Save Our Oceans!: Oil Eating Bacteria!, Part Four

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Oil spills in the environment and in particular in any ocean poses a significant risk to both the environment and the ecosystem. The science fair projects for the last 3 years have been exploring the possibilities of finding and characterizing Oil Eating Bacteria in the desert southwest area. In 2011 my science fair experiment consisted of finding four different bacterial isolates from soil, pond, and plants in the desert southwest that successfully grew using oil as a carbon source over simulated ocean water. In 2012, three of the bacteria isolated were identified using polymerase chain reaction (PCR) amplification. The bacteria were identified as Methylobacterium (which came from a sage plant), Bacillus nealsonii (which came from a backyard pond), and Pseudomonas Spp. (which came from a soil sample). Using a spectrophotometer and measuring the absorbance of light at 670 nm, the methylobacterium was determined to degrade the oil faster. Last year, 2013, Methylobacterium was utilized on simulated ocean environments with oil spills. The water fitness including O2 levels, pH, calcium, phosphate, nitrate, and nitrate levels were measured as the bacteria consumed/degraded the oil. An interesting observation from last year's experiment led to the focus of this year's project. The Methylobacterium formed a film on the surface of the water. This year, the characterization of the changes to the oil will be attempted using gas chromatography/mass spectrometry. The GC/MS data showed that after two weeks, the bacteria had completely degraded the oil. The identification of both the consumed and produced compounds is pending comparison with known standards.

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