FERMENTED DRINKS INTRODUCTION WORKSHOP

Workshop Notes

SUMMARY

This workshop booklet is your companion for exploring fermented drinks, combining natural ingredients with the living cultures of bacteria & yeasts, and/or SCOBY. With a touch of magic and the science behind probiotic brewing, using methods like ginger bug and kombucha scoby. You'll discover how yummy, diverse, simple, and rewarding fermented drinks can be.

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Workshop Notes

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Overview of fermentation

Methods of Fermentation

There are two main styles of probiotic brewing and fermentation:

1. Cultured fermentation
Cultured drinks require a starter culture, often a SCOBY (Symbiotic Culture of Bacteria and Yeast) to begin the fermentation process. These starter cultures can be sourced online or from other brewers.

2. Wild fermentation
Wild fermentation relies on naturally occurring yeasts and bacteria found in the environment, such as on the skins of fruits, vegetables, and ginger, or in the air. A common method is creating a "ginger bug," where these microbes are cultivated and then used to start fermentation.

Cultured fermentation drinks

Cultured fermented drinks use an established SCOBY or starter culture (grains) to begin fermentation.

Kombucha – A fermented tea made by adding a kombucha SCOBY to sweetened black or green tea. The result is a lightly fizzy, tangy drink rich in probiotics, antioxidants, and organic acids.

Jun – Often called the "champagne of fermented drinks," Jun is a lighter, crisper, and slightly sweeter fermented tea. It is made with a specific SCOBY, green tea, and raw honey instead of black tea and sugar.

Water kefir – A refreshing, fizzy, and tangy probiotic drink made by fermenting sugar water with water kefir grains.

Milk kefir – A creamy, probiotic-rich drink made by fermenting milk (dairy or plant-based) with milk kefir grains.

Wild fermentation

Wild fermented drinks rely on naturally occurring yeasts and bacteria found in the air and on the skins of fruits and vegetables to begin fermentation. This can be done by creating a "ginger bug" to use across multiple brews, or by allowing cultures to develop naturally in each batch.

Ginger bug – A wild starter culture made from ginger, sugar, and water. It captures natural yeasts and bacteria, which is then used to create batches of fizzy drinks like ginger beer, sodas, and lemonade.

Beet kvass – A tangy, earthy drink made from fermented beetroot. Using salt and wild microbes, it transforms into a probiotic-rich tonic.

Pineapple tepache – A traditional Mexican drink made by fermenting pineapple skins with sugar and water, using naturally occurring yeasts and bacteria.

Honey mead – A fermented beverage made from honey and water, where wild yeasts convert sugars during fermentation, producing a lightly probiotic, alcoholic drink.

Overview using cultured fermentation (aka Scoby)

Kombucha and other cultured drinks both go through two key stages of fermentation, primary and secondary fermentation. Each fermentation stages plays an important role in flavour and fizz.

Primary fermentation is where everything begins.
For kombucha, this is when the SCOBY (symbiotic culture of bacteria and yeast) is added to sweet tea. The microbes consume the sugar and producing acids that signature tangy flavour. This stage is usually done in an open or breathable container , for example using a paper towel and a rubberband which allows the microbes into enter the batch without the bugs/fruit flies etc. This fermentation stage focuses on building flavour, acidity, and healthy microbial activity.

Secondary fermentation is where the magic (fizz) and favours (taste) really happens.
The fermented liquid from the primary fermentation stage is bottled and often flavours; think fruit, herbs, or spices. The bottles are sealed, which traps carbon dioxide produced by the ongoing fermentation.

This creates natural carbonation, turning your drink into something lively and sparkling. It's also where you can get creative with flavour combinations.

In short:
Primary fermentation = base flavour development and microbial activity.
Secondary fermentation = carbonation and flavour boosting.

Overview using wild fermentation

Wild fermentation drinks are bubbly, probiotic-rich beverages created by harnessing natural yeasts and bacteria from the air or ingredients. You can create a ginger bug starter but typically don't use cultured starter culture like a Scoby. Popular examples include fruit-based soda (e.g., raspberry, orange), fermented teas, and traditional drinks like tepache or kvass. They are made by fermenting water, sugar, and ingredients like fruits or herbs on a kitchen counter for 2–4 days. Wild fermentation has only one primary fermentation cycle.

Ginger Bug Overview

How to create a ginger bug

CHECKLIST : CREATE NEW GINGER BUG

WHAT YOU NEED

- ***Glass Jar*** *- cleaned, approx ½ litre*
- ***Paper Towel***
- ***Rubberbands*** *(x2)*
- ***Filtered water*** *- can use boiled water (that's cooled)*
- ***Ginger -*** *organic if possible*
- ***Sugar -*** *I use white sugar*

METHOD

DAY 1	• Mix : ½ cup of water, 1 tbsp grated unpeeled ginger and 1 tbsp sugar. • Stir well • Cover jar with paper towel and rubberband. **Leave on counter**
DAY 2	• Feed your bug 1 tbsp grated ginger, 1 tbsp sugar daily & 1tbsp water. • Stir well, cover and leave on counter
DAY 3-7	• Feed your bug 1 tbsp grated ginger, 1 tbsp sugar daily & 1tbsp water. • Stir well, cover and leave on counter

IS YOUR GINGER BUG IS READY?

Your ginger bug is usually ready in about 3–7 days (around 4-5, but stay flexible). It should be active and bubbly, with a light foam on top, a yeasty smell, and a cloudy yellow colour. You'll notice ginger floating on the surface and a sludgy white sediment at the bottom. When stirred, it should fizz, showing it's ready to use.

How to maintain your ginger bug

Once your bug is active, you can keep it on the bench and feed it daily but it will grow quickly. For a lower-maintenance option, store it in the fridge *(a real jar with a proper lid—no more paper towel)* and

Once it's bubbly and lively, it's considered "established "and you have got two options depending on how often you want to brew:

Option 1: Use it all to ginger bug in your brew, then start fresh ginger bug next time. *(Best if you only make soda occasionally like once or twice a year.)*
Option 2: Use some to ginger bug in your brew and keep the rest of the ginger bug in the fridge as a base starter *(a real jar with a proper lid—no more paper towel).* Feed it once a week (about 1 tbsp ginger + 1 tbsp sugar & some water). Let it come to room temperature, feed it, leave it for a few hours, then return it to the fridge unless you're using it.

If you're brewing regularly, keep your established bug in the fridge as your base. When you want to make soda, take some out, feed it with fresh ginger, sugar, and water, and bring it back to life until bubbly again.

If you're familiar with sourdough, it's the same idea as taking the starter from the fridge and building it back up into an active starter before baking or returning to the fridge for storage.

To manage the volume, compost some of the ginger regularly or use in ginger shots or cooking. You can also strain off liquid, discard half the solids, then refresh with about 1½ cups water and resume daily feeding until it becomes active again.

Detailed Fermentation Stages for Ginger Bug

- **Stage One: The "Bug" (Starter Cultivation):** You mix ginger, sugar, and water, allowing it to bubble for 3-7 days. During this phase, you are building up the microbes needed to ferment your drink. You can utilised this ginger bug continually, following a good feeding routine.
- **Stage Two: The "Soda" (Beverage Fermentation):** You mix your active bug with a brewed ginger tea/fruit juice/another base favour profiles, bottle it, and allow it to ferment again for 1–3 days to create carbonation

How to use the ginger bug

You can make a simple ginger bug soda by mixing some strained bug (keep the rest for later) with your favourite juice, like orange, blood orange, apple, cranberry, pomegranate, pineapple or even sweetened tea/coffee. Bottle it and let it ferment.

For ginger beer, simmer fresh ginger and sugar, cool it, then add some of your ginger bug. You can also add some ginger bug (e.g. ¼ of cup) to glass of sparking mineral water or hot water, that way you benefit from the probiotics which the waiting.

Once bottled, fermentation takes about 12–72 hours depending on temperature. It may look quiet at first, but carbonation is building. **Be sure to "burp" your bottles daily to release pressure, or you risk them popping**, trust me, fizzy explosions are messy!

Naturally Fermented Ginger Bug Soda

GINGER BUG

Fermentation : 12-72 hrs

Ingredients

- ½ cup grated ginger
- 1/4 cup sugar
- 1 litre water
- 1/4 cup strained ginger bug

Directions

- **Create Tea** : put ginger & 2 cups of water into saucepan
- Cover & simmer for 15 mins
- Add sugar & stir and disolve
- Cool the tea til room temperature
- Add ginger bug & remain water
- Stir well
- **Bottle** : Pour into glass flip-top bottle
- **Fermentation** : Store in a cupboard or box to carbonate
- "Burp" bottles every day to release gas and prevent overflow or breakage
- Ferment for about 12 to 72 hours
- **Refrigerate** when ready
- Drink

Notes

Exploding bottles can occur, so store them in a cupboard or box to contain any mess. Burp bottles every days, depending on fermentation. Opening too often reduces carbonation. With experience, you'll develop a feel for the right timing in your kitchen.

Naturally Fermented Hibiscus Soda

GINGER BUG

Fermentation : 12-72 hrs

Ingredients

- 2 heaping tablespoon hibiscus tea leaves
- 1/2 cup sugar
- 4 cups / 1.25 litre water total
- 1/4 cup strained ginger bug

Directions

- **Create Tea :** Brew a strong tea on stove using hibiscus leaves in 1 cup of hot water
- Strain the tea and stir in the sugar
- Add 3 cups of water to dilute and cool the mixture faster
- Once cooled to room temperature, add the ginger bug
- **Bottle :** Pour into glass flip-top bottles
- **Fermentation :** Store in a cupboard or box to carbonate
- "Burp" bottles every day to release gas and prevent overflow or breakage
- Ferment for about 12 to 72 hours
- Refrigerate when ready

Notes

Exploding bottles can occur, so store them in a cupboard or box to contain any mess. Burp bottles every days, depending on fermentation. Opening too often reduces carbonation. With experience, you'll develop a feel for the right timing in your kitchen.

Naturally Fermented Blue Butterfly Pea Flower Soda

GINGER BUG

Fermentation : 12-72 hrs

Ingredients

- 1/4c Butterfly Pea Flower/Tea
- 1/2 cup sugar
- 4 cups / 1.25 litre water total
- 2 tbl lemon juice
- 1/4 cup strained ginger bug

Directions

- **Create Tea :** Brew on stove a strong tea using Butterfly in 1 cup of hot water
- Strain the tea and stir in the sugar
- Add 3 cups of water to dilute and cool the mixture faster
- Once cooled to room temperature, add the ginger bug
- **Bottle :** Pour into glass flip-top bottles
- **Fermentation :** Store in a cupboard or box to carbonate
- "Burp" bottles every day to release gas and prevent overflow or breakage
- Ferment for about 12 to 72 hours
- Refrigerate when ready

Notes

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Naturally Fermented Fruit Juices

GINGER BUG

Fermentation : 12-72 hrs

Ingredients

- ½ cup of ginger bug, strained
- 7 ½ cups fruit juice (unsweetened juice)

Directions

- **Directions**
- **Combine the ginger bug and Juice.**
- **Transfer the mixture to a flip top lid bottle like the one in the photo, leaving ½ inch of headspace. Can be explosures ferments very quickly**
- **Allow drink to ferment for 12-72 hourss at room temperature.**
- **Burb daily**
- **Transfer bottle to refrigerator after it becomes carbonate**

Ideas

- Apple: Unsweetened apple juice with a cinnamon stick.
- Grape: grape juice creates a robust soda.
- Citrus: Orange, grapefruit, or lemonade.
- Berry: Mixed berry juice for a vibrant flavor
- Different fresh Juices
- Ginger Lemonade: Use ½ cup of freshly squeezed lemon juice mixed with 3 cups of filtered water, along with the zest from 2 lemons.

Kombucca Overview

What is Kombucha?

Kombucha is a fermented drink made using a SCOBY, a living culture of yeast, bacteria, and fungi. It forms a slightly shiny, jelly-like layer on top of the liquid (often described as a "mushroom". Don't worry, it's meant to look like that and its a little yucky!).

The SCOBY is very hardy and surprisingly easy to look after. It thrives in an acidic environment and is quite forgiving, making it perfect for home fermentation.

Kombucha Fermentation

The time it takes for kombucha to ferment can vary depending on a few key factors:

- Temperature
- Tannins in the tea
- Amount of sugar
- Strength of the starter (mother)
- Ratio of starter liquid to fresh tea

Kombucha is ready when it tastes lightly acidic with a slight vinegar edge.
If it's still too sweet, it simply needs more time.

Trust your taste (use a teaspoon, don't double dip), fermentation is as much intuition as it is science.

Key Components of Kombucha

- **SCOBY**: A cellulose culture of bacteria and yeast that drives fermentation
- **Sugar**: Feeds the culture and is mostly consumed during fermentation (5–14 days)
- **Tea**: Usually black or green tea, providing nutrients for the SCOBY
- **Starter Tea**: Starter tea is previously brewed kombucha added to a new batch. It lowers the pH (makes the mix acidic), which helps protect against unwanted bacteria and gives the SCOBY the right environment to start fermenting quickly and safely.

Primary Fermentation: Basic Steps

1. **Prepare Sweet Tea**
   Boil the filtered water, then take off the head. Put the tea into the hot water,

let it sit for around 15 minutes, then remove the tea/tea bags. Add sugar into the tea mix and dissolve sugar. Stir to assist in the dissolving the sugar

2. **Cool & Add Starter Tea**
   Allow the tea to **cool** to room temperature, then add starter tea (previous kombucha) to increase acidity. This helps acidify the mix and keeps things safe. Place the room temperature tea into a big jar. *Let it come to room temp (hot tea = dead SCOBY… not ideal).*
3. **Add the SCOBY**
   Place the SCOBY into the big jar with the liquid. It might float, sink, or sit sideways (all normal).
4. **Ferment**
   Cover with a breathable cloth or paper towel using a rubber band and leave at room temperature for 5 days – 10 days. In colder weather it may double in time. **No lids.** It needs to breathe (just like us). Store out of direct sunlight near windows or glass doors.
5. **Taste**
   Taste your brew after 5 days, once you can't taste any tea flavour its ready for bottling and refrigeration. If you leave the brew too long it will taste more vinegary every day and will not be very pleasant.
6. **Bottle**
   Remove the SCOBY and bottle the kombucha – leave around 5 cms from the top of the bottle to allow the kombucha breathe room. Remember to **save your starter tea**, alittle kombucha brew for your next fermentation batch. E.g. You can add fruit or herbs at this stage for flavour and natural carbonation.

Primary Fermentation Recipe : Kombucha

Total Brew	Water	Teabag	Sugar	Stater Tea
1 litre Brew	900ml	4 teabags (2 green/2 black)	¼ cup	100ml
2 litre Brew	1.8 ltr	6 teabags (3 green/2 black)	½ cup	200ml
3 litre Brew	2.7 ltr	8 teabags (4 green/4 black)	¾ cup	300ml
4 litre Brew	3.6 ltr	10 teabags (5 green/5 black)	1 cup	400ml
Best results use filtered water, organic tea (can use loose leaf tea, strain before added scoby), Organic sugar				

Secondary Fermentation of Kombucha

Secondary fermentation is the stage where kombucha develops flavour and natural carbonation. This occurs after the primary fermentation, once the SCOBY has been removed and the kombucha is transferred into bottles.

During this stage, additional ingredients such as fruit, juices, herbs, or teas can be added to create a wide range of flavours.

Process for Secondary Fermentation

To begin secondary fermentation:

- Pour the finished kombucha brew into sealable bottles leave a little space at the top of the bottle
- Add your chosen flavourings
- Leave around 5 cms from the top of the bottle to allow the kombucha breathe room
- Seal the bottles tightly to allow carbonation to build
- Store at room temperature

It is important to **"burp" the bottles daily** (briefly open the lid) to release pressure and prevent over-carbonation.

Fermentation Time

Secondary fermentation typically takes **2–14 days**, depending on environmental conditions.

In warmer climates, such as Hervey Bay, fermentation can occur much faster, often within **2–3 days**.

Flavouring Options

You can experiment with a wide variety of ingredients. Some examples include:

- Passionfruit pulp (e.g. frozen a couple of 1 table blocks or the pulp of 2 passionfruit.)
- Raspberries – around 1/3 punnet or ½ cup frozen (defrost)
- Strawberries – around 1/3 punnet, chopped
- Chopped one peach or ½ cup peach nectar

- Chopped one apple or approximately ½ cup apple juice
- Approximately 2 teaspoons hibiscus tea
- Botanical combinations such as lavender and rosemary (around 1 teaspoon each)
- Fresh grapes chopped
- Grapefruit juice without seeds

Secondary Fermentation Notes

There is no single "correct" combination secondary fermentation is highly flexible and encourages creativity.

Flavour intensity, sweetness, and carbonation levels can all be adjusted over time. Small variations between batches are normal.

Trial and error is part of the process, and developing your own preferred flavours is encouraged.

Tips & Tricks : Flavouring and Carbonation (2nd Fermentation)

- **Bottle Safety:** Use strong, swing-top glass bottles to prevent explosions.
- **Prevent Explosions:** "Burp" your bottles daily if your kitchen is very warm to release excessive pressure.
- **Flavouring Techniques:** Use fruit juice, fresh slices, or dried herbs. Ginger is excellent for boosting carbonation.
- **Less Mess:** Refrigerate bottles for at least 24 hours before opening to reduce foam over, as cold slows down the yeast.

Kombucha Tips : Troubleshooting

No Fizz? Ensure bottles are airtight, add more fruit/sugar, and ensure enough headspace (approx. 1–2 inches) is left during bottling.

Too Sour? Next time, use less starter tea or reduce the brewing duration (bottle earlier). If it's too strong, dilute it with tea or juice before drinking.

Mold? If you see fuzzy patches (green, black, or white) on top of your SCOBY, discard it and the liquid, then clean the jar thoroughly.

Kombucha Frequently Asked Questions

My SCOBY isn't floating — is that okay?

Yes, this is completely normal. A SCOBY does not need to float on the surface to do its job. It may sit at the top, sink to the bottom, or remain suspended somewhere in the middle of the brew. Regardless of its position, the fermentation process will continue as expected. Over time, you may also notice a new SCOBY forming on the surface. This is a natural part of the process and a good sign that your kombucha is developing well.

There is a white film forming on the surface, is something wrong?

No, this is not a problem. The film you are seeing is actually a **new SCOBY forming**. It often starts as a thin, clear or slightly cloudy layer and gradually thickens over time.

It is important not to disturb this layer. Avoid stirring the brew or attempting to remove the film, as this can interfere with the fermentation process. Leaving it undisturbed will allow a healthy new SCOBY to develop.

There are brown blobs or strands in my kombucha, what are they?

Brown blobs, strings, or sediment in your kombucha are **yeast formations**, and they are completely normal. These develop as the SCOBY consumes sugar during fermentation.

The yeast may appear as floating clumps, strands hanging from the SCOBY, or sediment collecting at the bottom of the jar. While they may look unusual, they are a natural and essential part of the brewing process and are not a cause for concern.

My kombucha tastes too vinegary. What happened?

If your kombucha tastes overly vinegary, it has simply fermented for too long before bottling. As fermentation continues, the sugars are further broken down and the acidity increases, resulting in a stronger vinegar flavour.

To avoid this, it is recommended to begin tasting your kombucha from around **day 5** of fermentation. Once the strong tea flavour has reduced and the taste becomes lightly tangy and balanced, it is ready to bottle. At this stage, you may also notice some natural carbonation beginning to develop.

Keep in mind that fermentation speed is influenced by temperature. In warmer climates, such as Hervey Bay, the process occurs more quickly, so regular taste testing is important. Each additional day of fermentation will increase the acidity, so timing is key to achieving your preferred flavour.

Scoby Hotel (Backup plan)

A **SCOBY hotel** is simply a dedicated glass jar used to store extra SCOBYs in mature, acidic starter tea. Think of it as a safe place to keep your cultures healthy, fed, and ready for when you need them.

Figure 1 Scoby Hotel sample

Why Have a SCOBY Hotel?

- **Backup**: If a batch goes mouldy, you've got a healthy spare ready to go
- **Sharing**: Easy to pass cultures on to friends or workshop participants
- **Brewing Breaks**: Perfect if you want to pause brewing without losing your SCOBY

How to Create and Maintain a SCOBY Hotel

Setup / Create a Scoby Hotel

Place your extra SCOBYs into a large, clean glass jar.
Cover them with a **50/50 mix of raw kombucha brew and fresh sweet tea**, making sure they are fully submerged.

Cover the Hotel

Use a breathable cloth or paper towel with rubber band such as a coffee filter or tightly, woven cloth.
Secure with a rubber band to allow airflow while keeping insects out.

Storage

Store at room temperature in a **dark, quiet spot** out of direct sunlight.

Maintenance / Feeding schedule

"Feed" your SCOBY hotel by adding fresh, cooled sweet tea:

- Every **4–6 weeks**, or
- Anytime you remove a SCOBY

Make sure there is always enough liquid to keep everything covered and healthy.

Unique kombucha flavour ideas

Here are some unique flavour ideas you can experiment with:

🟤 **Earthy & Unexpected**

- Coffee
- Cold brew + vanilla
- Matcha
- Chai spice

🌸 **Floral & Botanical**

- Lavender + lemon
- Rose + raspberry
- Hibiscus + orange
- Elderflower
- Chamomile + honey

🍊 **Bright & Fruity (with a twist)**

- Pineapple + turmeric
- Mango + chilli
- Watermelon + mint
- Blood orange + ginger
- Passionfruit + lime

🌿 **Herbal & Savoury**

- Basil + strawberry
- Rosemary + grapefruit
- Sage + pear

🔥 **Bold & Adventurous**

- Ginger + cayenne
- Beetroot + apple
- Carrot + orange + turmeric

👉 Tip: Start small, keep notes, and tweak as you go, some combos will surprise you (in a good way… and occasionally not 😄).

Beet Kvass

Primary fermentation

PROBIOTIC

Fermentation : 3days+

Ingredients

- 1-2 large organic beets
- 1/2 tbl fine sea salt (non-iodized)
- Filtered water (750ml)

Directions

- **addPrep**: Wash and scrub beets (leave skin on). Dice into 2cm cubes.
- **Combine**: Add beets (plus optional flavourings) to a clean 1Litre jar.
- **Brine**: Add salt (+ starter if using). Fill with filtered water, leaving 2–3cm headspace.
- **Ferment**: Seal (lid or airlock). Leave at room temp, out of direct light, for 3–7 days.
- **Burp**: If using a standard lid, open daily to release gas.
- **Check**: Taste from day 3 — should be tangy and lightly salty.
- **Drink** : Strain, discard/compost beets, refrigerate liquid.

Ready

- **Smell** : lemony smell,
- **Look**: Small bubbles, Liquid blood colour
- **Taste** : Varies from watered-down juice to savory lemony juice. Taste Daily

Pineapple Tepache

Primary fermentation

PROBIOTIC

Fermentation : 24 hrs +

Ingredients

- 4 1/2 cups water
- 1/2 cup or brown sugar
- 1 fresh pineapple (skin/core)
- 1 cinnamon stick
- ½ tspn ginger

Directions

- **Prep:** Wash pineapple well. Cut into cubes (including skin and core)
- **Combine:** Dissolve sugar in a little water. Add skin, core, spices, and remaining water to a large jar.
- **Ferment:** Cover with breathable cloth/paper towel and secure. Leave at room temp, out of direct sunlight.
- **Wait:** Ferment for 2–3 days. (Taste daily)
- **Check:** Look for light foam (wild yeast) on top (normal; skim if needed).
- **Strain:** Remove solids. Refridge. Serve chilled, optional lime or Tajín.
- **Optional Fizz / Secondary Fermentation:** Bottle and seal for 1 more day, then refrigerate. **Can add mint or chilli to secondary fermentation**

Ready

- **Look**: Small bubbles, Liquid blood colour
- **Taste :** Yummy, Taste Daily

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