

# Herbal Pharmacy-Tinctures Preparation and Ratios

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This handout is to help herbalists prepare tinctures using some standard formulas. I hope this demystifies the tincture making process and makes the associated numbers less formidable.

## Definitions

1. **Ethanol**-the type of alcohol used in preparing tinctures ('drinking alcohol').
2. **Menstruum**-any fluid used to prepare a medicine (i.e., alcohol, honey, water).
3. **Tincture**-a medicine where plant constituents are extracted in ethanol.

## Equipment Needed

1. Calculator
2. Ethanol
3. Measuring cup
4. Plant material
5. Scale
6. Water

## The Three Main Numbers

There are three important numbers used to figure out how to prepare tinctures.

1. The weight of the plant material you want to tincture.
2. The volume of fluid (ethanol and water) you need to prepare the tincture.
3. The percentage of alcohol you are starting with (i.e.; 50%, 95%)
4. The below ratios are standard and can be adjusted to the specific medicine you are preparing. The important part is to keep the same system of measurement on both sides of the equation, such as metric (e.g., grams: milliliters) or imperial (e.g., ounces: fluid ounces).

## Alcohol proof into alcohol percentage

1. To change alcohol proof to a percentage, take the proof and divide it by two
2. This gives you the percentage of alcohol
3. Minus this number from 100, which is the amount of water
4. Example: 160 proof is 80% ethanol and 20% water
5.  $160 \div 2 = 80$  (percentage of alcohol)
6.  $100 - 80 = 20$  (percentage of water)

## The Ratio

**Herb weight: Menstruum volume** (i.e., 1:2, 1:5)

1. This is always a relationship of weight to volume (herb weight: liquid volume)
2. Note on metric and imperial (US) systems
  - 30 grams is about 1 ounce (weight)

- 30 milliliters is about 1 fluid ounce
- 1000 milliliters equals one liter, which is about 1 quart

## Tincture Preparation Examples

Note: In the below examples there are various starting percentages of ethanol (95% is often standard for herbalists). If you are purchasing ethanol at the percentage listed in the examples, i.e., 60% (120 proof), then you would have one less part of the formula to contend with.

### Example 1

#### Tincture of Dried Cardamom Seed

1. Tincture 8 oz. of dried Cardamom seed in 60% ethanol at 1:5
  - Starting with 95% ethanol
  - 8 oz. dried Cardamom seed
  - 1:5
  - 60% final menstruum
2. The ratio will be **8:40**. This number is calculated by the 1:5 ratio used in this formula, and you are using 8 oz of herb,  $8 \times 5 = 40$ .
3. Your final menstruum will be 40 ounces of 60% ethanol.
4. The numbers you will be working with-8:40 at 60% ethanol.
5. To change 95% ethanol to 60%, divide the percentage of alcohol you are starting with (95%) by the percentage of alcohol you want in your final product (60%).
  - $95 \div 60 = 1.58$
6. Now divide the amount of the final menstruum (40 oz) with the number above
  - $40 \div 1.58 = 25.3$
  - 25.3 is the amount of 95% alcohol you will use
7. To figure out the amount of water needed, subtract the amount of 95% alcohol from the final amount
  - $40 - 25.3 = 14.7$
8. Final product
 

**25.3 oz 95% alcohol**  
**14.7 oz water**

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**40 ounces menstruum**

### Example 2

#### Tincture 18 oz of fresh Echinacea root in 95% ethanol at 1:2

1. Starting with 95% ethanol.
2. This example doesn't need an ethanol conversion number as the formula asks for 95% ethanol, which is what you have on hand.
3. Tincturing 1:2 in 95%
4.  $18 \times 2 = 36$
5. Final ratio 18:36
6. Tincture 18 oz. of fresh Echinacea root in 36 oz of 95% ethanol.

### **Example 3**

#### **Tincture 12 oz of dried Peppermint leaves in 40% ethanol at 1:6**

1. Starting with 100 proof vodka (50% ethanol)
2. The ratio will be 12:72 ( $12 \times 6 = 72$ )
3. To convert 50% of 72 oz to 40%
  - $50 \div 40 = 1.25$
  - $72 \div 1.25 = 57.6$  oz, the amount of 50% ethanol
  - $72 - 57.6 = 14.4$  oz, the amount of water
4. Tincture 12 oz of dried Peppermint leaves in 57.6 oz of 50% ethanol, and add 14.4 oz of water.

### **Example 4**

#### **Tincture 22 oz partially wilted Black cohosh rhizome at 80% ethanol at 1:3**

1. Starting with 95% ethanol
2. The ratio will be 22:66 ( $22 \times 3 = 66$ )
3. To convert 95% to 80%
  - $95 \div 80 = 1.19$
  - $66 \div 1.19 = 55.46$  oz of 95% ethanol
  - $66 - 55.46 = 10.54$  oz of water
4. Tincture 22 oz of Black cohosh in 55.46 oz of 95% ethanol and 10.54 oz of water.