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A COMPARATIVE IONOMIC ANALYSIS OF *SOLANUM MELONGENA* PLANTS TREATED WITH ARSENIC OR CHROMIUM

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The cell plants possess a wide array of ions transporter proteins allowing to regulate the uptake, the distribution and the accumulation of mineral in the plants. However, these processes lack of high selectivity and therefore plants can also absorb non-essential elements such as heavy metals. The accumulation of some elements such as As, Cd, Cr and Pb in edible part of crops is hazardous for human health. Among these elements we have focused our attention on arsenic (As) and chromium (Cr). The content of these two elements in agriculture soils may be due to anthropogenic activities or the paedogenesis of agricultural soil such as them from volcanic area. Arsenic enters, mainly, in the plant by different families of transporters as: *nodulin 26-like intrinsic protein* (NIP), *High-affinity phosphate* (PHT), *ATP-binding cassette* (ABC). On the other hands, plants do not possess specific mechanisms for the absorption of chromium but it has been reported that it uses the "ionic mimicry". Among the ions transporter gene family, the SULTR proteins are the main candidates to recognise Cr. In addition, the Metal Tolerance Protein (MTP) and the metallothioneins (MT), are proteins that are regulate the content of several elements. Eggplant is a plant widely cultivated in many parts of the world and in Italy the largest production in the southern areas. In this study, we report the change in ionomic and expression of some ion transporters in roots stem, and leaf of the following cultivars: Bellezza Nera (BN); Purple Queen (PQ); Cima Viola (CV); Violetta di Firenze (VF); Violetta Lunga 2 (VL); Rotonda Bianca Sfumata di Rosa (RB). The effects of As and Cr in form of sulphate was assayed in hydroponic culture at the concentration of 5, μM. The treatment was performed on 30 days-old plants. The analysis obtained by ICP-MS showed that eggplants roots are the main organs that accumulates As and Cr. A different index of bioaccumulation was determined in the root of the 6 cultivars assayed. Based on such index we have determined the minus and plus cultivars for each elements assayed. In addition, the translocation factors shown that As and Cr were not easily translocated to the aboveground organs. The ionome of roots, stems and leaves of eggplant varied in presence of the two elements added into the hydroponic solution. By a bioinformatic approach it was possible to identify eight genes related to As and Cr uptake transport and accumulation. Those genes modified their expression according to treatment and /or genotype in an organ specific manner.