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### Comparison of screening methods for biosurfactants/bioemulsifiers detection in bacteria

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#### **Abstract**

In soils polluted with hydrocarbons, some bacteria develop tactics to access hydrophobic substrates, such as the synthesis of biosurfactants and bioemulsifiers through which they dominate in hostile environments. These molecules have respectively the characteristics of reducing the surface tension of hydrocarbons and allowing the formation of an emulsion in water thus facilitating their transfer to the cell cytoplasm where they will be degraded and used as a carbon source. The aim of our work is to apply and compare simple screening methods for biosurfactants and bioemulsifiers producing strains. Bacteria were isolated on mineral salt medium with 2% crude oil, identified, then screened by emulsification test, oil spreading, drop collapse and blood hemolysis assays. Out of 34 strains tested, 11 strains (32.35%) showed a production of both Bs and Be with notable differences. The determination of statistical correlation between assays demonstrated that oil spreading assay was strongly correlated with the drop collapse assay ( $r = 0.790$ ) while the rest were not correlated. These simple methods are very informative and preliminary in the selection of candidates for the bioremediation process of hydrocarbons-polluted sites.

**Keywords:** Hydrocarbons, Biosurfactants, Bioemulsifiers, Bacteria, Oil spreading assay.