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Interaction of between Cd and Zn in Barley (Hordeum vulgare L.) Plant for Phytoextraction Method

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Abstract : The aim of this research is to remediation of the cadmium (Cd) pollution in agricultural soils by using barley (Hordeum vulgare L.) plant. For this purpose, a pot experiment was done in greenhouse conditions. Cadmium (100 mg/kg) as CdSO₄.8H₂O forms was applied to each pot and incubated during 30 days. Then Ethylenediamine tetraacetic acid (EDTA) chelate was applied to each pot at five doses (0, 3, 6, 8 and 10 mmol/kg) 20 days before harvesting time of the barley plants. The plants were harvested after two months planting. According to the pot experiment results, Cd and Zn amounts of barley plant increased with increasing EDTA application and Zn and Cd contents of barley 20,13 and 1,35 mg/kg for 0 mmol /kg EDTA; 58,61 and 113,24 mg/kg for 10 mmol/kg EDTA doses, respectively. On the other hand, Cd and Zn concentrations of experiment soil increased with EDTA application to the soil samples. Zinc and Cd concentrations of soil 0,31 and 0,021 mg/kg for 0 mmol /kg EDTA; 2,39 and 67,40 mg/kg for 10 mmol/kg EDTA doses, respectively. These increases were found to be statistically significant at the level of 1 %. According to the results of the pot experiment, some heavy metal especially Cd pollution of barley (Hordeum vulgare L.) plant province can be remediated by the phytoextraction method.

Keywords : Barley, Hordeum vulgare L., cadmium, zinc, phytoextraction, soil pollution
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