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CHARACTERIZATION OF *N*-HEXADECANE-DEGRADING BIOSURFACTANT-PRODUCING- *Acinetobacter* SPP. ISOLATED FROM PETROLEUM HYDROCARBON POLLUTED SOIL

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Abstract

Soil contamination by petroleum hydrocarbons is a worldwide problem, becoming a major environmental threat and a potential human health risk. In contaminated sites, bioremediation is an attractive alternative for decontaminating soils. In this study, 11 strains of *Acinetobacter* spp. were characterized. These strains were isolated from chronically oil-polluted soil at the Aconcagua river estuary bank (Región de Valparaíso, Chile). Low generation time, high growth rate, and the ability to grow in several hydrocarbons as sole carbon source, were the main selection criteria for further characterization. Degradation of *n*-hexadecane by strains codenamed 53, and 64 were tested. At 55 hours, strain 64 degraded 100% of 0,1% v/v *n*-hexadecane, whereas strain 53 degraded 75% at the same time. Strains 75, 78 and 80 had the highest emulsification index (E24): 70.0%, 72.4% and 64.7%, respectively. Additionally, in strains 75 and 78 were detected *alnA* gene, which encodes an outer membrane protein part of the biosurfactant called "alasan" described in *Acinetobacter radioresistens* KA53. Moreover, strain 80 showed properties similar to those described for "emulsan" like as an emulsion stabilizer and bioemulsifier power, this one biosurfactant was described in *Acinetobacter venetianus* RAG-1. As surface tension reduction and emulsifying power increase bioavavailability of hydrophobic compounds, these strains are potential candidates for use in bioremediation. This characteristic should act synergistically with catabolic abilities, thus increasing biodegradation in contaminated environments.