

GUIDE TO MAKING COCKTAIL BITTERS



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What are bitters?

Bitters began as medicinal tinctures. Angostura, the most famous bitters of all, was developed as a cure for seasickness and other stomach complaints. The herbs and spices that create the bitter flavors have been used in herbal medicine for hundreds of years. By adding aromatic herbs and sweetener, we can balance the bitter taste and make it pleasant to drink. Bartenders discovered that bitters can mellow the harshness of alcohol and add pleasant flavors, and thus the cocktail was born.





Why make bitters at home?

Because store-bought bitters are boring. Homemade bitters offer an endless array of flavors limited only by your imagination and access to ingredients. It's also fun.

The basic process isn't complex at all: concentrated flavor extracts are created by soaking or steeping various herbs and spices in water or high-proof neutral alcohol, such as vodka. Blend the concentrates together in different ratios to create unique taste profiles. Think of it as cooking with an entirely different palette of flavors. Some basic recipes and some simple equipment and ingredients are all you need to get started. From there you're free to experiment and go where your tastes and available ingredients take you.

Frequently asked questions

Does it matter what kind of alcohol I use to make my bitters?

The reason we recommend using **neutral flavored spirits** such as vodka is that the flavor of other types of alcohol can be overwhelming. If you want to include flavors from spirits like rye whiskey or brandy, use equal parts vodka and the other spirit so that the flavors of the spices get a chance to shine.

Can I make the bitters with water so they are non-alcoholic?

The reasons we recommend using some form of alcohol for making bitters are two-fold: polarity and resistance to spoilage.

You've heard that **oil and water don't mix** right? That's due to polarity, a physical property of the water and oil molecules. On the spectrum from water to oil, ethanol falls near the middle and therefore can dissolve both oil and water-based flavors out of the spices and herbs. High-proof spirits (100 proof/50% ABV or more) have more ethanol and less water, pushing them closer to the middle of the polarity spectrum, making them better at dissolving the oil-based flavors like cinnamon and citrus. **You can use water to make bitters but it will dissolve less of the flavorful essential oils out of the spices for a weak or unbalanced flavor.**

The second reason for using alcohol is that it is **anti-bacterial and anti-fungal**, so your alcohol-based bitters won't turn slimy, stringy, or have weird green lumps on top, no matter how long they sit on the shelf. Water-based bitters must be refrigerated and used quickly, or frozen, to keep bacteria and mold from taking over.

Adding a dash of 80-proof bitters to an 8-ounce glass of sparkling water results in an ethanol concentration of about 0.0065% ABV, less than the average for soft drinks (0.04 – 0.08%) or yeast-raised breads such as sourdough (0.31 – 0.45%) and pizza crust (0.09 – 0.42%).

How do I use bitters? They're only for drinks, right?

Think of bitters as a liquid spice cabinet. You can add them to any dish where that flavor might be appealing. Add a few dashes to soup or salad dressing. Substitute bitters for all or part of the vanilla extract in a cookie recipe. Drizzle a little over ice cream. Not every flavor will work in every dish, but if you're worried about overwhelming your food, scoop out a sample and add a drop of bitters at a time to see if you like the combination.

For cocktails, try to find complementary flavors. Instead of combining ingredients of the same flavor, like orange juice with orange bitters, try a contrasting flavor like hibiscus. Smoky barbecue bitters work well with the sweet and sour flavor of pineapple juice and lemon bitters are delicious with piney gin. Bitters are more about adding depth and complexity to a drink, not just reinforcing the main components.

Bitters also contain herbs that have been used for medicinal purposes for centuries. Please research the individual herbs or ask an herbalist if you have specific health concerns. While we do not claim any specific medicinal benefits of using bitters, some people find bitters and soda soothing for indigestion and heartburn, for example.

Why does it take so long to make bitters?

The two reasons bitters benefit from a long soak are related to surface area and the chemicals that dissolve out of the spices to flavor the bitters. **Whole spices take longer to infuse** because the cell walls of the plant tissues make it difficult for the flavor molecules to escape. Crushing or grinding the spices can help the flavors infuse faster but then they are more difficult to filter out later. As the flavor chemicals are floating around in the ethanol, they may continue to interact with other chemicals to form new flavors that weren't present in the individual spices.

What is the best flavor? Which one will I like?

Just as we all have different opinions about the flavor of foods, the best flavor of bitters will depend on what flavors the drinker likes and what other ingredients are in the glass. Some people love the flavor of licorice while others don't even like the smell. Smell and taste are strongly tied to memories, which is probably why so many foods are an "acquired taste," because they are associated with pleasant memories of family meals in childhood.

When deciding which bitters recipes to try, look at the ingredients to see if there are any that you find objectionable and leave those out or find a substitute, or find a different recipe altogether. If you aren't familiar with an herb or spice, taste a small piece of the dry herb. You may need to chew it to release the flavor. To help with this, we've compiled a list with groups of herbs and spices that have similar flavors.



Making bitters

BITTERS KIT EQUIPMENT

Dropper bottles
Apothecary jars
Funnel
Filter paper
Syringe
Storage box

INGREDIENTS BY FLAVOR GROUP

Warm spices

Allspice berries
Black peppercorns
Cardamom (green pods)
Cinnamon chips
Cloves
Fennel seed
Ginger (fresh or candied)
Nutmeg & mace
Star anise (licorice flavor)

Earthy Bitters

Burdock root
Gentian root

Pure Bitters

Cascade hops (*citrusy*)
Cinchona bark
Quassia wood
Milk thistle seed (*like sunflower seeds*)
Wormwood herb

Chocolatey

Roasted cocoa beans

Tannic Bitters

Wild cherry bark
Black walnut leaf

Medicinal Spices

Birch bark
Juniper berries
Licorice root (*sweet, doesn't taste like licorice candy*)
Sarsaparilla root
Wintergreen leaf

Fruity

Hibiscus flower
Tamarind

Savory Spices

Caraway
Chili
Coriander
Cumin
Dill (*seeds or leaves*)
Fennel (*seeds or bulb*)
Mustard seed

ADDITIONAL INGREDIENTS

Fruits

Apple, pear (*peels or pulp, cored*)
Berries
Cherry, plum, apricot, peach
Lemon, lime, orange,
grapefruit, and other citrus
(*zest or whole fruit*)
Melon

Edible flowers

Calendula
Chamomile
Linden
Nasturtium

Herbs

Basil
Lavender
Lemongrass
Mint
Rosemary

Nuts and seeds

Almonds
Hazelnuts
Pecans
Pepitas
Sesame seeds
Walnuts

Vegetables

Celery (*great way to use trimmed
ends and tops*)
Cucumber
Pumpkin
Rhubarb (*red parts only*)
Watercress

Other

Coffee beans
Tea
Wood chips



Techniques

There are three basic techniques for steeping the herbs to make bitters. The first is to simply add **all the herbs to a jar at once**, add the alcohol, and let sit for about two weeks. Another is to **steep the bitter herbs and aromatics separately** and blend to taste at the end. A third hybrid technique is to **steep the aromatic herbs until the right flavor is reached, then strain them out and add the bitter herbs** and strain again when you are happy with the final flavor. Shaking or swirling the steeping herbs on a regular basis will help distribute the dissolved flavor compounds around the jar and expose the settled herbs to fresh solvent. Some herbs and spices, such as hot chilies, are much more potent than others, so you may want to limit the amount of time that spice is in the jar to keep from overwhelming the other flavors.

Cooking the extracted herbs and spices in water can extract more of the water-soluble flavors. Strain the solids out of the alcohol, saving both parts; place the solids in a small pan with just enough water to cover them and bring to a boil. Turn off the heat, cool, then steep a few hours or overnight. Strain the liquid and add it to the infused alcohol.

Two cooking techniques that can help bring out the best flavor and color from your herbs and spices are **blanching and toasting**. **Blanch** fresh herbs like basil and parsley by dipping them in boiling water, then rinse under cool water. This deactivates the enzymes that break down flavor compounds and chlorophyll, resulting in a brighter flavor and color. **Toasting** spices, nuts, and seeds in a dry skillet or oven brings out different flavors than the raw ingredients. You can even split the batch; toast half and use the other half raw.

When choosing ingredients, look for fresh, pungent-smelling herbs and vegetables. Old spices and low-quality produce will make a poor tasting infusion. Bitters are a good way to use up trimmings and peel that you might not otherwise use, but avoid bruised, moldy, or otherwise damaged parts.

Use a fine mesh kitchen strainer to strain the solids. For the clearest bitters, use the filter paper or a trimmed coffee filter folded into quarters then opened with one layer on one side and three layers on the other side, to form a cone. Line the funnel with this cone and slowly pour the bitters through and into a dropper bottle. Excess bitters can be stored in a sealed jar in a cool, dark place.

Tasting as you go is important for achieving the right flavor. Since the bitters are very strong, the best way to taste is to add a few drops to a shot glass and fill with water or club soda. Avoid water that is strongly flavored, such as mineral water or heavily chlorinated tap water. Next, try the bitters

in the cocktail recipe in which you are most likely to use them. The bitters should mingle with the other flavors of the drink, enhancing them rather than overpowering them. Try your bitters in different amounts in the same drink recipe until you're happy with the result (this is the fun part!) Enlist some friends to help with this step.

Single-flavor tincture preparation

Tinctures made using a single herb or spice are useful for developing an appreciation for the taste of that ingredient and understanding how different ABVs and steep times impact the flavor profile. Additionally, tinctures are extremely useful when creating a new bitter or drink recipe, as a few drops of a specific flavor can be added and evaluated at a time.

The making of single-flavor tinctures is much the same as that of bitters. Careful note-taking with regards to amounts; preparation of the ingredient (such as chopping, grinding, grating, roasting, etc.); type of alcohol used; and the time the ingredient spends in the alcohol before it is strained out will help you recreate successes and avoid repeating mistakes.

Storing bitters

We recommend using glass jars with tight-fitting glass or metal lids for long-term storage of bitters, as this will minimize evaporation and the chance of spillage. Some bitters are particularly sticky when dry, so carefully wipe the threads of the jar before tightening the lid. When using the apothecary jars, placing a piece of plastic or paraffin film between the jar and lid can create a tighter seal and prevent the lid from sticking.

As bright light can alter the flavor of the bitters, keep your bitters in a cool, dark place.

Alcohol choices

In general, choose a neutral-flavored alcohol such as vodka for making bitters. 80-proof is acceptable, but 100-proof is better. Higher-proof alcohol, such as Everclear or GemClear (190-proof), will liberate even more flavor from the ingredients. Be aware that substituting a higher-proof alcohol in a bitters recipe will likely yield a different flavor profile. Once made, you may dilute these bitters with 80 proof vodka, but don't be alarmed if the mix becomes cloudy, as some of the dissolved compounds may drop out of solution when the ABV (alcohol by volume) decreases.

There is little reason to use an expensive vodka because its subtle flavors will be lost in the flavors of the bitters ingredients.

Oleosaccharum

Oleosaccharum, which translates to oil-sugar, uses the osmotic pressure of sugar to extract the flavorful oils from citrus zest. Sugar and salt are the two most common food-safe ingredients that can accomplish this task and substitutes such as stevia or honey will not work.

Using a sharp vegetable peeler, carefully remove the zest in strips and place it in a clear jar with a tight-fitting, corrosion-resistant lid. Avoid adding any of the bitter pith to the jar. Add approximately the same volume of sugar as there is zest to the jar. Tightly cap the jar and shake the ingredients until the zest is evenly coated with sugar. Store in the refrigerator for a few days until a thick layer of citrus oil develops at the bottom of the jar. This may be strained out and used alone or you may use it with the zests depending on the recipe. After straining, place the zests back in the jar and add a little hot water dissolve the sugar. Shake well and strain again.

Blood oranges, lemons, and pomelos make particularly good oleosaccharum and the resulting candied peels can be used as garnish.



Glassware handling

The ground glass lids for the apothecary jars can get stuck with extreme temperature changes. The best way to guard against this is to rub a small amount of food-safe grease or mineral oil on the ground joint or place a piece of plastic or paraffin film between the lid and jar. It will also ensure a better seal. If the lid does get stuck, simply warm the jar in a dish of warm water and gently rock or twist the lid. See our blog for more detailed instructions if the lid won't open to gentle persuasion. Removing a stuck lid can sometimes cause tiny chips in the rim of the bottle. Rubbing the chipped area with wet extra-fine sandpaper will smooth out the chipped area.

While many of the bulbs used on the dropper bottles included with our kits are synthetic, some are natural rubber (the ground glass droppers, for instance). Oils may damage these bulbs. Clean only with water and a mild detergent and avoid storing them in bright light or high temperatures.



Bitters recipes

RHUBARB BITTERS

Combine in a glass jar:

½ cup chopped rhubarb stem

1 teaspoon lime zest

1 teaspoon lemon zest

½ cup 100-proof vodka

Steep for 12 to 14 days in a dark place. Shake the jar each day.

In a second jar combine:

¼ teaspoon whole coriander seeds

3 juniper berries

½ teaspoon fennel seed

½ teaspoon dried lavender flowers

½ teaspoon dried hops

½ teaspoon cut wild cherry bark

½ teaspoon burdock root

1 teaspoon calamus root

½ cup light rum or vodka

Steep 7 to 10 days in a dark place. Shake the jar each day.

Strain both jars separately and save the solids. In a small saucepan, combine all solids with:

½ cup water

Simmer for 5 minutes and then set aside until cool. Strain and filter mixture. Pour the rhubarb-infused vodka into a larger jar and add small amounts of the other two liquids until you find a flavor combination that you like.

CELERY BITTERS

Combine in glass jar:

- 2 tablespoons lemongrass leaves, chopped**
- ½ teaspoon coriander seeds**
- ½ teaspoon black peppercorns**
- 1 bay leaf**
- 1 mint sprig**
- 1 allspice berry**
- ¼ teaspoon burdock root**
- ½ teaspoon gentian root**
- 2 tablespoons celery seed**
- ½ cup celery, chopped**
- 1 cup 100-proof vodka**

Steep 10 to 12 days. Strain and taste. If the celery flavor is not strong enough, cook the celery with a little water and return to jar for an additional 2 days of steeping. Strain and filter.

GRAPEFRUIT GINGER BITTERS

Combine in glass jar:

- 1 cup 100-proof vodka**
- Zest and pulp from 1 grapefruit**
- Zest from 1 lemon**
- 2 inch piece of fresh ginger, chopped**
- ½ teaspoon dried lavender flowers**
- 2 cardamom pods**
- 3 dried juniper berries**
- 1 fresh sage leaf**
- ½ teaspoon whole coriander seeds**
- ½ teaspoon gentian root**
- ½ teaspoon quassia chips**

Steep 10 to 12 days, strain and filter. Add:

- 2 ounces simple syrup or 1 tablespoon agave syrup**

MOLE BITTERS

Toast in a dry skillet:

½ teaspoon sesame seeds

1 teaspoon pepitas

Combine in a glass jar with:

1 cup vodka or silver tequila

2 tablespoons cacao nibs

½ (2 inches) cinnamon stick

3 allspice berries

1 teaspoon dried oregano

½ teaspoon dried wormwood leaf

½ teaspoon milk thistle seeds

1 tablespoon raisins

Steep for 7 to 10 days in a dark place. Add:

1 ancho chili

Steep for 1 to 4 more days, depending on your heat preference. Strain through a fine mesh strainer and then through filter paper.

Dissolve:

1 tablespoon agave syrup in

¼ cup water

Add to infused vodka.

HIBISCUS BITTERS

Combine in glass jar:

- 1 cup rum or vodka**
- 3 tablespoons dried hibiscus flowers**
- Zest of one lemon**
- Two inch piece of ginger, chopped**
- 2 cinnamon sticks**
- ½ teaspoon whole cloves**
- 2 pods star anise**
- ½ teaspoon gentian root**
- ¼ teaspoon wild cherry bark**

Steep 10 to 12 days, strain and filter. Add:

2 ounces simple syrup or 1 tablespoon agave syrup

SARSAPARILLA BITTERS

Combine in glass jar:

- 1 cup vodka**
- 1 teaspoon sassafras root bark**
- 2 teaspoons sarsaparilla root bark**
- 1 teaspoon wintergreen leaf**
- ½ teaspoon licorice root**
- 1 whole star anise**
- 1 teaspoon crushed ginger**
- 1 sprig spearmint**
- 2 teaspoons mild molasses**
- ¼ vanilla bean**

Steep 10 to 12 days, strain and filter. Add:

2 ounces simple syrup
or **1 tablespoon agave syrup**
or **1 ounce Grade B maple syrup**

ANCASH GOLDEN BITTERS

Combine in glass jar:

½ cup chopped dried Peruvian golden berries

Zest of 1 lemon

1 teaspoon elderflowers

¼ teaspoon barberry root

3 cardamom pods

½ teaspoon pink peppercorns

1 cup rye whiskey

1 cup vodka

Sweeten with panela or piloncillo syrup.

PANELA SYRUP

Panela (or piloncillo) is made from sugar cane juice that is boiled and poured into a mold. Typically dark, reddish brown and tasting of caramel and smoke, panela is often sold in blocks or small cones. To make panela syrup, simply dissolve one part panela in two parts hot water and strain to remove sugar cane fibers and other impurities. This is essentially simple syrup. Refrigerate and use within a week.





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