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BRAVO- Bioremediation as instrument for environmental mangrove recovery of Guanabara Bay, Rio de Janeiro, Brazil

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The announcement of Rio de Janeiro, Brazil, as World Heritage Site by UNESCO (United Nations Educational, Scientific and Cultural Organization) listed the most relevant natural settings that make this landscape original and exceptional. One of the key natural elements that have shaped and inspired Rio de Janeiro's city development is Guanabara Bay. Nonetheless this area suffers with the high concentration of pollutants that arrive daily through suspended particulate material to its organic matter rich sediments. In the year 2000, a spill of over 300,000 gal of marine fuel oil occurred at Guanabara Bay affecting environments such as beaches and mangroves. Mangroves are very sensitive to hydrocarbon contamination. Petroleum hydrocarbons tend to adsorb organ¬ic matter rich surfaces due to their high molecular weight, hydrophobicity and solid state. Consequently, sediment adsorption limits bioavailability of these compounds to microorganisms, reducing bioremediation efficiency. Fortunately, biosurfactants produced by hydrocarbon-degrading bac¬teria can emulsify hydrocarbon-water mixtures, which enables them to grow on oil droplets. BRAVO project proposes the use of bioremediation as instrument for environmental mangrove recovery of Guanabara Bay. The objective of this project is to isolate biosurfactant producing bacteria from petroleum contaminated mangrove and apply it as tool for oil spill pollution-con¬trol. Currently, we successfully isolated mangrove bacteria consortia able to biodegrade petroleum. The next goal is to study the properties of bacterial consortia and its biosurfactant composition. Furthermore, for better understanding of biodegradation in tropical areas our studies accomplishes the limiting factors of petroleum biodegradation in contaminated aquifers.

Biography

Natascha Krepsky is associate professor at Federal University of the State of Rio de Janeiro, Brazil, with Post-doctorate from Federal University of Rio de Janeiro (2009), PhD in Marine Geology and Geophysics (2008), MSc. in Marine Biology (2004) from Fluminense Federal University. Her researches in petroleum biodegradation and bioremediation started ten years ago, after graduation in Microbiology and Immunology at Federal University of Rio de Janeiro. She authored or co-authored 8 papers published in national and international peer-reviewed journals. Currently, she coordinates Project Bravo - Bioremediation as Instrument for Environmental Mangrove Recovery of Guanabara Bay, Rio de Janeiro, Brazil.

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