

TITLE: GROWTH OF HYDROCARBONS DEGRADING BACTERIA ISOLATED FROM ANTARCTIC SOIL CONTAMINATED WITH DIESEL

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ABSTRACT:

A project for the establishment of a consortium of hydrocarbon-degrading bacteria to be applied to soils around the Comandante Ferraz Antarctic Station (EACF) contaminated with diesel oil is being developed under PROANTAR scope to accelerate the hydrocarbons degradation within the application of the bioaugmentation technique. As the metabolism and growth of soil bacteria in Antarctica is naturally slow due to the low temperatures, It becomes important to test the feasibility of applying the bioaugmentation technique to increase the biomass of hydrocarbon-degrading bacteria, thereby helping to accelerate hydrocarbons degradation. From the isolation of bacteria using the diesel oil used in the EACF as the sole carbon source, 20 isolates that showed morphological differences of the colonies growing in Petri dishes were selected. The objective of this work was to quantify the cellular concentration of the inoculum obtained by the growth of each isolate. For this, Erlenmeyer flasks containing 50mL of Nutrient Broth medium were used, which were inoculated with colonies of the isolates. The Erlenmeyer flasks remained under shaking at 120rpm at 15°C during 4 days. The counting was then performed by the serial dilution technique and plating in Petri dishes containing nutrient agar medium. Dilutions were made up to 10^{-8} and triplicates were plated using the dilutions of 10^{-7} and 10^{-8} . The Petri dishes were incubated at 15°C during 48 to 72h. The number of bacterial cells per ml of culture medium from the 20 isolates ranged from $3.4 \times 10^{10} \pm 1.5 \times 10^{10}$ to $5.5 \times 10^{12} \pm 8.5 \times 10^{12}$. The bacterial cell cultures obtained in this work will be used tested for the ability to degrade hydrocarbons of the diesel used in EACF. The quantification of the cell concentration in the cultures obtained will be used to standardize the amount of cells applied to the contaminated soil.

Keywords: hydrocarbon, consortium, bacteria, Antarctica

Development Agency: UFSJ, FAPEMIG, MMA