

Isolation and Identification of *Bacillus firmus* from the Marine Sediments of Imam Khomeini Port and Study Its Ability in Biosorption of Lead

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Abstract

Using of biosorbents is considered as an inexpensive and convenient method for controlling and removing pollutants from the environment in comparison with physico-chemical methods. In this study, the indigenous bacterium, which is resistant to lead, was isolated through sampling of surface sediments of Imam Khomeini Port. The isolated bacterium *Bacillus firmus* was identified through biochemical tests. The growth of *Bacillus firmus* was analyzed at concentrations of 50, 100, 200, 400 and 800 mg/l. Maximum bacterial growth was observed in 50 mg/l of lead concentration. The bacterium was also able to grow in high concentrations of lead (800 mg/l) that shows the high resistance of bacterium to lead. The potential of *B. firmus* in biosorption of lead was evaluated at concentrations of 50, 100 and 200 mg/l and the results represented the ability of bacterium in removal of 95 percent of lead from the metal solution. Therefore, the isolated bacterium is suggested for cleaning metal contaminated sediments, especially lead-contaminated area located in Imam Khomeini Port.

Keywords: Lead, Biosorption, *Bacillus firmus*, Imam Khomeini Port.
