The Effect of pH of Water on the Biodegradation of Microplastics via the Micrococcus luteus Bacteria

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There are theories within the scientific field that bacteria may be a counter to the microplastic-polluted waters in the current world. In my previous project, I researched and tested with the micrococcus luteus, bacillus cereus, and lactococcus lactis bacteria. To find another effective technique to treat microplastics that costs less money, research, and experiments were conducted on these bacteria and their effects on microplastics in the water. Finding the ideal environment for these bacteria to function effectively would involve experimenting with various temperatures. In the continuation portion of this project, I am testing how the pH of water impacts the biodegradation process of microplastics via the micrococcus luteus bacteria. With three tanks holding around 20,000mL of stream water and nine jars holding around 75mL, the pH of each tank was altered to test the correlation between micrococcus's biodegradation abilities and pH. From my background knowledge, I hypothesized that micrococcus luteus will perform and survive best when submerged in water with a neutral to basic pH, hence why it was used for this experiment. To analyze each tank/jar before and after for microplastics, the water from each tank/jar would be filtered through a filter to catch any material within the water. Then, the filter would be placed under a microscope to be examined for any microplastics caught by the filter. By the end of the procedure, I concluded that micrococcus luteus biodegraded more microplastics as the pH of the tested water increased and became more basic.

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