OFFICIAL ABSTRACT and CERTIFICATION

Controlling Coliform Contaminated Water through Mycofiltration

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Waterborne illnesses guarantee numerous deaths every year. One of the main causes is the absence of safe drinking water. The World Health Organization reports that over 3.4 million people die annually from water-related diseases. The greatest dangers from unclean water are sicknesses caused by microbes, protozoa, or parasites. The purpose of this study was to create an inexpensive and efficient water filter that has the ability to provide clean water to individuals living in the impoverished regions of the world. Mycofiltration uses fungal species in a substrate matrix to filter out pollutants (chemical and/or biological) from water. In this study, mycelia from Stropharia rugosoannulata and Pleurotos ostreatus to was to use remove Escherichia coli (K12 strain). Mycofilters were prepared by inoculating autoclave sterilized grain and perlite with S. rugosoannulata or P. ostreatus in sterile 50 mL conical tubes with a hole drilled in the bottom. The mycofilters were then placed on a ring stand, 10 mL of E. coli K12 suspension was aseptically pipetted at the top of the tube, and the water was collected at the bottom in sterile collection tubes. Samples were serially diluted, then plated to nutrient agar for colony counts. The mycofilters of Stropharia rugosoannulata and Pleurotos ostreatus significantly reduced the concentration of the E. coli.

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1. As a part of this research project, the student directly handled, manipulated, or interacted with (check ALL that apply):

   ☐ human participants ☐ potentially hazardous biological agents

   ☐ vertebrate animals ■ microorganisms ☐ rDNA ☐ tissue

2. I/we worked or used equipment in a regulated research institution or industrial setting: ☐ Yes ■ No

3. This project is a continuation of previous research. ☐ Yes ■ No

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This stamp or embossed seal attests that this project is in compliance with all federal and state laws and regulations and that all appropriate reviews and approvals have been obtained including the final clearance by the Scientific Review Committee.