Benchtop Winterization/ Lipid Removal V1

Revision Date: 11/31/2018

Document #1

- Standard Operating Procedure -

Department - Process and Chemistry

Department Head - _____ Date _____

Provider - Gemstone Essential LLC

Purpose - For the precipitation and separation of the naturally occurring lipids from a Cannabis or Hemp extraction. Removal of the lipids is necessary for multiple further refinement processes. Removed lipid fraction can be utilized in a variety of purposes and products.

Definitions -

Decarboxylation - Removal of the Carboxylic acids from compounds in the oleoresin

DV - Decarboxylation vessel

Essential Oil - Lighter-than-air and fragrant fractions of extracted oleoresin

Oleoresin - Extracted Oil-bearing products from the Cannabis plant lineage

Terpenes - (See Essential Oil)

Volatiles - Fraction of low molecular weight compounds that have a BP below 130^{o}c under vacuum.

Precipitation – Solidification and fall out of

Reaction - A process in which chemicals undergo a change of molecular structure

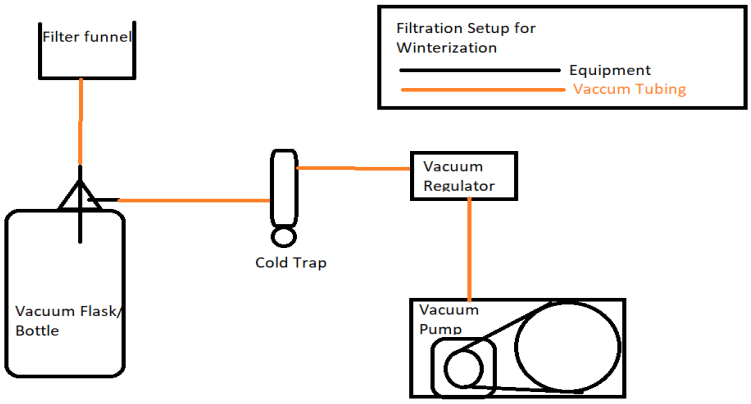
Equipment –

- Winterization Vessel (stainless steel/ glass beaker, solvent-proof plastic bucket
- Stainless Steel/ Silicone tools e.g. Stir tool, spatula,
- Filter Funnel e.g. Buchner, Fritted Disk, Bel Art, Stainless Steel
- Collection Vessel- Vacuum/ Solvent safe Glass, Metal, or Plastic bottle, filter flask, carboy
- Vacuum Pump – Diaphragm Chemical safe preferred
- Vacuum Cold Trap
- Appropriately sized vacuum tubing
- PPE – Safety goggles, Solvent proof gloves, Lab coat
- Filtration media
    - Filter Paper 25-.5µ, glass/ steel wool, propak, adsorbant/ physical media i.e Celite, Silica, Perlite
- Filter paper re-enforcement ring (if available)

Procedure –

1. Record starting weight of cannabis oleoresin to be winterized.
2. Prepare 1-2x volume of oleoresin in cleaned Ethanol or Acetone, place in appropriately sized glass or stainless steel vessel. Heat to 50°c
3. Prepare 2-5x Volume of oleoresin in cleaned Ethanol or Acetone, allow solution to reach room temperature.
4. Place oleoresin in a glass/ stainless steel vessel, heat until oleoresin reaches 50°c on a stirred hot plate.
5. While solvent is being stirred, slowly pour oleoresin into solvent vessel, allow stirring/ agitation until solution completely dissolves and reaches full clarity i.e. the lack of any clouding/ flocculation.
6. Begin stirring of 2nd volume of room temperature, cleaned solvent. Slowly pour Dissolved Solution into clean solvent. Botanical waxes and lipids should instantaneously flocculate and cloud up the solution.
7. Allow solution to cool to room temperature or refrigerate to fairly colder.
8. (If applicable) Prepare solution of filter media in winterization solvent at a 1:5 v/w ratio

9. Prepare filter apparatus by connecting equipment via vacuum tubing in the following manner



10. Prepare Filtration funnel initially with a filter paper of 10-25 Micron.

11. After assembly is completed, wet filter paper with 75mL of extraction solvent. Initiate vacuum momentarily to seal filter paper to filter funnel. (Note: some manual sealing may be needed to properly secure the filter paper if no filtration ring is used)

12. After vacuum is initiated and filter paper secure, pour additional solution of filter media and solvent into filter, stop vacuum and allow to settle for .5 – 1 minutes.

13. Once filter media bed is settled, place a small mesh or paper filter in the middle of the filter bed solution. You will pour filter solution onto this to disrupt the flow and maintain a level filter media bed.

14. Secure filter housing/ top ferrule and fittings (Pressurized filtration only)

15. Apply vacuum set to 100torr / Apply pressure set to 15-50 PSI (pressurized filtration only)

16. Pour/ Inject room temperature/ slightly chilled solution into filter funnel. Maintain a consistent flow as to not let the filter media bed dry.

17. Once solution is filtered, place in appropriate sized storage vessel.

18. Chill to at least -20°c and conduct filtration as previously described.

19. (Optional but preferable) Chill solution to <-40° and conduct filtration as previously described.

20. Collect all material deposited on filter, dispose of appropriately

21. (Optional) Wash and dissolve collected material with warm ethanol, and repeat filtration as previously described to achieve full extraction efficiency.

22. For the sake of a swift process, the -20° may be skipped, only if a colder filtration is possible.

23. Remove filtered solution from cold environment and allow to warm to room temperature/ warm with a Heat exchanger.

24. Refer to Bulk Solvent Evaporation SOP for continuing steps.

25. Disassemble filtration devices for cleaning.

1. All personnel shall read and fully adhere to this SOP when Remediating Pesticides, and should be trained hands on with this extraction procedure.

"I have read and understand this SOP. I agree to fully adhere to its requirements"

Last	First	Employee ID	Signature	Date