

**TITLE:** BIOTRANSFORMATION of N-HEXADECANE TO ISOLATES OF *Gordonia sp.* FROM COMPOST

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**ABSTRACT:**

The composting process is used for the treatment of organic waste generating a biofertilizer as final product. This transformation occurs predominantly by the action and diversity of resident microorganisms. The São Paulo Zoological Park Foundation (FPZSP) has an organic compound production unit (UPCO), in which the organic residues from all the different areas of the park are submitted to the composting process. Based on the metabolic diversity of the microorganisms present and active in the composting process, this work had an objective to evaluate the capacity of four isolates of *Gordonia sp.*, regarding the survival and biotransformation of hydrocarbons, using n-hexadecane as a model. This compound is widely present in petroleum and its derivatives, also being considered an environmental pollutant, with high potential to contaminate soils and water. The initial degradation of aliphatic hydrocarbons can occur by the action of microbial monooxygenases. In this work, we investigated the presence of two monooxygenases genes (*cyp153*, *alkB*), using degenerate primers in PCR reactions. The degradation capacity of n-hexadecane (1%) was also evaluated using the phenotype test based on the use of 2,6-dichlorophenol indophenol (2,6-DCPIP) as an indicator of the biotransformation of the hydrocarbon by bacterial isolates. PCR results revealed the presence of the *alkB* gene in the DNA of two isolates (MTZ095 and MTZ096). However, none of the isolates evaluated presented amplification for the *cyp153* gene. All the isolates analyzed were positive in the test using 2,6-dichlorophenol indophenol, indicating their ability to biotransform n-hexadecane. Thus, the present work demonstrates the ability of the composting microbiota to the potential of biotransforming different molecules as substrates, such as n-hexadecane.

**Keywords:** *Gordonia*, n-hexadecane, *cyp*, *alkB*, DCPIP.

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