عنوان مقاله:

Isolation, identification and evaluation of oil hydrocarbon decomposing bacteria from contaminated areas of oil fields

محل انتشار:

فصلنامه پیشرفت ها در فناوری محیط زیست, دوره 4, شماره 3 (سال: 1397)

تعداد صفحات اصل مقاله: 9

نویسندگان:

.Mohsen Kojuri - *Department of Chemical Engineering, Qaemshahr Branch, Islamic Azad University, Qaemshahr, Iran*

,Fatemeh Ardestani - *Department of Chemical Engineering, Qaemshahr Branch, Islamic Azad University*

خلاصه مقاله:

Microbialbiodegradation is known as an effective and harmless method to overcome environmental pollution with oil hydrocarbon. Some bacterial species were isolated from the Sarvestan oilfields (Iran, Fars province), then identified and applied for oil hydrocarbon decomposition. A carbon-free minimum medium (CFMM) containing 1% crude oil was used to isolate bacteria through incubation at 30°C in the dark at 200 rpm for 7 days. Different methods were used to identify the hydrocarbon oil decomposing bacteria: gram staining, squalene hydrolysis, catalase, production of arginine dihydrolase, gelatin liquefaction, hydrogen sulfide production, levan production, methyl red, oxidase, nitrite reduction, oxidative/fermentative, starch hydrolysis and Tween-80 hydrolysis tests. Nine different oil decomposing bacterial species were isolated. All the species grew well at 28 and 35°C, while four isolates containing of Bacillus sp. SA13, Pantoea sp. SA1112, Pseudomonas aeruginosa sp. SA21, and Bacillus sp. SA23 were capable of growing in a temperature of up to around 42°C. The minimum salt tolerance for isolates, except for Enterobacter sp. SA711, was 8%; Bacillus sp. SA212 had the highest tolerance of 15% sodium chloride. Acinetobacter sp. SA172, Enterobacter sp. SA711, Pseudomonas sp. SA75, Bacillus sp. SA212 and Bacillus sp. SA23 had the most growth rate in the CFMM. The highest percentages of oil removal obtained were 89% for Enterobacter sp. SA711, 86% for Acinetobacter sp. SA172, and 68% for Pseudomonas sp. SA75. The three isolated bacterial strains from the contaminated soil of the Sarvestan area had a good ability to degrade oil hydrocarbon. Therefore, they could be used commercially for the .bioremediation of this region

کلمات کلیدی:

Biochemical test, Biodegradation, Contaminated soils, Oil removal bacteria