



# PICKLING

## safety, spice and success

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Canning is an art form, combined with both hands-on experience and a scientific knowledge to create a consumable product. Pickling has grown in popularity in recent years, as have important safety guidelines.

Canning is one of the most recently developed methods of food preservation. It was first discovered in the 1790s. The French confectioner, Nicolas Appert, applied the theory of preserving wine to storing foods in a sealed glass bottle. A pressure retort (canner) was patented in 1851 to can foods at temperatures higher than 212°F. It wasn't until the 1920s that home canners linked the importance of heat killing the bacteria *Clostridium botulinum*.

*Clostridium botulinum* in canned and pickled foods may cause botulism, a deadly form of food poisoning. Botulinum spores are present on most fresh food surfaces but only produce deadly toxin in the right environment: moist, low-acid food; temperature between 40° and 120°F; and less than two percent oxygen. One small drop of the toxin is deadly and it cannot be seen or tasted. Botulinum can be destroyed by using proper canning techniques and safe storage procedures.

### **What's the difference between pickling and fermenting?**

This can be confusing. Pickling is typically referred to food preserved in an acidic medium. Pickled foods can also be made by fermenting, the process of allowing the food product to cure, generally in a water and salt mixture, over the span of a few weeks

at a temperature of 70-75°F, then processing in a boiling water bath or storing in the refrigerator. Fermented foods include kimchi and sauerkraut. There are also recipes called “refrigerator pickles” or “quick pickles” that are not processed in a boiling water bath or fermented, but stored in the refrigerator. Refrigerator or quick pickles cannot be stored safely at room temperature.

### **What makes the recipe safe?**

The acidic medium of the pickling recipes and the processing time in a boiling water bath are key aspects to safely preserving pickles and pickled products. Use only vinegar with 5% acidity or greater. Check the acidity level on organic vinegar varieties. White vinegar is preferable for food light in color, such as fruits and cauliflower.

Salt is used in the brine of pickling cucumbers and fermented cucumbers to enhance the flavor and to boost the fermenting process. If a recipe calls for a brine, the cucumbers can be soaked longer to enhance the flavor but it does not reduce the processing time. Use “pickling” or “canning” salt. Other salts contain anti-caking materials and produce a cloudy brine.

Always use a tested recipe from a reliable source and adjust for altitude. MSU Extension can recommend the tested recipes at the National Center for Home Food Preservation and Ball Canning since food scientists have completed rigorous testing on the recipes. Food scientists calculate recipes based on the heat penetration, consistency of the food



product, initial temperature of food, pH value of the food, water activity, and several other factors. Plus, the adjustment for altitude will be listed with either of these sources. Water does not get as hot at higher altitudes, so the length of processing time must be increased. Processing with heat is a key factor in producing safe pickles since it destroys the yeast, molds and bacteria that may cause the product to spoil.

### What about the spices?

The spices enhance the flavor of the acidic medium. Some commercial vendors, such as Mrs. Wages or Ball, have pre-packaged pickling spices for ease to the consumer. Many dill recipes call for dill sprigs, garlic, and/or mustard seeds in the jar while some do not. The amount of spice to use is generally whatever the consumer prefers for flavor. Use fresh, whole spices like garlic cloves, dill, pepper, or mustard seeds for the best quality and flavor. Powdered spices may cause the food or brine to be dark or cloudy.

### What makes pickles crunchy?

An important factor in pickling is the crunch value. There are products to enhance the crispness of cucumbers, but it is important to process immediately after picking. Another trick is to soak the cucumbers in ice water for a couple of hours before processing. Be sure to cut off the blossom end of the cucumber since enzymes may be present there, which can lead to excessive softening of pickles. Allow the pickles about a week to firm up after processing before they are enjoyed.

MSU Extension has a network of Extension agents serving across Montana in each county with various knowledge and expertise. There are also self-help MontGuides, publications developed by faculty members, which focus on home-canning techniques. Hands-on classes are offered across Montana with Family and Consumer Science Extension agents; contact local offices for available food preservation classes or assistance. ■



When Katelyn Andersen sought firsthand knowledge and started pickling on her own, she entered her first jar of pickles in the local fair, pictured below. Start any canning process with fresh ingredients. For aesthetic appeal, select a uniform size when purchasing or gathering cucumbers for pickling. Process cucumbers as soon as possible for more crisp pickles.

