

Fermentation ? & A



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Every discipline has a selection of the most frequently asked questions, and fermentation is no exception.

1. How much salt to use and how to use when fermenting?**General guideline**

- Dry salting – massaging vegetables with salt and allowing the salt to draw liquid from the vegetables.

For this, the typical amount of salt would be approximately 1 tablespoon for every 1 1/2 lbs. of vegetables.

This technique is commonly used for sauerkraut and tomato salsa.

Easy to sprinkle salt as you go along and massage with each salt and veggie / fruit addition.

- Pre-brining – mixing brine by dissolving salt in water and then soaking the vegetables in the brine.

This is followed by draining brine and then compressing the vegetables to encourage further liquid to escape the vegetables and cover the vegetables for the fermenting process.

A stronger brine of 4 tablespoons salt for 4 cups of water is ideal.

Often used for kimchi making.

- Brining – mixing a brine of salt and water or boy choy juice and submerging the vegetables within brine, commonly used for making cucumber pickles and whole vegetables.

2% – 5% brine is most common.

This concentration of salt stops bad bacteria from growing and allows for the lactic acid bacteria to thrive.

It is perfect for fermenting vegetables that do not lend to being massaged /compressed.

- Tennis ball Brining – basically a very strong brine that bounces away.

This can work well when you need to ferment something without needing to refrigerate afterwards, as in making salted citrus.

Once fermented and when ready to eat, rinse the vegetables or fruit several times to remove some of the salt to make the dish/pickle more palatable.

- Added Salt – when fermenting salsa or something more akin to a paste (mustard, horseradish, ketchup, pesto etc.)

Add some salt to the mixture to help keep the environment more stable.

1. How much salt should be used for brine?

- When mixing a brine to submerge your fermentables, it is common to mix to a salinity level between 1.5% and 5% with the sweet spot being in the 2-3% range.

- This percentage is a proportion by weight, if you divide the weight of your salt by the weight of your water, you will come up with the percentage.

- For example, brine typically will have approximately 2.5 tablespoons salt to four cups of water

4 cups water – 960 grams – 32 oz.

1 Tablespoon Himalayan salt – 19 grams – .67ounce

Making brine

- Mix 4 cups of brine to various salinity % dissolve the following amounts of salt into 4 cups of water:

2% brine – 1 Tablespoon Himalayan salt

3% brine – 1.5 Tablespoons salt

4% brine – 2 Tablespoons salt

5% brine – 2.5 Tablespoons salt

1. What veggies require brine?

- If the veggie can produce its own brine with a bit of love (massage) the result will be tastier than using salted brine (water + salt).

Many vegetables when coaxed (such as squeezing / massaging and hugging) provide their own waters to ferment itself in (such as cabbage and tomatoes).

- In the case of vegetables and fruit left whole (cucumbers, asparagus, radish, turnip, whole jalapenos, onions, peas, cherry tomatoes, string beans, okra, zucchini, eggplant, capsicum, radish, mushrooms – try anything), the vegetables should be submerged in brine.

- Pretty much any vegetable can be fermented.

Use what is abundantly available and be bold in your experimentation – try a small quantity first.

- The main idea is to pack your fruits/veggies in a saltwater solution, while making sure they are kept submerged under the solution (aka saltwater brine) the entire time it is fermenting.

We must admit, in our kitchen we do not own kitchen scales and as for salt just make a salty solution to taste like salty sea water and have never had a bad batch and produce a load of probiotic goodies.

1. How much salt for pickles?

- Old-timers made 10% brine when they had little refrigeration and needed to keep on the shelf longer (instead of the fridge) after jarring and once it had been opened.

They would see if a raw egg would float in the brine to see if it were at 10% or not.

- Guideline for Half Sour versus Full Sour Brine

Full sour is considered 5% salt solution.

It takes longer to ferment and is sourer.

Recipe: 3 tablespoons salt per litre (quart) is considered for full sour.

Half sour is 3% salt and goes more quickly, is less sour tasting.

- Help, soft Pickles?

- To get crisp pickles start with fresh, just-picked cucumbers.

If the produce cannot be used immediately upon picking, refrigerate.

Vegetables become soft as their pectin structure changes due to microbial activity, excess heat, or improper handling.

If a vegetable becomes soft it cannot be made firm again.

- Some people have reported cucumbers can freshen-up by having a bath in ice.

Soak cucumbers or other vegetables in ice water or layer with crushed ice for 4 to 5 hours before fermenting.

Sometimes this step is combined with a salt solution.

- We prefer to start with cucumbers that are fresh picked.

- Crunch in fermented cucumbers, try adding a little horseradish.

It is an old technique from Eastern Europe.

grape, oak, cherry leaves, tea leaves or lemon balm for the tannin content.

Tannins inhibit the pectinase enzyme that makes pickles soft.

However, if you remove the blossom ends, will help to keep a crunchy pickle.

- With small fresh picked cucumber – use a skewer and pierce each end – so the brine can penetrate the whole cucumbers.

1. • WHEN READY?

- When kraut has a pleasant and tangy fermented flavour, and the cabbage shreds are translucent rather than opaque.

Approximate 4 – 6 weeks.

If kraut contains fruit (apple kraut) check at 14-21 days (depending on temperature).

- Approx. Time frame for vegetable fermentation
- Approx. 2 weeks for soft veggies – 3 days for tomato (fruit) salsa.

Once happy with the flavour and consistency, move the jars into refrigerator.

The fermenting fairies have performed, and the flavour will continue to evolve, even under refrigeration.

Kimchi (Napa / wombok has a softer leaf, with less sugar and more water. – 3- 5 days / up to two weeks at room temperature, depending on your taste. Napa gets softer with a longer ferment.

1. HOW TO PREVENT SPOILAGE?

- Three things that prevent spoilage are salt, an anaerobic (air-free) environment and lactic acid fermentation.

- The weight or outside cabbage leaves applied to sealed bottles, on top during fermentation keeps the cabbage submerged under the brine and, thus, in an anaerobic environment.

Lastly, as the cabbage ferments, lactic acid develops which creates an undesirable environment for potential microbial contaminants.

- Refrigerate “finished” product once decided “to your taste” and have moved from the crock or larger vessel into smaller containers or kept in fido type jar.

- Kimchi will stay good in the fridge for years, sauerkraut for months — even after the jar has been opened, if kept well packed down in the liquid.

Keep that anaerobic environment in play, so keep it submerged or will begin to rot.

- Always use a clean spoon or fork to take out what you are eating from a jar, as dirty utensils can introduce pathogens into the jar and make it spoil more quickly.

Although tempting, best not to spoon and eat out of the jar Oops!! did I say anything about fingers? Make sure the remaining veggies are covered with the brine solution before replacing the lid. Push down with a pestle or rolling pin.

1. What about airlocks?

- Mankind has been fermenting foods for more than 9000 years, according to archaeological evidence, and water locks have only been used for a couple hundred of those years. They are an invention on the scene. Some breweries still ferment beverages in open vats. After the initial fermentation period, they are closed to retain the alcohol and allow long term aging (slower secondary fermentation which builds up less gas).

- Keeping food under the brine and air-tight is far more important than the kind of container you ferment the kraut / vegetable within. Sellers of air lock systems state, to keep the food under the brine – if the method were truly what is claimed, would that matter?

- Grandma used to hang cheese in an old bag on the wash line to drain, and to re-purpose anything she could find. Point is to get started today as inexpensive and easily as possible.

1. EEK! Is this Mould???

- If “mould” is not raised or fuzzy, it is probably kahm yeast that can be produced during fermentation and is said to be totally safe, but would affect the taste, and in my opinion, it would infuse the flavour. If you have an anaerobic environment, you will not produce kahm.

- Mould requires oxygen to develop. If there is mould, must have had airflow, i.e. not producing a true lacto-ferment, producing more a salt-cured aerobic veggie ferment that, whilst still containing some lactic bacteria, not going to be dominated by lactic acid bacteria (LAB). Oxygen is the enemy of LABs and it kills them off via competition from oxygen-loving bacteria.

- Mould puts tendrils all through fermentables before the fuzzy nasties show up on top. So even if you scrape off the mould on the top, it still leaves tendrils behind. Once the development begins, you can only kill mould by using heat. However, please do not panic about mould just follow the easy steps.

- Vinegar production will sometimes produce a white bloom in the early stage and perfectly okay. Remember there is only one thing that looks and smells like mould and you will KNOW the difference between mould and Kahm. Mould = toss

1. WHAT IS Kahm Yeast?

- A whitish velvety or powdery layer floating on the top. Although thought to be harmless, Kahm yeast is something you want to avoid developing and not to allow overgrowth of what you are fermenting. If you do develop Kahm, Remove all Kahm yeast from your ferment.

- Keep vegetables submerged in brine and container with a good air-tight seal.

Use fresh vegetables and avoid producing Kahm.

- Watch the temperature. Do not place fermenting bottles into a closed container (esky) Temperature range – not over 78-degree F (17.7-25.5 C)

1. My bottle of Classic Kraut (green cabbage, caraway, and salt) has turned pink.

- PINK sauerkraut (not from red cabbage) is a sign of yeast. Always remember THE BEST THING TO DO TO KEEP KRAUT HAPPY ... IS TO SUFFOCATE IT!

- Anaerobic (oxygen-free) environment. Could also be, too much salt, or an uneven distribution of salt, more than likely, too much oxygen exposure (check the seal on your bottle). Keep the kraut under the brine and disturb as little as possible, especially in the first phase.

1. Visible Fuzz, Significant Mould, Smells Bad or Smells of Alcohol.

- The fermentation did not proceed as it should due to an imbalance in microbes or too much air in the fermentation container. The bad microorganisms (moulds and yeasts) took hold, chasing out the good bacteria.

- The temperature of the room where sauerkraut is homed during fermentation could have been too warm, more than 78 degrees. And sauerkraut will not have that nice tang and delicious crunch we aim for.

- Use high quality vegetables, preferably organic.

- Keep vegetables below the brine.

- Vegetables and salt should be well mixed.

- Wash and rinse well (no need to sterilize) equipment and containers.
- Keep combinations simple, too many sweet or starchy vegetables, will produce alcohol (yeasty smell and taste).
- To minimize the amount of air in the jar, do not pack the jar too much lower than the bottom of the shoulder of the jar. The jar should be about 75-80% full.
- Follow the simple rules and you should never require sharing kraut with the worms in your compost pile.

1. Help! I see white stuff on the bottom of my jar and my liquid is all cloudy

- Cloudiness is all part of the process, means good bacteria and good for you.
- White sediment on the bottom of the jar is yeast that forms during the fermentation process and is not harmful.

When you are done munching, the juice is great to add to raw dips, smoothies and cold soups or drink straight-up for probiotic punch!

1. YEASTY END RESULT

- Keep the quantity of high-sugar vegetables and fruits (beetroot, carrots, apples) to a minimum in kraut. Two regular size carrots or one – two medium beetroots or one apple per litre (quart) jar of fermented sauerkraut.
- If fermenting carrots, cover with 2% brine (1 tablespoon salt to 2 cups water) before fermenting. Add daikon radish (neutral in flavour and will help counteract the yeasty result).

1. My pickles and kraut have changed taste after being in the fridge.

- Lacto-fermented foods are alive and continue to “ferment” even in cold storage, just at a slower rate. In our experience, the harder the cell wall of the vegetable the longer they will last after fermentation and stored in the refrigerator. An example would be cabbage that has a very tough cell wall will last at least up to 12 months or more in cold storage vs. a pickle (cucumber) that has a soft cell wall will only last maybe 6 months in cold storage before it becomes too mushy and unpalatable.

1. Why do my fermented foods sometimes taste a little different from batch to batch?

- Vegetables can taste different from season to season and farm to farm. The soil conditions, weather, etc. come into play – this is the very same reason that fermented foods will taste different at different times of the year. You are making a natural product so tastes can vary slightly.

1. Too Salty

- Sometimes too much salt gets mixed into our ferment or we do not ferment for a long enough time, resulting in overly salty fermentation. Some sources say to rinse the sauerkraut. Doing so, however, rinses off all the beneficial probiotics, defeating the purpose of eating sauerkraut.

- Dilute the brine by adding a little water and mixing well.

- Mix sauerkraut with lettuce or mix into foods to “dilute” the saltiness.

- Ferment for a longer time. The longer you ferment, the less salty the ferment becomes. We love a long slow ferment.

1. Soft Texture

- If you prefer sauerkraut with a nice crunch, it can be heartbreaking to open your jar to find mush. This usually happens when your fermentation environment is too warm. This makes it hard if fermenting during the tropical summer. Sauerkraut is traditionally fermented during the season when temperatures are cooler.

- Fermenting below 72 degrees is desired.
- Add a little extra salt
- Ferment for a shorter time and finish fermenting in the fridge (not ideal, however, if you have run out of kraut and summer temperature is very high – better than no kraut at all). Or put containers in an air-con room / wine fridge.

1. Sauerkraut Too Dry, Not Much Brine Created.

- When massaging the salt into cabbage you may notice you have to work harder and longer to get a puddle of brine. The cabbages used to make sauerkraut could have dried out in storage.
- Select fresh cabbages that seem heavy for their size and show tightly packed leaves when sliced open.
- Grow your own /purchase cabbage fresh and make sauerkraut in season, preferably after the first frost. This is where it helps to know your farmer. Visit with them at your local farmer's market.
- Add fruit with moisture to the massaged cabbage – pineapple and capsicum is a nice mix. Use a not too ripe pineapple. Pear and goji are also a nice mix.
- Sauerkraut fermented in the larger ceramic fermentation crocks tend to retain more brine. If sauerkraut seems dry when getting ready to put in cold storage, you can always add more brine. We never have and urge you to try not to add any outside liquid, because it dilutes the flavour, we work so hard to create.

Before adding any extra liquid – get your rolling pin and push down hard on the kraut and see how much liquid you can naturally produce.

Remember the Basic Fermentation Rules

This should cover any imbalances you might encounter as you explore the wonderful and wild world of Gift of Fermentation.

Please do not allow them to scare you away. Happy fermenting! We are here to help you!!

The Basic Concept:

Keep it Fresh!

Keep it Salty!

Keep it Under the Brine!

Develop a rhythm!

We try to start a new batch before the previous batch runs out. We ferment about half of our year's supply in crocks (classic kraut) and the other half in jars (the fancy ones). We have two crocks on the go, so we never run out of Sauerkraut, and always have excess to share.

Love and bacteria, Lynnne