND OBJECTIVE-Aim is to study the analysis of EDTA ie Ethylenediaminetetraacetic acid with growing plants and it's parts.
- (ii) To analyse and enhance the Phytoremediation technology with EDTA.

- (b) **Methodology** - Plants in pots are taken treated with lead (Pb) and chromium and after few days treated with EDTA. Analysis is done and growth of plants roots, shoots.

III RESULTS & DISCUSSION

Comparison of measurements with and without IEDTA is tabulated at Table 1, 2 and 3 and fig. 1, 2 and 3.

(a) Results

Table 1
An analysis, interaction of EDTA,Pb(lead), Chromium(Cr) on shoot(length)of plant.

| | Shoot length (cm)without EDTA | Shoot length (cm)with EDTA | | |
|----------------|-------------------------------|----------------------------|--|--|
| Pb 100 mg | 22.3 | 28 | | |
| Control | 25 | | | |
| Pb150 mg | 26 | 29 | | |
| Chromium 100mg | 27 | 28 | | |
| Control | 32 | | | |

Table 2
An analysis, interaction of EDTA,Pb on root(length) of plant.

| | Root length(cm) without EDTA | Root length(cm) with EDTA |
|-----------|------------------------------|---------------------------|
| Pb 100 mg | 8.4 | 11.3 |
| Control | 11 | |
| Pb150mg | 11.4 | 11.8 |
| Control | 11 | |

Table 3
An analysis interaction of EDTA, Pb on root dry weight of Brassica juncea.

| | Root dry weight of Brassica juncea | |
|--------------------------|------------------------------------|--|
| Control | 0.34 | |
| Interaction of lead,EDTA | 0.4 | |

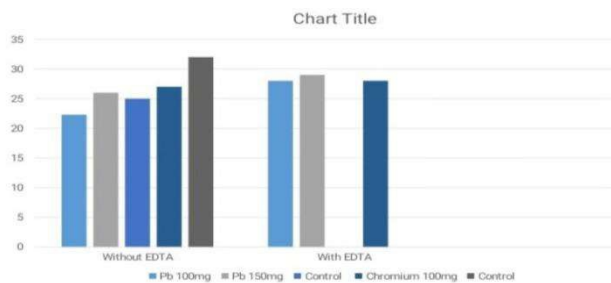


Fig. 1 An analysis, interaction of EDTA,Pb(lead), Chromium(Cr) on shoot(length)of plant.

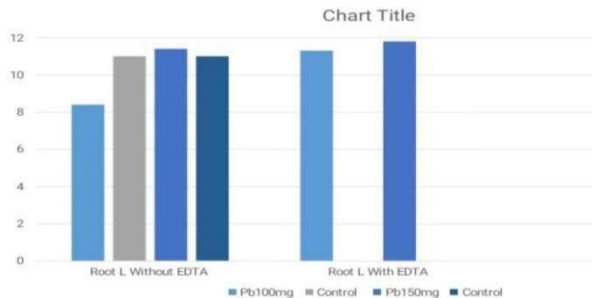


Fig. 2 Ananalysis interaction of EDTA, Pb on roots of Brassica juncea.

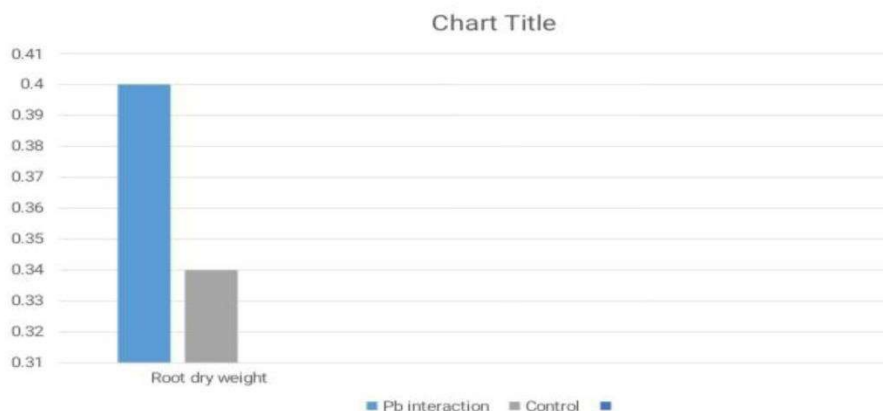


Fig. 3 An analysis interaction of EDTA, Pb on root dry weight of *Brassica juncea*.

(b) **Discussion**-Enhancement of growth of plants is observed on interaction with EDTA. Increase of root, shoot length is observed with enhancement of Phytoremediation technology is observed. Reduces heavy metals from soil, water.

IV CONCLUSION

EDTA enhances the Phytoremediation technology and increases growth and root, shoot length of plants. Reduction of heavy metals is observed by EDTA with increasing growth of plants.

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