ANALYSIS OF INORGANIC MARKERS OF STRESS IN NATURAL AND GETICALLY MODIFIED PLANTS IN THE PRESENCE OF CHEMICAL AND PHYSICAL STRESSES.

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The action of biotic and abiotic stresses on plants can induce within the plant the production of compounds able to contrast the effects of the attack. The knowledge of the response of the plants to unfavourable conditions can have useful effects in many fields (biological, environmental, agronomic), taking into account the climatic changes which occur in these last years. (1,2).
The plant that we considered is *Nicotiana langsdorffii* in its wild-type form and transgenic forms for the rat gluco-corticoid receptor gene (GR) and for the rolC gene from *Agrobacterium rhizogenes*. The plant was grown in controlled and reproducible conditions, with the aim of providing a well charactherized reference sample and better detect the variations induced by stresses. The investigated plant samples were exposed to chemical (high concentration of cromium) and physical (dehydration) stresses, that give rise to the alteration of the cellular concentrations of a series of inorganic species. We studied such effects, monitoring the modification of a series of ions, such as the concentration of sodium and potassium cations, of nitrate and chloride anions, that are known to be markedly altered both by physical and chemical stress.(3)
The considered cations and some other elements (Al, Ba, Ca, Fe, Mg, Mn, P and Si) were determined using ICP-OES after acid digestion. Nitrates and chlorides were extracted into water and determined by ion cromatography; the results were compared with those obtained using ion ionoselective electrodes.
The obtained results were treated with multivariate chemometric techniques (Principal Component Analysis and Hierarchical Cluster Analysis) to identify correlations and similarities or dissimilarities among the the different considered markers.

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