OilExTech
Oil Extraction Technologies

Essential Oil Studies
Qualitative Results

Abstract:

Exploratory studies often begin with qualitative results from a small sample of a particular botanical material. Here are some notes regarding work in progress or initial studies that looked interesting, yet time did not permit adequate full development of processes. Note: as further work is performed, results may be found in the "processes" section but qualitative results will remain in this listing.

Preparation:

- In most cases, 50 to 100 grams of the fresh botanical were utilized, alternatively, sometimes dried material was used and in those cases, ~25 to 40 ml of water was added using a pipette directly into the botanical after placement in the reactor.
- Most operations involved 6 minutes of microwave excitation and a 2 minute cool-down period prior to oil recovery from the collection vessel
- Qualitative results mean that the variance is high from run to run and that no process has been optimized.

Results:

- Basil: 0.27% by mass yield from fresh basil leaves.
  - (100 gm Basil leaves yielded 0.27 g basil oil.)

- Bee Balm: A member of the mint family, cultivars vary significantly in oil content. Varieties obtained in West Virginia were found to have modest traces of menthol which separated into a layer of 1 to 3 mm thickness from 100 grams of plant botanical.

- Chamomile: While no oil has been extracted as of this publication, an interesting colored liquid has been found in the botanical after running the extraction. Further work on the material is underway.

- Cedar (Sawdust and/or leaves (fronds)): Oil extracted by at least one EssenEx™ owner, no details on procedure used.

- Cilantro: So far, no oil layer.

- Cinnamon: There are several varieties of cinnamon. At least one EssenEx™ experimenter has performed extractions, and that individual then takes the hydrosol (containing water soluble elements of cinnamon oil) and performs a secondary solvent extraction using a "roto-vap".

- Coconut: No oil using system, better to just add water to coconut shavings as oil floats on top of water layer. The coconut shavings need to be warm as this oil is a solid at normal room temperatures in Oregon.

- Cow Parsnip: Take care! There are evidently two vastly different plants that are sometimes confused with Cow Parsnip. Be sure you know which one you are studying as one of them can cause severe inflammations of the skin!

- Curry Leaf: Interest exists, however samples have not been studied at this time.

- Elderberry: No observable oil layer formed.

- Garlic: Obtained significant quantities of oil, but it is heavier than water and was seen in the bottom of the separator. Did not determine a method to collect.
    - *(Probably can be accomplished with a gravy separator, but was not done by this researcher - ed)*

- Ginger: No oil observed from ground ginger. Adding lemon zest yielded an oil layer with ginger components but as the two are miscible, quantitative yield is uncertain.

- Jewel Weed: Extractions on a variety collected in Pocahontas County, WV yielded a hydrosol that seemed to quell the rash formed from Stinging Nettle abrasion through use of a double blind experimental study. Jewel Weed is a "natural remedy" and this note does not refer to any substantiated medical comparative analysis. Native Americans used (and still use) the watery juices in this fashion as reported by the National Park Service, Shenandoah National Park website. www.nps.gov/shen/learn/nature/jewelweed.htm

- Hops: Fresh Hops yielded 0.4ml oil from 78gm hops.

- Lavender: With a huge number of varieties, oil yields from as low as 0.5 to as high as 2.5% by mass have frequently been performed. Many Lavender Botanists are utilizing the unit to study crosses of this plant and other members of its family. Of particular note is the high oil yielding "Lavandin".

- Lemon Geranium: Oil was recovered from leaves of this plant. Exact quantities were not recorded.

- Oregano: 2-3 mm oil from 100 grams dried oregano + 30 ml water

- Peppers, Hot: A rather unusual mechanism to dry hot peppers has been performed by placing the sliced segments of the peppers in the reactor and performing an extraction. This leads to the removal of the majority of the water in

the pepper botanical yielding exceedingly hot peppers that are very dry and hence have an extended storage life! Drying of other materials has not been communicated.

- Rose: Flower petals yield very excellent Rose water. Concentration of oil in most Roses is very low (< 0.01% by mass) hence unlikely to observe an oil layer. Several owners have indicated use of the reactor to obtain rose water hydrosol for cooking and other purposes.

- Spice Bush: A sample was sent to OilExTech and some experimental runs were performed. No observable oil layer, but a very fragrant hydrosol was accomplished. It is felt that harvest time is important for this material and that the sample was not selected at an opportune time.

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