Potential Bioremediation of Waste Hydrocarbons: Utilization of Mycorrhizal Fungi as an Environmental Enhancement Agent

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Introduction The oil industry is extremely important in the entire world. Although oil is a very important resource, it can cause devastating environmental problems if an oil spill occurs. There are current methods used today to remove oil spills from soil, but they require introducing more chemicals into the soil. Finding ways to use natural methods such as bioremediation can be an alternative method for removing crude oil from soil. The purpose of this research is to investigate the ability of endomycorrhizal fungi and ectomycorrhizal fungi to reduce hydrocarbons in soil. Procedure Experimentation was conducted for a five week period. The fungus were allowed to grow for two days before one milliliter of crude oil was added to the soil. After each week, approximately ten grams from each soil sample were soaked in acetone in order to separate the crude oil from the soil. Data was analyzed and collected using a Vernier Gas Chromatograph connected to a computer. One microliter (µl) of each acetone/oil mixture was inserted into the gas chromatograph using a syringe. Data was analyzed using peak integration so that comparisons in peak area could be made. Results/Conclusion It was hypothesized that the soil samples containing fungi from the Gnarly Roots brand would have the greatest impact on oil reduction since it contains the largest variety of fungus. The hypothesis was correct because the mycorrhizal fungi that had the highest percent reduction compared to the other brands used was the Gnarly Roots. Although the Gnarly Roots brand had the highest percent reduction, all brands used showed a reduction, the lowest being of 24.9%. Therefore, it can be concluded that mycorrhizal fungi can be used in bioremediation as an environmental enhancement agent.

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