

Safely Fermenting Food at Home

Extension Food Safety Fact Sheet- September 2015

Fermenting food at home is becoming an increasingly popular food trend, although home food fermentation has been practiced for centuries around the world as a key way to preserve food. However, as with any food preservation or preparation method, it is essential that it is done safely. Many different types of food are often fermented at home, including sourdough bread, yogurt, vegetables (such as sauerkraut and kimchi), kombucha and others. This fact sheet will focus on fermented vegetables and kombucha.

What happens in the fermentation of vegetables?

The natural bacteria present in the vegetables break down the components (natural sugars, etc.) of the vegetable into forms that are easier to digest. Lactic acid normally forms during fermentation, which helps to control any harmful bacteria that might be present.

Basic safe home food fermentation tips

In addition to the same good practices that should be used for any home food preservation projects, these tips should be particularly considered when fermenting vegetables:

- 1) Start with vegetables that have been grown using good food safety practices.
- 2) Wash all surfaces and containers that will be used with hot sudsy water and rinse well with very hot water before use.
- 3) Be certain that fermenting foods contact only food-grade materials (NOT garbage bags or garbage cans, etc.). The fermenting container should not be metal or have scratches or cracks which could harbor harmful bacteria. Some metal containers (other than stainless steel) may react with the acid in the food and give it a strange flavor or color and could leach into the food.
- 4) Start fermentation process within 24 hours of harvesting the vegetables.
- 5) Use the amount of salt called for in the recipe as it is essential to its safety (and texture and flavor). Be sure to use non-iodized salt canning and pickling salt to ensure the proper proportion of salt to vegetable. Do NOT reduce or eliminate the amount of salt as it is essential to the safety of the fermentation process.
- 6) Store fermenting vegetables in a sealed container at 70 to 75°F, which is the optimum temperature for the fermenting microorganisms. Try not to disturb the vegetables during fermentation to reduce the amount of oxygen reaching the vegetables so that mold doesn't develop.
- 7) Remove any scum that forms during fermentation by skimming the scum with a clean, non-metal spoon or cup.
- 8) After fermenting, be sure to handle fermented foods with clean hands and do not let them come into contact with contaminated meat or fish or surfaces that have not been adequately cleaned.
- 9) After fermenting, products must either be stored in the refrigerator or canned properly.

Where can I get tested recipes?

The National Center for Home Food Preservation (NCHFP) (http://nchfp.uga.edu/how/can6a_ferment.html) has tested recipes available for fermented dill pickles and sauerkraut. NCHFP also has additional information available on suitable containers, covers, and weights for fermenting food, as well as causes and possible solutions for problems with fermented pickles.

NOTE: to sell naturally fermented canned foods (such as sauerkraut and kimchi) in Kansas, proper KDA licensing is required. The Missouri Department of Health also requires licensing for selling naturally fermented canned foods. If selling across state lines, FDA regulations apply, which require licensing, but not a scheduled process.

References: [National Center for Home Food Preservation](#), [The University of Wisconsin](#), [Food Safety News](#) (with info from USDA and the University of Idaho)

Kombucha

Kombucha is a fermented sweetened tea which has become more popular recently in the US because of its purported health benefits. However, various research-based resources state that there is not adequate evidence of the health claims of kombucha, including the following from the Mayo Clinic: "In short, there isn't good evidence that kombucha tea delivers on its health claims. At the same time, several cases of harm have been reported. Therefore, the prudent approach is to avoid kombucha tea until more definitive information is available" www.mayoclinic.org/healthy-living/consumer-health/expert-answers/kombucha-tea/faq-20058126

Further, there are food safety concerns with making kombucha at home because of the importance of having a clean environment and strict controls to make the tea. There are currently no tested recipes for the safe manufacture of kombucha. However, if people do want to make this product at home, the University of Wisconsin (<http://fyi.uwex.edu/safepreserving/2014/06/03/safe-preserving-kombucha-what-you-need-to-know/>) outlines some key points to keep in mind for food safety:

- 1) Sanitation is critically important
- 2) Sugar must be added to allow the microorganisms that will cause fermentation to grow
- 3) Do not use herbal teas or other beverage bases, but rather black or green tea as the base
- 4) Use the proper steps of heating, cooling rapidly, and adding the starter
- 5) Ferment the tea at 68-72°F, but do not ferment in the sun or outside where the temperature can rise too high. Cooler temperatures (62-68°F) will also work.

Other references:

Kombucha, the fermented tea: microbiology, composition, and claimed health effects. Greenwalt et al. 2000. *Journal of Food Protection*. 63:976-981.

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