

TITLE: CHARACTERIZATION OF PETROLEUM DEGRADATION BY PSEUDOMONAS spp. COLLECTED AT AMAZON REGION

AUTORS: CASTRO, D. P.^{1,2}, SILVA, J. R. A.¹, AQUINO, P.², CARVALHO, P. C.³, SERRA, P. T.², BATISTA, I. H.⁴, NOGUEIRA, P. A.², ODAIR, J.P.¹, ORLANDI, P. P.²

INSTITUTION: ¹UFAM – Universidade Federal do Estado do Amazonas (Av. General Rodrigo Octávio, 6200 - Coroado I, Manaus - AM, 69077-000), ²FIOCRUZ ILM D – Instituto Leônidas e Maria Deane (Rua Terezina, 476. Adrianópolis. Manaus - AM. CEP: 69.057-070.), ³- FIOCRUZ – ICC – Instituto Carlos Chagas; ⁴ – Universidade do Estado do Amazonas UEA

ABSTRACT

Petroleum is a heterogenic substance composed predominantly by hydrocarbons. Despite its many utilities, at petroleum contamination environmental disasters its removal is costly, dangerous and difficult to remove all chemical residues. Many methodologies are now used to recovery contaminated sites, and bioremediation is one of the most utilized due application of native microorganisms to process and transform the chemical compounds. At this study we propose the characterization of a *Pseudomonas* spp. isolated from macrophytes collected in an eviction petroleum residue lake from Isaac Saba petroleum refinery at Coari, Amazon. We challenge the bacterium inoculum against raw petroleum and had its degradation rates estimated by gas spectrometry and its protein expression pattern analyzed by mass spectrometry. As results the *Pseudomonas* isolate alone was able to degrade 51% of raw petroleum in 72h contact. 51 hydrocarbons were identified, of these amount 23 hydrocarbons had 100% of degradation and 28 partial degradation ranging of 3,80 to 69,88%. At mass spectrometry analysis we found many proteins related to degradation of xenobiotic residues as cytochrome c5, related to transport of hydrocarbons through bacterial membrane. The *Pseudomonas* isolate object of this study has Amazon origin, and alone was capable of raw petroleum degradation, while commonly a bacterial consortium is needed. We believe this study may contribute to discovery new biochemical process involved in petroleum degradation and development of tools to apply in this field.

Keywords: *Pseudomonas*, Petroleum Degradation, Proteomic.

Development Agencies: CnPq, FAPEAM, FIOCRUZ