

Microorganisms Isolated From Guanabara Bay And An Oil Well As Potential
Tools For Biodiesel Bioremediation

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Fuels made from renewable sources, called biofuels are being studied as possible substitutes for fossil fuels. After the successful ethanol fuel program (PROALCOOL) in Brazil, biodiesel is the new bet of scientists, governments and environmental protection agencies. Although the production of biodiesel is being largely studied, the ecological consequences of its use need more advances. This work starts with the objective of finding out microorganisms in the environment for biodegradation and bioremediation of biodiesel in sea water. Twelve bacteria were isolated from the polluted waters of Guanabara bay and from an oil extraction well. The bacteria were characterized morphologically and by the Gram **test**. They grew in fluid and solid medium containing biodiesel as the sole carbon source and, observing the reduction of added 2,6-dichlorophenol indophenol, some activated oxidative pathways during the growth in the media. One of these microorganisms has already shown capacity to completely consume biodiesel in sea water, producing carbon dioxide as final product. The results confirm that, although biodiesel is rapidly biotransformed, its complete oxidation is slow and must be fully understood. The other species will also be tested by the shaker flask system (EPA guideline 560/6-83-003) as the products formed during bioremediation will be monitored by gas or liquid chromatography.