Snail gel

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Introduction
Snail gel is an ideal food supplement to the lettuce and algae (Nostoc spp.) that is normally fed to laboratory snail colonies. Currently, the NIH NIAID Schistosomiasis Resource Center uses snail gel as a supplement to feed neonates, juveniles and adults of Biomphalaria glabrata and Bulinus truncatus. Adult Oncomelania hupensis also enjoy snail gel.

Materials and reagents
500 mL deionized water
2 g sodium alginate (Alginic acid-sodium salt [Sigma A-2033, medium viscosity, sold as a fine powder])
8 g barley grass powder (available at health food stores, Amazon.com)
2 g wheat germ (available at grocery stores)
2 g fish food (Tetramin – Large Tropical Flakes)
1 g powdered milk (available at grocery stores)
1 L 2% calcium chloride solution (Sigma C-4901, anhydrous)

Equipment
Electric stirring hot plate
1000 mL beaker
Large stirring bar (1.5 inch)
Thermometer
Mortar and pestle
Two flat plastic 7” x 9” x 6” pans

Procedure
1. Heat 500 mL deionized water to ~70-80°C in a 1000 mL beaker with a large stirring bar. Do not boil at any time.
2. Add ingredients in the exact order listed above.
3. Add sodium alginate gradually to the 500 mL water. Using a stir stick, agitate and mix the water to thoroughly dissolve the sodium alginate.
4. Continue to add small amounts of the sodium alginate (pausing after each addition to agitate and dissolve the powder).
5. Once the sodium alginate is dissolved, turn off the heat source.
6. Add the barley grass powder to the solution and stir until homogenous.
7. Pulverize wheat germ, fish food and powdered milk to a fine powder with the mortar and pestle; gradually add the powder to the barley grass suspension, continuing to stir.
8. Stir for a few minutes.
9. Pour the hot suspension into flat pans to cool to room temperature. For 500 mL of food, two 7”x 9”x 6” pans will provide adequate area for a ½” depth gel.
   a. The suspension should not exceed ½ inch in depth. We use 2 plastic 7”x 9” repurposed plastic mouse cages for cooling the suspension.
10. Allow the suspension to cool at room temperature for 2-3 hours without disturbing the pans.
11. After the suspension is cool and partially solidified, gently flood each pan with the 2% calcium chloride (CaCl$_2$) solution until the gel is well covered. In order not to disturb the gel, slowly pour the calcium chloride solution over a glass plate onto the surface of the gel.
12. Place the pans in the refrigerator (4°C) overnight.
   a. The gel will shrink after 2-3 hours in the cold CaCl$_2$.
13. Pour off the CaCl$_2$ and rinse the gel 1-2 times with deionized water. The gel is now firm enough to hold with a gloved hand while rinsing.
14. Store the remaining gel at 4°C in the 7”x 9”x 6” pan until use.
15. The gel may be fed to snails by pinching off a section approximately 1”x 1” or can be sliced into cubes. Be careful not to overfeed the snails. If the gel is not eaten within a day or two, remove from the aquaria; excess food will foul the water.

Comments
The Snail Gel will be useable for about 1 week before it deteriorates. Any remaining gel should be disposed of, and a new preparation made.

References: