

Fermented drinks - Homemade sodas

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Description

Simple, healthy and zero-waste recipes for fermented drinks !

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Introduction

Fermented food is food that has been transformed by micro-organisms : bacteria, yeasts, fungi. This process usually happens without oxygen, in an anaerobic environment. Microbes multiply normally in the presence of oxygen. But without it, they struggle and produce molecules to fight rival microbes : alcohol, lactic acid, acetic acid. This leads to several types of fermentation : alcoholic, lactic, acetic, etc. Even if we tend to forget it, a lot of our daily food is actually a product of fermentation : bread, cheese, yogurt, wine, beer... It's a long list. Which is a good thing because they are beneficial for your health ! They make food easier to digest, improve your digestive health, contain vitamins and minerals, boost your immune system...

As Virginie Geres reminds us with her website HappyBiote, **without micro-organisms we'd be dead !** Quite simply ! We couldn't function without the billions of bacteria, yeasts and other (non-pathogenic) microbes that line our bodies. They carry out important tasks such as protecting us from aggression from other (pathogenic) microbes, allowing us to eat, to have a distinct smell from other people (and therefore making it easier to fall in love when we're not too dirty), they participate in our immune system... And in each of our cells is a microorganism that we have incorporated over the millennia: the mitochondrion, which enables cellular respiration! Watch this super video to find out more. So, not only are microorganisms necessary for our survival, but by providing a wide diversity of them through a healthy and varied diet (in particular with foods rich in fibre -[prebiotics](#)- and microorganisms -[probiotics](#)-) **we improve our immune and mental health**. This is the antithesis of modern Western standards, which literally make people ill, not least because of a weak microbiota. For more information I recommend this report from Arte, or this one a little older on the same theme.

Many good reasons to eat or drink them regularly (careful not to make it your whole meal though !)

Here are several recipes for no-waste fermented drinks, made from natural micro-organisms. Try out the making of these homemade sodas !

More info on fermentation : [1] [2]

More info on natural fermented drinks : The Wildcrafting Brewer, Pascal Baudar

Crew member on the Nomade des Mers and founder of the Food Forest Lab, Claire Mauquié's Youtube channel

Matériaux

- Fruit peels or rinds (orange, lemon, ginger, kiwi, mango, pineapple...)
- Sugar (white, brown)
- Water

Outils

- Glass jars
- Plastic bottles
- Kitchen scale
- Spoons

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Étape 1 - A few reminders about fermented fruit drinks

Wild yeasts and fruit peels:

Not all fruit peels contain the same amount of wild yeast.

- Kiwi and pineapple skins contain a lot of sugar, which can be converted into alcohol. The result will be a fairly alcoholic drink, similar to beer or wine.
- Lemon and mango peels and melon seeds contain less sugar, so few sugars are converted. Fermentation will be rapid and the result will be a light lemonade.

For the sugar, you can also use another sweetener such as fruit molasses, honey, maple syrup, agave syrup or other. Using refined white sugar allows the drink to retain the colour of the fermented fruit, but you can also have fun with amber panels.

The basic proportions are 3 portions of fruit peel for 1 portion of sugar and 10 portions by volume of water. But this may vary depending on the fruit or the objective sought:

- Lots of wild yeast + lots of sugar = alcoholic beverage and long fermentation.
- Lots of wild yeast + little sugar = very short fermentation, turning to vinegar very quickly
- Few wild yeasts + little sugar = light fizzy drink and quick fermentation
- A little wild yeast + a lot of sugar = not all the sugar will be converted, so the drink will be very sweet.

If I want a drink with a higher alcohol content, I add more sugar and leave it to ferment for longer (several weeks). For example, for a kiwi skin wine, I use water sweetened to 25% (250g of sugar for 1 litre of water). The first phase of fermentation lasts 1 week, the second phase at least 3 weeks. This method should give an alcohol content of 5°.

If I want a low-alcohol drink like lemonade, I add very little sugar and I can enjoy my drink after about 5 days. For example, for a lemonade made from mango or lemon peel, I use water with around 10% sugar. (100g of sugar for 1L of water).

Fermentation steps :

1st fermentation step (F1): This phase of fermentation is called respiration because it works aerobically (with oxygen). This is when the yeasts and bacteria multiply and develop aromas. Mix all the ingredients in a wide-mouth glass jar. Close the jar loosely or place a cloth over the top with a rubber band. Leave to ferment for **3-5 days** in a warm place (around 20°C), stirring regularly. You'll know that the first phase is complete when you see the liquid simmer generously when you stir it.

2nd fermentation step (F2): This phase is called carbonation because the aim is for the CO₂ produced by the micro-organisms to be forced back into the liquid (by pressure) and thus make the liquid fizz. It is during this phase that the micro-organisms are anaerobic (without oxygen) and therefore produce acetic (vinegar-type acid) and/or alcoholic fermentation. When they consume the sugar in the drink, the micro-organisms produce this acid or alcohol and release CO₂. **If you like the taste at the end of F1, you can drink it now.** Filter the liquid and pour it into a lemonade-type bottle, but it also works with plastic soda bottles. At the start of this second phase, the liquid should still be a little sweet. Fermentation will continue for a few more days, and the yeasts need food. If this is not the case, add more sugar. Open the bottle every day to degas and taste to see if the taste suits you.

This phase can last between **2 and 5 days**, depending on the taste and the level of bubbles you want. You can taste it from time to time.

- Too sweet: wait another two or three days.
- Not sparkling enough: add sugar and wait another day or two.
- Too vinegary: add more sugar and wait another day.

When you're happy with the taste, you can enjoy your own sparkling drink fermented from flowers! You can keep it for a few days at room temperature, before it turns 'vinegary' (which is also delicious). You can also keep it in the fridge for longer, as this slows down the fermentation process.

Étape 2 - How to make a fermentation starter / stock solution

A fermentation starter (also called "stock solution" depending on the drink) is a preparation that helps start the fermentation process of various food and fermented drinks. In practical terms, a starter is a microbiological culture that's at the heart of fermentation. These ferments are usually composed of a culture medium, like grain or seeds, or nutritive liquids that have been colonized by micro-organisms used for fermentation.

There are numerous starters depending on the food or drinks you want to ferment. Here are the ones used on the fermentation of fruit or vegetable juices.

Ginger bug :

Ginger contains a lot of natural yeast. Thus it is very simple to ferment it. It takes between 3 and 7 days depending on the room temperature. It lasts forever if nurtured properly.

The ingredients are simple :

- Water
- White sugar
- Fresh ginger, thinly sliced or diced, no need to peel it

1. Fill a big jar with 50 cl of water.
2. Add 100-150 gr of sugar and 40-50 gr (3 big spoons) of thinly sliced or diced ginger.
3. Don't close the lid completely to let out the fermentation gases ; 2-3 times a day, close it and shake it vigorously, then re-open it a bit.
4. Place it in a warm spot (south-facing window-sill, radiator, near the fireplace). Heat is important to start the fermentation.
5. After 24h, add 1 coffee spoon of sugar, 1 big spoon of ginger and 1 big spoon of water. Stir. Repeat every 24h for 4-5 days.
6. When the brewage is opaque and bubbly on the surface, it's ready. It may be used right away or kept in the fridge.
7. Nurture the ginger once or twice a month with 1 coffee spoon of sugar and some ginger to keep it alive. To reactivate it, put it back in a warm spot and feed it everyday as indicated above until it's opaque and bubbly again.
8. When used, replace the amount you've taken with the same amount of water and ginger.

How to use it ?

We use it to ferment every sweet drinks, fruit juice and sweet plant infusions.

- Add 5 cl of ginger bug / 1 l of liquid.
- Let ferment for a few days until it is effervescent.
- Filter and put in a bottle (a glass bottle with joint and metal lid or a plastic soda bottle)
- Use within 2-3 days if kept at room temperature or under 2 weeks if kept in the fridge.

Étape 3 - Ginger ale / ginger beer

For 1 l of ginger ale :

- 1 l of non chlorinated water
- 50 gr of sugar
- 50 gr of fresh peeled and thinly chopped ginger
- 5 cl of lemon juice
- 5 cl of ginger bug (filtered liquid only)


This dosage of ginger is indicative and results in a slightly spicy beverage. The lemon juice only adds flavour and takes no part in the fermentation process.

1. Fill a pot with water, ginger and lemon juice and sugar. Bring to boil until the sugar is dissolved.
2. Remove from heat and decant in a 1.5 l jar. Let cool at room temperature.
3. Add the ginger bug (don't forget to put back as much water as you took in the ginger bug, with a pinch of sugar).
4. Close hermetically and let ferment for 2-5 depending on the room temperature.
5. Filter and put in a bottle (a glass bottle with joint and metal lid or a plastic soda bottle).
6. Use within 2-3 days if kept at room temperature or under 2 weeks if kept in the fridge.

{{Tuto Step |Step_Title=Lemon soda |Step_Content=In a 2 l jar :

- Put 3 lemons or lemon peels. Try not to pick too bitter ones.
- Add 100-150 gr of sugar, to your taste.
- Fill the rest of the jar with water.

Option : add grated ginger to your taste.

 Lemon naturally contains yeasts and will ferment by itself. However, ginger or ginger bug, loaded with yeasts, will accelerate the fermentation.

1. Let the mixture ferment 3-5 days depending on room temperature. Stir everyday with a wooden stick.
2. When effervescent, filter and decant in a glass bottle or a soda plastic bottle.
3. Leave 1-2 days before drinking to let the sugar rate decrease.

4. Drink within 2-3 days. After a while, it turns into vinegar. If your drink is too vinegary, add sugar. If too sweet, wait a few days still or add ginger to extend the transformation.

Étape 4 - Kiwi or orange soda

In a 2 l jar :

- Fill half of the jar with kiwi or orange peels.
- Add 250 gr, ajust to your taste.
- Fill the rest of the jar with water.
- Let ferment 5-7 days depending on room temperature.
- Filter and put in a bottle (a glass bottle with joint and metal lid or a plastic soda bottle).
- Drink within 2-3 days if kept at room temperature, or under 2 weeks in kept in the fridge.

Étape 5 - Mango soda

In a 2 l jar :

- Fill half of the jar with mango peels + stone
- Add 100-150 gr of sugar, ajust to your tast.
- Fill the rest of the jar with water.
- Let ferment 2 days.
- Filter and put in a bottle (a glass bottle with joint and metal lid or a plastic soda bottle).
- Wait 1-2 days for fermentation to end and sugar rate to decrease.

Étape 6 - Pineapple soda - Tepache

Tepache is a mexican traditionnal drink made from pineapple peels.

In a 2 l jar :

- 1 ripe pineapple
- 100 gr of sugar. Traditionnally, pinoncillo cones but you can use brown sugar or even maple sirup.
- 1 cinnamon stick.
- 1 or 2 cloves.
- 1 l of water.
- Option : 1 dehydrated red pepper.

1. Cut the pineapple into pieces (you can use the peel and core, or the whole fruit for more flavour)
2. Mix all the ingredients in the jar.
3. Cover with a clean towel and stir 3 times a day until fermentation starts.
4. When effervescent (usually 2-3 days), filter and decant in a bottle.

There's no ground rule for fermentation term. This brewage is usually drunk rightaway, but you can let ferment a few days more to increase the alcohol rate (some people even add beer). Don't wait too long though because it will eventually turn into vinegar.

Étape 7 - Basil soda

In a 2 l jar :

- Fill a third of the jar with basil leaves.
- Add 100-150 gr of sugar, ajust to your tast.
- Fill the rest of the jar with water.
- Let ferment 3-5 days.
- Filter and put in a bottle (a glass bottle with joint and metal lid or a plastic soda bottle).
- Wait 1-2 days for fermentation to end and sugar rate to decrease.

Étape 8 - Borage - grape soda

Bourrache or vin bourru is the first liquid fermented when the grapes are harvested. It is freshly pressed grape juice that begins to ferment and sparkle without containing much alcohol.

To make it, you can press a few grapes (with your hands, a mash press or a juice extractor) and then leave the grapes to ferment in their own juice in a jar for 1-2 days, covering the jar with a cloth. You can then filter the juice and put it in a lemonade-type bottle to enjoy or store in the fridge. Make sure you use a bottle with a mechanical seal and remember to degas every day, as fermentation is still very active and a freeze can quickly occur.

Étape 9 - Chicha and Tesgüino - corn beers from Latin America

"While the brewing West seems to believe that the only spontaneously fermented beer left on the planet is Belgian Lambic, many brewers in the Andes and sub-Saharan Africa continue to brew their beers in the same way as their ancestors. Believe it or not, these traditional recipes, from Ethiopia to Peru, require fermentation as natural as that of the Belgians from Pajottenland, which is so popular with beer lovers today." Extract from the very interesting *Coureurs Des Boires* article on chichas.

In South America and in Africa, the production of beverages similar to beer is generally done in two ways :

1. We soak and then germinate the cereals: as the seeds germinate, they naturally produce enzymes that transform their complex sugars into simple sugars, making these sugars available to fuel their growth, before they can draw these nutrients from the soil with their future roots (and they do the same with their minerals and proteins, but we're less interested in that here). Once the cereals have been germinated, they are generally heated to further activate the enzymes produced to break down the complex sugars into as many simple sugars as possible, then the mixture is cooked, before cooling and adding yeast to transform the simple sugars into alcohol. This is what is done to produce modern beers. The process has been refined, but the basics are the same. They are all beers, in the original sense of the word: grain alcohol, even if 'old' beers are very different from what we drink today as an aperitif.
2. The second option is to chew the corn kernels, to start a similar process.

La **chicha de jora** (Peru) is a type of beer made from the spontaneous fermentation of grains of jora, a particular variety of sun-dried and oven-cooked corn. It has a pasty yellow colour. A direct legacy of the Inca civilisation, this drink has lost its ritual meaning to become the everyday drink in Peru. Not to be confused with chicha morada, which contains no alcohol.

El **Tesgüino** is the Mexican equivalent of chicha. Both follow the first method, except that no yeast is added, and fermentation is generally spontaneous. Chicha de jora is often made using a ratio of 1 kg of corn to 8 litres of water. Barley and sugar are sometimes added. Sample recipe in Spanish

It is common to add ingredients to flavour the beer, such as pineapple, lemongrass, cinnamon, aniseed...

The non-alcoholic version of chicha is known in Peru as **chicha morada** (purple chicha). It is a flavoured pink corn juice. Here's a recipe in French To make it fizzy, you can follow the same process as for beer, or add a starter and make an F2.

Notes et références

- - Reference book to go further : *The Wildcrafting Brewer*, Pascal Baudar
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- For further recipe inspiration and fermenting courses, don't hesitate to follow ShiraBio, Ferment'Nation and to explore the incredible website (and books) of Marie-Claire Frédéric, anthropologist and chef fascinated by fermentations from around the world: Ni cru ni cuit There are also several facebook groups for fermenting enthusiasts, which I recommend to you
 - Homemade Fermentation founded by Ferment'Nation
 - Natural lacto-fermentation and preserves, specifically focused on lacto-fermentation If you're looking for reference books to learn the art of fermentation, Sébastien aka Ferment'Nation offers in this post from the Home Fermentation group an explained compilation of the best books he's tested. There are some specific ones (on lacto-fermentation, cheeses) and some general ones. Enough to inspire you! To find lots of recipes, ferments and tools for fermenting at home, visit the website of Fairment, organisers of the Fermentation Summit: <https://fairment.com> Other essential references can be found in the first few pages of the file attached to this tutorial.
- **If you would like to see more tutorials on fermentations, please have a look at :**
 - Lacto-fermented preserves
 - Fermented foods - fruit fermentations
 - Fermented drinks - homemade sodas
 - Fermented drinks - flower-based sodas
 - Fermented drinks - Kefir, kombucha and vinegars
 - Fermented drinks - Meads
 - Fermented foods - homemade animal dairy products
 - Fermented foods - vegetable milk kefir and vegan cheeses
 - Fermented foods - sourdoughs and breads
 - Fermented foods - Asian fermentations of cereals, pulses and variations
 - Fermented foods - festival of sauces
 - Fermented foods - alternatives to animal proteins