

SOP 1: Solid-State Cultivation (Mycelial Biomass)

This method involves growing Agarikon mycelium on a solid substrate. Once fully colonized, the entire block (mycelium + substrate) is dried and processed for extraction.

Phase 1: Materials and Equipment

- **Spawn:** Agarikon liquid culture or agar wedge.
- **Substrate:** Because Agarikon is a brown-rot fungus that prefers conifers, a mix of Douglas fir or hemlock sawdust is ideal, though sterilized rye, milo, or sorghum grain is often used for faster mycelial expansion.
- **Grow Bags:** Autoclavable mushroom grow bags with a 0.2-micron filter patch, or mason jars with modified filter lids.
- **Sterilization:** Pressure cooker or autoclave.
- **Environment:** Laminar flow hood or a sanitized Still Air Box (SAB).

Phase 2: Substrate Preparation and Sterilization

1. **Preparation (Grain):** If using grain, soak the grain for 12–24 hours, boil lightly until the grains swell but do not burst, and drain thoroughly until the exterior is dry to the touch.
2. **Preparation (Sawdust):** If using a conifer sawdust mix, hydrate to 60% moisture capacity.
3. **Packaging:** Load the substrate into your bags or jars.
4. **Sterilization:** Load the containers into a pressure cooker. Sterilize at **15 PSI (121°C) for 90 to 120 minutes** (depending on the density of the container).
5. **Cooling:** Allow the pressure cooker to depressurize naturally and cool to room temperature before opening.

Phase 3: Inoculation *Agarikon is notoriously slow-growing, meaning sterile technique must be flawless to prevent faster-growing contaminants (like Trichoderma) from outcompeting it.*

1. **Sanitize:** Clean your workspace, hands, and the exterior of your liquid culture syringe with 70% isopropyl alcohol.
2. **Inoculate:** In front of a flow hood or SAB, inject 3–5 cc of Agarikon liquid culture into the sterilized substrate.
3. **Mix:** Seal the bag/jar and shake well to distribute the liquid culture evenly.

Phase 4: Incubation and Harvest

1. **Temperature:** Place the sealed containers in a dark incubation room maintained at cooler temperatures, between **60°F and 70°F (15°C–21°C)**.
 2. **Duration:** Be highly patient. Agarikon can take **3 to 6 months** (or longer) to fully colonize a substrate block, making it significantly slower than most medicinal mushrooms.
 3. **Observation:** The mycelium will appear as a dense, sometimes chalky white mass.
 4. **Harvesting:** Once the substrate is entirely consumed and bound by the dense mycelium, remove the block from the bag.
 5. **Drying:** Slice the myceliated block into thin strips and dry in a dehydrator at **120°F–130°F (49°C–54°C)** until completely brittle. The dried myceliated biomass can then be ground into a powder for dual-extraction (alcohol and water).
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SOP 2: Submerged Liquid Fermentation (Bioreactor Method)

This is the preferred method for commercial laboratories, as it yields pure Agarikon mycelium without any residual grain or sawdust substrate attached.

Phase 1: Materials

- **Culture:** A pure Agarikon liquid culture.
- **Vessel:** A sterilized bioreactor, Erlenmeyer flask, or modified mason jar equipped with a magnetic stir bar and an aeration port with a sterile HEPA filter.
- **Nutrient Broth:** A liquid solution containing a carbon source (like light malt extract or dextrose) and a nitrogen source (like yeast extract or peptone).

Phase 2: Fermentation

1. **Broth Prep:** Mix a standard 4% nutrient solution (e.g., 40 grams of Light Malt Extract per 1,000 ml of distilled water).
2. **Sterilization:** Sterilize the broth in your vessel at **15 PSI for 30–45 minutes**. Allow it to cool completely.
3. **Inoculation:** Using sterile procedures, inject the Agarikon liquid culture into the nutrient broth.
4. **Incubation:** Place the vessel on a magnetic stir plate (or activate the bioreactor impellers). The continuous agitation breaks up the mycelium, encouraging rapid, multi-point growth while preventing it from forming a solid mat on the surface.
5. **Aeration:** Ensure steady, filtered oxygen is pumped into the liquid, as the submerged mycelium requires oxygen to breathe and grow. Keep ambient temperatures at **60°F–70°F**.
6. **Harvest:** After **4 to 8 weeks**, the liquid will become thick with floating, cloud-like spheres of Agarikon mycelium.
7. **Processing:** Filter the liquid through a fine, sterilized mesh to capture the pure mycelial biomass. Rinse it gently with sterile water, then dry the pure mycelium in a dehydrator for future extraction.