Liquid Culture

Like the agar technique explained in the Agar protocol, growing fungi in liquid cultures is considered stage one among cultivation techniques. These are the fundamental steps that have to be mastered to isolate and propagate mushroom cultures. In the following, I will cover the reasons and methods around this technique.

Growing fungi in liquid cultures is a technique that originates from professional biology laboratories. It is also done on an industrial scale, where colonies are grown in huge fermentation tanks in order to extract certain enzymes the fungi produce. The online community of amateur mycologists worldwide has scaled down these techniques and adapted them, resulting in an easy procedure for multiplying mycelial mass in a modified canning jar.

Bill of Materials

- 435 ml canning jar (best to use a modified jar or Mycoreactor)
- 400 ml pure water (can be filtered from the tap, if chlorine is sure to be absent, ideally bottled or spring water)
- light malt extract
- dextrose
- gypsum (optional, supplements nutrients)

Tools

- magnetic stir bar with a razor blade (optional but helpful)
- clean spoons for each ingredient
- precision scale preferably, otherwise kitchen scale
- magnetic stir plate (optional but helpful)
- pressure cooker or autoclave
- ideally, this is done in front of a running sterile flow hood

Method for preparing a liquid culture jar

1. If a sterile flow hood is available, it is run for at least 30 minutes prior to starting the work. If there is none available, a still air box can be used or otherwise. The following two steps are to be followed with even higher care.

2. All utensils are cleaned thoroughly with soap and warm water or a dishwasher to a hygienic state.

3. All utensils and the work surface is wiped down thoroughly with 70 % Isopropyl Alcohol. The jar is placed on the scale and the scale tared.

4. 280 g of pure water is filled into the jar.

5. A small pinch of gypsum is added.

6. 20 g of dextrose is added.

7. 20 g of light malt extract is added.

8. The magnetic stir bar with an optional razor blade is dropped in the jar.

9. The jar is closed up tightly with the lid, making sure the lid was prepared by placing micropore tape on both sides over the air port.

10. The jar is stirred on the magnetic stir plate for a few minutes or until all solids, and powdered ingredients are dissolved completely.