

Instant Herbal Tinctures with the Whipper!! Whipper!!

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Why Instant Tinctures (rapid infusions)

- The myth of 2 week maceration time
- Fractionate tinctures into different flavor parts
- Why wait, instant everything culture
- Herb walk tinctures, and spritzers with herbs collected, easy and quick and end with great tasting medicine
- CO₂ and N₂O are both useful
- Has an affinity for nonpolar agents, will extract more flavor and fewer tannins, bitters.



The Whipper:

- ISI best brand, CO₂ and N₂O cartridges available online or at high-end kitchen stores, must be 21 to buy nitrous oxide (it is laughing gas or whippets in a former life)
- Sizes: 500 mL (\$86 on Amazon) or 1000 mL (\$109 on Amazon)
- Many cheaper models available, but must be sturdy and pressures can be as high as 250 psi.

The Gases

- **CO₂, carbon dioxide**
 - Forms carbonic acid, a weak acid, which adds sour flavor and classic bubbly water taste
 - CO₂ is a greenhouse gas
 - Super-critical CO₂ is a natural solvent of nonpolar substances and used widely in the herbal industry to extract lipid soluble components like those in kava, milk thistle, Saw palmetto and *Cannabis* (THC and CBD).
 - It is unlikely to create small amounts of super critical CO₂ in a whipper as the critical point is 88 F and 1070 psi, a pressure that is not possible in the whipper.
 - Still, CO₂ has solvency for nonpolar agents which in herbal medicine is all the flavors (terpenes.)
 - Water, in the subcritical phase (pressure: 10 to 100 bar, temperature: 150 to 250°C) can solubilize hydrophobic compounds. Therefore, subcritical water (sometimes referred to as hot compressed water) can be used for the extraction of plant materials (polyphenols, nonpolar resins, terpenes, etc.)
- **N₂O, nitrous oxide (laughing gas)**
 - It is a colorless, nonflammable gas
 - Has sweet smell and slightly sweet, small bubble when placed in water solution
 - Highly water soluble as well as fat soluble, long used for whipped cream
 - Creates 4x volume for whipped cream as hand whipped method
 - Strong oxidizer at higher temperatures
 - Causes euphoria and used in medicine (laughing gas) mostly dentistry
 - Had ozone depleting action, 40% of volume in the air is from human activities.

- Great for creaming, foams, and fluffs and used for Nitro beers (creamy foam.)
- Must be 21 years old to buy the product.

The Set Up

- **Equipment needed:** Whipper, CO2 or N20 cartridges, extraction kit from ISI, funnel, alcohol, herbs, citrus, bowl, cups, honey or sugar. Cups or bowls for serving.
- Make sure whipper is clean and sanitized. Never store with the top screwed on, leave open. Use sanitizing solution and small brushes provided with the whipper. Label well if storing solution in the refrigerator.
- Read instructions and understand all cautions.

The Method

- **Ratio:** 1 to 1 ratio is best, 1 gram to 1 ml of liquid. Use extra solids to extract flavor, porous material a plus, like dried ground coffee, Pack whipper as full as possible leaving a little head space for gas. Cut fresh herbs fine for better extraction.
- **Temperature:** Room temperature is fine, cold is bad for extraction and sometimes heating in is better for extraction more flavor or more bitter. 2-10 minutes is common, overnight is rare.
- **Time:** Infuse 2 to 10 minutes, is common up to 1 hour for some hard to extract material. Experiment. With some oils, I have left them overnight.
- **Pressure:** Is important inside whipper, high pressures mean faster, more complete extraction. To get consistent results to use sample time, pressure and temperature. See chart below* from the ISI manufacturer. Two cartridges are used most often used for optimal results.

*Whipper	Volume	Liquid	PSI 1 charge	PSI 1 char. 10 shaking	PSI 2 charges	PSI 2 10 times shaking
Half liter	500 ml	Water	197	119	n/a	n/a
One liter	1000 ml	Water	200	77	260	15
Half liter	500 ml	Oil	186	95	n/a	n/a
One liter	1000 ml	Oil	186	74	247	106
One liter	1000 ml	40% Etoh	175	68	236	135
One liter	1000 ml	90% Etoh	171	25	196	49

- **Venting:** The process of squeezing the trigger and releasing gas is important. The more rapid the better without creating a huge mess. Use a cup over the vent and a bowl below. Use extraction disc to keep from clogging the vent. If vent clogs, slowly unscrew over a bowl. The whipper is designed to decompress this way but it is messy. The rapid venting allows the liquid to boil and gas escapes drawing out the flavor. Let open whipper vent, listen when bubbling stops then bottle.
- **Cautions:** Contents are under pressure, don't point at anyone or your face! Cartridges are also pressurized, cannot take on an airplane! I take whipper with me then when I land google Sonoma Williams to buy whipper. They are often next to Whole Foods so you can get flavor herbs and juices.
- **Cleaning equipment:** I like Star-San™ (phosphoric acid) from home brew store, hot soapy water and occasionally some bleach. Make sure to use small brushes to get vents.

Which types of rapid infusions?

- **Alcoholic tinctures:** Use any ratio of alcohol from 25% to 95%, strong solvent for nonpolar, instant tinctures, bitters, extracts. Extracts the high notes easily, less tannin or bitters flavors.
- **Oil fixed:** Olive oil, Almond oil and other fixed oil, instant herbal oil, must clean machine well!
- **Water-based (CO2 & N20) spritzers:** Bubbly herbal water with herbal tea and CO2, Nitrous water for creamy foams and gels.

What type of herbs?

- **Forms:** Aromatic flowers and leaves and roots work best. Fresh cut finely, dry in cut and sifted form. Fresh roots cut fine in cross-sections.
- **Flavors:** Unlimited options, experiment with what you have in the garden. Terpene rich plants are best, give sharp, clean flavors, not muddled astringent tastes!
- **Flowers:** Elder flower, Calendula, St. Johnswort, chamomile, Hibiscus, Echinacea, hawthorn, red clover, violet.
- **Leaf:** Mints, Holy Basil, lemon balm, rosemary, wormwood
- **Seeds, Fruits:** Anise, Fennel, Caraway, Elder berry, Hawthorn berry
- **Barks:** (Extracts flavor, not tannins) Sassafras, wild cherry, Inula, turmeric, cinnamon, burdock, dandelion, Echinacea, horseradish.

Recipes

- **Instant Elderflower Bitters**
 - **Ingredients:** Fresh Elder flowers in full bloom, I prefer the pink blossoms from the purple leaf ornamental elder tree. The dry flower will not work.
 - Elder Flower: 60 grams cut fine
 - Artichoke leaf (bitter) with rib cut out and cut finely, 10 grams
 - Lemon balm fresh, 14 grams
 - Juice of 1 lemon 50 grams
 - Honey or sugar 25 grams
 - 40% Vodka or gin, 450 mL
 - **Method:** In a 500 mL whipper add all herbs well chopped and then liquid ingredients. Charge with 2, 7.5 gr, CO2 or N20 chargers
 - Wait 10 minutes and rapidly discharge, strain and store in the refrigerator
 - For extra bitterness: Add whipper, under pressure to the hot water bath for the 10 min. infusion time.
- **Instant Saint Johnswort oil or Calendula oil**
 - 200 mg of fresh finely cut Hypericum buds
 - 200 mg of fresh or dried Calendula flowers
 - 400 mL of warm olive oil
 - Charge with 2 cartridges (N20) In hot water bath for 1 hour
 - Vent, strain and store in refrigerator.

Resources:

- Book "Liquid Intelligence" by Dave Arnold, pgs. 189 -219
- ISI web site www.isi.com
- Marine Drugs. 2018 Oct; 16(10): 348. Overview on the Application of Modern Methods for the Extraction of Bioactive Compounds from Marine sources