How to: Run a Fermentation Workshop

Introduction

This guide is intended for individuals or groups wanting to run a 'Fermentation' Workshop. Let us know if you use it and send feedback to info@cagoxfordshire.org.uk

This document covers the following topics:

- Health and safety
- What is lacto-fermentation?
- What are the benefits of fermenting?
- Is it safe?
- What equipment is needed?
- Dry fermenting
- Wet fermenting
- Type of salt
- Excluding oxygen
- Sauerkraut
- Kimchi
- Looking after and enjoying fermented food

TIP:
Ask your participants whether they have tried fermenting.

What have the tried?

Was it successful?

If not, what do they think went wrong?

DECIDE:
Your venue
Indoors or outdoors?
How long will it be?
How many participants?

Depending on the number of people attending, I recommend allowing 90 minutes for the workshop. It works well with 8-10 participants; if you have more people then I would suggest having another person to support you in facilitating the workshop.

You don't need kitchen facilities, so the workshop can even be run outside - participants will need to bring equipment with them (see below). Access to drinking water is helpful, but not essential as long as you wash vegetables in advance.

Think about promoting your event - give people at least 4 weeks notice. Do you have a newsletter where you can advertise? Is there a local parish or community newsletter or a social media group for your area? We can help promote the event in the CAG and Replenish newsletters and on our socials.
Email: comms@cagoxfordshire.org.uk.

Health and safety

Please conduct a risk assessment for your event - you can use our general template.
Risks specific to a fermentation workshop include:

Food allergies:

Ask if any of your participants have any food allergies (ideally before the event).
If you bring any fermented foods along for people to try, avoid the 14 main allergens (see below re sulfites) and let people know the ingredients you have used.
1 of 14 main allergens is **sulfites** - sulfites are a by-product of fermentation so warn people of this. **Onions** and **garlic** contain sulfites too

Use of knives: Remind participants to be mindful of using sharp knives and follow the safe use of knives guidance. Ensure a first aid kit is available.

Hygiene:

It is not required to sterilise jars for lacto-fermentation, but you should still follow general food safety practices around hand washing and wash vegetables thoroughly.

What is lacto-fermentation?

- Lacto-fermentation is the process by which bacteria in the genus lactobacillus break-down the sugars in food to form lactic acid (and carbon dioxide and sometimes ethanol or acetic acid).
- Examples of lacto-fermentation are yogurt (milk), sauerkraut (cabbage) and kimchi (white radish or cabbage).
- It is not the same as pickling, which involves submerging vegetables in an acidic solution like vinegar and usually uses heat which will destroy any beneficial bacteria.

What are the benefits of lacto-fermentation?

Extends the shelf life of vegetables

Lacto-fermentation has been used as a preservation method for thousands of years, before we had refrigerators. The salt, acid and lack of oxygen creates an environment where the ‘good’ bacteria thrive, but the ‘bad’ bacteria, fungi and moulds do not.

Good for your wallet

Shop-bought sauerkraut and kimchi are ridiculously expensive given their basic ingredients of cabbage and/or radish and salt. You can expect to pay £3 or £4 for a small jar of fresh or ‘raw’ sauerkraut. The jars on the supermarket shelves might be cheaper, but if sold at room temperature they will have been pasteurised and will not contain the live bacteria that provide many of the health benefits.

Flavour, texture and aroma

Lacto-fermented foods all have distinctive sour flavours. As the food ferments the texture also changes as the sugars are broken down. Many people find lacto-fermented foods easier to digest as a result. For example, fermentation breaks down the lactose in milk into glucose and galactose.

INTERACT:
Why do your participants want to learn lacto-fermentation.

Are they interested in a particular benefit?

Good for your health

The 'good' bacteria in fermented foods have a probiotic beneficial effect on your body. They help to maintain a balance of gut bacteria and thereby improve your digestive health. As you are not cooking the vegetables, the nutrient content is generally higher in fermented foods. Research into the health benefits is ongoing, but they may help heart health, support your immune system, improve your mood and aid weight loss.

Is it safe?

Lacto-fermented foods are safe for most people, as harmful bacteria are unable to grow in the anaerobic, acidic, salty environment. If you are new to them, introduce them slowly; you may notice some digestive symptoms like bloating or flatulence. People with histamine intolerance may also experience side effects. I would not recommend lacto-fermented foods to those with a compromised immune system and if any of your participants are pregnant they may want to seek medical advice.

What equipment is needed?

Participants will need to bring the following (unless you are able to provide them)

- 1-2 jars, ideally at least 500ml
- Chopping board
- Knife / grater
- Large bowl and spoon
- Apron (optional)

TIP:
Any wide rimmed glass jar is fine - a mason jar, kilner jar, a fermenting crock pot or reuse an old pickle jar
No need to sterilise

You will need to provide:

- Vegetables per recipt
- Non-iodised salt
- Herbs/spices
- Digital weighing scales

TIP:
Use **organic veg** if possible as there are likely to be more lactic acid bacteria naturally present.
Give them a wash, but **don't peel them.**

Dry fermentation

This is when you ferment salted vegetables without adding any extra water. The salt acts on the chopped vegetables, when massaged or pounded, to release the water within them. This creates liquid submerging the veg and excluding oxygen. A 2% salt concentration is commonly used - i.e., 2% of the weight of the veg - for 500 grams of veg, use 10 grams of salt. A benefit of this method is that none of the flavours or nutrients are diluted by the addition of water. This is how sauerkraut is made.

Both sauerkraut and kimchi are examples of wild fermentation - the 'good' bacteria are naturally present on the vegetables and so no 'starter' is needed. Although, you can add some liquid from a previous vegetable ferment to give your ferment a kick start and speed up the process.

Wet fermentation or brining

This involves adding a solution of **dechlorinated** water and salt (brine) to your vegetables to submerge them and exclude oxygen. This is often used for softer vegetables that you want to ferment whole or in larger pieces, like mini cucumbers, courgettes, chilli peppers or green beans. Most wet fermenting recipes use a higher salt concentration of 3.5-5%. This slows down the fermentation process, resulting in crispier veg. You can also use this method for vegetables that contain very little water.

Type and amount of salt

Unrefined sea salt is the preferred type of salt to use, but pickling or kosher salt are also acceptable. Look for sea salt without anti-caking agents as these can discolour your ferment. It doesn't matter much whether you use crystals or flakes, fine or coarse salt. Avoid iodised table salt as this can impact the fermentation process.

Recipes will vary in their salt concentration from 1.5 to 5%, but those more experienced in fermentation will salt to taste. If you don't have digital scales, you can use spoons: level teaspoon = 6 grams, level tablespoon = 18 grams.

Excluding oxygen

It's important to exclude oxygen to prevent growth of pathogenic bacteria or moulds. Pack the veg tightly so that the jar contains as little air as possible. Leave an inch of space at the top to allow carbon dioxide to escape. If the ferment includes cabbage, fold a leaf over to cover the top of the veggies. Use a fermenting weight or a smaller glass or jar of water to weigh down the veg and ensure they are submerged. Leave the lid on loosely (so gases escape) or cover with a muslin or kitchen paper with an elastic band to protect it from flies.

Sauerkraut

Ingredients

1/4 head of green or red cabbage
1 carrot
1/2 beetroot
1/4 onion
2% weight of vegetables in salt
A pinch of fennel seeds (optional) or preferred flavouring e.g., ginger, garlic, dill, chilli.

Method

- Weigh your bowl and note the weight
- Ensure your glass jars are clean - no need to sterilise but wash with soapy water.
- Wash, but don't peel your vegetables
- Set aside one or two whole cabbage leaves for covering the ferments.
- Finely chop or grate the vegetables
- Add all the vegetables to the bowl and weigh it - deduct the weight of the bowl to calculate the weight of the vegetables.
- Calculate 2% of the weight (weight of veg X 0.02) This will give you the amount of salt (in grams) to add.
- Use unrefined sea salt, without anti-caking agents. Do not use table salt.
- Sprinkle the salt over the vegetables. Firmly massage the mixture with your hands for 5-10 minutes to dissolve the salt and mix the ingredients and release the water from the veg.
- Let it stand for 15 minutes. The vegetables will release most of their water.
- Transfer the veg and all of the liquid to the glass jar in small batches, compressing the cabbage by hand or with a spoon or packer. The liquid produced should submerge the cabbage.
- Add a splash of water (dechlorinated) to submerge the vegetables, if needed.
- Place the cabbage leaf on top of the vegetables to prevent the vegetables being exposed to oxygen (this can cause mould).
- Add a weight or smaller jar or glass filled with water to keep the veg submerged
- Cover with a muslin or piece of kitchen paper and elastic band to allow air flow, but prevent insects from entering.
- Leave to ferment at 15-20°C for 3-14 days, depending on how you like the taste. Longer = more tangy! Have a taste every 3 days. The warmer it is, the faster it will ferment. As it ferments it will get bubbly and go cloudy. Place your jar on a tray or bowl as it may bubble over.
- Put the lid on and refrigerate once it tastes good to you. It will continue to ferment more slowly in the fridge.

Kimchi

Kimchi is the name used to describe a traditional Korean fermented side dish, but there are many different types - kimchi is more of a method than a dish. You are likely most familiar with one made from Napa or Chinese cabbage and/or Korean radishes - a variety of the Daikon white radish - you can sometimes spot these at Asian grocery stores. The vegetables are combined with a flavoursome paste of green onions, ginger, garlic and the red Korean chilli powder, *gochugaru,* which gives the dish its bright red colouration. Often it would also include fish sauce, giving a 'umami' flavour, but you can substitute this for soya sauce or miso to make a veggie version.

Traditional non-vegan kimchi from My Korean Kitchen
Quick and easy kimchi from Feasting at Home
Easy vegan kimchi from The Minimalist Baker

Looking after and enjoying fermented food

Leave your ferment at room temperature (15-20℃) out of direct sunlight and taste every few days. How long the fermentation process takes will depend on many factors, including the amount and type of bacteria present, the veggies and herbs/spices you used and the salt concentration. Turmeric and ginger in particular can affect your ferments as they have mild antimicrobial activity. Some people leave them at room temperature for longer than 2 weeks or until they stop bubbling.

Once you are happy with the flavour, put the lid on and move the ferment to the fridge. It will keep in the fridge for at least 4-6 weeks, often much longer. Fermented veg should have a pleasantly sour taste and smell. You may see a white film on the top of the cabbage leaf or on the jar - this is kahm yeast - it is a harmless natural yeast that can be scraped off. The liquid may appear cloudy or have a sediment at the bottom - again this is nothing to worry about.

Indications of a spoiled ferment are if it is very smelly, has a 'bad' taste, is slimy or there is visible mould. Some people just scrape this off and eat the ferment, but if in doubt throw it out. Encourage your participants to try again if it doesn't work as every time will be different.

It's beneficial to eat ferments at different stages as they will contain different strains of bacteria. Remember not to cook the ferments, as this will kill the bacteria. Sauerkraut and kimchi are usually served as a side dish, but can also be mixed into salads.

Additional resources and recipes

These resources and recipes could be circulated to your participants following the event:

Replenish blog: How to ferment vegetables at home
3 minute sauerkraut video by the fermentation guru Sandor Katz
Additional Sandor Katz videos and Harvard lecture
Sandor Katz's book 'The Art of Fermentation'
The 5K's of fermented foods - kefir, kraut, kimchi, kamut sourdough, kombucha

Fermented ginger carrots from Steph Gaudreau - this is good if you are new to fermented foods or prefer a milder flavour - also great intro for kids.
Fermented hot sauce from Feasting at Home
Fermented courgette relish from Fermenting for Foodies
Pineapple, turmeric and ginger sauerkraut from Yang's Nourishing Kitchen