عنوان مقاله:

Characterization of naphthalene-degrading bacteria isolated from the Persian Gulf and the Caspian Sea as potential agents for naphthalene removal from polluted environments

محل انتشار:

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نویسندگان:

منیژه رهبری - *M.Sc. of Microbiology, University of Isfahan, Iran*

سید مهدی قاسمی - *Ph.D. Student of Microbiology, University of Isfahan, Iran*

خلاصه مقاله:

Over fifty bacterial strains were isolated from seawater samples in the presence of naphthalene as a sole source of carbon and energy. Among them, three isolates with higher growth rate and naphthalene degradation ability were selected for further studies. Biochemical and molecular analysis revealed that two Persian Gulf isolates, strain PG-10 and strain PG-48 belonged to the group of hydrocarbonoclastic bacteria (HCB). The other isolated strain (SA-58, from the Caspian Sea) was not related to this group. After 1 week incubation at 30 °C, the rates of naphthalene degradation by PG-10, PG-48 and SA-58 was 91.2, 78.5 and 87.3%, respectively. Furthermore, the effects of addition of salicylate on naphthalene degradation by the isolated bacterial strains were investigated. The naphthalene degradation rate of the strains PG-10 and PG-48 increased with addition of salicylate. In contrast, biodegradation of naphthalene by strain SA-58 was decreased approximately 30% in the presence of salicylate. These isolates were also able to grow on different contaminants, including crude oil, kerosene, toluene and hexane as the sole sources of carbon and energy. Hence, we suggest these bacterial strains as a potential tool in bioremediation of oil-polluted environments.

کلمات کلیدی:

Bioremediation, Hydrocarbonoclastic bacteria, Marine environment, Polycyclic aromatic hydrocarbon