Bioremediation of marine oil pollution by *Brevundimonas diminuta*: effect of salinity and nutrients

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**ABSTRACT**

*Brevundimonas diminuta* was isolated from the oil-contaminated seawater in Dalian, China. The effects of salinity and nutrients (nitrogen and external carbon) on diesel oil biodegradation were investigated. This strain could utilize diesel oil as the sole source of carbon and energy and gave a biodegradation rate of 45% over 6 d under the salinity of 3.38% (w/w). Under the saline condition, nutrient addition has been proved to be an effective strategy to enhance oil biodegradation in marine environment. The addition of soluble starch and methanol exhibited a significant stimulative effect on oil biodegradation. The optimum external carbon source was soluble starch. Based on this, the optimum carbon source to external carbon source (C/EC) ratio in the test range was 2:1. Under the optimum conditions, diesel oil biodegradation rate increased from 44 to 65%. The optimum nitrogen source and C/N ratio were found to be NaNO₃ and 20:1, respectively. Under the optimum condition, the diesel oil biodegradation rate increased to 88%. The polymeric compounds formed in the culture after nitrogen addition comprise a number of amphoteric functional groups. The results suggest that *B. diminuta* has considerable ability for bioremediation process of oil in marine environment.

**Keywords:** *Brevundimonas diminuta*; Bioremediation; Oil pollution; Salinity; Nutrient

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