

ALUMINIUM PHYTOACCUMULATION POTENTIAL IN RICEFIELD WATER-NYMPH PLANT (*NAJAS GRAMINEA DELILE*) SPECIES

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Abstract

Najas graminea Delile species is a common submerged water plant, becoming more and more widespread in Southeast Europe. The aim of this research was to determine at experimental level, the aluminum bioaccumulation potential of this aquatic plant, found in still or slow-moving freshwater habitats.

Najas graminea plants were grown in experimental aquariums conditions, at different $Al_2(SO_4)_3$ concentrations. The evolution of water parameters (pH, dissolved oxygen, electrical conductivity, and total dissolved solids) was monitored. Aluminium bioaccumulation was assessed at the end of the experiment, through atomic absorption spectrometry (AAS), and the concentration of photosynthetic pigments and final dry plant biomass were determined by solvent extraction and UV-Vis spectrometry, and respectively, gravimetric method.

Aluminium hyperaccumulation in *Najas graminea* plants (9,309 mg/kg, accumulation coefficient 9.31) occurred only at the highest ambient concentration, of 1,000 mg/kg Al. Background concentrations of 100 - 1,000 mg/kg induced a significant drop in chlorophylls and carotenoids concentration, however, without a proportional decrease in plant biomass. Also, no significant differences in dissolved oxygen were found. Increases in pH, conductivity and dissolved solids were observed, however they cannot be attributed to *Najas graminea* plants.

Obtained results emphasize that *Najas graminea* Delile species act as a valuable aluminium bioaccumulator, with possible applications in bioremediation of freshwater quality.

Key words: Phytoaccumulation, Aluminium, *Najas graminea* Delile species, Freshwater.