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Potential of Soil Aluminum Phytoremediation by *Astraglus gossypinus* in Mineral Area in Bidouiee

Salari H.[1*], Honarmand M.[1], Mozafari H.[1], Oloumi H.[1]

1 Department of Ecology, Institute of Science and High Technology and Environmental Sciences, Graduate University of Advanced Technology, Kerman, Iran

* (Corresponding author): hsalari57@gmail.com

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Abstract

Considering the high amount of aluminum in the soil in the copper mining region of Bidouiee, Kerman province and its downstream areas, it is important to identify and introduce plants with the capacity to absorb polluting metals. In this study, in order to evaluate the potential and effects of aluminum accumulation in the soil and especially in the accumulating plants, five systematic random sampling stations were determined in the soil and dominant plant of mining area. The amount of aluminum, iron and copper elements in soil samples and dominant plant of each station was measured and analyzed by acid digestion method with ICP-OES device. Absorption, transport and bioaccumulation factors of each of the above elements were calculated. The results of analysis of variance showed a significant difference of the above elements in dominant plants compared to the soil of the sampling area. Also, the results showed that aluminum was more absorbed than iron and copper in the soil in the dominant plant. The aluminum absorption factor in different sampling stations showed a significant difference, and these results show the effect of other factors on aluminum absorption. The bioaccumulation factor showed a significant difference in the samples related to aluminum and the control. The correlation between soil and plant elements was significantly significant only in the case of aluminum (0.763). In general, due to the proper growth and high biomass of dominant plant of region (*Astraglus gossypinus*) and the high amount of aluminum, this plant can be suggested as aluminum bioremediation plants.

Keywords: Alluminium, Bidouiee mine, Phytoremediation, *Astraglus gossypinus*