

## **Evaluating Desirable Traits of Plant-Inhabited *Burkholderia*, *Pseudomonas* and *Bacillus* Isolates for Bioremediation of Crude-Oil**

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Microorganisms are capable of cleaning petroleum hydrocarbon- contaminated environments. In addition to the degrading ability of petroleum hydrocarbons, some microbes have emulsification ability. The present study screened local isolates of bacteria for bioremediation ability and evaluated the emulsification potential. *Burkholderia* isolates (i.e. A, B, D, E, and F), a *Pseudomonas* isolate (G), *Bacillus megaterium*, and *Bacillus subtilis* which were inhabitants of plant surfaces were used for the study. Crude oil degrading ability of the bacterial isolates was tested in Bushnell Hass medium (BHM) using crude oil (0.1% v/v) as the sole energy source and optical density (OD) at 600 nm was measured. The emulsifying potential of the isolates was evaluated by calculating an emulsification index (E-24). The test was performed twice using the culture supernatants of the bacterial isolates and percentage E-24 was calculated. All the isolates demonstrated a typical growth curve over a two-week period in BHM supplemented with 0.1% crude oil indicating their ability to use/metabolize crude oil as the sole energy source as they did not grow in BHM without crude oil. Among the isolates, the highest and lowest growth rates were reported by *B. megaterium* and *Burkholderia* isolate A, respectively in BHM with 0.1% crude oil. *Burkholderia* isolate F and *Pseudomonas* isolate (G) showed no emulsification ability in comparison to the negative control but the emulsification indices of the rest ranged from 20- 40%. The study identified five *Burkholderia*, one *Pseudomonas*, one *Bacillus megaterium*, and one *Bacillus subtilis* isolates which are inhabitants of plant surfaces as potential microbes that can be grown on crude oil as the sole carbon source. Except for two tested isolates (F and G), the rest demonstrated emulsification ability. Results revealed the potential of using all the tested bacterial isolates, with or without the emulsification ability for the bioremediation of crude oil.

**Keywords:** Bioremediation, Emulsification, Petroleum hydrocarbons