The Effects of Nitrogen and Carbon Sources on the Ability of Two Microbial Isolates to Produce Bioemulsifiers

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Abstract

Pseudomonas mallei and Pseudomonas pseudomallei were isolated from produced water samples collected from Escravos Tankfarm, Nigeria. The two bacterial isolates were found to produce very high emulsion turbidities when grown on hydrocarbon culture medium. The bioemulsifier produced by these two isolates were found to be related as they contain both protein and carbohydrate moieties of very close molecular weight and no trace of lipid. The bioemulsifier produced emulsified both aliphatic and aromatic hydrocarbons and also a variety of hydrocarbon mixtures such as olive oil, kerosene, diesel oil and crude oil. A combination of acetate and diesel oil seemed to be the preferred carbon source for bioemulsification while Ammonium sulfate was the preferred nitrogen source. Bioemulsifier production was highest at pH 7.05 while a pH greater than 7.25 inhibited bacterial growth and emulsifying activity.

Keywords: Hydrocarbons, Bioemulsifier, Bacteria, Ammonium sulphate

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