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SOLANUM LYCOPERSICUM X *S. PENNELLII* INTROGRESSION LINES WERE USEFUL TO CHARACTERISE THE IONOME OF TOMATO FRUIT

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The term "biofortification" identify all the conventional and advanced breeding methodologies applied to edible plant organs to increase their nutritional value. Among nutrients, nowadays mineral elements are getting more and more attention for both human and animal health. Thus, the improvement of food mineral composition is considered an important goal for plant breeders. For a cell or an organism at a specific developmental stage, the inorganic component composition represents its "ionome". Regarding to plants, ionome studies are aimed to reveal the complex network interactions between genotype and environment which, affect the uptake, translocation and accumulation of inorganic elements and their relationships in different plant organs. A final goal is to obtain a mathematical model of plant ionome, useful to predict the mineral composition of a specific tissue/organ. In the frame of "GenoPom" PON-MIUR project, we have began a study of tomato ionome in order to identify the contribution of specific chromosome and part of them on the ionome. For this purpose, we have analysed by ICP-MS plants of an introgression line (IL) population derived from the cross between *Solanum lycopersicum* cv. M82 and *S. pennellii* (Eshed and Zamir, 1995) grown under controlled environmental conditions. An IL population is very useful in plant genetics and breeding, because any phenotypic difference between an IL and the recurrent parent, when cultivated under the same environmental conditions, can be attributed solely to one or more donor parent genes within the introgressed chromosomal segment. We have already shown the effects of *S, pennellii* introgressions on shoot tip ionome (Ruotolo *et al*., 2011). Here, we report results derived from tomato whole fruits ionome analysis of 30 IL, covering all 12 tomato chromosomes, along with the recurrent parent cv. M82. Among several detected elements, the following ones have firstly been analysed: Ca, Fe, Cu, Zn and Se. Each element concentration data were referred to cv. M82. As general behaviour, introgressions increased Ca concentration (from +34% to +414%) but reduced the Fe one (from -16% to -59%); however, those two elements did not show a significant correlation. Only Cu and Zn showed a positive correlation near to 0.5. It is worthy to note that 9 ILs increased the Se concentration in tomato fruit, from +26% to 93%. This latter value was obtained in an IL in which Ca, Cu and Zn concentrations were not statistically different from the recurrent parent, although Fe concentration decreased of about 50% always in respect to cv. M82. Four ILs were found to increase a single specific element concentration more than 3 times the standard deviation calculated for its concentration in all tested lines.

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