METHODOLOGY TO EVALUATE DESULFURIZATION CAPACITY OF THE BACTERIAL STRAIN *GORDONIA SP.* F.5.25.8

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Sulfur content restrictions in fuels have stimulated the improvement of desulfurization technologies as such as the research of alternative processes, among them biodesulfurization. Usually, dibenzothiophene (DBT) is used as a model compound to study the microbial desulfurization, as it is worth as representing petroleum sulfured contaminants. Biodesulfurization is based on the selective removal of sulfur from the molecule and the maintenance of the carbonic skeleton intact, keeping mostly its caloric value. The aerobic bacterial strain *Gordonia sp.* F.5.25.8 is able to use DBT as the sole sulfur source through the selective sulfur oxidation, presenting 2-hydroxybiphenyl (2-HBP) as the final product. In order to study and optimize the process, it is necessary a quantitative analytical method of the desulfurization capacity. In this study, a new methodology was developed to evaluate the desulfurization by *Gordonia sp.* F.5.25.8, after testing resting cells and cells in growth conditions. Assays with different initial biomass concentrations (1, 3 and 5 g dry cell weight L^{-1}) and with different reaction times (until 65 hours) were accomplished. Substrate (with initial DBT concentration of 46ppm) and final product quantifications were performed by HPLC. The *Gordonia sp.* F.5.25.8 strain presented the highest desulfurization rate (0,196 ppm DBT g dry cell $weight^{-1}$ h^{-1}) in growth test with 3 g dry cell L^{-1} in 40 hours.

Supported by: PETROBRAS
Key words: biodesulfurization, dibenzothiophene, 2-hydroxybiphenyl, *Gordonia*