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A Guide to Fermenting Vegetables at Home

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BASIC SAUERKRAUT:

You'll need:

- **A head of cabbage** – Whatever variety you fancy will work, just as long as it hasn't been treated with chemicals (as many supermarket veggies are), since these might kill the beneficial microbes needed to get your fermentation going.
- **Salt** - Best to use a salt that has no additives (like anti-caking agents), since they can affect your final product. Your salt can be finely ground or coarse, but you might find it easier to work with finely ground salt (or small salt flakes) because they have more surface area to help draw water out of the cabbage.
- **A knife** – Other chopping/shredding instruments may be helpful too, such as a mandolin, a grater (particularly if you're getting adventurous with other veggies like carrots or beetroot), and even a food processor.
- **A chopping board**
- **A large bowl**
- **A clean jar or crock** - No need to sterilize your fermentation vessel, just a good wash with hot water and soap or white vinegar should do the trick. Make sure there's no soap residue left before you add your vegetables.
- **Grape/vine leaves** (optional)

Method:

1. Peel away a few of the outer leaves of the cabbage. You can use these later, if you like, to help keep your sauerkraut submerged under liquid.

2. Cut your cabbage in half, then remove the hard white core. Now chop your cabbage into strips – the size you choose depends on your sauerkraut preference. Some people like to use a mandolin for this step. If that's your choice, cut the cabbage into wedges first, then hold the wedges with a tea towel to protect your fingers from the mandolin's merciless blade. You can even throw those wedges into a food processer and give them a quick whirl. Put your chopped cabbage into a large bowl.

3. Add salt to taste, and toss it with the cabbage to spread around evenly.

4. Now you can either walk away for 20 minutes or so, and let the salt do some of the wilting work for you, or you can get right in there and start massaging your cabbage. What you want to achieve is a bowl of very wilted cabbage with plenty of liquid at the bottom – essentially you need to break down the cell walls of the vegetable to allow the water to escape. Some people find it helpful (and satisfying) to start out by bashing the cabbage with a rolling pin or potato masher. But you can just pick up handfuls of cabbage, squeeze it and knead it, until its firm structure breaks down. This will probably take 10 minutes or so, depending on how much salt you've used and how long you've left it to marinate.

5. Shove your cabbage into your jar or crock or whatever fermentation vessel you've chosen. The cabbage should be really tightly packed into your jar, so

compress it at regular intervals. If you have a wide-mouthed vessel or small hands, you can do this with your hands. Otherwise, you might need to use a muddler or potato masher to help you compress the cabbage. This step will help to release some of the remaining water, and you should find that your cabbage is submerged under liquid. Pour any remaining liquid from your bowl into your jar. Do not fill the jar right to the top – leave a few cm of space at least, since your sauerkraut will expand as it ferments and releases CO_2.

6. (This step isn't necessary, but it's helpful.) Cover your sauerkraut with your discarded outer cabbage leaves or grape/vine leaves. Grape leaves tend to work best since they stay fresh for ages and are heavy in tannins, which helps keep the veggies below crunchy. You may also choose to weigh down your sauerkraut to help keep it submerged under the liquid. Try a small, clean jar (like a jam jar) filled with small rocks or a sealed plastic bag filled with water or brine (see notes on brine below).

7. Stand around and watch your sauerkraut ferment on your kitchen bench for at least 3 days. If you've used a regular jar, you might need to crack the lid once every couple days to release pressure formed by the CO_2. Taste the sauerkraut after a few days and see what you think. Use a spoon or masher occasionally to press the sauerkraut down and keep it submerged. The temperature of your kitchen and the amount of salt you've used will affect the rate of fermentation, so a little experimentation will help you figure out how long to let the fermentation go on. Generally, you can let the jar sit out for anywhere from 3 days to 3 or 4 weeks. Once it's reached a taste and texture you like, pop the jar in the fridge, which will halt your fermentation and inhibit growth of surface moulds and yeasts. Sauerkraut generally stays good in the fridge for a few months. Toss it out if you no longer like the taste of it.

ALTERATIONS & EXPERIMENTS:

Plain old cabbage-and-salt sauerkraut is great, but won't win you any awards for creativity. Try changing it up in some of the following ways:

- Add other veggies to complement your cabbage. Grate in some carrot, beetroot, ginger, radish. Finely chop some onions, leeks, garlic (just be aware, these mixtures, while tasty, might stink up your kitchen a bit – covering the jar with a tea towel works wonders). Even seaweed is a great addition – buy some wakame from an Asian grocer, rehydrate it in a bit of water, and toss it into the mix.
- Add spices. Caraway seeds and juniper berries are a classic sauerkraut addition (but start sparingly – they can have a pretty strong flavour). Dried or fresh chillies are great. Cumin adds a nice twist, as do black peppercorns, fennel seeds, dill seeds… pretty much anything you can think of can go into your sauerkraut. Play around until you find your favourite combinations.

There are many different factors that will affect your final sauerkraut product, and the best way to figure out your optimal procedure is to do some experimenting. Try making up multiple jars at once and changing just one variable per jar. For example, use four jars and make the same basic sauerkraut recipe for all four. Leave one jar as-is, but to another jar, add more salt, to another, add spices, and perhaps let the last jar ferment in a spot with a higher or lower temperature. See how these alterations affect the rate of fermentation, the taste, how long the sauerkraut will last before it becomes too soft or too sour. Or maybe just try different combinations of spices and vegetables in each jar. Or make a new jar using the same recipe every few days and taste them all at a certain point to compare the differences in different ages and lengths of fermentation.

FERMENTED PICKLED VEGGIES:

You'll Need:

- **Vegetables** – Pretty much any veggie you can imagine will work here, as long as it's chemically untreated (organic and home-grown work well).
- **A clean jar or crock**
- **A knife**
- **A chopping board**
- **Spices** (if using)
- **Brine** – See "Making Brine" below.
- **Grape/vine leaves** (optional)

Making Brine:

Brine is a saltwater solution that your vegetables will be submerged in during the fermentation process. Most fermentation recipes call for a 2-5% solution of salt dissolved in water. For example, 5 grams of salt in 100mL of water is a 5% solution. As a rough guide, use 1.5-3 tablespoons salt per 1 litre of water, and stir until completely dissolved. Unless you're using distilled water, which contains no chlorine, you'll want to make your brine in advance so you have time to de-chlorinate it. Chlorine can kill the beneficial microbes on your vegetables that are necessary for fermentation. You can de-chlorinate water by leaving it out overnight or by boiling it. If you boil the water, just make sure to let it cool completely before pouring it over your vegetables.

Method:

1. Put any spices and aromatics (such as garlic cloves) into the bottom of your jar.

2. Chop your vegetables into the shape and size you want your pickles to be.

3. Pack your vegetables into the jar, leaving at least a few cm of room from the top.

4. Pour brine over the vegetables so that they are completely submerged under the liquid.

5. (Optional) Use grape leaves to cover the vegetables, which will help to keep them submerged and will provide a barrier between your pickles and any surface moulds or yeasts that may develop. If these do develop, scrape them off and replace the grape leaf. If your vegetables are not staying submerged under the brine, you can weigh them down with a small jar filled with rocks or a sealed plastic bag filled with brine.

6. Wait and taste. The time it takes for your vegetables to ferment will depend in part on how small you've chopped them. The more surface area, the faster they will ferment. Whole vegetables – like whole radishes – tend to take a bit longer. Your pickles should be ready to eat anywhere from a few days to a few weeks, depending on how you like them. Tasting regularly can't hurt, and also gives you a chance to open your jar every few days to release built-up pressure.

FERMENTATION NOTES AND TROUBLESHOOTING:

If your cabbage is particularly old or dried out, you might not get enough water to be able to submerge it completely. In this case, add some brine. (See Making Brine, above.)

White settlement at the bottom, or flakes in the jar, is a combination of excess yeasts and lactic acid. Not a cause for concern – totally safe.

White surface moulds are not worrisome either – just scrape them off, but move your jar to the fridge at this point (if you haven't already) to inhibit more growth. If the top layer of your sauerkraut looks a bit mouldy, just spoon off and discard the unwanted bits. The cabbage below should still be fine.

Bright, colourful moulds are rare and indicative that something has gone very wrong. Discard any foods with brightly coloured moulds.

Kahm yeast may form at the top of your ferment – this is different from mould. It's not fluffy and soft looking like mould, but rather flat and white, and may appear bubbly because of CO_2 trapped underneath. This is also not harmful, but can smell a bit and may affect the flavour of the vegetables directly underneath it. Scrape it off, and once you're ready to ferment another batch, to prevent

contaminating that batch with the yeast, use boiling water and distilled white vinegar to clean all equipment between uses.

The easiest and most effective way to prevent surface moulds and yeasts from affecting the veggies below is to cover your ferment with a layer of something that can be discarded and replaced if necessary, such as large outer leaves of cabbage or, (my preference) grape leaves, which also help to keep your vegetables crispy because they are tannin-rich. Some people use a thick layer of cheesecloth (muslin), which can be purchased by the metre from Spotlight.

Keeping your vegetables submerged is the best way to prevent them from getting yeasty or mouldy. Many people weigh down their ferments with a plate and a jar of water or rocks. Others use a plastic bag filled with water or brine (in case the liquid leaks, brine is preferable). The plastic bag method is handy because it will cover the entire surface, effectively keeping out oxygen, even in a tapered crock, unlike a plate or weights, which must be smaller than the opening of the crock. However, to avoid prolonged exposure to plastic, consider using a layer of cabbage or vine leaves between the bag and the veggies below.

Lower temperatures and higher salt contents both slow down fermentation and create a less hospitable environment for the growth of surface moulds and yeasts. Veggies that have fermented more slowly also tend to stay good for longer. Additionally, chopping your vegetables into smaller pieces creates more surface area for acidification, which will help to exclude other microbes. Whole vegetable ferments are more likely to develop surface growths. If you're finding you're getting a lot of unwanted growth, consider finding a cooler spot to ferment your vegetables, chop your veggies smaller, or use more salt – but be aware that salt content does not decrease during fermentation, so your end product will taste saltier. Additionally, try experimenting with adding spices to your ferments, which not only add flavour but also inhibit microbial growth – black peppercorns, mustard seeds, hot chillies (fresh or dried), dill seeds, bay leaves, coriander seeds, cumin, cloves, caraway seeds, juniper berries… pretty much anything you like the flavour of can be thrown in. Don't be afraid to try new combinations!

Occasionally you'll make a jar of sauerkraut or pickled veggies that will be a complete failure. While nothing ruins a good dinner party like a soggy pickle covered in mould, all is not lost – you'll find that you learn the most from a failed experiment. Consider what factors you might have changed and what could have gone wrong. Were your veggies home-grown or organic, or were they from the supermarket and possibly treated with some antimicrobial chemical? (If so, it's likely your fermentation never got going and some other bacteria took over and caused your jar of veggies to rot.) Check the ingredients on your salt. Additives may have inhibited the fermentation process. What about the water you used for the brine? Did you de-chlorinate it first? (See notes on making brine above.) Usually, with a little detective work, you can figure out what went wrong, which means your next batch is much more likely to go right.