CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)

Rebekah Kaiser; Hannah Tufts

Project Number

34287

Project Title

Agaricus bisporus Mycofiltration

Abstract

Objectives/Goals

The objective is to determine if water filtered through a Brita carbon-based water bottle filter is more effective at lowering levels of bromine and chlorine and maintaining pH than an Agaricus bisporus# mycelia filter.

Methods/Materials

The Agaricus bisporus mycelia filter was designed from a spice bag, half the top of an edible basidiomycete mushroom, and some large pieces of mulch. The mulch was tested alone as a control creating no affect on the water. Tap water was tested then filtered through the Brita water bottle carbon-based filter as well as the Agaricus bisporus mycelia filter. Each trial was tested with fresh, unfiltered water at the same temperature from the same faucet.

Results

The Agaricus bisporus filter lowered the levels of chlorine and bromine, and it maintained a more stable pH as compared to the Brita carbon-based water bottle filter. The Agaricus bisporus mycelia filtered water created safer water for human consumption.

Conclusions/Discussion

Questions are revealed about the design of water filters and if nature#s design of the Agaricus bisporus mycelium could improve water filters. Different categories of contaminants that affect humans when consumed could be measured for in the water going through each filter. Other types of Agaricus bisporus mycelia could be tested to measure the levels from the new mycelia. Engineers could base their new designs of water filters on the mycelia and recognize which parts extract the certain toxins that are unhealthy for human consumption. Overall, the data suggests that the Agaricus bisporus mycelia filter is a better choice than the Brita carbon-based water bottle filter, strictly based on levels of pH, chlorine, and bromine in the water.

Summary Statement

Water was filtered through a man-made carbon-based filter and a filter containing Agaricus bisporus mycelia to see which was more efficient in obtaining healthier levels of chlorine, bromine, and pH.

Help Received

No help received