

PRODUCT DESCRIPTION



Coconut vinegar is a natural product obtained from a natural process of fermentation, with no preservatives or chemicals added.

There are several types of vinegar depending on the raw material used. For coconut, it is made either from coconut water or fermented coconut sap.

Starter cultures such as *Saccharomyces cerevisiae* (yeast) and *Acetobacter aceti* (bacteria) are used to aid ethanol and acetic acid fermentation, respectively.

Vinegar is produced by alcoholic fermentation of coconut water by adding 10-12% sugar. It involves the fermentation of sugar into ethanol or alcoholization and the oxidation of ethanol into acetic acid or acetification to produce vinegar.

Table 1. Composition of Coconut Water Vinegar

PARAMETER	VALUE
Moisture	98%
Fat	0.1%
Ash	0.3%
Total Carbohydrates	1.4%
Calcium	24 mg
Phosphorus	34 mg
Iron	0.1 mg
Riboflavin	0.01 mg

Source: Coconut as Food, Banzon 1990

COCONUT VINEGAR PRODUCTION

Materials:

4 cups coconut water 1/4 tsp yeast
3/4 sugar 1 cup vinegar starter

Utensils:

stainless casserole stainless/wooden spoon
stove wide mouth container
dry cheesecloth plastic twine/rubber band
rubber tubing

Procedure:

1. Strain freshly collected coconut water using a cheesecloth.
2. Dissolve 3/4 cups sugar in 4 cups coconut water.
3. Pasteurize by heating at 60-65°C for 10-15 minutes to kill the microorganisms.
4. Transfer in sterilized glass jars, half filled. Cool and add 1/4 teaspoon dry yeast.
5. Cover the container with a clean cheesecloth.
6. Allow the sugar solution to ferment for 2-3 weeks or until there are no more bubbles of carbon dioxide formed. This is alcoholic fermentation.
7. Decant the alcoholic solution to remove the yeast and other solid materials. Pasteurize the alcoholic solution and cool immediately.
8. To 4 cups alcoholic solution, add 1 cup vinegar starter. Cover with clean cloth/paper. This starts acetic acid formation.
9. Set aside for 1 month or until maximum sourness is obtained. For the development of desirable aroma and flavor, allow the vinegar to age in barrels or earthen jars which are filled to full capacity.
10. Filter the vinegar and then pasteurize before bottling the product. To clear the vinegar, stir it with well-beaten egg white and heat until egg white coagulates (optional). Filter vinegar.
11. Bottle, label and store.

MOTHER VINEGAR PREPARATION

Materials:

4 cups coconut water 1/4 tsp yeast
3/4 cups sugar 1 cup Acetobacter

Procedure:

A. Alcoholic Fermentation

Perform steps 1-5 on the coconut vinegar production and allow to ferment for 4-7 days.

B. Acetification

1 test tube culture of *Acetobacter aceti*, 3-day old per 250 ml fermented coconut water

1. Decant the fermented coconut water into two sterilized 1000 ml bottle.

2. Aseptically add approximately 2 tsp (10 ml) sterile fermented coconut water to sterile test tube. Scrape the surface using an inoculating rod and dispense to the 1 cup fermented coconut water. Add another 2 tsp fermented coconut water, shake to get the remaining organism (*A. aceti*) and transfer the same to the batch aseptically in an inoculating chamber or a clean enclosed room.

3. After 3 days, the implanted fermented coconut water can be used as mother vinegar. Two weeks should be the maximum fermentation period.

4. To reproduce mother vinegar, repeat the alcoholic fermentation steps and mix this with an equal amount of 3-14 day old mother vinegar. Use this initially prepared mother vinegar for the mass production.

PHILIPPINE
COCONUT
AUTHORITY



COCONUT PROCESSING
TECHNOLOGIES

COCONUT VINEGAR



COCONUT SAP/ TODDY VINEGAR

Materials:

Fresh coconut water	5 liters
3-day old tuba	5 liters
Refined sugar	1/2 kg
Dry yeast	1 tsp

Utensils:

stainless casserole
stainless/wooden spoon
stove
wide mouth container
dry cheesecloth
plastic twine/rubber band
rubber tubing

Procedure:

1. Collect fresh coconut water from mature, ungerminated and newly opened nuts.
2. Filter through cheesecloth to remove all solid particles.
3. Add sugar to the filtered coconut water.
4. Pasteurize mixture for 20 minutes at 65°C.
5. Cool the pasteurize mixture to 40°C. Transfer cooled mixture to the wide mouth fermenting pail.
6. Take 1/2 cup of the cooled mixture and dissolve yeast thoroughly. Mix dissolved yeast to the mixture.
7. Add the 3-day old tuba. Cover with clean dry cheesecloth and set aside undisturbed for 2 to 3 weeks.
8. Harvest by siphoning. Pasteurize for 30 minutes at 80°C.
9. Cool and store in sterilized narrow mouth bottle.

USES AND APPLICATIONS

- ⇒ **Food preparation**
 - As a condiment seasoning for meat, fish, and vegetables on the table or during cooking.
- ⇒ **Food preservation**
 - Used in the manufacture of vegetable pickles, catsup and other tomato products, mayonnaise, mustard, dressings, sauces, and additive in many manufactured foods to enhance flavor.
- ⇒ **Cleaning agent**
 - For toilets, kitchen sinks, pots, wood panels, windows, grills, greasy ovens and hardened paintbrushes.
- ⇒ **Deodorizer**
 - For refrigerator and microwave ovens
- ⇒ **Medicinal use**
 - Used as an antimicrobial agent to treat infections
 - Lowers cholesterol and aids in weight management

STANDARD FOR VINEGAR

Titrateable Acidity = 4%
(4 grams acetic acid/ 100 mL vinegar)

Source: Philippine Food and Drug Administration

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