

Preservation of Vegetables by Salting and Pickling



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Preservation of Vegetables by Salting and Pickling

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Pickling is one of the oldest known methods of food preservation. The preserving agents in pickling are salt or vinegar, or a combination of these. For flavor, spices may or may not be added. Pickling should only supplement other methods of preservation such as canning, freezing, and drying. Preservation of vegetables with small amounts of salt is recommended especially for families who do not have pressure cookers, driers, or adequate containers for canning or drying.

This bulletin is written in two parts--the first part is on **Salting** and the second is on **Pickles and Relishes**.

SALTING

There are four methods of preservation by salting: two using dry salt and two using a salt brine.

Method I. When a small amount of dry salt is used, fermentation takes place. This usually is called **krauting** and it takes 2 or 3 weeks for this process. Method I is the best method of preservation by salt. Cabbage, turnips, lettuce, beets, and string beans may be krauted. Sauerkraut is an economical and good source of vitamin C. The lactic acid and fiber content of kraut aid in digestion and removal of waste from the body. Since a

small amount of salt is used it does not have to be soaked out. Therefore, the minerals and most of the vitamins found in the fresh vegetables are in the kraut.

Method II. When a large amount of dry salt is used, fermentation does not take place. The product is ready to seal and store on the second day. This method is recommended only to those who have quantities of vegetables and who do not have time, equipment or material to preserve them by better methods. Salting with a large amount of dry salt would be classed as the least desirable method of salting because a long soaking is necessary to remove the salt. When the salt is soaked out, some of the minerals and most of the water soluble vitamins are removed also.

Method III. When a weak salt brine solution is used, a small amount of vinegar should be added, also. A rapid fermentation takes place and the vegetables are pickled in about two weeks. This method is next to krauting in being the most desirable method of salting because there is not an excess of salt to soak out. Vegetables brined by this method may be served as pickles or relishes or may be cooked and served buttered, creamed, or scalloped.

Method IV. When a strong salt solution is used the fermentation is slower and five to six weeks are required to complete the process. This method is good for cucumbers or other vegetables that are to be made into pickles. The long brining process makes pickles crisp in texture, more

intense and uniform in color, and good in flavor. One disadvantage is that the vegetables have to be desalted before they are made into pickles or cooked for eating. As in method II, when the salt is soaked out, some of the food nutrients are lost.

Materials Needed in Salting Vegetables

Equipment and Containers:

1. Use stone jars, kegs, or large glass jars for brining foods. Do not use metal containers under any condition. Avoid using crocks or kegs which previously contained lard or meat. Be sure that the container has been cleaned and scalded.
2. Use a plate or hardwood board which fits inside the jar or keg to keep the product under brine. Use any clean board which does not have an off-flavor.
3. Put the plate in a square of cheesecloth or other thin cloth to help remove scum and keep the food under brine. Wrapping the plate in a cloth makes it easier to lift out.
4. Use a fruit jar filled with water or wet sand to hold the plate down. Metal lid should not touch brine. Do not use bricks, rocks, or metal weights because they may effect color and fermentation.
5. Cover the container with lid or clean cup towel to protect the food from insects, dust, and excess air. This also reduces evaporation of the liquid.
6. Kitchen scales, measuring cup, and spoons help in preparing brine.
7. Use a kraut shredder, a saw cutter, or a sharp stainless steel knife for making kraut.

Salt:

Use dairy or cheese salt, if possible. This is a pure salt which dissolves quickly. If this is not available, use any coarse salt which does not have ingredients added to prevent lumping because these added ingredients might affect color and fermentation of vegetables.

Water:

Soft water is best for normal fermentation. If the water is hard, boil it 20 or 30 minutes and let it stand about 12 hours in a covered enamel kettle. Remove the scum, strain, and discard sediment. Water which contains iron may cause vegetables to turn dark.

METHOD I
Krauting—A Small Amount of Dry Salt
With Fermentation

Read page 4 for information about salt, equipment and materials for brining.

Steps in Making

Cabbage Kraut:

1. Flat Dutch and Ballhead cabbage are good varieties for kraut. Select mature, sound, hard heads. Green cabbage has more vitamin A but white cabbage makes a light colored kraut. Usually 1½ pounds of cabbage make 1 pint of kraut.
2. Remove outer leaves and wash.
3. Quarter large heads, core and shred.
4. Weigh cabbage. Use 5 pounds at a time. A large, firm head about 7 or 8 inches in diameter weighs about 2½ pounds. Use 2 ounces salt (6 tablespoons of dairy salt or 4 tablespoons of table salt) for each 5 pounds of cabbage. Too much salt prevents fermentation, and not enough causes soft kraut or spoilage.
5. Shred the cabbage directly into the jar. Contact with air reduces the amount of vitamin C. A two gallon jar will hold about 12 pounds of shredded cabbage.
6. Mix salt thoroughly with shredded cabbage. Uneven distribution may cause red streaks in

kraut. If more than 5 pounds are to be used in one crock, continue mixing salt with cabbage as it is shredded. Do not bruise or beat cabbage in mixing.

7. Cover the shredded cabbage with the outer leaves, which have been trimmed and washed. This helps hold shredded cabbage under brine.
8. Wrap **Cheesecloth** around the plate or board which fits in the crock and place on top of cabbage.
9. Place weight on the board.
10. Cover the jar with a lid or clean cup towel.

Care During Fermentation:

1. Keep shredded cabbage under brine. If the cabbage is dry, and sufficient brine does not form to cover in a day or two, add brine. Use 1 teaspoon salt to a cup of soft water.
2. A scum will form on top in a day or so. Remove daily or at least every other day, because the scum destroys the acidity and causes soft kraut or spoilage. Wash and scald board or plate when the scum is removed. Have two cloths, while one is on the board, the other may be washed and scalded.

3. Temperatures best for curing kraut are between 70 and 85 degrees Fahrenheit. Too low temperatures retard fermentation and too high temperatures cause ropy brine and soft or slimy kraut.
4. Ten days to three weeks are required for fermentation. Well cured cabbage should be a light straw or golden color. It should be acid in flavor, translucent, crisp, firm but not tough. It should never be bitter, rancid, mushy, or streaked in color.

Storage of Kraut:

1. To can, pack the kraut into glass jars or plain tin cans. Place on a rack in a deep kettle of warm water. The water should be about 2 inches below the rim of the jars. Cover the water bath kettle with a lid. Steam 10 minutes. Start counting time when steam accumulates above the jar and the water begins to boil. Take jars out and press food down to let air bubbles out. Seal immediately and return to the kettle. Add enough hot water to cover the jars. Process 15 minutes. Begin counting time when water begins to boil. Cool. Store in a cool, dry, dark place.
2. To keep kraut in the container in which it

was fermented, pour a layer of hot paraffin over the surface of the brine. When the paraffin seal is broken, the kraut should be used in a short time, canned, or the paraffin remelted and poured over the kraut to seal it again. Beeswax may be used instead of paraffin. Also, cooking oil poured over the brine will keep out the air.

Lettuce Kraut:

Lettuce may be substituted for cabbage in making kraut. It has a mild flavor, and is an attractive product. Use only firm fresh heads, and make it exactly as cabbage kraut is made.

Sauerruben (or Turnip Kraut)

Sauerruben is made with shredded turnips fermented by the same method as cabbage kraut. Fall varieties of turnips are better for sauer-ruben than spring ones. Purple Top is the best variety. Use medium sized turnips. Wash in cold water. Remove top and root and any blemishes. Shred unpeeled turnips and mix with salt. Follow other directions for care and storage as for kraut.

String Beans and Unpeeled

Beets may be shredded and made into kraut the same as cabbage. Since these vegetables do not have much water, added brine may be needed. Use 1 tablespoon salt per cup of water.

METHOD II

A Large Amount of Dry Salt Without Fermentation

Read page 4 for information about salt and containers.

String Beans—Select young tender beans. Remove tips and strings, if any, and wash thoroughly. Cut into short pieces. Weigh, and allow 1 pound of salt for every 7 pounds of beans. Put alternate layers of salt and beans into a crock, wooden or glass container, beginning and ending with a layer of salt. Cover and place heavy weight on the vegetables. In 12 to 24 hours there should be enough brine formed from the vegetable juices to cover the products. If evaporation is too rapid or if enough brine does not form to cover the vegetable, add brine made in the proportion of 2 tablespoons of salt to 1 cup of water, preferably soft water. Next day remove the cover and weight. If a crock is used cover the surface with a layer of hot paraffin to prevent evaporation. If a fruit jar is used, it is not necessary to use paraffin but the jar should be sealed.

Corn—Select prime roasting ears. Trim off defective parts and remove all silk. A brush aids in removing the silk. Plunge into boiling water and cook 7 to 10 minutes or until the milk is set. Dip in cold water to cool. Cut corn from cobs. Weigh and pack in salt as for green beans.

Greens, including spinach,

chard, beet tops, dandelion and all edible greens. Gather while young and tender, or at the right stage for eating. Pick them early in the morning while they are crisp. Look them over carefully and remove any woody stems or bruised leaves. Wash greens several times, each time in a large volume of water. Be sure every trace of sand or grit is removed. Shake and drain as dry as possible, but do not squeeze and bruise the leaves. Weigh and pack in salt as for string beans.

Shelled green peas and beans—Shell peas or beans and prepare the same as for string beans.

How to Freshen or Desalt the Products for Cooking or Pickling — A simple way to freshen or desalt vegetables is to suspend them loosely in a cheesecloth bag or colander in the top of a large container of water. The salt dissolves and is carried away by the large volume of water more rapidly than if the vegetables are placed in the bottom of a pan of water. Changing the water frequently speeds up the freshening process.

Use of Desalted Products—After removing excess salt from the product, cook the vegetables and prepare for the table in any desired way—buttered, creamed, or scalloped.

METHOD III

Brining in a Weak Salt Solution Plus Vinegar

Preparation of Vegetables Suitable for This Method

1. Select fresh, tender, firm vegetables.
2. Beets, cucumbers, cauliflower, carrots, and tomatoes should be washed and trimmed but may be brined without peeling or heating. Cauliflower should be separated in smaller flowerets.
3. Turnip greens, mustard greens, beet tops, and kale should be washed carefully. All tough or soft leaves should be discarded.
4. Snap beans should be washed, trimmed, and left whole or cut into pieces. They should be blanched five minutes by steaming or boiling water, then cooled immediately in cold water.

Steps in Brining in a weak salt solution plus vinegar:

1. Read page 4 for information on salt, water and equipment for brining.
2. Pack prepared vegetables into containers.
3. Cover vegetable with brine made as follows:
 - $\frac{1}{2}$ pound salt (about $\frac{1}{3}$ cup dairy salt or $\frac{3}{4}$ cup table salt)
 - 1 gallon of soft water.
 - 1 cup of vinegar (4 to 5% acidity)

The amount of brine needed should be about one half the volume of vegetable material packed. For example if a 10 gallon crock of material has been packed it will take about 5 gallons of brine. Brine should cover vegetables 2 to 4 inches.

4. Use a plate with cheesecloth to hold vegetables under brine.
5. Place weight on plate.
6. Use a loose fitting lid or thick cloth over the top of the containers.
7. Store in cool place (75 degrees Fahrenheit is good and the temperature should not be above 85 to 90 degrees for best results). With this method no additional salt is required. Scum will form in several days.
8. Remove scum daily if the temperature is warm, and every other day if the temperature is cool. If the scum is not removed, the vegetable will get soft, turn sour and may spoil. The cheesecloth should be washed each time the scum is removed. Have two cloths; wash and scald one while the other is in use.
9. The fermentation period is about two to three weeks. The food will be

even in color and will have a decided acid taste but will be low in salt content.

10. **To store**, follow directions on page 6 for canning kraut.

Use of Brined Vegetables—

Cucumbers, beets, green tomatoes or carrots without soaking may be served as pickles or relishes. Beans, cauliflower, greens, or carrots preserved by weak brine do

not require desalting before they are cooked. Rinse them well, cover with fresh water and cook in kettle without lid. Even though some of the acid flavor is boiled off during cooking, the final product may be noticeably acid. If this is undesirable, soak in 1 or 2 changes of water before cooking. This procedure reduces the food value and should be avoided or reduced to a minimum.

METHOD IV

Brining in a Strong Salt Solution

Preparation of Vegetables

Select fresh tender firm vegetables. Wash carefully.

Cucumbers--Select even sizes. Leave whole with $\frac{1}{8}$ inch stem.

Snap Beans--string or snap, or if small, leave whole. Blanch or steam 10 minutes. Cool by dipping in cold water.

Okra--leave short stem. Select even, small to medium size. Leave whole.

Carrots--clean and scrape before putting into brine. Leave small carrots whole. If large, cut lengthwise.

Beets--cook until skin slips. Cool, peel and leave whole.

Green Tomatoes--use small whole, perfect tomatoes.

Corn on Cob--steam about 6 to 10 minutes, then dip in cold water to cool.

Peppers--may be left whole.

Asparagus--is left whole but the woody portion is cut off.

Cauliflower--heads should be separated into smaller divisions after the leaves have been removed.

Onions--should be small to medium in size and the outer skin taken off.

Steps in Brining with a strong salt solution:

1. Read page 4 about containers, salt and water.
2. After preparing the above vegetables, weigh to determine how much brine to prepare.
3. Make brine ($1\frac{1}{2}$ gallons is sufficient for about 10 pounds of vegetables)

For most vegetables dissolve:

$1\frac{1}{4}$ pound salt ($3\frac{1}{2}$ cups dairy salt or $1\frac{7}{8}$ cups table salt)

1½ gallons water

For cauliflower and peppers:

1½ pounds salt (about
4⅛ cups dairy salt or
2¼ cups table salt)
1½ gallons water

For onions and asparagus:

2¼ pounds salt (about
6¼ cups dairy salt or
3⅔ cups table salt)
1½ gallons water

4. Pack vegetables into containers.
5. Cover with brine.
6. Wrap cheesecloth around the plate or hardwood board and place on top. Hold vegetables under brine at all times.
7. Place a weight on the board or plate.
8. Put a cover or clean cloth over top of container.

Care During Fermentation

1. Next day add 1 pound of salt (about 2¾ cup dairy salt or 1½ cup table salt) for each 10 pounds of vegetables. This is necessary to maintain the strength of the brine.
2. **Each week** for 5 weeks add ¼ pound salt (about ⅔ cup dairy salt or ⅓ cup of table salt) for each 10 pounds of vegetables. Place salt on the cover to dissolve. Or, take out some brine, dissolve salt in it, and pour back into jar. If the salt is not evenly distributed it causes vegetables to

get soft, turn pink, and sometimes spoil.

3. **Important** — Remove scum that forms every day or so. If left on, it affects the fermentation, make vegetables soft, and causes spoilage.
4. The **temperature** best for brining is between 70 and 85 degrees Fahrenheit. Higher temperatures may cause spoilage and lower temperatures may retard the fermentation.
5. Keep vegetables under brine at all times.

Storage Is Important

Brined vegetables may be kept in the containers in which they are fermented. After fermentation stops, (at the end of the six-weeks period) pour hot paraffin, beeswax or cooking oil over the surface. Paraffin is easiest to use, and can be melted, strained, and used again.

If glass containers are available the vegetables can be packed into the jars, covered with strained brine in which they were fermented, and sealed to keep the air out. If brine is very cloudy, fresh brine may be made by the same proportion as the original brine.

Use of Vegetables

When ready to use the vegetables, soak out the salt as described on page 7.

To desalt onions and cauliflower simmer them in clear water 20 minutes and then al-

low them to cool in the water. To make a whiter product they may be heated in a solution made with $\frac{1}{2}$ teaspoon sodium sulphite per gallon of water. Wash thoroughly after this solution has been used.

Recipes for making pickles out of these products are given on page 12.

Desalted vegetables may be served as buttered, creamed or scalloped.

PICKLES AND RELISHES

Pickles and relishes in small quantity help to create and stimulate appetite and add variety in the diet. Pickles brined in weak salt solution plus a small amount of vinegar retain their minerals and most of the vitamins. Quick pickles and relishes also retain the minerals but when they are not brined, they do not have as desirable a texture, color or flavor. Pickles brined in a strong solution over a long period of time keep well and have an excellent color, texture and flavor, but when the excess salt is removed some of the minerals and vitamin are removed also.

Materials for Pickling

Vinegar for Pickles

Fresh fruit vinegars are usually preferred in making pickles. A 4-6% acetic acid (40-60 grain) vinegar should be used. Labels on good vinegars usually show the percent of acid present. If too high a percent is present, the pickles become dark, soft or shriveled. Cheaper vinegars bought in bulk are usually higher in acid content and should be diluted. Most druggists can test the per cent easily so that vinegar can be diluted properly.

Spices for Pickles

Spices may or may not be used according to the taste of individual families.

Spices should be used in small amounts. They should not conceal the flavor of the fruit or vegetable. If spices are tied in a thin cloth bag, they may be removed when pickles are sufficiently flavored. Loose spices make pickles dark. A bitter flavor is developed if spices are boiled with vinegar for a long time. Long boiling also spoils the flavor of vinegar.

Try to buy sterilized or vacuum packed spices. Bacteria found on unsterilized spices may cause spoilage of pickles. Spices packed in tight tin containers usually have fewer bacteria and are stronger in flavor than those in loose boxes. Spices lose strength in storage so new spices should be used each year.

Horse radish root added to pickles helps to prevent mold. It should not be boiled. When used in pickles which are to be heated, it is added after they are removed from the fire.

Grape leaves added to cucumbers impart a bright green color and characteristic flavor. The color may also be bright-

ened by pouring cold vinegar over the cucumbers and heating gradually to boiling.

Alum Should Not Be Used

Alum makes pickles crisp but since it is an astringent which tends to contract the tissues of the body, it should not be used in any great amount. If proper methods are followed in brining pickles, the salt and acids in the brine

will produce the desired firmness without the addition of alum.

Containers for Pickles

Glass jars with glass lids are most desirable for use in canning pickles and relishes. The vinegar or salt solution may corrode metal lids and when a zinc lid is badly corroded, there is danger of zinc poisoning.

PICKLES MADE FROM FERMENTED OR BRINED VEGETABLES

Sour Pickles

Freshen or desalt brined vegetables as described on page 7. Pack vegetables in hot sterilized jars. Heat vinegar to simmering and pour over vegetable. Seal immediately and store in a cool, dark dry place.

If spices are desired, they may be placed in a bag and heated with the vinegar. Remove the bag when the vinegar is poured over the vegetables. Three tablespoons of spice are sufficient to flavor a gallon of pickles. The standard spiced vinegar syrup on page 13 is very suitable for pouring over brined vegetables such as cucumbers, onions, carrots, beets, cauliflower and snap beans.

If relishes or mixed pickles are desired, a combination of several of these vegetables may be ground, chopped or left whole and packed in the container before the hot vinegar solution is added.

Sweet Cucumber Pickles

1 gallon sour cucumber pick-

les (use the sour pickle recipe above. Omit spices)

9 cups sugar

3 tablespoons mixed spices

6 to 8 cloves

If pickles are very small, they may be left whole, but if they are larger than $\frac{3}{4}$ inch in diameter and $2\frac{1}{2}$ inches long, they should be sliced into rings. Place the spice in a bag and put it in the bottom of the crock jar. Put the pickles on top. Sprinkle 3 cups of sugar on top of pickles. Place cover on crock and let set for 12 hours. Stir gently, add 3 cups of sugar and let set 12 more hours. Add the last 3 cups of sugar. Stir once or twice each day for 10 days. Remove spice bag. Pack pickles in hot sterilized jars. Strain the liquid and heat to boiling. Pour over the pickles. Seal air tight and store in a cool place.

Dill Pickles

Carrots, cucumbers or green tomatoes make good dill pickles. Add 2 tablespoons of pickle spice and 2 tablespoons of sugar to the brine under Step

3, Method III on page 8. As the cucumbers or other vegetables are packed in the container, one layer of dill may be put on bottom, then one layer of vegetables, and so

on, until all vegetables are packed. Follow directions for care and storing as described in Method III--Brining in Weak Salt Solution Plus Vinegar referred to above.

PICKLES AND RELISHES MADE FROM FRESH VEGETABLES THAT HAVE NOT BEEN FERMENTED OR BRINED

Standard Recipe for Spiced Vinegar

3 cups vinegar
1 cup water
1½ cups sugar
1 tablespoon mustard seed
2 hot red peppers (if desired)
1 or 2 tablespoons mixed spices

Mix above ingredients and bring to the boiling point. Pour while boiling hot over the vegetables. More or less sugar may be added as desired. Part honey or corn syrup could be substituted for sugar.

This spiced vinegar may be used over brined vegetables which have been freshened or it may be used in the next three recipes for pickled beets, cucumbers and carrots. This amount will cover about 4 quarts of well packed vegetables.

Pickled Beets

Wash beets. Leave root and about 1 inch stems. Cook in boiling water for 15 to 20 minutes until skins slip. To test drop one in cold water and press the skin to see if it slips easily. Dip the beets in cold water and slip the skin, root and stem off. Pack beets

while still warm in hot jars. The small beets may be left whole and the large beets quartered. Pour the hot spiced vinegar (recipe above) over the beets. Seal immediately and store in a cool, dark place.

Unbrined Cucumber Pickles

Pack clean small cucumbers in hot jars. If cucumbers are large, they should be sliced. Pour over vegetable boiling hot spiced vinegar (recipe on this page). Seal immediately and store in a cool place. Cucumber pickles made by this recipe will not have as good a color, flavor or crispness as brined cucumber pickles.

Carrot Pickles

Wash carrots and leave about 1 inch stem on them. Cook in boiling water 5 to 10 minutes until skin slips. Immerse in cold water, slip skins and stems off. Pack whole or in lengthwise slices in hot jars. Pour over the vegetables, the hot spiced vinegar (recipe on this page). Seal and store in cool place.

Pickled Onions

1 gallon small white onions
Make brine of:
1½ cups salt and
2 quarts boiling water

Chili Sauce

5 quarts peeled, cored and chopped ripe tomatoes
2 cups chopped sweet red pepper
2 cups chopped green pepper
1½ cups chopped onions
3 tablespoons salt
1 cup sugar
3 cups vinegar
1 teaspoon cloves
1 teaspoon allspice
1 teaspoon cinnamon

Combine the chopped vegetables, the salt, and sugar, and simmer the mixture until it begins to thicken. Then add the vinegar and spices and cook the mixture down until it becomes a thick sauce. Pour into hot sterilized bottles or jars and seal air-tight. This recipe yields about 3 quarts of sauce.

Tomato Catsup

Select good tomatoes, cutting out all green and hard places. Remove skin and seed and press through fine sieve (as for tomato juice).

5 lbs. tomato puree
6 tablespoons salt
1¼ cup sugar

1 cup vinegar (strong 5%)
Spices tied in ample size bag
1 tablespoon celery seed
⅓ tablespoon cinnamon bark
⅓ tablespoon cayenne pepper
⅓ teaspoon mustard seed
½ teaspoon paprika
1 slice chopped onion

Strain puree of tomato through cloth, separating yellow liquid from red tomato solids. Boil liquid rapidly to one-half its volume. Add tomato solids and place spice bag into the boiling catsup. Boil rapidly 30 to 40 minutes. Stir to prevent sticking or scorching.

Add vinegar, salt and sugar 5 minutes before the end of the cooking period. Boil rapidly and stir carefully. Remove spice bag. Seal at once into hot sterilized bottles or jars.

NOTE: Spices can be added or omitted to meet individual taste. Allspice, cloves, and black pepper impart a dark color.