

Medicinal Extraction Workshop

Berberine Simple Extraction and Milk Thistle Multi-fractional Extraction

August 24, 2024 , Sugar Land, Texas.

Berberine, or ***Berberine hydrochloride***, is a naturally occurring alkaloid (salt) that has several health benefits. Traditional Chinese Medicine (TCM) for thousands of years has been using it to treat infections, inflammation, and diabetes. It is well-known that Berberine has antimicrobial activity that can inhibit infectious microbiome extent or stop its growth.



Several plants are carrying this phytochemical, such as tree turmeric (*Berberis aristata*), golden seal (*Hydrastis canadensis*), Barberry (*Berberis*), Oregon Grape (*Berberis aquifolium*). Oregon Grape is native to North America, has spiny leaflets and dense clusters of yellow flowers.

The common characteristic of these plants beside their berberine content is that they are yellow.

Milk Thistle (*Silybum marianum*) is native from the Mediterranean and much of Europe to Central Asia and Africa. It is classified as an invasive weed. The main part of thistle used is its seed. Silibinin is the major active constituent of silymarin, containing a mixture of flavonolignans. Silybnin is used to treat toxic liver damage. Potentially, it will be used to benefit the skin and play a role in cancer treatment likes inhibition of STAT3 signaling.

Materia Medica

pharmacological medicine

Herb Ingredient	Oregon Grape	Milk Thistle
picture		
method of extraction	cold simple maceration	hot multi- fractional extraction
characteristic	sensitive to heat and light	can tolerate heat, alcohol and glycerine
Origin	Western North America	Mediterranean, to Central Asia and Africa
major function	antimicrobiome	liver detox
major constituent	Berberine	silibinin
solvent (menstruum) - a liquid to dissolve solids or hold them in suspension.	distilled water	distilled water, glycerine
soaking agent	40% alcohol - vodka, bland	40% alcohol, - vodka bland
suggested second maceration with remaining marc - insoluble residue	simple Medicinal oxymel (vinegar +honey)	
serving	served with sparkling water or eat as a salad dressing	
Potency ratio (herb : solvent)	1:5	1:10
partnership	need a partner like milk thistle extract with glycerin which could help to digest berberine better.	serve as an agent of berberine intake.

Utensils for this workshop:

2 X 16 oz mason jars - sterilized.
coffee grinder
coffee filters paper - brown to cover berberine jar
strainer
utility cloth
rubber band
crock pot
towels
unused chopsticks or forks
measuring cup
scale to weigh herbs
notebook
pen or pencil to take notes for each step and observation

Other ingredients:

Distilled water
vegetable glycerine
vodka to soak
Apple cider vinegar for making Oxymel
Local raw honey

soaking solvent : 40% Ethanol (42ml of 95% Ethanol with 58 ml distilled water) = 100ml
still dry, then add 10ml distilled water, ending soaking in 110ml liquid.

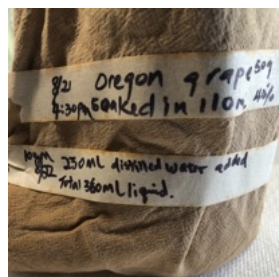
soaked overnight.

time: 4:30 pm on 8/21/2024

Day 2 of Oregon Grape Extraction

1. Set Up:
 1. distilled water
 2. Oregon grape jar
 3. measuring cup
2. checked the soaked herbs and make sure of no mold and such.
Observation: no mold, herbs saturated.
3. Add 250 ml water, stir with a wooden skewer or a chopstick. Covered tightly and rest in a muslin sag. label the additional liquid. Rest overnight preferred.

40% alcohol /360 ml of liquid = 11% alcohol level in this jar.



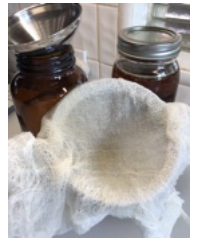
Strain & Squeeze

Utensil:

1. cheese cloth
2. strainer
3. funnel

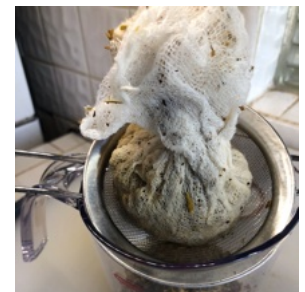


4. measuring cup
5. gloves
6. a bottle for final product
7. a bottle for ACV maceration
8. plastic spoons



Procedures;

1. wet the cheese cloth with a little bit of vodka to prevent sucking up some of the yield that we will obtain from this maceration.
2. put cheese cloth in the strainer on top of the funnel which is stacking on the milliliter index measuring cup.
3. open Oregon Grape maceration after 23 hours, check on the condition. Make sure it has no mold. *(from my first attempt last year, I used only water to soak and macerate - in our hot and humid climate, it developed mold).*
4. squeeze the marc as hard as you can with gloved hands.
5. Observation: Yield was 270ml
6. calculate the components' ratio
 - alcohol = 40 ml
 - water = $270 - 40 = 230\text{ml}$
 - alcohol % = 15%
 - water % = 85%



By-Product Oregon Grape ACV Maceration

1. stuff all strained marc remaining into a amber jar
2. fill the jar with raw Apple Cider Vinegar, as much as you want .
3. let it rest on the counter for serving salad dishes, or add to sparkling water for a refreshing beverage.



Labelling Requirements

Lot#, date, ingredients and ratio % .

If you make product to sell, make sure to add a disclaimer attached to your label.



Milk Thistle Processing - Multi- Fractional Extraction

Water Decoction Processing

1. soaking
2. decoction in a Crock Pot for at least 6 hours to 24 hours

Set Up

1. ingredient:
 1. 30 g milk thistle seeds
 2. 180 ml vodka
2. Utensil
 - mason jar
 - coffee grinder



Procedures

1. on 8/22 11am.
goal plan:
herb = 30 g
ratio = 1:10 potency
yield = 300ml

method : first water decoction and second with glycerine decoction

2. grind herb coarsely.
note: better to buy whole seed and then grind them.
Powder products on the market may be lightly oxidized.
Slightly grinding herbs before extraction is to provide more surface for the solvent to penetrate.



3. pour in 180 ml vodka and let it rest for 2 hours
note: I used 72ml (95%ethanol)+ 108 ml of water
4. Water Decoction set up
 1. water = 250 ml
 2. mason jar ring
 3. a piece of muslin cloth
 4. a crock pot
 5. kitchen towel for support jar in bath and prevent direct heating on the bottom



5. pour in 250 ml water to the soaked herb, totaling 430 ml of liquid. I aim to let liquid evaporate down to 220 ml, which will be ideal before adding glycerine for decoction.
6. set the jar in the crock pot and set the temp to high. Let it decoct overnight. Before, I went to bed at 11pm, I turned the temp to low and filled the water bath level.

Overnight Observation after 23 Hours. maintaining 186F in temp

8/23/2024 10 am

Water level is down to 10 oz, assuming from 3 oz to 10 oz is water about 180ml of water before squeezing the marc.



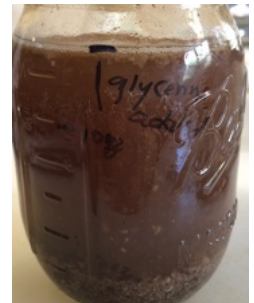
Glycerine Extraction

set up

1. Vegetable glycerine
2. measuring cup
3. water decocted thistle = 10oz marked

Procedures:

1. add 100 ml glycerine
2. fill water bath and set the temp to high.
3. cover it loosely with a muslin cloth
4. let it sit in hot bath for another 7 hours .
5. temp stays at 200F.



Time to strain

1. set up
 1. cheese cloth - pre- wet with distilled water
 2. strainer on the top of measuring cup
 3. decocted thistle in jar
 4. food handling gloves
2. Procedure
 1. pour decocted liquid into the strainer with cheese cloth
 2. squeeze hard to get as much as possible.
 3. the measurement is reached to 300ml
 4. dispense into a amber jar and label properly with lot#, Date, ingredients.
 5. if you sell in your market, make sure put a disclaimer to protect your liability.

