

A comparative study of Al, Cr, Ni, Zn accumulation and total phenolic content in some macrophyte species to evaluate phytoremediation

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Plant use to clean-up the polluted environments (phytoremediation) is an innovative green technology and identification of the suitable plants has become an important issue. In our research, we conducted both field and laboratory work to investigate metal accumulations in some macrophyte species of Terkos Lake in Istanbul (Turkey). In this context, naturally growing *Ceratophyllum demersum*, *Myriophyllum spicatum*, *Potamogeton perfoliatus* and *Trapa natans* were collected and then they were exposed to Al, Cr, Ni and Zn in the greenhouse conditions. Plants were analyzed for metal accumulation capacity. According to our ICP-OES measurements, *Trapa natans* might be evaluated as Al, Ni and Zn accumulator which can be used in phytoremediation. Effects of metal stress on total chlorophyll amounts and on total phenolic contents were also assessed for correlation. Chlorophyll found to be reduced in metal treated plants compared to control, whereas, phenolic contents increased with several fluctuations depending on the different metal treatments and different plant species. Metals may have deleterious effect on many parameters like chlorophyll biosynthesis. However, enhancement in total phenolic content may show the role of phenolics in scavenging ROS.

Keywords: Macrophytes, Metal accumulation, Phenolics, Phytoremediation

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