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How Phytoremediator Plants Showing Potential of Maximum Remediation of Heavy Metals

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Abstract: ***The original laboratory work done by Pragya Shah on Phytoremediation technology shows that Phytoremediator plants have maximum capacity of Phytoremediation technique.Heavy metal like lead Pb, cadmium Cd, Cr ie Chromium are dangerous for living beings, plants etc,if present in environment,soil, water makes a person ill.Mustard plant(Brassica juncea,nigra), Tomato plant (Solenum lycopersicon) are Phytoremediator plants showing maximum remediation of heavy metals.Mustard shows higher germination rates.Tomato(Solanum lycopersicon)BCF value is 1.43>1showing higher potential of Phytoremediation.Mustard plant(Brassica juncea) and Tomato plant ie Solanum lycopersicon showing higher rates of remediation of heavy metals ie 99.99% showing higher potential of Phytoremediation technique.***
Keywords: Phytoremediation, heavy metals, Plants, Mustard, Tomato.

I. INTRODUCTION

Phytoremediation is the use of plants and associated soil microbes to reduce the concentrations of contaminants in the environments.It is a relatively recent technology and is perceived as cost effective,efficient ,novel, eco-friendly and solar driven technology with good public acceptance. Phytoremediation is an area of active current research.New efficient metal hyperaccumulator's are being explored for applications in phytoremediation and phytomining-.Molecular tools are being used to better understand the mechanisms of metal uptake,translocation ,sequestration and tolerance in plants.Phytoextraction-(Accumulation), Phytostabilisation-By Immobilisation, Phytovolatalization-By Transpiration, Rhizofiltration-By roots and by precipitation,Phytodegradation-By microbes present in rhizosphere.BCF>1ie1.43 or ranging from 0.6-1than plants has maximum potential for Phytoremediation.Higher heavy metal remediation rates ie 99.99% shows the potential of plants for Phytoremediation, cleaning air, water, soil and environment at higher rates and percentage.

II. AIMS AND OBJECTIVES

Is to show BCF and heavy metal remediation at maximum and higher percentage with Phytoremediation technology

III. MATERIALS AND METHODS

Plants are treated with heavy metals ie Pb, C d, Cr.And keeping it for days, months.After few weeks or days by making solutions, observed by Atomic Absorption Spectrophotometer ie AAS.

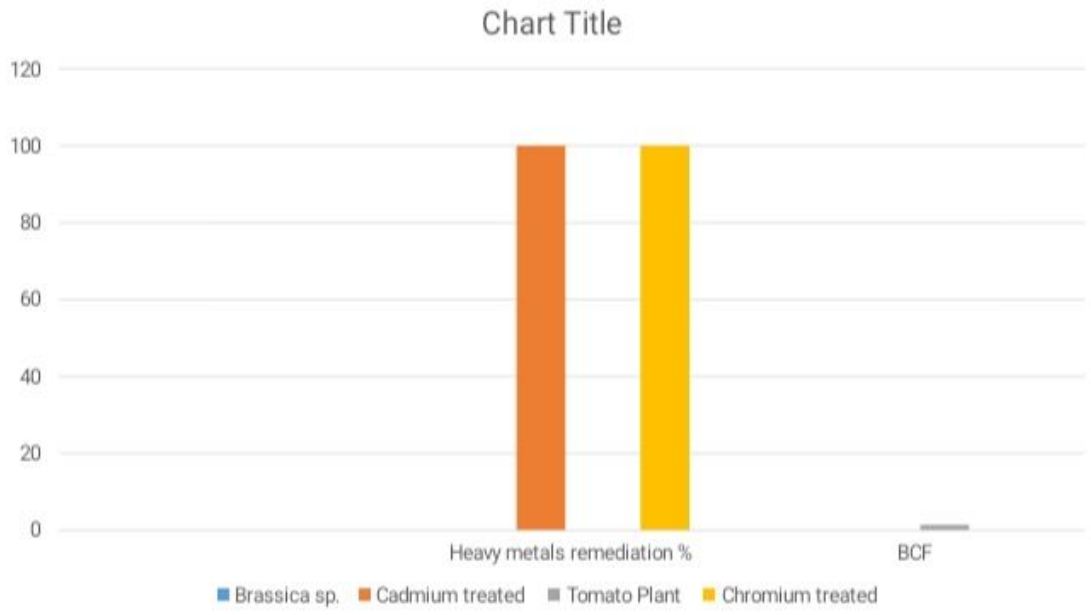
IV. RESULTS AND DISCUSSION

BCF value is greater than 1shows higher potential of plants for Phytoremediation.Their heavy metals remediation rates are also very high 99.99% suggest the plant potential to clean air, water,soil and acts as Phytoremediator Plants doing Phytoremediation at higher rates and percentage.

TABLE1 Mustard (Brassicasp) and Solanum lycopersicon Tomato plant Heavy metal remediation rate in percentage and BCF value

	Heavy metal remediation in percentage	
Brassica sp. Cadmium treated	99.998%, with initial conc.100, final conc.0.00192,	
Solanum lycopersicon Chromium treated	99.99%with initial conc.100, final conc.0.0030,BCF-1.43 with shoot conc.0.0043.	BCF-1.43greater than 1., have high potential for Phytoremediation.

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GRAPH 1 Mustard(Brassica sp)and Solanum lycopersicon Tomato plant Heavy metal remediation rate in percentage and BCF value.

V. APPLICATIONS

1) Phytoremediation is a green technology for removal of heavy metals and harmful contaminants from the environment.
2) Useful in Agriculture-Phytoremediation is a technique of employing green plants and their associated microorganisms,soil amendments and agronomic practices to remove,inhibit or neutralize hazardous environmental contaminants,so useful in agriculture.
3) Useful in Agricultural and nutritional sciences and food industry.
4) Useful in Atomic energy sector-Nuclear weapon testing(release of mainly 14C,137Cs,90Sr,and 95Zr) production (release of mainly 137Cs,106Ru,95Zr,)and nuclear power production.
5) Useful in Environmental Chemistry,waste management,and mine reclamation-Applied where the soil or static water environment has become polluted or is suffering ongoing chronic pollution eg where Phytoremediation has been successfully include the restoration of abandoned metal mine workings and sites where polychlorinated biphenyles have been dumped during manufacture and mitigation of ongoing coalmines,discharges reducing the impact of contaminants in soil,water,or air.Contaminants such as metals,pesticides,solvents explosives and crude oil and it's derivatives have been mitigated in phytoremediation projects worldwide.
6) It is an insitu and exsitu technique helpful in tissue culture.
7) Phytoremediation is a groundwater remediation technologies.
8) Useful in national institute of environment,health sciences,helpful in environmental cleanup ENVIS centre.

VI. CONCLUSIONS

Tomato ie Solanum lycopersicon and Mustard ie Brassica sp.juncea is a Phytoremediator Plants with higher remediation of heavy metals ie cadmium Cd Cr ie Chromium.Their BCF>1and remediation rate is also 99.99%,means Plants has higher potential for remediation of heavy metals and they have a potential of cleaning the soil, water, air and environment.

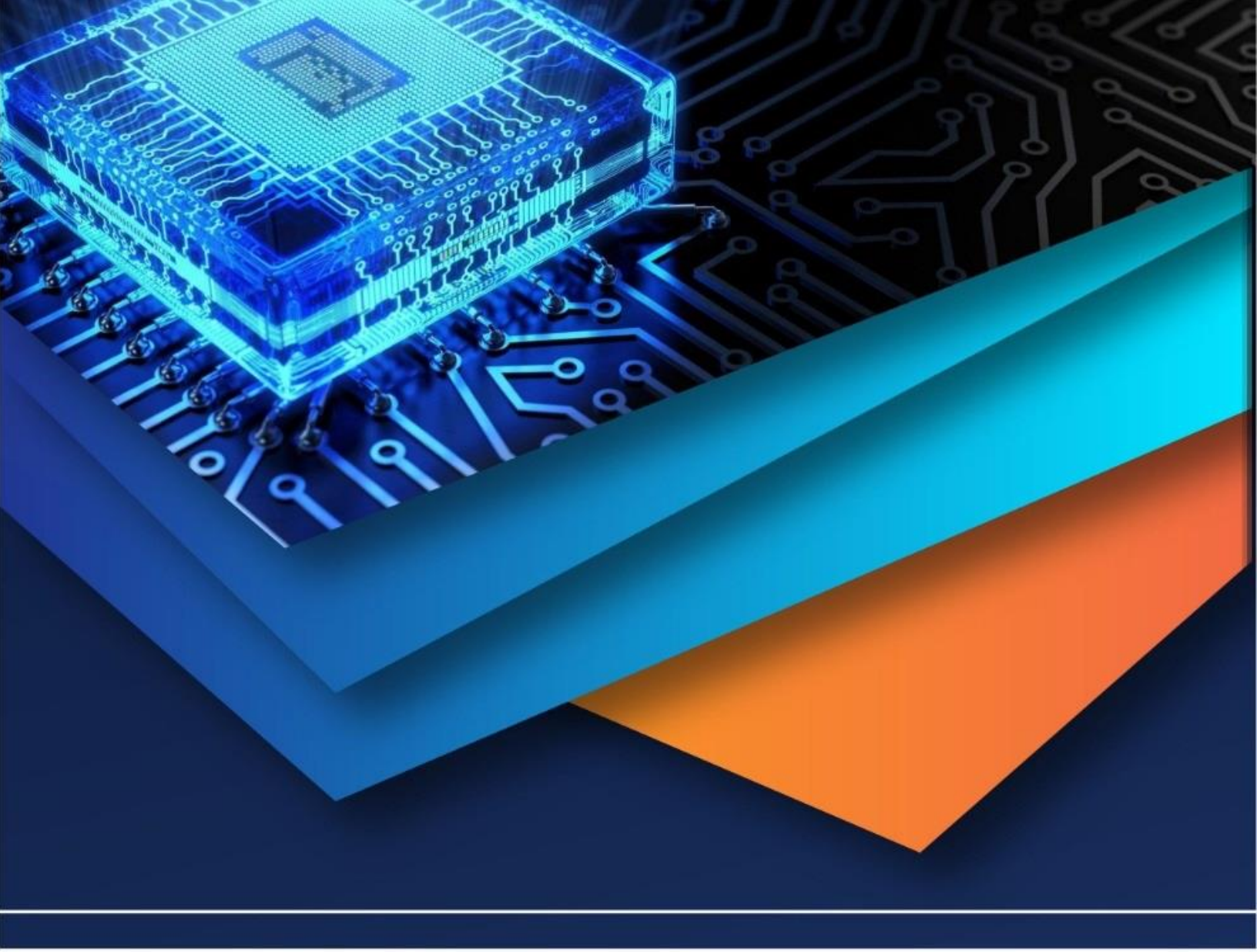
VII. ACKNOWLEDGEMENT

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