

Antioxidant enzymes functions of *Vetiveria zizanioides* during the absorption of cadmium in soil

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ABSTRACT:

Given the importance of cadmium in the ecosystem pollution, the remediation of soils contaminated with this heavy metal in particular through phytoremediation is necessary and inevitable. This research was aimed to investigate the toxicity effects of Cd Chloride on the function of antioxidant enzymes in *Vetiveria zizanioides*. The experiment was performed in plastic pots in the Baghou nursery, affiliated to the Department of Natural Resources. At the beginning of the experiment, irrigation was done two times a day and then, due to the moisture in the environment, irrigation was administered once daily. Treatments included 0, 20, 40, and 60 mg/l Cd Chloride, arranged in a randomized complete blocks design with four treatments and five replications. The root growth of plant is high; therefore, after the initial growth of the plant, they were transferred to the field and irrigated with the treatments for two months. At the end of the period, samples were taken and Cd content in root, stem and leaves and the activity of antioxidant enzymes were measured. According to the obtained results, with increasing concentration of Cd Chloride, a significant increase was observed for the enzyme activity of catalase, peroxidase, superoxide dismutase, glutathione reductase, polyphenol oxidase, ascorbate peroxidase, and guaiacol peroxidase. In addition, cadmium absorption and accumulation was higher in roots as compared to the shoots. The results clearly showed the high capability of vetiver for the remediation of soils contaminated with Cadmium. Thus, this plant could be considered as one of the suitable candidates for cultivation in industrial areas.

Keywords:

Cadmium, Anti-oxidant enzymes, *Vetiveria zizanioides*.