

Removal of oil hydrocarbons using the grass *Panicum maximum* and a bacterial consortium in contaminated soil

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The phytoremediation is a bioremediation technology used for the contaminants removal in soil and plants of tropical areas which has showed their potential with oil hydrocarbons. Species of grass belonging to *Panicum* genus has been found in oil contaminated soil. In this study, the aim was evaluating the removal of oil hydrocarbons from soil using the grass *Panicum maximum* alone or combined with a bacterial remover consortium. Grass and oil contaminated soil were collected from a closed oil extraction field and greenhouse experiment was established with consortium Bacterial (B), Grass (G) and their combination (G+B) on soil-cow manure-agrolite (1.8:0.1:0.1 w/w) in sterilized and not sterilized treatments during 112 days. A control (natural attenuation) without treatment was established in same conditions. Bacterial consortium was selected and mixed to growth as consortium after encapsulated with liposome in a permeable matrix of sustained release. The height, number of leaves, *total hydrocarbon concentration* (TPH) was recorded at 0, 28, 56 and 112 days, and grass biomass (root and stem) was determined at the end. TPH was determined by GC-MS. The treatment with only grass has a significant growth after 28 days up to end of the experiment, presented significantly higher root biomass than other treatments. The higher oil hydrocarbons removal was observed in the treatment of bacterial consortium (85%) followed by combined G+B (80%) and grass (77%) than natural attenuation (15%). The bioaugmentation with bacterial potentialized the oil hydrocarbons removal and helped the phytoremediation using the grass *Panicum maximum*.

Biography

S M Contreras-Ramos has completed her PhD from Centro de Investigación y Estudios Avanzados del IPN (CINVESTAV) and Postdoctoral studies from Universidad Autónoma de México (UNAM). She is now the Director of Environmental Technology Unit in CIATEJ, and received Prize of Innovation 2016 grant by Jalisco Government State. She has published more than 25 papers in recognized and international journals reaching 400 cites (no self-citations), h-index=12 and has been serving as an Editorial Review Member of reputed international journals.

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