

Indigenous and Site- contaminated Soil Microbiote as Source for Biorremediation
Agents Applied for Biodiesel Contamination

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Biodiesel is a renewable fuel produced by transesterification of vegetable oils and animal fat with short chain alcohols. Due to nature of these feedstocks biodiesel is believed to be fully biodegradable, however many types of soil are negatively affected biodiesel spills. Remediation of soil with selected microorganisms, called biorremediation, is an effective way to solve such problem. In this work, selection and identification of specific biodiesel-degrading microorganisms have been performed. For this end, samples of virgin soil (VS) and biodiesel-industry-wastewater-site-contaminated soil (SCS) were treated with 1% biodiesel and microorganisms were selected in solid medium containing biodiesel as a unique carbon source. Forty biodiesel-degrading colonies were isolated, being 31 bacterial and 9 fungi. Metabolic tests of isolated colonies indicated that some of them were not able to oxidize biodiesel, suggesting that such microorganism should degrade biodiesel only in consortia. Biochemical tests were done in order to evaluate lipase/estearase production and biodiesel oxidation by isolated microorganisms. 3 microorganisms from SV and 2 from SCS displayed high lipasic/sterasic activity and oxidation capacity and could be considered as good candidates for bioremediation of biodiesel contaminated soils. Special attention to other BDM with no or low oxidation activity must be given, as they can produce toxic metabolites which compromise soil health. Amplification and sequencing of rRNA 16s genes are being performed in order to genetic identification such microorganisms.

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