DETERMINATION OF TRACE ELEMENTS IN LICHENS BY INSTRUMENTAL NEUTRON ACTIVATION ANALYSIS

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Epiphytic lichens have been used as bioindicators in environmental pollution studies due to their ability to accumulate metals present in the atmosphere at very low concentrations. In this work, instrumental neutron activation analysis has been applied to analyze epiphytic lichens from the Canoparmelia texana species. Samples collected from the bark of trees were previously cleaned and then lyophilized and ground to be irradiated with the thermal neutron flux of the IEA-R1 nuclear reactor. Elements, Al, As, Br, Ca, Cl, Co, Cr, Cs, Fe, Hf, K, lanthanides, Mg, Mn, Na, Rb, Sc, Se, Th, Ti, U, V and Zn were determined quantitatively by using short and long irradiations. Comparisons between the samples collected from different trees of a same area as well as for those collected in areas of different levels of pollution indicated a variability in the concentrations of some elements depending on the origin of the samples. The precision and accuracy of the method were evaluated by analyzing NIST 1572a Citrus Leaves, IAEA 336 Lichen and USGS W-1 Rock reference materials.