

Sauerkraut and Other Fermentations

You can do it yourself. It's easy and exciting!

“When your experiments go awry, and they inevitably will, learn from them and don't be discouraged... Our perfectionism lies in our imperfection.” (Sandor Katz)

Background:

“In earlier times, people knew how to preserve vegetables for long periods without the use of freezers or canning machines. This was done through the process of lacto-fermentation – an anaerobic process, whereby starches and sugars in food are broken down by bacteria and/or yeast; “pre-digesting” and preserving the food by producing lactic acid. Lactic acid is a natural preservative that inhibits putrefying bacteria. Starches and sugars in vegetables and fruits are converted into lactic acid by the many species of lactic-acid-producing bacteria. These lactobacilli are ubiquitous, present on the surface of all living beings and especially numerous on leaves and roots of plants growing in or near the ground.” (<https://www.westonaprice.org/health-topics/food-features/lacto-fermentation/>)

The process of fermenting foods – to preserve them and to make them more digestible and more nutritious – is as old as humanity. From the Tropics, where cassava is thrown into a hole in the ground to allow it to soften and sweeten, to the Arctic, where fish are customarily eaten ‘rotten’ to the consistency of ice cream, fermented foods are valued for their health-giving properties and for their complex tastes.

Unfortunately, fermented foods have largely disappeared from the Western diet, much to the detriment of our health and the economy. Fermented foods are a powerful aid to digestion and a protection against disease. Sadly, they have been replaced by white sugar and an infinite array of highly refined, denatured foods, that disrupt our digestion, and can contribute to gut dysbiosis, inflammation, heart disease, diabetes, and so much more.

Eating fermented foods directly supplies our digestive tract with living cultures essential to breaking down food and assimilating nutrients. Eating a variety of live fermented foods promotes diversity among microbial cultures in our body. Our bodies function best when populated by diverse species of microorganisms.

So let's get started making our kraut...

Equipment:

Essential:

- Cutting board
- Chef's knife
- Large mixing bowl
- Fermentation vessel
- Weight

Optional:

- Food processor/Mandolin
- Grater
- Peeler
- Tamper
- Airlock lid (not used traditionally)
- Plastic/rubber gloves, if mixing something very spicy

Fermentation Vessels:

Traditional Crock (open/unsealed system): The traditional way to ferment is in a large crock or barrel. The produce is submerged under a brine and held down by a weight. The brine keeps the produce safe under the salt solution. Anything that floats to the surface will fall prey to mold, which needs to be skimmed regularly from the top. A mesh cover or dishtowel should be secured over the top to keep out flies or other pests.

Mason Jar (either open/unsealed system or closed/sealed system): People have begun using Mason Jars or similar glass jars in place of the larger crock to allow them to ferment smaller batches. Smaller batches are great because they allow you to test recipes or experiments that you might not have wanted to do in a full-size crock. You will need to apply a weight to keep the fermentation below the brine level. Just like in the crock, anything that sticks up above or floats on top of the brine will be subject to mold so you must be cautious about keeping everything submerged. They can be used as open or closed system, depending on the weight you use. An example of an open system would be using a smaller jar filled with water as the weight, but in which case the top of the smaller jar is above the height of the jar with the kraut. In this scenario, you will simply cover with a mesh cloth.

Airlock System (Closed/Sealed System): An airlock water barrier set attaches to the top of any size wide-mouth mason jar. Carbon dioxide is created through the process of fermentation and it escapes through the vegetables into the top of the jar where it forces oxygen (and accompanying mold spores) out of the jar and through the airlock. Forcing out that oxygen is what keeps the airlock system clean and mold-free. However, layers of shredded vegetables (like you have with sauerkraut) create a barrier making it difficult for carbon dioxide to escape. This means that the carbon dioxide bubbles will frequently force the cabbage and brine up (sometimes into your airlock) instead of forcing oxygen out of the top of the jar. So, it is still recommended to use a weight.

Weights:

- A boiled rock (You need to take into consideration the composition of the rock. Is it something you want to leach into your vegetables?)
- A smaller glass jar filled with water that will nest inside the jar you are using
- A heavy vegetable or fruit (A heavy vegetable or fruit also works well - and is free! Try a big chunk of turnip, rutabaga, cabbage core etc. Please note that a beet will stain your other veggies red or pink which might be fun-or not!)
- Any food safe, lead-free item
- Glass or ceramic weights that can be purchased
- A wooden circle cut just the right diameter (hardwood, not plywood or particle board)

Vegetables:

- Cabbage
- Beets (do not food process, they will become too alcoholic)
- Carrots
- Turnips
- Radishes
- Apples (attract yeast, can give yeasty flavor called “funk”)
- Fennel
- Hardy greens (use sparingly unless you want strong flavor)
- Onion
- Garlic
- Ginger
- And much more... experiment with what sparks your interest

Salt, optimal is mineral salt. These are the most common:

- Celtic Sea Salt (aka: Celtic Gray Salt)
- Baja God Salt
- Redmon’s Real Salt
- Himalayan Pink Salt

Salt, acceptable:

- Pickling Salt
- Kosher Sea Salt

Salt, DO NOT USE:

- Table Salt
- Iodized Salt

Herbs and Spices:

- Caraway Seeds
- Juniper berries
- Fresh or dried chilis
- Black pepper
- Cumin seed
- Seaweed
- Mustard seed
- Celery seed
- Fresh or dried herbs (I almost always use dry oregano. If using fresh herbs, chop finely or they may get slimy. Alternatively, you can add whole sprigs to give flavor but not to eat.)
- And more...the possibilities are endless

I encourage using organic vegetables and herbs. They are more nutritious, tastier, free of unwanted pesticides, and more ecologically sustainable. Whenever possible support your local farmers. Think globally, shop locally!

For a quart of kraut:

Simple:

- 1 ½ to 2 lb head cabbage
- 1 T salt
- Desired herbs and spices

Adventurous:

Replace up to half the cabbage with other veggies

Rinse, Chop, Mix, Pound, Pack, Cap, Weight, Cap/Cover, Note, Ferment, Enjoy!

Rinse cabbage, peel outer leaves and save for barrier; core cabbage if you want to use the core as a weight, otherwise you can leave the core in; rinse, scrub/peel other veggies, if using

Chop or grate cabbage and other veggies as coarse or fine as you like. It will take slightly longer to ferment if using big chunks, and you may want to add a little more salt.

Mix veggies with salt

Pound! Squeeze! Mash! Get your hands into the mix. Break down cell walls, dissolve salt and release juices. The volume will probably shrink to about ½ or ¼ the original. It should taste salty but not too salty.

Pack and pack some more to keep oxygen out. Veggie fermentation is anaerobic! The level of the top of the brine, once the weight is on, should be at least 1” from the top of the vessel. So plan accordingly; do not over pack.

Top with outer leaves of cabbage to create barrier. Push edges of leaves down into brine at the edge of the jar.

Weigh kraut down to keep the solids below the liquid. Wipe the edge of the jar clean.

Cap with mason jar lid or airlock top if a closed system. **Cover** with a mesh cloth or dish towel if open system

Note on the jar lid the date you started the kraut and note on an index card the date, the ingredients used, and anything else you might want to remember about the process you used today.

Ferment till desired taste and consistency. I like to let mine ferment until there are no more bubbles, or approximately 4 weeks. Stop your ferments (by putting in the fridge) at different ages for a greater diversity of healthy bacteria.

Here are some additional notes about the fermentation process:

- Place jar in a small dish to catch overflow
- Keep at room temperature, covered and out of direct sunlight
- Do a visual check every day or two making sure
 - Bubbles are moving up to the surface
 - Brine is still above the solids (if not, simply open and push back down; if there is not enough brine, you can add a salt brine with a ratio of 2T salt to 4 cups of water)
 - No mold forms at the surface (if there is mold, open and remove mold; also taste for doneness while you have the jar open, you may think it is done and want to refrigerate)
 - The top is not bulging (if it is bulging at all, simply untwist the lid slightly to let air escape)

- If desired, taste 1x/week, using a clean fork. Be sure to press solids down after tasting to keep the process going. I do not like to do this. My research and personal experience have taught me that opening it interrupts the process, so I only open when absolutely necessary. It does not ruin it, it is just not optimal. However, when first starting out, you may want to do this to get an idea of what you like.
- When done remove weight, push solids back down and put in the fridge. What you do with the cabbage leaf barrier is up to you – leave it as a barrier, eat it along with the kraut, cook if too crunchy, or toss into the compost bucket.

ENJOY! Lactic-acid fermented vegetables are not meant to be eaten in large quantities but as condiments, unless on a therapeutic diet such as the GAPS diet. They are easy to prepare, their health benefits cannot be undervalued. 😊

Troubleshooting Mold: Mold is aerobic; it needs oxygen to form. Mold forms on the kraut's surface whenever solids meet the air. That is why it's important to keep kraut submerged under the brine. Some people are more comfortable with mold than others. Here are some scenarios you may encounter, and options to deal with them.

1. The kraut surface has dried out and is molding. Scrape off and discard the moldy parts; repress the kraut under its brine. If necessary, add a salt brine.
2. There is mold floating on the top of the brine. Simply skim off the surface, no need to repress.
3. The kraut surface looks okay but it is soft and mushy to the touch. Scrape and discard the mushy kraut. When you get down to good kraut, re-press and add a little salt brine.

Troubleshooting Excess Salt: New fermenters often throw out their first batch of kraut because it is too salty. If yours is too salty, do not despair. And do not throw it out. It is usually salvageable. Follow these steps to attain a more palatable saltiness:

1. Drain the brine from your kraut. If just a little too salty, drain half the brine; if way too salty, drain all the brine. Set aside for future ferments.
2. Add fresh, filtered water back in, and wait for a few hours to a day for the salt level to equalize.
3. Taste your kraut. If you like it, stop there.
4. If not salty enough, add back some of the drained brine little by little to desired saltiness.
5. If still too salty, repeat steps 1 & 2 until it suits your taste.

Additional Resources:

Wild Fermentation, Sandor Ellix Katz

The Cultured Cook, Michelle Schoffro Cook

Wild Fermentation Facebook Group <https://www.facebook.com/groups/63032745368/>

<https://www.westonaprice.org>

- Look for Wise Traditions Podcast #44 (Lacto-fermented Foods, Principal #5)

<https://www.farmcurious.com/blogs/farmcurious/58156485-diy-fermenting-weights>