Modern Mushroom Double Extraction

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With the advent of many modern miracles of kitchen witchery we have found a way to significantly improve the timing involved in making a mushroom fruit body double extraction, as well as increase the potency!

A subcritical (S.C.) water extraction. Instead of the traditional decoction methods this process utilizes both heat and pressure. The end product is then preserved with mushroom infused alcohol (EtOH). The final solution should be shelf-stable for an indefinite period, have high concentrations of polysaccharides, terpenes and sterols.

A Magic Butter machine produces an alcohol extraction enhanced with heat and agitation. Herbalists use this to create herbal tinctures and oils in a fraction of traditional maceration time.

Even though starting with 190 proof alcohol, this method produces a much lower alcohol (EtOH) content than most double extractions you can purchase already made, and you use a lot less mushroom material (great for at-risk species like Chaga). There is some research that shows the polysaccharide and terpene concentrations are much more concentrated.

The below instructions were created specifically for hard, woody conk mushrooms that have been dried and shredded or powdered.

The below apparatus is needed:

- Magic Butter Machine
- Instant Pot (or similar pressure cooker with timer and various settings)
- Ninja bullet, Vita mixer, or any high-powered blender
- 190 proof EtOH
- Clean water

- Butter muslin
- Wide Mouth half gallon and quart size mason jars with lids
- Wide mouth jar funnel
- Large Tea Strainer
- Ladle
- Large bowl
- Scale that measures in grams

Water Extraction – 1:10 mushroom to menstruum ratio

1. First, prepare the Instant Pot for the water extraction, ensuring that the inside of the apparatus is clean and free of grease or leftover tidbits from other projects.
2. Measure dried, finely chopped or ground mushroom fruiting body at a 1:10 ratio.
3. ½ gallon of water extraction:
    a. ½ gallon is approximately 2000 ml.
    b. If using a Ball jar, the ml marks are on the side.
    c. To come up with a 1:10 ratio, you would find 1/10 of 2000 and this gives you the appropriate grams of dried mushroom.
        i. 1/10 or .10 x 2000 = 200 – so measure out 200 grams of dried mushroom.
4. Fill the clean half gallon jar up to the 2000 ml mark with clean spring or well water. Try to avoid chlorinated tap water if possible.
5. Pour the measured water (2000 ml) into the Instant Pot and add the finely ground mushroom marc (200 grams).
6. Stir gently so that the marc is thoroughly moistened and submerged in the water.
7. Set Instant Pot to High setting, set the timer to 60 minutes.
8. Once the timer goes off, manually release with the handle of a spoon, and turn the pot off.
9. Let the extraction cool completely. (I usually do this process at night, wait until the extract and pot is cool to the touch, then cover it and leave it in the fridge overnight).
10. Once completely cool, grab a clean, empty half-gallon mason jar, jar funnel, large tea strainer, ladle, large bowl and butter muslin.

11. Place jar funnel in jar, place tea strainer in funnel, then line with a large square of butter muslin so that it overlaps the funnel.
    ****Pro tip: soak the butter muslin in the fluid extract first and squeeze out so that is damp to touch before using.****
12. Carefully, ladle mushroom marc and fluid extract into the draped muslin in batches no bigger than the palm of your hand. There is going to be a whole lot of squeezing going on!
13. Gather up the overlapping corners of the muslin to form a sack that traps the marc inside and vigorously squeeze out over the strainer and funnel into the jar.
14. Once divested of as much liquid as possible, empty squeezed mushroom marc into the bowl and reserve, (you will use it again so save as much as possible).
15. Once all marc is done, measure how much liquid extract you have left. You will lose some of the water from the extraction process, so don't be alarmed if you have less than the 2000 mls you started with.
    a. In this scenario, I had 1125 ml of S.C. extract left after extraction.
16. Note the final ml of your S.C. water extract, cap and place in fridge while you make the EtOH extract.

Alcohol Extraction: 1:10 mushroom to menstruum ratio, 95% EtOH

1. Grab the Magic Butter Machine, Everclear or similar 190-proof alcohol, gram scale and bowl.
2. You must use a minimum of 2 cups of menstruum in the Magic Butter Machine, so we will work backwards to get a 1:10 ratio
    a. 2 cups = 473.2 ml
    b. 473.2 x .10 or 10% = 47.32 grams
3. You will need to measure out 47.32 grams of the reserved mushroom marc from your water extraction for a 1:10 EtOH extraction.
4. Place 47.32 grams of reserved mushroom marc and 473.2 ml of Everclear into Magic Butter Machine and plug in.
    a. Select 160 degrees and 2 hours for the time.

b. Watch the pretty lights and think of all the things you are grateful for 😊

5. When the timer goes off, unplug the machine and take the top off to cool the extraction.
6. When the EtOH extraction is completely cool, repeat steps 8-12 of the supercritical water extraction and reserve strained extract.
7. Note the final ml of EtOH extract.
   a. In this example I had a final yield of 400 ml EtOH extract.

To make a shelf-stable extract, the final solution must be at least 25% EtOH. If using only 2 cups of EtOH to make the extraction, you may end up with more S.C. extraction than needed for the final solution.

Let's Get Mathy! (You CAN do this!)

To get a 25% shelf-stable S.C. hydroethanolic dual extraction, you can use the standard dilution and concentration equation used to make herbal extraction menstruum, with a few tweaks!

Dilution and Concentration Equation: $C_1V_1=C_2V_2$

1. By using 190 proof Everclear this eliminates the need for complicated math because the extraction will contain 95% pure EtOH.
   ****the following example was taken from Lisa Ganora's "Making Better Medicine" class. I highly recommend that class and her book – <u>Herbal Constituents – Foundations of Phytochemistry</u>*****
   a. Example: You have 400ml of 95% EtOH extraction.
   b. You need your combined solution to equal 25% EtOH of the total volume.
   c. C_1 is 95 (%), V_1 is 400 (ml) [your starting concentration and volume]
   d. C_2 is 25 (%), and V_2 is how much of the S.C. extraction you will need for the final concentration and volume.
      i. (95)(400) = (25)(? S.C.)

ii. 38,000 = (25)(? S.C.)
iii. 38,000/25 = 1,520
iv. V_2 (total solution) = 1,520
v. 1,520 (total solution) – 400 (total EtOH extract) = 1,120 (S.C. extract)

2. Combine the 400 ml of EtOH extract with 1,120 ml of S.C. extract and Shake It UP BABY!

Congratulations! You have now made a modern miracle mushroom extract!

Tips and fun tidbits:

1. Reserve any leftover Etoh extract and label. This will not have many polysaccharides, but it is rich in fat-soluble compounds and you may use this to extract other herbs/mushrooms for formulas in the future.

2. Label and date your mother tincture jar:

75% S.C. H20 extract 1:10

25% M.B. EtOH extract 1:10 and store is a cool, dry place (like a cupboard or pantry).

3. For a higher-terpene dual extraction, use fresh mushroom material instead of the S.C. mark for the EtOH extraction. (Warning: fresh ground mushrooms like Reishi are very porous and will absorb liquids rapidly, so you will have to adjust your EtOH ratio.)
4. Your mother dual extraction can be combined with complementary mushrooms and herbs to make custom formulas.
5. If done correctly, the polysaccharides should stay in solution (the double extraction will be cloudy, these are the polysaccharides). If the polysaccharides fall out of solution don't fret! This may happen if the EtOH content is too high. If that is the case, just shake it well before use.