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*Mycoremediation Capabilities of Fungi as Applied to Fresh Water*

Mycoremediation is the process whereby fungi decompose pollutants, rendering an environment less contaminated. This experiment was conducted to study the effects of fungi cultivation on caffeine contaminated fresh water. Caffeine was utilized as a substitute for pharmaceuticals. The chemical formula for caffeine is similar to that of pharmaceuticals. Research indicates every body of water, public and remote, is currently contaminated with pharmaceuticals and caffeine. To conduct this experiment, 2000mL of 18 megaohm-deionized water was contaminated with 15.9 mg of caffeine. Throughout one week, 100mL of contaminated water was placed in a sterilized jar with Mycogrow, native or non-native *Plurotis Ostriotis* mycelium. Due to a lack of lab and equipment availability, the experiment was conducted so that each sample would represent a different day throughout the experiment, as though the specimens were tested daily for a week. The water was tested utilizing Ultraviolet Visible Light Spectroscopy. The most effective fungi was Mycogrow, experiencing a decrease in contamination from 15.9ppm to 3.32ppm. Non-native mycelium samples decreased from 15.9ppm to 7.84 ppm. The Native mycelium samples decreased the caffeine concentration from 15.9ppm to 1.35ppm. The concentration of caffeine in the samples of non-native and native mycelium were higher than expected and some indicated an increase in caffeine concentration. It was concluded that there was some form of matrix in the water, most probably emitted from the mycelium, interfering with the test results. Though some results were skewed, I have concluded that cultivating fungi in caffeine-contaminated water will reduce the amount of caffeine present in the water.