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## Short Communication

# Pickling Process Preserving Foods by traditional fermented methods

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### ABSTRACT

Pickling is the process of preserving foods in brine or vinegar or a combination of the two. The method using both salt and vinegar calls for a short brining period before the vinegar is added

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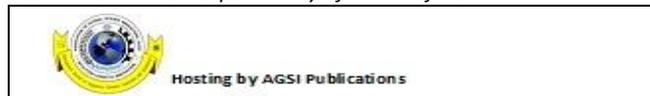
Pickles are one of the important consumer products. Pickles are of different varieties in veg and nonveg. The important pickles in India are mango, drumstick, brinjal, gongura, mirchi pickle, chicken pickle, mutton pickle, fish pickle and prawn pickle. Pickles are one of the earliest commercial products appeared in the market. In India the people are consuming the various pickles in daily diet. Pickles are consumed along with staple food such as rice, chapathi, bread, samosa, upma, etc. Fully matured fresh vegetables, fruits, are washed and cut into required sizes and add salt, mirch, oil and other ingredients in required quantity. The same process also for nonveg pickles. The durability of the nonveg pickles is very short. The nonveg pickle to be consumed within 3 months after preparation of the pickle. Pickling is the process by which fresh fruits and vegetables are preserved and with the addition of salt, chilly and spices, a tasty preparation known as "Pickles" is made. Pickles are also good appetizers and digestive agents. There are several varieties of pickles and they are consumed throughout the year by people from all walks of life. Unimaginable quantities of pickles are consumed round the year. On an average, each family consumes about 2 kgs of pickles every year. Pickles, crisp and spicy, stimulate the sense of taste and enhance the flavour of bland foods. Pickles and relishes contain small amounts of nutrients,

depending on ingredients used in making them. Most pickle products are low in calories, except for the sweet varieties. Pickling is the process of preserving foods in brine or vinegar or a combination of the two. Brine is made by combining salt with water in proportions to make either a weak, medium or strong solution. In some instances, salt is added directly to the food in the dry form and the brine is formed as juices are drawn out of the food. Vinegar, an acid, acts as a preservative and contributes flavour different from the flavour produced by lactic acid fermentation that occurs during the brining process. The method using both salt and vinegar calls for a short brining period before the vinegar is added. Kinds of pickles and relishes are varied and numerous. Processing methods for each should be selected in keeping with the food to be processed and the desired product. Definition Pickling, also known as brining or corning is the process of preserving food by anaerobic fermentation in brine (a solution of salt in water) to produce lactic acid, or marinating and storing it in an acid solution, usually vinegar (acetic acid). The resulting food is called a pickle. This procedure gives the food a salty or sour taste. Pickling is preserving a food with acid and salt. The key to safe pickling is making sure that the acid is high enough to kill any microorganism that can lead to spoilage and illness. Pickle Manufacturing Process Young vegetables and fruits are more suitable to be made into raw pickles. If the vegetables or fruits

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are ripe, the abundant natural juice, usually acidic, reacts with the solution of salt, vinegar or sugar used to preserve them. The result can be disastrous because you will be left with very mushy fruits. However, ripe fruits are good to be made into jam. Brined pickles go through a fermenting process for about three to five weeks. Dilled cucumbers and sauerkraut are in this group. During this curing process, colour of the cucumber changes from a bright green to an olive or yellow green. The interior of the cucumber becomes uniformly translucent and the pickle develops a desirable flavour. When properly cured, the skin and interior of pickles are firm and tender. To prevent sour, salty, hard, rubbery, shrivelled or mushy pickles, carefully follow recommended fermentation procedures.

#### Manufacturing Process Ingredients Salt:

Pure, granulated salt is best. Use only canning or pickling salt. Table salt is pure but contains iodine and anti caking agents that might cause pickles to darken or the liquid to become cloudy. Do not use flaked salt or rock salt. Reduced sodium salt may be used in quick pickle recipes but the pickles will have a different flavour. Reduced sodium salt should not be used in fermented pickle recipes. Always use the amount and type of salt specified. Salt, as used in brining, functions as a preservative. The brine draws moisture and natural sugars from the vegetable. Lactic acid is then produced, which prevents spoiling. This is often sold as pickling or canning salt. It is sometimes called meat curing salt. The noncaking material added to iodized and non iodized table salt may make the brine cloudy. The iodine in iodized table salt may cause pickles to darken.

#### Vinegar:

Cider vinegar or white distilled vinegar can be used in pickle recipes. Cider vinegar tastes are mellow, but may darken white or light colour fruits and vegetables. White distilled vinegar has a sharper taste and should be used when a light colour is important. Do not use homemade vinegar. The level of acidity is important to both the flavour and safety of the product. Pickles may spoil if the vinegar contains less than 4% acetic acid. Never alter the amount of vinegar or water. Use either cider or white distilled vinegar of 5 to 6% acidity (50 to 60 grain strength). Cider vinegar, used in most recipes, has a good flavour and aroma, but may discolour light foods. Distilled (white) vinegar is often used for onions and cauliflower where clearness of colour is desirable.

#### Spices and Herbs:

Spices and herbs lose quality rapidly after opening; for best flavour always buy fresh seasonings yearly. Use clean, fresh, insectfree heads of dill. Avoid over mature, dry, brown dill. Fresh dill is preferred because it gives better flavour, but 1 to 3 teaspoons dill seed can be substituted for one head fresh dill. Spices add flavour and aroma to pickles and both whole and ground spices are used in making them. For best flavour, always use fresh spices and store amounts that are not used immediately in airtight containers.

#### Sugar:

Use white granulated sugar unless otherwise specified. Brown sugar may darken the liquid and change the flavour slightly. If you plan to use a non nutritive sweetener, use tested recipes that accompany these products.

#### Water:

Use soft water for best results. If hard water is used in brining, it may interfere with the formation of acid and prevent pickles from curing properly. Extremely hard water can interfere with curing and cause

discoloration of pickles, particularly if the water has high iron content. Some types of hard water can be softened by the following method. Boil water for 5 minutes; remove the scum, cover and let the water stand 24 hours. When the sediment has settled to the bottom, pour off the water without disturbing the sediment. Discard sediment and use water. Distilled or bottled water can be used for pickles also, but may be expensive. Ingredients Found in Older Recipes The following ingredients are still used in some of the older pickling recipes. These substances are not essential for making crisp, colourful pickles if upto-date methods and good quality ingredients are used in making them.

**Lime:** Lime using quality ingredients and current pickling methods eliminate the need for crisping or colouring ingredients. Calcium increases the firmness of both pickled and fermented cucumber; alum only improves the firmness of fermented cucumbers. Pickling lime (calcium hydroxide) is a common calcium source added to firm pickles. DO NOT use quick lime or agriculture lime as they are unsafe for human consumption. Lime is not essential for making crisp, firm pickles if good quality ingredients are used and upto-date methods are followed in making them. If recipe calls for lime, use food grade pickling lime from the grocery store. Do not use agricultural or burnt lime. **Alum:** Alum is not needed to make pickles crisp and firm if good-quality ingredients are used and upto-date methods are followed in making them. It is better not to use alum, but if alum is used, be sure to measure it accurately. This ingredient can be purchased from the grocery store. **Equipment Utensils:** For brining, use a clean crock or stone jar, unchipped enamel lined utensils or a large glass container. To cover vegetables while they are in brine, use a heavy plate or large glass lid that fits inside the container. Use a filled jar of water to hold the cover down so the vegetables are kept below the surface of the brine. A more recent method is to use a water filled plastic bag, the kind intended for use with food. The bag covers the container, keeping contents at a correct level so that a plate is not needed. For heating pickling liquids, use un chipped enamelware, aluminium, stainless steel or glass. Do not use brass, copper, galvanized or iron utensils. Containers of these metals may react with acids or salts and form undesirable compounds or cause colour changes in the pickles. Use large wooden or stainless steel spoons for stirring pickles. **Jars:** Use standard canning jars with the word "Mason™" on them. Some food processors are now using "Mason™" jars. However, most jars from commercially canned food have not been heat treated and may break when subject to home canning methods. Pack pickles or relish in jars and cover with liquid. Wipe the jar mouth with a clean, damp cloth or paper towel. Adjust the lid according to the manufacturer's directions.

#### Lids:

Use the two piece closure, which has a metal screw band and a metal lid with sealing compound. The metal screw bands may be reused, but metal lids containing sealing compound may be used only once.

#### Water bath Canner:

Water bath canners may be purchased on the market, or any large container meeting the requirements of a water bath canner may be used. The container should be deep enough to hold jars placed on a rack and allow for 2 to 4 inches of water above jar tops. A rack with dividers will hold jars in place and prevent them from touching each other or sides of canner during processing. The container must also have a cover. Procedures for Safe Pickling To insure a safe and quality product, use fresh fruits and vegetables following standardized recipes and process as recommended for the product.

#### Filling Jars:

Fill jars, leaving headspace at the top of the jar after brine or syrup has covered the pickles. Avoid overpacking jars so there will be enough

headspace. Wipe the rim and threads of jars thoroughly. Small food particles left on the rim may prevent an airtight seal.

**Adjusting Caps (Lids):**

Select the twopiece metal lid (a screw band with a flat metal lid; the flat metal lid contains the sealing compound). The closure is screwed on the jar mouth firmly by hand. When metal screw band is tight, this lid has enough "give" to let air escape during processing. When taken from the canner, the two piece lid needs no further tightening. Sometimes the bands on the two piece metal lids are loose when the hot jars are removed from the canner. Do Not Attempt To Tighten. Often the lid has started to seal and further tightening will break the partial seal. After a hot jar is removed from the canner, sometime may elapse before a "popping" sound is heard. This sound indicates the jar has sealed. Follow directions of the manufacturer concerning the heating of the flat metal lids.

**Heat Treatment:**

Heating is needed to destroy microorganisms that cause spoilage and to inactivate enzymes that may affect flavour, colour and texture. Processing jars of pickles in a boiling water bath is considered to be the best way to achieve adequate heat treatment. For safe pickle products made from low acid vegetables, always use vinegar of 5% acidity. Certain bacterial spores that are present in air, soil and raw foods grow well in sealed, airtight jars of lowacid foods. As these spores (*Clostridium botulinum*) grow, they produce a poisonous toxin. The use of strong vinegar in combination with the heat treatment prevents the growth of these organisms.

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