

Courtesy of the Wild Fermentation Facebook Group

Vegetable fermentation is an ancient tradition for preserving vegetables, with unique recipes from all parts of the world. When fresh vegetables are shredded and layered with salt, or submerged whole in a salt-water brine, healthy lactic acid bacteria convert the starches to acids, preserving the veggies with all their nutrients in a safe acid brine. Benefits of lactic acid fermentation include:

- Preventing spoilage of fresh foods, keeping them edible through the lean winter months.
- Preserving vitamins, minerals, and enzymes.
- Creating healthy organic acids that aid digestion and keep our bowels at the proper ph.
- Providing beneficial bacteria that function as probiotics in our bodies.
- Adding interest to meals with bright, tangy flavor that gets the digestive juices flowing.

GETTING STARTED

Fermenting vegetables at home is easy! All you need is: fresh vegetables, salt, clean water, a jar or crock, a weight. For best results, be sure to choose:

- Vegetables that are fresh and free of spoiled spots or mold.
- Salt that is pure and does not contain anti-caking agents or added iodine.
- Water that has been purified or filtered to remove chlorine and chloramines.
- Clean jar or crock in good condition and with an opening wide enough to fit your hand.
- A weight made of food-safe glass or ceramic. A small jar or shot glass may be used in a jar, and a plate in a crock. In a pinch one may use a plastic baggy filled with brine.

DRY SALTING

Vegetables can be “dry salted” or shredded and layered with salt to ferment in their own juices. Good candidates for dry salting include: cabbage, carrots, beets, turnips, radishes, rutabagas, onions. Try different combinations of these for endless variety! The amount of salt one uses depends on personal taste. Here are some guidelines:

- 2% salt by weight is a good general choice. This is about 10g, or 2 teaspoons, fine grind salt per 1lb. of vegetables.
- 3% salt by weight when weather is warm or a stronger flavor is desired. This is about 15g, or 3 teaspoons, fine grind salt per 1lb. of vegetables.

Use of a home scale to weigh vegetables and salt makes getting the right salinity easy, however it is possible to go by taste. As you mix the shredded vegetables and salt have a taste now and then - they should be a little saltier than a potato chip, so that you wouldn't want to eat a bowlful, but not so salty that you need to spit it out.

BRINING

To make a classic pickle instead of a kraut, whole vegetables or sticks or chunks can be submerged in a salt water brine. Good candidates for pickles in brine are: cucumbers, carrot sticks, green beans, radishes, asparagus, sugar snap peas, cauliflower florets, sliced jalapenos. The amount of salt is determined by personal taste, and also by how watery the vegetables are. Mix salt into water to create a brine of the desired strength, and then pour the brine over the vegetables:

- 2% brine is a good basic brine for most vegetables. This is about 1 tablespoon of fine grind salt per quart of water.
- 3.5% brine is good for softer veggies like chiles or for making half-sour cucumber pickles. This is about 2 tablespoons of fine grind salt per quart of water.
- 5% brine for classic full-sour cucumber pickles. This is about 3 tablespoons fine grind salt per quart of water.

TECHNIQUE

For either dry-salting or brining all vegetables should be packed into a clean jar or crock, leaving a little space at the top for bubbling and foam. A weight should be placed on top of the vegetables to make sure they remain under the brine at all times. Any vegetable that floats on top or pokes above the brine can become moldy. The jar or crock should be covered with a lid or plastic wrap to prevent bugs and mold from getting in, while allowing gas from the fermenting vegetables to escape. Vegetables ferment best between 60-70°F, but can be done at warmer temperatures. Fermenting time takes from 4-12 weeks for dry-salted vegetables (such as sauerkraut) and 2-6 weeks for brined vegetables (such as pickles).

<http://keepwell.ca/2012/02/probiotics-as-foundational-supplements/#more-410>

Probiotics have in recent years been drawing a great deal of attention not only from the scientific community but also from the press at large, and for good reason. Research has shown that these friendly microorganisms, which have been traditionally associated with the digestive category, offer so many more health benefits than could have been ever imagined. They play a role in immunity, cardiovascular health, cancer, weight regulation and of course digestive health to name a few. As important as their role may be in health maintenance unless you use a quality probiotic and ideally pair it with a prebiotic you may not be getting all the benefits you hoped for.

The number and diversity of microbes in our gut is astounding. The small intestine has per gram of fluid contents between 1 thousand to 1 million bacteria. The number jumps exponentially in the large intestine to between 100 million to 100 billion per gram of contents. There are between 400 to 500 different species that are known and they weigh between 3 to 4 lbs. Thirty percent of the solid matter that makes up your feces is in fact bacteria¹. As if these numbers weren't hard enough to imagine it's hard to believe there are 100 times more good bacteria in our intestines than cells in our body!

Where do we get our probiotics? There are two principal sources; fermented foods and probiotic supplements. Fermented foods have been around for thousands of years. Over 3500 years ago fermented milk was already being consumed. Aside from fermented dairy foods like yogurt fermented vegetables have also been around for a very long time; sauerkraut, kimchi, miso, tempeh, kefir & kombucha to name a few. Not only do fermented foods provide benefits by way of their probiotics but they also provide metabolites produced by these probiotics and often the foods themselves are rich in bioavailable nutrients, phytochemicals, vitamins, minerals, etc.

Although probiotic supplements don't have the long standing history that fermented foods do they offer some very unique advantages. For starters you can closely control the dose in supplement form. This is not possible with fermented foods and in fact several studies have proven that many of today's commercial yoghurts contain either too little or no active probiotics despite label claims. When using a probiotic from a quality manufacturer you can be assured of its potency. In fact quality probiotics should state their minimum potency at expiration. With probiotic supplements you can choose specific therapeutic strains. One other obvious advantage of fermented foods is the portability of supplemental probiotics.

We know how many microbes reside in our gut and how we can get them there but when were we first exposed to probiotics? It should be noted that a mother's womb is a relatively sterile environment as is the gut of a baby before birth. So how does first exposure occur; the answer is when the newborn passes through birth canal (i.e. vaginal canal)? Further exposure occurs from breast milk (largely probiotics of the genera *Lactobacillus*). This raises the important question, what of infants born by C-section? Numerous studies have proven that children born by way of C-section are often at greater risk of health complications than babies born via the birth canal. Atopic diseases like eczema and asthma are more prevalent as are allergies later in life. The bacteria that first colonize the gastrointestinal tract (GIT) are the ones that stay with you for life. This reinforces the need for breast feeding and supplementation when c-sections are performed.

Whereas probiotics are good for our health pathogens are the polar opposite. These microbes infect the host and bring about disease or illness. Examples would include *C. difficile*, *Candida albicans*, *E. coli* (specific strains), *Salmonella*, *H. pylori*, etc. One of the important roles of "friendly" microbes is to keep these bad microbes (pathogens) in check. This is accomplished by a number of clever means. Probiotics can produce lactic acid, hydrogen peroxide & acetic acid. These compounds acidify the intestines keeping harmful bacteria at bay. Bacteriocins are also naturally produced and these act as antibiotics that kill pathogenic microbes. Surfactants are also produced and these compounds keep pathogens from adhering to the intestinal wall.

When too many pathogens are present in the GIT dysbiosis is the net result. There are numerous reasons why someone may suffer from dysbiosis; poor diet & digestion, weakened immune function, chronic constipation, and likely the biggest offender antibiotics. A 2 week course of high dose antibiotics can decimate your normal gut microbes. Symptoms of dysbiosis include fatigue, flatulence, poor complexion, inability to lose weight and constipation/diarrhea to name a few.

Some of the documented benefits of probiotics were mentioned in the first paragraph but there are so many more conditions that can benefit from supplementation; eczema and psoriasis, urogenital infections, crohn's, ulcerative colitis, leaky gut syndrome, lactose intolerance, and even mood and behavior!

With all the benefits that one can derive from probiotics it's once again important to remember that not all probiotics are of the same quality as has been demonstrated in several published studies. Look for a probiotic that provides complete protection (oral, small/large intestine and vaginal support). Look for multi strain formulas, these have been shown to be more protective than single strain formulas. Look for human sourced microbes. Unlike dairy and vegetable strains only human strains can adhere to the lining of the gut. All others are transient and therefore don't provide the same degree of protection. Look for a formula that is potent. Ensure the product uses all the known means of ensuring both potency and stability (cryoprotection, addressing moisture, heat and oxidation). All species should be both acid & bile salt tolerant.

Probiotics should not be seen as a once in a while supplement especially given today's environment and poor dietary habits. Leading authorities have gone on record stating that probiotics should be thought of as daily foundational supplements. This was best said by **Dr. Michael L. McCann** "*Probiotics will be to medicine in the 21st century what antibiotics & microbiology were in the 20th.*"