Ni ACCUMULATION IN CHLAMYDOMONAS REINHARDTII AND THALASSIOSIRA WEISSFLOGII CELLS

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Photosynthetic algae play a crucial role on environmental sustainability, being in the basis of the nutrition chain. Exposure of algae to environments polluted with heavy metals results the accumulation of these toxic elements in them. Accumulation occurs via both adsorption of the metals on the cell walls and insertion into the cells. Examination of the accumulation of the heavy metals on the algae is important both for the information it gives about the condition of the ecosystems, and for the potential of exploitation of these organisms for the remediation of natural water-bodies, or as biofilters with a wide range of applications.

In this study, Ni accumulation in two unicellular algae was investigated. One freshwater microalga (Chlamydomonas reinhardtii) and one marine microalga (Thalassiosira weissflogii) were cultivated in media polluted with several concentrations of Ni. Tolerance of these organisms to Ni pollution was examined and the growth curves for different Ni pollution levels were constructed. The percentage of the adsorbed vs. the total accumulated metal was estimated by atomic absorption spectrometry, and the biochemical impact of the inserted metals in the cells was examined.

Cells, grown in both unpolluted and polluted media were lysed and differential centrifugation was applied on lysates in order to isolate the different cellular fractions and organelles. Heavy metal-induced proteins were searched by SDS PAG Electrophoresis.

KEYWORDS: Chlamydomonas reinhardtii, Thalassiosira weissflogii, heavy metals, Nickel, heavy metal-induced proteins, bioindicators

REFERENCES:

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