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THE USE OF *TILLANDSIA USNEOIDES* L. AS BIOINDICATOR OF AIR
POLLUTION IN SÃO PAULO, BRAZIL

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Tillandsia usneoides, L. is an aerial epiphytic bromeliad that lives on trees or other kinds of inert substrates, absorbing water and nutrients directly from the ambient. Due to its morphological and physiological characteristics this species accumulates the pollutants present in the atmosphere. These plants are adequate for use as a biomonitor in tropical and subtropical areas where they occur frequently.

In a previous work, the potential usefulness of these species as an active accumulator biomonitor of atmospheric pollution was verified. The objective of this paper is to use *T. usneoides* as an atmospheric pollution biomonitor, in order to study air pollution in São Paulo city (Brazil), one of the most populated cities in the world.

The extended city of São Paulo, with about 8000 km² and a population around 18 million people, represents an important industrialized and economic center of Brazil. The urban area is polluted by industrial emissions, but according to the Environmental Protection Agency of the State of São Paulo (CETESB), the governmental agency of air quality control, emissions from about 5,5 million motor vehicles daily are the main source of air pollution.

Plants collected at an unpolluted area were distributed throughout the city, in sites submitted to different sources of air pollution (industrial, vehicular). The time of exposition was 8 weeks. After this period the plants were analyzed by neutron activation analysis (NAA), for determination of trace element accumulation in the samples.

The unpolluted area chosen to collect the *Tillandsia usneoides* was located about 70 km from São Paulo, with a low influence of industries and traffic, making it adequate for transplantation experiments.

Each system for exposure was composed of 5 g of entangled green mass of plants. The samples were hanged in a gyrator apparatus with 6 samples, which turned with wind, so that homogeneous contact with air contaminants was guaranteed.

The collected material was dried at 50° C, was mechanically homogenized in a blender, and grinded in an agata mortar. Two hundred mg of samples were accurately weighed in polyethylene envelopes. For the determination of trace elements, samples and biological reference materials were irradiated at the IEA-R1 nuclear reactor of IPEN. The measurements of the induced gamma-ray activity were carried out in an hyperpure Ge detector.

The results obtained, even though preliminary, shows a tendency of increasing concentration of elements such as Al, As, Cr, Fe, Mo, Sb, Ti, V and Zn in samples of *Tillandsia usneoides* exposed in sites presenting increasing degrees of pollution.

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