**Preserving Meat**

**Basic Food Safety**

***Wash Hands Frequently***

* Personal cleanliness is a must. Wash your hands thoroughly and frequently. *E. coli* resides in the human nose and intestines. Wash your hands if you rub your nose, or if you wipe your face or skin.
* Bandage any cuts or burns on hands before handling food, or use disposable gloves.

***Avoid Cross Contamination***

* Rinse all fresh fruits and vegetables well under running water before preparing or eating them. Dry them with a clean cloth or paper towel.
* **ALWAYS** wash your hands, knives, cutting boards, and food preparation surfaces well with soapy water before and after any contact with raw meat, fish, or poultry.
* Use a disinfecting solution of 1½ teaspoon of chlorine bleach to 1 pint of water. Dispense with a spray bottle to disinfect countertops, cutting surfaces, sinks, etc. Let sit one minute then wipe. Make a new solution daily.

***When In Doubt, Throw It Out***

* Never taste food that looks or smells strange to see if it can still be used.
* Most bacteria that cause foodborne illness are odorless, colorless, and tasteless.

**Canning Basics**

***General Pressure Canning Supplies***

* Pressure canner (either dial or weighted gauge, big enough to hold four quart jars on a rack)
* Standard canning jars, rings, self-sealing one-time use lids or reusable lids/seals
* Funnel
* Headspace measurer and De-bubbler
* Jar lifter and tray/towel for hot jars
* Reputable recipe that follows the USDA recommended canning procedures

***Get Ready … Be Prepared!***

* Read the recipe thoroughly before you begin.
* Measure out all ingredients. Gather all of your utensils.
* Wash jars in hot soapy water and rinse well. Check jars for imperfections.
* Place clean jars in the canner and heat the jars.
* Prepare lids and rings according to the manufacturer’s instructions. (Current boxes of lids don’t require pre-heating, older ones did.) *Note: reusable lids follow different preparation and finishing instructions than single-use lids.*
* Do a “dry run” of the recipe to make sure you have all of your materials.

***Canning Processes***

* Use a **pressure canner** for low acid foods: meats, vegetables, and mixtures of high and low acid foods
* Use an **atmospheric steam canner** or a **boiling water canner** for high acid foods: fruits, pickled and fermented products, jams and jellies.

Why two different processes? Low acid foods must be pressure canned because *Clostridium botulinum*, the bacteria that causes botulism, is a spore former. When conditions are not favorable for the organism to grow (high heat, dryness, etc.), the bacterial cell forms a protective structure called a spore. It takes a higher temperature than boiling to destroy the spores: 240ºF. If you do not destroy the spores in low acid foods they will germinate and produce fatal toxins in the food when it is stored on the shelf. High acid foods have enough acidity to destroy spores.

***Raw-Pack vs. Hot-Pack Methods***

Filling jars with raw, unheated food prior to heat processing is called the raw-pack method. The preferred method, filling jars with preheated, hot food prior to heat processing, is called the hot-pack method. Benefits include a tighter pack and, because food expels air when heated, less float.

***Jars & Lids***

Check jars, lids and bands for high quality. Wash jars, lids and bands in hot, soapy water. Rinse well. Heat home canning jars in hot water, not boiling, in the pressure canner until ready for use. Add water to the jars to prevent flotation, pour water into canner before filling jars. Bring to a simmer over medium heat. Keep jars hot until ready for use. Keeping jars hot prevents them from breaking when hot food is added. Leave lids and bands at room temperature for easy handling.

***Headspace***

Headspace is the completely empty space left in the jar underneath the lid and above the food. Headspace allows for food to expand during canning without being forced out from under the lid during processing. Recommended amounts also allow for good vacuums to be formed for holding lids in place and good food quality to be maintained during storage.

**Pressure Canning Essentials**

***Pressure Canning Equipment***

Pressure canner with the following features:

* + Flat rack in bottom
  + Pressure regulator or indicator
    - Dial or weighted gauge
    - Vent pipe for pressurizing
  + Safety valves or overpressure plugs
* Safety locks when pressurized
* Flexible gasket/sealing ring in lid or metal to metal seal

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| Altitude Chart | |
| **Altitude in feet** | **Required Pressure** |
| Sea Level – 2,000 ft. | 11 lb. |
| 2,001 – 4,000 ft. | 12 lb. |
| 4,001 – 6,000 ft. | 13 lb. |
| 6,001 – 8,000 ft. | 14 lb. |
| 8,001 – 10,000 ft. | 15 lb. |

* Optional: jar stacking rack

Please note that a pressure cooker is NOT a pressure canner, but a pressure canner can be used as a pressure cooker. A pressure cooker must be able to hold **4 quart** jars on a rack to be considered a pressure canner.

***Adjusting for Altitude: Pressure Canner***

Processing times for all recipes are at sea level. At sea level to 2,000 feet, 11 pounds of steam pressure will produce 240°F. Above 2,000 feet you must increase the steam pressure to reach this temperature. At altitudes above sea level adjust the pressure according to the altitude chart.

***Using a Pressure Canner***

1. Clean lid gaskets and other parts according to the manufacturer’s directions; make sure all vent pipes are clear.
2. Put 2 to 3 inches hot water (140ºF for a raw pack, 180ºF for a hot pack) into the canner.
3. Place filled jars on the jar rack in the canner, using a jar lifter.
4. Fasten the canner lid securely. Leave the weight off the vent pipe or open the petcock.
5. Turn the heat setting to high; heat until the water boils and steam flows freely in a funnel-shape from the open vent pipe or petcock. While maintaining the high heat setting, let the steam flow (exhaust) **continuously for 10 minutes**.
6. Place the weight on the vent pipe, or close the petcock.
7. Start timing the process when the pressure reading on the dial gauge indicates that the recommended pressure has been reached, or, for canners without dial gauges, when the weighted gauge begins to jiggle or rock as the manufacturer describes.
8. Regulate the heat under the canner to maintain a steady pressure at, or slightly above, the correct gauge pressure. **IMPORTANT:** If at any time pressure goes below the recommended amount, bring the canner back to pressure and begin the timing of the process over, from the beginning using the total original process time. This is important for the safety of the food.
9. When the timed process is completed, turn off the heat, remove the canner from the heat (electric burner) if possible, and let the canner cool down naturally. Do not force cool the canner. Pints take about 30 minutes to cool; about 45 minutes for quarts.
10. After the canner is completely depressurized, remove the weight from the vent pipe or open the petcock. **Wait 10** minutes; then unfasten the lid away from you to remove.
11. Remove the jars from the canner by lifting them upright and placing them on a rack or folded towel away from drafts.
12. Do not retighten the rings with single-use lids. Leave the ring bands on the jars until they have cooled thoroughly (approximately 24 hours). Do not try to dump or wipe up any water on the lids.
13. Dry the canner, lid and gasket. Take off removable petcocks and safety valves; wash and dry thoroughly. Follow maintenance and storage instructions that come from your canner manufacturer.

***Removing and Cooling Jars***

Be careful when moving and lifting filled jars. Do not tilt. Do not be tempted to try to pour off the water on the top when lifting them out of the canner. The water on top of the hot jars will evaporate very rapidly. If the jars are tilted, food may become lodged between the glass rim and the sealing compound preventing proper sealing.

* After cooling the jars for 12 to 24 hours, remove the screw bands.
* Check each jar for a seal; press the middle of the single use lid with your finger. If the lid springs up when you release your finger, the lid is unsealed.
* Clean the jars with a damp cloth. Thoroughly dry ring bands may be replaced on the jars, if desired.
* Label the jars with the product name, date, processing method (PC = pressure canner), and store in a cool, dark, dry area.
* If a jar did not seal, check the jar for flaws. Refrigerate and use the product within a few days, freeze the jar, or reprocess it within 24 hours using a new lid and if necessary, a new jar. Process by the method originally advised for the full length of time.

***Resources***

* National Center for Home Food Preservation (<http://nchfp.uga.edu/>)
* UC Master Food Preserver Program publication library (<http://mfp.ucanr.edu>)

***Canning Recipes***

**Meat Stock** *(including poultry)*

1. Place large carcass bones (with meat removed) in a large stockpot. Add enough water to cover bones.
2. Cover pot and simmer 30 to 45 minutes or until any remaining tidbits of meat on bones easily fall off.
3. Remove bones, cool broth and discard excess fat.
4. If desired, remove any tiny amount of meat trimmings still clinging to bones and add back to the broth.
5. Reheat broth to boiling.
6. Ladle hot stock into hot jars leaving 1-inch headspace.
7. Wipe rim with a paper towel moistened with vinegar. Place lids and rings on jars, tighten rings finger tight.
8. Process in a pressure canner: pints 20 minutes, quarts 25 minutes
   * Weighted gauge: 10 lbs at 0-1000’, 15 lbs above 1000’
   * Dial gauge: 11 lbs at 0-2000’, 12 lbs at 2001-4000’, 13 lbs at 4001-6000’, 14 lbs at 6001-8000’

*Source: USDA Complete Guide to Home Canning, 2015*

**Ground Beef**

1. Sauté ground meat. Remove excess fat.
2. Fill jars with pieces. If desired, add 2 teaspoons of salt per quart to the jars.
3. Add either boiling meat broth, tomato juice, or water, leaving 1-inch headspace.
4. Wipe rim with white vinegar. Place lids and rings on jars, tighten rings finger tight.
5. Process in a pressure canner: pints 75 minutes, quarts 90 minutes.
   * Weighted gauge: 10 lbs at 0-1000’, 15 lbs above 1000’
   * Dial gauge: 11 lbs at 0-2000’, 12 lbs at 2001-4000’, 13 lbs at 4001-6000’, 14 lbs at 6001-8000’

*Source: USDA Complete Guide to Home Canning, 2015*

**Mincemeat Pie Filling**

**Yield:** About 7 quarts

2 cups finely chopped suet

4 lbs ground beef (or 4 lbs ground venison and 1 lb sausage)

5 qts chopped apples

2 lbs dark seedless raisins

1 lb white raisins

2 qts apple cider

2 tbsp ground cinnamon

2 tsp ground nutmeg

5 cups sugar

2 tbsp salt

1. Cook suet and meat in water to avoid browning. Peel, core, and quarter apples.
2. Put meat, suet, and apples through food grinder using a medium blade.
3. Combine all ingredients in a large saucepan, and simmer 1 hour or until slightly thickened. Stir often.
4. Fill hot jars with mixture without delay, leaving 1-inch headspace.
5. Wipe rim with a paper towel moistened with vinegar. Remove bubbles.
6. Place lids and rings on jars, tightening rings finger tight.
7. Process quart jars in a pressure canner for 90 minutes.
   * Weighted gauge: 10 lbs at 0-1000’, 15 lbs above 1000’
   * Dial gauge: 11 lbs at 0-2000’, 12 lbs at 2001-4000’, 13 lbs at 4001-6000’, 14 lbs at 6001-8000’

*Source: USDA Complete Guide to Home Canning, 2015*

**Chili con Carne**

**Yield:** 9 pints

3 cups dried pinto or red kidney beans

5-1/2 cups water

5 tsp salt (separated)

3 lbs ground beef

1-1/2 cups chopped onion

1 cup chopped peppers of your choice (optional)

1 tsp black pepper

3 to 6 tbsp chili powder

2 qts crushed or whole tomatoes

1. Wash beans thoroughly and place them in a 2 quart saucepan. Add cold water to a level of 2 to 3 inches above the beans and soak 12 to 18 hours. Drain and discard water.
2. Combine beans with 5-1/2 cups of fresh water, and 2 teaspoons salt. Bring to a boil. Reduce heat simmer 30 minutes. Drain and discard water. Brown ground beef, chopped onions, and peppers, if desired, in a skillet. Drain off fat and add 3 teaspoons salt, pepper, chili powder, tomatoes, and drained cooked beans. Simmer 5 minutes. **Caution: Do not thicken.** Fill jars, leaving 1-inch headspace.
3. Wipe rim with a paper towel moistened with vinegar. Remove bubbles.
4. Place lids and rings on jars, tightening rings finger tight.
5. Process in a pressure canner: pints 75 minutes, quarts 90 minutes.
   * Weighted gauge: 10 lbs at 0-1000’, 15 lbs above 1000’
   * Dial gauge: 11 lbs at 0-2000’, 12 lbs at 2001-4000’, 13 lbs at 4001-6000’, 14 lbs at 6001-8000’

*Source: USDA Complete Guide to Home Canning, 2015*

**Chicken**

1. Remove excess fat.
2. Cut the chicken into suitable size parts for fitting into your jars leaving the required headspace. Can with or without bones. The hot pack is preferred for best liquid cover and quality during storage. Natural poultry fat and juices are usually not enough to cover the meat in raw packs.

* **Hot pack** – Boil, steam or bake meat until about two-thirds done. *(If cooked poultry needs to reach an internal temperature of 160°F, two-thirds would be an internal temperature of 110°F.)* Add 1 teaspoon salt per quart to the jar, if desired. Fill jars with pieces and hot broth, leaving **1-1/4** inch headspace. Remove air bubbles.
* **Raw pack** – Add 1 teaspoon salt per quart, if desired. Fill jars loosely with raw meat pieces, leaving **1-1/4** inch headspace. Do not add liquid.

1. Wipe rim with white vinegar. Place lids and rings on jars, tighten rings finger tight.
2. Process in a pressure canner:
   * **Without bones:** pints 75 minutes, quarts 90 minutes  
     **With bones:** pints 65 minutes, quarts 75 minutes
   * Weighted gauge: 10 lbs at 0-1000’, 15 lbs above 1000’
   * Dial gauge: 11 lbs at 0-2000’, 12 lbs at 2001-4000’, 13 lbs at 4001-6000’, 14 lbs at 6001-8000’

*Source: USDA Complete Guide to Home Canning, 2015*

**Beef Stew with Vegetables** Yield: About 14 pints or 7 quarts

4 to 5 pounds beef stew meat

1 tablespoon oil

12 cups peeled cubed potatoes

8 cups sliced peeled carrots

3 cups chopped celery

3 cups chopped onions

4½ teaspoons salt

1 teaspoon dried thyme

½ teaspoon pepper

1. Cut meat into 1 1/2-inch cubes; brown in oil.
2. In a large kettle, combine meat, vegetables, and seasonings. Cover with boiling water. Bring to a boil.
3. Ladle into hot jars, leaving 1-inch headspace.
4. Wipe rim with a paper towel moistened with vinegar. Remove bubbles.
5. Place lids and rings on jars, tightening rings finger tight.
6. Process in a pressure canner: pints 75 minutes, quarts 90 minutes
   * Weighted gauge: 10 lbs at 0-1000’, 15 lbs above 1000’
   * Dial gauge: 11 lbs at 0-2000’, 12 lbs at 2001-4000’, 13 lbs at 4001-6000’, 14 lbs at 6001-8000’,   
     15 lbs at 8,001-10,000’

*Source: Ball Complete Book of Home Preserving, 2020*

**Dried Ground Beef**

1. Break raw ground beef into large chunks the size of mini-meatballs.
2. Using a meat thermometer, stop cooking when temperature reaches 160 degrees F and most liquid has evaporated.
3. Strain excess liquid. Using paper towels, blot out as much moisture as possible.
4. Spread the cooked ground beef on dehydrator trays using the inserts to make leathers.
5. Break up the clumps into crumbles. Spread out the crumbled meat on the tray so there will be room for plenty of air circulation.
6. Dry at 155°F for 6 to 8 hours until meat is very firm and dry throughout.
7. Cool completely before putting it into an airtight container.

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