



Heavy Metals Removal from Raw Industrial Wastewater by Halophilic Actinomycetes Isolated from Saudi Saline Soil

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Abstract: Microorganisms are interacting with metals through a number of mechanisms including binding the metals to their cells and intracellular bioaccumulation. Thus, they have used in biological treatment of wastewater containing heavy metals that resulting from industries. On the other hand, the performance of biological treatment for salt industrial effluent is usually low due to the adverse effect of salt on microbial flora. Through this study, we have investigated the removal of heavy metals from actual industrial wastewater samples (A-B-C-D) by using tow isolates of halophilic actinomycetes isolated from saline soil sample collected from the west of Saudi Arabia. The isolates were identified as *Nocardiopsis halophila* and *Nocardiopsis rosea* based on their 16S rRNA gene sequence analysis. The results showed that both isolates can not grown on the samples (A,C,D) while they exhibited total removal efficiency (100%) of heavy metals from sample (B) that contain Zn and Pb (12.82 , 29.84 mg/l) respectively, in spite of the long incubation period that extended for (8) weeks. Furthermore, the study revealed the effect of glucose (1%) addition to wastewater samples, which exhibited to enhanced the growth of actinomycetes isolates within (4) weeks and managed the actinomycetes to uptake heavy metals faster, Since the results have been detected the removal of Cr (100%) by *N. halophila* and Zn (100%) by *N. rosea* from sample (C) that contain (Al,Cr, Zn) at (38.37, 17.20 , 7.05 mg/l) respectively after the addition of glucose (1%).

Key words: *Halophilic actinomycetes, Raw industrial wastewater, Heavy metals, Heavy metals removal, Saline soil.*

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