

Phytoremediation; Pb, Cr and Cd Accumulation in Fruits and Leaves of *Vitis Vinifera* L. From Air Pollutions and Intraction between Their Uptake Based on the Distance from the Main Road

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Abstract : Air pollution is one of major problems for environment. Providing healthy food and protecting water sources from pollution has been one of the concerns of human societies and decision-making centers so that protecting food from pollution, detecting sources of pollution and measuring them become important. Nutritive and political significance of grape in this area, extensive use of leaf and fruit of this plant and development of urban areas around grape gardens and construction of Tabriz – Miandoab road, which is the most important link between East and West Azarbaijan, led us to examine the impact of this road construction and urban environment pollutants such as lead chromium and cadmium on the quality of this valuable crop. First, the samples were taken from different adjacent places and medium distances from the road, each place being located exactly by Google earth and GPS. Digestion was done through burning dry material and hydrochloric acid and their ashes were analyzed by atomic absorption to determine (Pb, Cr, Cd) accumulations. In this experiments effects of 2 following factors were examined as a variable: Garden distance from the main road with levels 1: For 50 meters, 2: For 120-200 meters, 3: For above 800 meters, and plant organ with levels 1: For fruit, 2: For leaves. At the end, the results were processed by SPSS software. 3.54 ppm, the most lead quantity, was at sample No. 54 in fruits with 800 meters distance from the road and 1.00 ppm was the least lead quantity at sample No. 50 in fruits with 1000 meters from the road. In leaves, the most lead quantity was 19.16 ppm at sample No. 15 with 50 meters distance from the road and the least quantity was 1.41 ppm at sample No. 31 with 50 meters from the road. Pb uptake is significantly different at 50 meters and 200 meters distance. It means that Pb uptake near the main road is the highest. But this result is not true for others elements. Distance has not a meaningful effect on Cr uptake. The result of analysis of variation in distance and plant organ for Cd showed that between fruit and leaf, Cd uptake is significantly different. But distance and interaction between distance and plant organ is not meaningful. There is neither meaningful interaction between these elements uptakes in fruits nor in leaves. If leaves and fruits, assumed all together, showed a very meaningful integration between heavy metal accumulations. It means that each of these elements causes uptake others without considering special organs. In the tested area, it became clear that, from the accumulation of heavy metals perspective, there is no meaningful difference in existing distance between road and garden. There is a meaningful difference among heavy metals accumulation. In other words, increase ratio of one metal to another was different from the resulted differences shown in corresponding graphs. Interaction among elements and distance between garden and road was not meaningful.

Keywords : *Vitis vinifera* L., phytoremediation, heavy metals accumulation, lead, chromium, cadmium

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