



FERMENTED DRINKS with Dr. Wendy Nolan Joyce

Welcome! Today we're going to learn the basics of fermentation and make beverage recipes that will create a happy home for your gut microbes, the foundation of good health.

Goals for today:

- 1) Teach you basics about fermentation and its health benefits.
- 2) Teach you how to make kombucha: you'll brew your FIRST FERMENT. We'll discuss what to do with it when you get home (care and bottling and second fermentation) and discuss SCOBY care and the best conditions and safety guidelines for fermenting
- 3) Teach you how to make jun (a honey and green tea ferment)
- 4) Demo other fermented beverages: water kefir, wild soda, tepache
- 5) Demo a Persian shrub from organic apple cider vinegar

What is fermentation? A process by which micro-organisms (bacteria or yeast) convert carbohydrates to alcohol or acids.

Fermentation happens under two conditions:

Aerobic: oxygen is required during the primary fermentation stage.

Examples: kombucha, jun, kefir (a cheesecloth keeps debris and insects out, allowing air to enter)

Anaerobic: no oxygen required

Examples: kimchi, miso, beet kvass, honey mead (these are fermented in a sealed jar with as little extra space as possible)

Cultured vs. wild fermentation: these are two styles of fermenting.

Cultured: relies on a starter culture, a mother or a SCOBY (see below) to start the fermentation process

Wild: this is spontaneous and relies on the naturally occurring yeasts and bacteria found in the air and on the skins of fruits, vegetables and roots to start the fermentation process.

About your tutor Wendy: I'm a professional chef and fermentation convert who has learned by co-running fermentation workshops with experts and through a lot of trial and error! I started making kombucha in 2015 when a friend gave me a SCOBY (more on SCOBIES below) and talked about the noticeable health benefits of fermented foods. Over the past decade my family and I have felt the energy- and immunity-boosting effects of drinking fermented drinks and eating kimchi daily. I now make a variety of fermented drinks for my business, Savour Cooking School: water kefir, jun, wild sodas and more.



SCOBY= Symbiotic colony of bacteria and yeast that looks like a jelly fish.

Kombucha and jun both use a SCOBY that is distinct to each (you mustn't mistake one for the other because they need to be fed different solutions! And they need different requirements)

A SCOBY looks something like a jellyfish. The bacteria and yeasts that make it are held together in a polysaccharide matrix. Each SCOBY is unique to its location, environment and owners, just like sourdough starters take on the flavours of their environment (a starter left in a pine forest will begin to have hints of pine, for ex.). My SCOBY may look like my neighbour's, but it will have a slightly different bacteria and yeast composition. The finished product will be slightly different too, which is part of the mystique and art of fermentation!

My 1st scoby has multiplied many times over and I now make many different flavours of kombucha on an ongoing basis, many with organic herbs and flowers from my garden (lemon verbena and rose, for ex). All of my current kombuchas are caffeine-free (many amateurs believe you need to use black or green tea but this is not the case). I also make water kefir and jun which have different flavour profiles and different requirements which I'll discuss.

WHY DRINK KOMBUCHA AND OTHER FERMENTED BEVERAGES?

PROBIOTICS: the good bacteria that are one of the keys to overall wellness. They add 'good' bacteria to your gut to outweigh the 'bad' bacteria. Most of us have heard of the fabulous and powerful benefits of probiotics:

- Eliminate waste and toxins from the colon
- Manage gastrointestinal issues and aid digestion*
- Enhance skin health
- Improve nutrient absorption*
- Regulate the immune system thereby reducing inflammation
- Improve mood and reduce stress (your gut is responsible for around 80-90 % of the production of serotonin, the amazing feel-good hormone)

*Fermentation breaks down difficult-to-digest food compounds such as oligosaccharides & lactose. This is the reason why some lactose-intolerant individuals can tolerate fermented dairy products containing lactose. It's also the same reason why people struggling with IBS can sometimes tolerate cultured grains in sourdough. Other nutrients like proteins & fats are also made more digestible by fermentation. Many seeds, legumes, & grains contain phytic acid which binds important minerals like iron. This binding makes most of the iron content in a food unavailable for absorption. But when the food is cultured, fermentation breaks down the phytic acid therefore making it easier for your body to absorb sufficient iron from your meal. (source: SYMBIOTA)

Why Probiotics Capsules Can Never Be As Good As Taking Fermented Foods and Drinks?

Although probiotic supplements help, they generally only have selected strains of bacteria. With probiotic foods, you'll get natural and denser probiotic nutrients.



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How the gut becomes unbalanced: pollutants in food, water and air, poor diet, especially too much sugar, gluten, processed foods, stress, medications, antibiotics

Pathogens such as bad bacteria and viruses can be overcome with a strong gut, which in turn should lead to fewer illnesses.

In summary, health benefits of ingesting ferments include:

1. Supports good digestion
2. Improves immunity
3. Provides antioxidants to help fight cancer
4. Slows down the ageing process by helping your body fight inflammation (inflammation is the main cause of most diseases)
5. Improving liver and gastrointestinal functions
6. Reduces bad cholesterol

Cautions:

Be aware that, as with any unpasteurized product, caution is to be exercised when pregnant. Also it's important to keep in mind that too much kombucha could lead to tummy upset (because of its acidic nature) so pay attention to your body's signals if you find yourself drinking kombucha regularly. Start small and drink a little bit every day (1/4 cup) and pay attention to how your tummy behaves. If you find yourself bloated or with excess gas, drink less. Sandor Katz addresses the 'potential danger' of kombucha on pages 168-9 of "The Art of Fermentation" and concludes: 'I reject the idea that kombucha at home is random or dangerous. All of the ferments...involve creating selective environments* to ensure success...Make sure you understand the parameters of the selective environment you need to create...Basic information and awareness are important. Empowered with them, you may ferment without fear.'

*SELECTED ENVIRONMENT: Katz is referring to the best practice and environment used to create healthy ferments. Factors such as sanitation, temperature, oxygen, salt, water type (chemical-free and chlorine-free is best though in Wellington, tap water works fine), type of jar (glass is best for kombucha) and lid, sunlight (avoid). Hotter temperatures will hasten fermentation while in cooler months, your fermentation will take longer. Other factors to consider are the source of your ingredients. I use organic fruits, flowers and teas as much as possible in my kombucha. Chemical-free, organic is best.

Cleanliness: as Katz and other experts agree, you don't need a hospital-grade sanitised environment to make these ferments (if anything, too much sanitation and chemical residue can kill the good bacteria.) Wash your equipment in hot water with dishwashing liquid, then rinse with hot water and allow to air dry or you may prefer to dry your jars in a low oven. Ensure your hands and utensils are very clean (I pour boiling water over mine and then let them air dry before use).

References:

Sandor Katz, *The Art of Fermentation* and *Wild Fermentation*

Felicity Evans, *Kombucha & co*

Michael Murray and Joseph Pizzorno, *The Encyclopedia of Healing Foods*



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BASIC KOMBUCHA: to make 1 litre

4 tea bags (green, black, or fruit)*
1/4 cup raw or white sugar
3 T kombucha starter
1 kombucha mother
1 litre of spring or unchlorinated water

*read the label before purchasing and avoid any tea with additives such as sweeteners or colours or anything you don't recognize

PRIMARY FERMENTATION:

Bring 200 ml of water to a boil. Pour into heatproof bowl over tea bags and sugar. Stir and steep for 3-5 minutes. Strain the tea into a large, heatproof glass jar. Pour in remaining water.

When the liquid has cooled to room temp, add the starter liquid and the scoby. Cover with a piece of muslin and secure with elastic band. Leave in a cool spot where it won't be disturbed (out of direct sun) for 5 days in hot weather and 14-20 days in cooler weather.

Note: your scoby may sink to the bottom of the jar, but should rise to the surface as fermentation develops. Toward the end of one week, you should see a thin film of new culture forming on the surface of the liquid.

Bottling and/or SECOND FERMENTATION:

Gently remove the mother to re-use, retaining 3 T of the liquid for your next brew. Put a funnel over a glass bottle with lid and strain the kombucha into bottle. Tightly seal the bottle and leave on the bench to build carbonation*, burping occasionally to release the pressure. When the kombucha is as fizzy as you like, store in the fridge to slow the fermentation process.

*This process is called bottle fermentation which creates the fizz. This happens in the fridge as well, but at a slower pace.

Optional second fermentation: You may choose to add additional flavours at this stage, placing fruits or flowers inside the bottle to infuse to add complexity to the drink (I rarely do this, preferring to keep things simple). If you are infusing flowers or fruits or any other suitable flavouring, you always add these in the SECOND STAGE to the bottle.

Fragrant peach or apple fermentation (second fermentation)

1 ripe peach or apple, chopped (with skin)
1 basic recipe of kombucha using green tea

Add the chopped fruit to the bottle of first fermented kombucha. Tightly seal the lid. Leave on the bench to build carbonation for 2-14 days, depending on temperature of the room. Burp the kombucha daily. When it's as fizzy and sour as you like, store in fridge to slow the fermentation.



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Jun: warning: you must avoid any metal when making jun!!

1 litre springwater
4 green tea bags
3 T raw honey
1 jun SCOBY
3 T Jun starter liquid

Primary fermentation:

Bring 200 ml of water to a boil. Pour over the tea bags and add the honey (USE A PLASTIC OR PYREX CONTAINER FOR THIS. DO NOT USE ANY METAL!!); stir with a wooden spoon. Leave to steep for 2 minutes. Then remove tea bags and leave the mix until cool (don't leave the tea bags in too long of the drink becomes too bitter). Pour into glass container, add rest of the water, SCOBY and jun liquid, and cover with muslin and secure with elastic band. Leave for 7-10 days on the bench out of direct sunlight. Bottling: Remove the SCOBY to reuse and retain 3 T of the liquid. Bottle the Jun and place in fridge.

Wild soda

1 cup mint leaves
1 chopped cucumber
1 green apple
1 chopped lime
½ cup juniper berries

Combine all the ingredients with 2L water and ½ cup sugar in a large jar. Seal and leave on bench for a few days. When the water is showing signs of fizz, open the jar and taste. If it's bubbly and the flavours have soured a bit, that's good. Bottle it. Some people strain out the fruit but leave the rest. You may also want to add a bit more citrus juice or sugar at this point (or a tad of maple syrup). Leave another 48 hours. Put in the fridge. It will keep for a few weeks. If the fizz wears out, you can always add a bit more sweetener and leave the bottle, sealed, on the bench again for a day or two to rebuild carbonation.

Raspberry Shrub

A shrub is a traditional cider vinegar soda very popular in Iran, flavoured with herbs or fruit. I use an excellent apple cider vinegar from Otaki (Coral Tree organics) that is the best in my opinion. The cool thing about this syrup is it stores for a long time (a few months in the fridge) because of the vinegar and its syrup-like consistency means it doesn't take up much space in the fridge. Just add cool soda water and mix to prepare.

4 cups raspberry (frozen is fine)
1.5 cups apple cider vinegar
2 cups agave syrup (or 1 cup maple syrup)
½ cup lemon juice
2 tsp citric acid (sold at Moore Wilsons and keeps for ages)

Place raspberries in a jug and pour vinegar over and let steep for 8 hours or overnight. Add all the other ingredients, bottle and place in fridge. TO serve: add soda water and ice. Enjoy! (you can strain fruit if you prefer)



Different uses of kombucha and SCOBIES:

- You can make fabulous hair rinse from kombucha that will leave your hair soft and silky! Allow fermentation to continue till the vinegar stage so that no sugar is left—the kombucha will smell a bit acidic. Bottle it and use it as a hair rinse.
- You can also make 'fruit' leather out of leftover scobys. Dehydrate the scobies in a dehydrator. Makes a great tramping snack!
- Make poultices for wounds and burns. The scoby has antiseptic and healing properties.
- Outdoor compost: bury just below the surface near plants or put in your worm farms

Keeping a healthy kombucha:

The kombucha organism will last for centuries if well looked after because it continually renews itself. It must have the correct conditions to thrive.

Avoid:

- contaminating the kombucha with nicotine (cigarette smoke kills it)
- allowing it to be in contact with metal (especially Jun)
- extremes of temperature
- dust
- insects (fruit flies can sometimes get in through muslin so check that they aren't laying eggs on your scoby!)
- using oily herbal teas or citrus at the first ferment (I found that fresh lemon verbena didn't work bc of the oils, but drying the leaves first, then making kombucha worked great)

Care of your kombucha

You'll notice that your SCOBY renews itself very quickly, moreso in hot weather. Once the thickness is approx.. 5-6 cm, you can remove the bottom layers (just peel them off), give them away or start a parallel batch in a different flavour. When dividing your scoby, make sure your hands and all equipment is clean.

Storing: You can store your SCOBY in a sugar-tea solution in the fridge for up to three months if you want to take a break from fermentation. Please see my instructions for 'Resting the mother' which I will send you as a pdf (link on the Savour website).

Troubleshooting: I will send you a link to instructions tackling the usual problems and solutions. Feel free to get in touch with me with any follow-up issues.