عنوان مقاله:

Phenol biodegradation by bacterial strain O-CH1 isolated from seashore

محل انتشار:

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خلاصه مقاله:

phenol and phenolic compounds are among the most recognized environmental pollutants which exist in industrial wastewater and enter the biological cycles due to the solubility in water. Bioremediation is one of the cost-effective and Eco-friendly methods for phenol removal. In this study, the most effective phenol-degrading bacterial strain was isolated and identified from the shores of the Oman Sea by 16S rDNA. The optimal conditions of various factors, such as pH, temperature, carbon to nitrogen ratio and salinity for the phenol biodegradation, were determined using the experimental design based on Taguchi method with L9 array (34). Ability of the isolated strain (Halomonas elongata strain O-CH1) in degradation of different phenol concentrations was analyzed. The optimum operating conditions for phenol removal were determined in pH value of 8, temperature of 35 ˚C, carbon to nitrogen ratio of 100:30 (g/L) and salinity of 35 (g/L). In these conditions, 97% of the phenol was removed from the mediums. According to the optimization results, salinity and pH were the most influential factors in the biodegradation of phenol. The O-CH1 was able to grow and degrade phenol at concentrations of 250 mg/L to 1500 mg/L. Considering the high potential of this strain for phenol degradation, determining the optimal conditions for the biodegradation and its efficacy at high concentrations of phenol, the findings in this study can be used in the biological treatment of phenolic wastewater.

کلمات کلیدی:

Bioremediation, Phenol, Optimization, Biodegradation, Taguchi