Why Can?

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This past year lots of people explored preserving food by canning for the first time. It's a great way to create a stock of shelf-stable food, and is a fun family activity.

When we preserve food, we have one food safety goal: to keep pathogens from growing in our foods and spoiling it. To do this, we either destroy those pathogens or prevent them from growing.

Canning uses heat to destroy molds, bacteria, and yeasts so they can't grow. The vacuum seal protects the jar's contents so outside contaminants stay outside. This creates a shelf-stable product.

The National Center for Home Food Preservation recommends using the following methods to can high acid foods such as jams, jellies, fruits and pickles: boiling water canning and atmospheric steam canning. Use pressure canning to preserve low acid foods such as vegetables, soups, broths, meats and fish. For details on the processes, visit www.nchfp.uga.edu.

If you do a general internet search for canning jams and jellies and other popular products, you find people using open kettle canning, oven canning, and sealing jars with paraffin wax. These methods don't ensure that all pathogens in the product are destroyed. Let's take a look at each of those methods to make sure you understand what they are.

Open kettle canning is when you fill sterilized jars almost to the top with hot jam or jelly, put the lid on, then turn the jars upside down to force out the air and create a vacuum seal. When we boil jam and jelly in a cooking pot, we still don't reach a high enough temperature to destroy all spoilage and food poisoning organisms. Plus, the air is filled with floating microorganisms trapped in the jar when we add a lid. When we process a jar of jam or jelly in a boiling water or steam canner, there's enough of an increase in the temperature to destroy the pathogens and enough of a pressure increase to force the air out of the jar. When we remove the jars from the canner, the pressure equalizes and the vacuum seal forms over pathogen-free food.

Oven canning is deceptive. You'd think if you can jars in an oven at a temperature of 250° or more you'd kill all of the pathogens, right? But heat moves differently through air than it does through water. You put your hand in a hot oven to take the temperature of meat or to poke a toothpick in a cake, right? But would you put your hand into a pot of boiling water, which is at a lower temperature? Of course not! You don't get the same heat penetration in an oven as a canner.

People used paraffin wax to create a barrier between the jam or jelly and the rest of the world. That was fairly effective as long as the product was stored in a consistently cool place, such as a root cellar. Not many of us have the luxury of a root cellar. Storage temperatures in many houses fluctuate. The wax contracts with cold temperature (letting in pathogens and in my house – ants) and then expands with warm temperatures to trap undesirables in the product beneath the wax. If there was mold under the wax, it was a common practice to scrape it off since it only appeared to be on the surface. We know better now. Molds don't just grow on the surface, they create carcinogenic toxins (mycotoxins) that remain in the food, invisible to the human eye. I spoke with someone recently and she said she remembers helping her

grandmother seal jars with wax. Later her grandma would always have to throw several jars away because of mold under the wax.

Remember – the goal of processing jars is to ensure there are no pathogens in the sealed jar. The only way to do that is to process the jars in a canner.