

## INAA APPLIED TO THE STUDY OF *TRADESCANTIA PALLIDA* PLANT FOR ENVIRONMENTAL POLLUTION MONITORING

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*Tradescantia pallida* (Rose) Hunt cv *purpurea*, an indigenous popular plant from the Commelinaceae family, has been used to test the mutagenicity of radioisotopes-contaminated air after nuclear accidents and for monitoring around the power plant. Also the harmful effects of environmental pollution caused to this plant have been evidenced by micronucleus assay. The nuclei of plant DNA molecules which are submitted to high pollution levels are split in micronuclei so that *T. pallida* might be used as an indicator of environmental pollution. The number of micronuclei raises with the air pollution increases, that is, the more DNA molecules are split, the polluted is the air.

In this work, instrumental neutron activation analysis (INAA) was applied to analyze trace elements accumulated by *T. pallida* to establish adequate conditions for its sampling and treatment for elemental analyses. Before the analyses, the samples were cleaned using distilled water, then freeze-dried and ground using an agate mortar.

Results obtained in this plant analysis have indicated that Ca and K are present at the levels of percentage, Ba, Br, Cl, Fe, Mn, Na, Rb, Sr and Zn at the levels of  $\mu\text{g g}^{-1}$  and the elements As, Ce, Cr, Co, La, Sb, Sc and the Th at the levels of  $\mu\text{g kg}^{-1}$ . The elemental concentrations obtained for stems, flowers plus peduncles and leaves, separately, were the same magnitude however the preparation of leaf samples was easier than those other two parts.

The washing effect of the leaves on the elemental concentrations was verified by analysing washed and not washed leaves with distilled water. Results obtained for samples collected in places with distinct levels of pollution showed that when there are dry and wet depositions on the leaf surfaces, the step of cleaning the leaves must be performed for elemental analyses.

The leaf age effects were examined by analysing young and old leaves of *T. pallida* collected separately and the results indicated higher concentrations of Ce, Co, Cr, Fe, La, Sb, Sc and Zn in old leaves than those presented in the young ones and for the elements Ca, Cl, K, Mn, Rb and Se there were no difference related to the leaf age.

*T. pallida* is a plant of easy cultivation and propagation therefore to avoid the influence of the soil composition on the elements up taken by this plant, it can be cultivated in vases using the same lot of soil and after six months they can be distributed in different sites for environmental pollution monitoring.

Results obtained in this work indicate the possibility of using *T. pallida* in the environmental monitoring of toxic elements.

Acknowledgements: To International Atomic Energy Agency and to FAPESP and CNPq (from Brazil).