

THE HISTORY OF VINEGAR

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How was vinegar discovered?

Vinegar has been known to humans for centuries. It is a natural product. Any alcoholic beverage, whether it is from apples, grapes, dates, rice, or plain white sugar, once exposed to air will turn naturally to vinegar.

The Latin word for vinegar is acetum. The French word for vinegar is “Vin-aigre” which means sour wine. Under the effects of bacteria known as the “Mother”, the alcohol is transformed into acetic acid. Vinegar is the result of a natural alchemy which sharpens wine and turns it sour.

Who Discovered Vinegar?

Legend states that a courtier in Babylonia (5000 B. C.) discovered wine, formed from unattended date palm juice, leading to the eventual discovery of vinegar and its use as a food preservative. The Babylonians used vinegar as a condiment and they began flavoring it with herbs and spices.

The pure compound, Acetic acid, was not discovered until the 700s. After vinegar was known, Arab alchemist, named Jabir Hayyan Geber experimented with vinegar by distilling the substance. The results were extracting and isolating acetic acid concentrate. Even though Geber had found a way to isolate the compound, the pure compound was still not fully produced until 10 centuries later.

In the 1700s, German Chemist George Ernst Stahl successfully isolated acetic acid at its purest form. In 1865, Louis Pasteur solved the mystery surrounding vinegar through his scientific discoveries. His research on fermentation and the role of microscopic organisms uncovered the process of acetification (appendix). It is in fact produced by bacteria, the acetobacter (appendix) transported through dust in the air. He named it mycoderma acetic (appendix) because he believed that it was a fungus. These bacteria fix the oxygen in the air to the alcohol and transform it into acid. Then gradually, during the fermentation process, the bacteria develop on the surface to form a whitish skin, called the “Mother” of the vinegar. When this skin accumulates to a certain point, the bacteria dies and falls to the bottom of the container until all the alcohol in it is consumed.

Vinegar residues were found in urns from Ancient Egypt and have been traced to 3000 B. C. Written history of vinegar in China dates to 1200 B. C. The making of rice vinegar in China dates back 3000 years.

During biblical times vinegar was used to flavor foods. For example, after working hard gleaning barley in the fields, Ruth was invited by Boaz to eat bread dipped in vinegar (Ruth 2:14). In the New Testament, a sponge soaked in vinegar was held to the parched lips of Jesus to help ease his thirst when he was hanging on the cross.

In Ancient Greece, around 400 B. C., Hippocrates, the father of modern medicine, prescribed apple cider vinegar mixed with honey for a variety of ills, including coughs and colds and to medically manage wounds.

The 10th century creator of forensic medicine, Sung Tse, advocated hand washing with sulfur and vinegar to avoid infection during autopsies.

By the 18th century there were over 100 varieties of infused vinegars available.

Uses of Vinegar- Then

Sponges were soaked in vinegar and held to noses to offset the foul odor of raw sewage and the lack of indoor plumbing. Small silver boxes called vinaigrettes were used to carry these sponges. They were also stored in special compartments in the heads of walking canes.

From the reign of Charles VI, the occupation of vinegar distilling was made into a corporation which first registered on October 28, 1394 in Paris. This was joined in 1417 by the “Buffeters”. The statutes were completed in 1514 making up a trade body under the official title of “Vinegar makers, mustard and sauce makers, brandy liqueur and rectified spirit distillers”. Workers in this trade had to be “Sound in limb and clean in dress”. Alchemists were interested in vinegar from early times; the vinegar-makers jealously guarded their manufacturing secrets.

Vinegar was well known to the European alchemists of the Middle Ages. By pouring it over lead, they made a sweet tasting substance they called “Sugar of lead”, which was used well into the 19th century to smooth and sweeten the harsh cider. Unfortunately, lead acetate is also very poisonous, and it caused the early death of many a European cider drinker. (vinegar should never be stored in metallic containers made of lead, copper or iron nor in crystal glass, which contains a high level of lead).

Many European cities were hit by the Bubonic Plague from 1347 to 1771. About 50 million people died from this disease. The French cities were hit so hard that all the dead could not be decently buried. To cope with this situation, the French authorities released condemned convicts from prison to help bury the highly infectious corpses. According to legend, most of the convicts died. One team of four convicts managed to survive by drinking large amounts of vinegar infused with garlic daily. As a result, vinegar steeped in garlic is still sold today as **FOUR THIEVES VINEGAR**.

What does vinegar have to do with the military?

There are many examples of vinegar’s usefulness to the everyday soldiers. Vinegar was used by the Carthaginian General, Hannibal, when he crossed the Alps with elephants to invade Italy in 218 B. C. He poured vinegar over hot boulders to crumble them and allow his troops to march through. Diluted vinegar has been used as a strengthening and energizing tonic by the military throughout the ages. Roman soldiers called this refreshing drink “posca” and used it regularly. The Japanese samurai believed drinking a rice vinegar drink would boost their strength and power and like the Roman soldiers they drank it regularly.

Throughout history the antiseptic nature of vinegar has been used to clean and disinfect soldier’s wounds and thus speed up wound healing. Apple cider vinegar was used during the American Civil War and World War I.

Louis XIII of France (1601-1643) is reported to have paid 1.3 million francs for vinegar used to cool the cannons of his army during just one of his many battles. Vinegar, when applied to the hot iron cannons, not only cooled them, but helped clean the surface metal while inhibiting rust formation.

During the Middle Ages vinegar, along with an abrasive material such as sand, was used to clean and polish flexible mail armor (appendix).

How is it made?

In 1394 a group of French vintners developed a continuous method for making vinegar called the Orleans method. In this method, oak barrels were used as fermentation vessels and the vinegar was siphoned off through a spigot at the bottom of the barrel. About 15% of the vinegar was left behind and contained the “Mother of Vinegar” with its concentrated bacteria floating on top. A new batch of cider or wine was carefully added to the barrel and was quick-started by the remaining vinegar.

The French vintners formed a guild of master vinegar makers and using the Orleans method they were better able to supply the lucrative vinegar market.

One of the methods to make vinegar is the Orleans method. The other method is a slow or natural process. Vats of cider are allowed to sit open at room temperature. During a period of several months, the fruit juices ferment into alcohol and then oxidize into acetic acid.

Both the slow and Orleans methods require several months to produce vinegar. In the modern commercial production of vinegar, the generator method and the submerged fermentation method are used. These methods are based on the goal of infusing as much oxygen as possible into the alcohol to speed up the acetic acid fermentation process.

What are the types of Vinegar?

There are several types:

Malt is made from fermented barley and grain mash then, flavored with woods such as beech or birch. It has a hearty flavor and is often served with fish and chips. It is also popular for pickling.

Rice has been made by the Chinese for over 3,000 years. There are three kinds of rice vinegar: red is used as a dip for foods and as a condiment in soups, white is used mostly in sweet and sour dishes and black is common in stir-fries and dressings. Rice vinegar is excellent for flavoring with herbs, spices and fruits because of its mild flavor.

Sherry is made from sherry wine aged under the full heat of the sun in wooden barrels and has a nutty-sweet taste.

Wine can be made from white, red or rose wine. Wine vinegar can be aged up to two years before bottling. Red wine vinegar can be flavored with natural raspberry and has a dark red color. Wine vinegar is good for salad dressing, sauces, pickling and cooked in reductions to make sauces. White wine vinegar is good for bringing out the sweetness in strawberries and melons. It also adds a twist to marinades and wakes up the flavor of sauces and glazes.

Champagne has no bubbles. It's made from dry white wine made from Chardonnay or Pinot Noir grapes (both of which are used to make Champagne).

Cider is made from apples and is the most popular vinegar used for cooking in the United States.

Distilled is made from distilled grain alcohol and is usually colorless. It is best used for pickling. It is also used as a natural cleaning agent.

Balsamic is brown in color with a sweet-sour flavor. It is made from the white trebbiano or Lambrusco grapes and aged in barrels of various woods. Some gourmet Balsamic vinegars are over 100 years old. Balsamic is good for salad dressings, sauces and gravy. It is also good to sprinkle on strawberries, peaches and melons.

Some other specialty vinegars are **coconut** and **cane** which are common in India and Philippines, and **date** is used in Indonesia.

21st century industry uses vinegar in a range of different ways: to reduce microorganisms in slaughter houses and poultry plants; the cleaning of equipment in the construction industry, and as a cleaning agent around the home.

Other uses for Vinegar-Now

Here are just a few ideas for using vinegar around the house: **1.** For greasy buildup, put white vinegar (not water) onto the sponge and pop in the microwave on a low setting until it's quite warm, but not too hot to handle. Then add a dab of liquid dish soap. **2.** To keep flowers fresh longer add 2 T white vinegar and 2 T of sugar to the water in 1 QT vase. Trim stems and change water every few days or when water starts to get cloudy. **3.** Boil a solution of ¼ C of white distilled vinegar and 1 C of water in the microwave until steam forms on the window. Wipe away food residue. **4.** Remove bathtub film by wiping it first with white distilled vinegar, then with baking soda. Rinse away grime with clean water. **5.** Soak a stiff paint brush in hot white distilled vinegar until the brush softens. Wash with warm soapy water. **6.** Wash your berry-colored hands with vinegar to remove fruit stains. **7.** To keep drains fresh, pour a cup of white distilled vinegar down the drain once a week. Allow it to sit for 30 minutes then flush with cold water. **8.** To use vinegar as a weed killer, pour full strength white distilled vinegar on unwanted weeds. Reapply as needed.

Here are some highlights in the history of vinegar: John Adams, the 2nd President of the U.S. drank apple cider vinegar every morning for breakfast. In the 1920s, apple cider vinegar was made and drunk more than any other fruit juice in the U.S. In 1973, Balsamic vinegar from the provinces of Modena and ReggioEmilia was introduced to America by Marcella Hazen, a cooking teacher and author. In 1999, the International Vinegar Museum was opened on June 4th in Roslyn, South Dakota.

Caution: *While vinegar is acclaimed for curing many problems, it has not been evaluated by the Food and Drug Administration (FDA). I strongly encourage you to discuss topics of concern with your health care provider. Vinegar can interact with some drugs and supplements causing low potassium levels. Check with your health care provider before consuming vinegar in large quantities.*

In Closing

You may have heard the saying, "Full of piss and vinegar". This saying means that a person is brimming with energy. This saying is often used as a compliment. "Vinegar" is an old slang term for enthusiastic energy, though some try to make this saying politer by substituting "Pith" for "Piss". But, this change robs it of the imagery of acid, energetically boiling fluids, and conjures up instead, a sodden vinegar-soaked mass of pith!

APPENDIX

Page 1 – Alchemists – The word alchemists comes from alchemy, which has its origins in the Greek word klemcia, meaning ‘Art of transmuting metals’. Active since ancient times, alchemists could be considered very early chemists because of their work trying to transform base metals into gold.

Page 1 – acetification – The conversion of alcohol into acetic acid, as in the manufacture of vinegar, this reaction is a cause of deterioration of alcoholic drinks.

Page 1 – acetobacter – This is a bacterium that oxidizes organic compounds to acetic acid, as in vinegar formation.

Page 1 – mycoderma aceti – Mother of vinegar is also known as mycoderma aceti, a New Latin expression, from the Greek (fungus) plus (skin) and the Latin aceti (‘of the acid’). The naming of the bacteria has been rather fluid due to its original identification near the inception of bacteriology.

Page 2 – mail armor – Mail or malle (also chain mail or chainmail) is a type of armor consisting of small metal rings linked together in a pattern to form a mesh. A coat of this armor is often referred to as a hauberk.

RESOURCES

WWW.enzyme-facts.com/vinegar-history

www.today.com/home/28-ways-use-vinegar-around-your-house

<http://versatilevinegar.org/vinegar-lore/>

<http://brians.wsu.edu/2016/05/30/pith-and-vinegar>

www.apple-cider-vinegar-benefits.com/vinegar-history

www.moutarde-de-meaux.com/en/histo-origins-vinaigre.php

www.medscape.com/viewarticle/531649

<http://aceticacidvinegar.weebly.com/history>

UC Cooperative Extension Cottage Foods

Flavored Vinegars



Flavored vinegars are easy and fun to make at home. They can be used in marinades, cooked dishes, and salad dressings and even in beverages. The vinegars can be made with fresh, frozen or dried herbs, garlic, peppers, and onions, as well as fresh or frozen fruits.

Equipment Needed

Use glass, food grade plastic or crockery containers to make the vinegars. (Recycled vinegar, wine, sauce, fruit and marinade bottles are popular.) Wash thoroughly with warm soapy water and then sterilize the containers. To sterilize, place bottles in a pan of hot water, bring to a boil and gently boil for 10 minutes. Remove jars from boiling water and place inverted on a clean towel to dry. It is best to use non corrosive lids or corks to seal the bottles.

Vinegar

Several kinds of vinegars can be used depending on the flavor that you are trying to achieve. Sometimes a combination of different vinegars can be used as the base for a uniquely flavored product. Try different vinegars with different flavorings. Work in small batches so you can decide which one you like best.

Distilled white vinegar - clear in color with a sharp acidic taste. It is a good choice for delicate flavored herbs.

Apple cider vinegar - milder in taste than distilled white vinegar. The amber color may not be as desirable for light colored fruits, vegetables and herbs. It blends well with dark berries.

Wine vinegars - several flavors on the market. They are more expensive than the distilled and cider vinegars, but make very smooth flavored products.

Rice Vinegar - mild in flavor and slightly sweet in flavor.

Caution: Wine and rice vinegars contain some proteins that promote bacterial growth if the vinegars are not handled and stored properly. For added safety, use only commercially produced vinegars.

Flavorings

Herbs and edible flowers - A variety of herbs and edible flowers can be used to make flavored vinegars—either by themselves or in combinations. Popular herbs and flowers include mint, basil, tarragon, dill, oregano, chives, chive blossoms and nasturtiums. Use about 3-4 sprigs of fresh herbs, $\frac{3}{4}$ -1 cup loosely packed flower blossoms or 3 tablespoons dried herbs for each pint of vinegar. For added flavor, chop, bruise, or freeze herbs before adding to vinegar.

Fruits - Fruits can make special flavored vinegars with many uses from vinaigrettes and marinades to refreshing drinks. Especially flavorful fruits include raspberries, strawberries, blueberries, cranberries, blackberries and pineapple. Orange and lemon peel can be added. Use 2 cups of fruit per pint of vinegar. Along with the fruit, additional flavorings can be used, such as

cinnamon sticks, whole cloves, allspice, mint, lemon, or orange peels. For more flavor, freeze the berries first.

Vegetables—Vegetables can be added to herb vinegars or used themselves for special flavoring. Garlic, onion, jalapeno and other hot peppers are popular in flavored vinegars. These vegetables, along with citrus peels, can be threaded onto a bamboo skewer and inserted in the vinegar jar. This way they can easily be removed when the desired flavor is reached. To impart more flavor slit the peppers, peel garlic, and slice onions before adding to the vinegar.

Making the Vinegars

Herb and or vegetable flavored vinegars—Wash herbs and vegetables and pat dry with a clean towel or paper towel. Put the desired amount of herbs and or vegetables into a sterilized glass jar and then fill the jar with the vinegar of your choice. Some people prefer to heat the vinegar to 190-195°F, and then pour the hot vinegar over the herbs. Others like the flavor better when cold vinegar is added. Either way, pour the vinegar over the herbs or vegetables and cover jar with a non-corrodible lid. Let vinegar condition in a cool dark place for 3-4 weeks to develop flavor.

Fruit flavored vinegars - The fruit flavor vinegars can be a mixture of fruits with some herbs. Place fruit or the peel of one lemon or orange and herbs, if desired, in a sterilized jar. Add vinegar. Let steep until desired flavor is reached, usually 2-4 weeks.

Testing vinegar flavor - It will take at least 10 days for most flavors to develop and about 3-4 weeks for optimum flavor. The desired flavor is a matter of personal taste. To test for flavor development, place a few drops of vinegar on a piece of plain white bread and taste. Or use a sugar cube and dip it into the vinegar and suck the flavor from the cube. If the flavor has developed to your satisfaction, you are ready to strain the vinegar. If flavor seems too strong, you can dilute it by adding additional "base" vinegar. If the flavor is weak, let it steep longer.

Straining the vinegar - After the desired flavor is reached, strain the vinegar through a damp cheesecloth, jelly bag or coffee filter one or more times until the vinegar shows no sign of cloudiness. Discard the herbs, vegetables or fruit. Pour strained vinegar into clean sterilized jars and cap tightly. A few sprigs of fresh herbs, vegetables or a few pieces of whole fruit or berries can be added to vinegar before sealing.

Labeling

After the vinegars are cured and filtered, it may be difficult to know which flavors were used. It's important to label with type of base vinegar used, flavoring and date.

Storing Vinegar

Keep vinegars in tightly sealed bottles. Store in a cool, dark place. Refrigeration is best for retention of freshness and flavors. For best quality, use within 4-6 months. After six months, even if there is no sign of spoilage, taste the vinegar before using to make sure the flavor is still good. **If flavored vinegar molds or shows signs of fermentation such as bubbling, cloudiness or sliminess, it should be discarded without tasting.**

Using Flavored Vinegars

Flavored vinegars can add variety to your meals. Here are a few to try. Libraries, bookstores and the internet will have additional ideas.

- **Tarragon** - salad dressings, salads, sauces and pot roast
- **Basil** - cooked greens, coleslaw, sauces, meats and vegetables
- **Mixed herbs** - salad dressings, sauces, meats and vegetables
- **Nasturtium blossoms/garlic** - salads, marinades and pickled fresh cucumbers
- **Garlic/Cilantro** (coriander) - chutney, meat, lamb and Middle Eastern dishes
- **Mint** - lamb, dips or in vegetables and salads
- **Rosemary** - salads and meat dishes
- **Fruit flavored** - salad dressings, marinades, lemon-flavored soda and ice water

Note: Flavored herb vinegar should not be used for pickle making unless it has 5% acidity level. If the flavors become too strong, dilute flavored vinegars with more of the same "base" vinegar. If the vinegars are too tart, add a little sugar to enhance the flavor and reduce the tartness.

Significance of safety concerns

(So Easy to Preserve – University of Georgia – Bulletin 989)

As long as clean and high-quality ingredients (vinegar and herbs, vegetables or fruits) are used, the greatest concern with homemade flavored vinegars should be mold or yeast and then having to throw out your product. If your flavored vinegar starts to mold at any time or show signs of fermentations such as bubbling, cloudiness or sliminess, discard the product and do not use any of it that is left.

Some harmful bacteria may survive and even multiply slowly in some vinegars. It is important to follow directions carefully, store flavored vinegars in the refrigerator or cool places, and work in a very clean area with sanitary utensils. Also be sure hands are very clean while you work!

Source: OSU Master Food Preserver Program

Food Safety and Quality

Herbal Vinegars

*William C. Morris,
Professor, Food Technology
and Science*

Making your own herbal vinegar can be a very enlightening and tasteful experience. These flavored vinegars have become very popular and add variety to your meals. Some of the more popular herbal vinegars contain such herbs as basil, tarragon, marjoram, thyme or rosemary. There are many other herbs that can be used or various combinations of several may be incorporated into the vinegar.

The type of vinegar used varies with the cook; some use distilled white vinegar, others cider vinegar. The better flavor generally comes from using the distilled white vinegar that comes from grain alcohol since there are fewer flavors competing with the herb flavor. Today many gourmets choose wine vinegar, which is more expensive and has characteristic flavors.



A good rule-of-thumb in making herbal vinegar is to use a half a cup of freshly crushed or bruised leaves of the herb to two cups of vinegar. If garlic is used, crush it and leave it in the solution only 24 hours. You do not want to “overload” the vinegar so its preservative strength is diminished and it cannot hold more herbal material. Dried herbs may also be used at the rate of one tablespoon of dried herbs to two cups of vinegar.

The inviting experience of making and using your own herbal vinegar is rewarding and provides variety to your meals. By experimenting with different combinations of herbs, you can discover your own subtle tastes and become an expert in making herbal vinegar.

Making herbal vinegar is simple and safe. However, do not try to bottle herbs and oil together. The oil does not have the same preservative ability as the vinegar and will allow harmful microorganisms to grow.

Three basic methods in preparing herbal vinegars are as follows:

Heated Vinegar — Fill plastic gallon jug approximately one-half full with fresh herbs. Then pour hot (not boiling) vinegar over herbs and fill gallon container with vinegar. Store in dark area and mix contents daily for four to six weeks. Strain and add several sprigs of herbs. This is often the preferred method since it tends to draw out more flavor from the herb.

Cold Method — Add the herbs, etc., to cold vinegar. Let stand four to six weeks. Strain, add new herbs.

Solar Method — Add herbs to vinegar. Place outside in sunshine. Strain in four weeks. Add fresh herbs. This method can present problems with insects and flies.

Storage

Store in dark, cool area (pantry) in glass jar sealed with non-metallic closures, i.e. corks. If corks are used, dip in hot paraffin several times to assure proper seal. Metallic lids can be used by placing wax paper over the opening and screwing the lid on over the wax paper.

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