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POTENTIAL USE OF CYANOBACTERIA *NOSTOC* SP. IN BIOREMEDIATION OF HEAVY METALS-CONTAMINATED EFFLUENTS

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Cyanobacteria are well known for their ability to remove a variety of pollutants from waters, including toxic heavy metals (HMs). This study investigated the potential remediation of wastewaters by cyanobacteria *Nostoc* sp. Five heavy metal ions were selected for the experiment including Cd^{2+}, Cu^{2+}, Pb^{2+}, Ni^{2+}, and Zn^{2+}. Removal efficiencies of HMs by cyanobacteria *Nostoc* sp. using bioaccumulation and biosorption processes were evaluated and compared. Results confirmed the high efficiencies of the investigated species of cyanobacteria for the removal of the target contaminants which were concentration and contaminant-dependent. Live cells of *Nostoc* sp. have the highest affinity to bioaccumulate Pb (98.15%) and Cu (95.14%) from the solution. However, the biosorption capacity of dried biomass of *Nostoc* sp., besides Pb (92.27%) and Cu (96.00%), was high for Cd (91.00%) removal as well. Living cyanobacterial cells of *Nostoc* sp. were able to accumulate 82% of Zn, while dead cyanobacteria biomass adsorbed 87% of Zn. In the case of Ni, cyanobacteria *Nostoc* sp. did not show significant bioremediation potential. Through the bioaccumulation process, removal of Ni was only 38%, while the biosorption process was more efficient with 63.80% of Ni removal. These results indicate the potential of *Nostoc* sp. cyanobacteria as an efficient agent for pollution control. Furthermore, the data obtained represent a base for further investigation towards the development of a suitable biosorbent system that could be used for industrial effluent treatment.

Keywords: Biosorption, Bioaccumulation, Toxic metals uptake, Wastewaters, Cyanobacteria.

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