

# Coconut Neera production and processing in Karnataka

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## Introduction

The Neera Board was constituted by the Government of Karnataka to market the value added products made from neera in the state. The Board consists of representatives from the neera industry, i.e. farmers, state government officials and neera training institutes. The key objective of the Board is to inspect and control the quality of neera and its products, give approval to labels and come out with various schemes for the sale of neera and its by-products in the international market.

Horticulture Department, Government of Karnataka prepared a neera policy for commercial production of neera as a sweet beverage to be promoted as nutritious energy drink. The Government is planning to promote it as an energy drink with medicinal values. The government came up to promote neera following the crash in prices of coconut and copra. Department of Horticulture, Government of Karnataka during 2002-03 sponsored a grant-in-aid project on "Technologies for enhancing the shelf life of coconut sap (neera)" through Central Food Technological Research Institute (CFTRI), Mysore and Defence Food Research Laboratory (DFRL), Mysore. The CFTRI & DFRL have worked together and developed a methodology of packing and preserving neera up to 45 days

in refrigerated and 30 days in ambient conditions. In order to commercialize the technology developed by the CFTRI & DFRL a project for demonstration of technology for processing and packing neera at a cost of Rs.115 lakh was sanctioned with a sharing pattern of 25:75 between Coconut Development Board, Government of India and Government of Karnataka for establishing a pilot plant at Horticultural Farm, Tumbe, Dakshina Kannada district. The pilot plant has already started trial production and packing of neera. Attempts are also made at packing in different flavors as per the customer's preferences.

In the state of Andhra Pradesh the Khadi and Village Industries Commission (KVIC) is promoting 'neera', as a health drink, so as to uplift the depressed toddy-tappers economically. The central government is trying to develop neera clusters under the scheme of Fund for Regeneration of Traditional Industries (SFURTI). The Gramodyog Sangh, which undertakes programmes to help those who tap the palm trees, has under its fold 50 co-operative societies or institutions. The Khadi and Village Industries Commission (KVIC) implements the scheme. Apart from increasing the availability of the drink, the Neera cluster aims at generating more employment for tappers.

## What is Neera?

Neera, otherwise called Sweet Toddy is a sap extracted from inflorescence of various species of toddy palms. Neera is a natural and non alcoholic beverage, high in nutritional value and an instant thirst quencher. It is sweet, oyster white, and translucent. It is obtained by slicing the spathes of the palmyra, coconut and sago palms, and scraping the tender most part, just below the crown. It requires neither mechanical crushing, as in the case of cane, nor leaching like that of beet-root. This palm nectar is widely consumed in India, Sri Lanka, Africa, Malaysia, Indonesia, Thailand and Myanmar. This sweet sap of the palm, is fast becoming a popular drink on account of its highly nutritive value, delicious taste and agreeable flavor. The chemical percentage composition of neera varies, depending on various factors, namely, place, type of palm, mode and season of its collection. Neera is considered as a nutritious drink as it contains a number of minerals and salts and is high in protein. It contains acids like ascorbic acid (one form of vitamin C), nicotinic acid (vitamin B3 and vitamin PP) and riboflavin (vitamin B2)

## Composition of Neera:

Neera is rich in carbohydrates, mostly sucrose (table sugar), and has a nearly neutral pH. It has a specific gravity ranging from 1.058

to 1.077. Composition of neera is given below:

Substance	Concentration (gms per 100 ml.)
Sucrose (table sugar)	12.3 - 17.4
Total ash	0.11 - 0.41
Protein	0.23 - 0.32
Ascorbic acid	0.016 - 0.030
Total solids	15.2 - 19.7

### Production of Neera

Neera is collected every morning just at sunrise. The sap is extracted and collected by a tapper. The sap is collected from the cut flower of the palm. A container is fastened to the flower stump to collect the sap. The white liquid that initially collects tends to be very sweet and non-alcoholic. Neera is brought down from the top of the tree in either earthen pots or vessels, and then poured into stainless steel containers and bigger vessels, after being filtered through a fine mesh cloth or wire-mesh. Neera collected as above contains all the constituents of a cool and healthy drink with food and mineral value. It keeps the human system cool and improves digestion. Fresh neera, as it trickles from the tree, is easily

susceptible to fermentation at ordinary temperature, unless it is quickly treated with some preservative.

### Technological Developments:

Neera is highly susceptible to natural fermentation at ambient temperature within a few hours of extraction from palms. Once fermented, it transforms to toddy with 4% alcohol. Using several technologies developed by various research institutes, neera can be processed and preserved in its natural form to retain the vitamins, sugar, and other nutrients beneficial for health. To preserve and extend the shelf life of neera, heat preservation techniques such as pasteurization are used. A special filtration technique to enhance the shelf life of neera was developed by the National Chemical Laboratory, Pune, and technologies for the preservation and processing of neera was developed by the Central Food Technological Research Institute, Mysore.

### Value added products from Neera

**Palm Syrup:** Palm syrup is produced when fresh neera is heated and concentrated into syrup.

In many countries, palm, syrup is used as a health and wellness drink and is prevalently used in Ayurveda and other systems of medicine. The fresh neera is rich in carbohydrates with sucrose as its main constituent.

**Palm wine:** Palm wine is an alcoholic beverage created from the sap of various species of palm tree such as the palmyra, date palms and coconut palms. Palm sap begins fermenting immediately after collection, due to natural yeasts in the pores of pot and air (often spurred by residual yeast left in the collecting container). Within two hours, fermentation yields an aromatic wine of up to 4% alcohol content, mildly intoxicating and sweet. The wine may be allowed to ferment longer, up to a day, to yield a stronger, more sour and acidic taste.

In India, palm wine or toddy is served as either neera or padaneer (a sweet, non-alcoholic beverage derived from fresh sap) or kallu (a sour beverage made from fermented sap, but not as strong as wine). Kallu is usually drunk soon after fermentation by the end of day, as it becomes more sour and acidic day by day. Spices are also added in order to brew and drink and give it its distinct taste.



*Processed neera*



*Packing neera*



*Packed neera*

## Palm Jaggery

Neera converted into a solid or a semisolid crystalline mass ready for direct consumption is called Palm Jaggery. It has got wide use as sweetening agent in Indian village food products. Palm gur has a characteristic smell of its own. Traditionally, Palm Jaggery is made by boiling raw palm sap in large, shallow, round-bottom vessels. The raw juice is heated at 40°C in a pan and this juice is then delimed to neutrality i.e., pH by adding either phosphoric acid direct or triple super phosphate solution slowly and stirring all the while. Boiling of the filtered juice is done over open-fired improved furnaces using metal pans of 20 to 24 gauge thickness. As boiling proceeds, the froth and foam coming up to the surface is removed by means of a perforated ladle. The juice is stirred at intervals to facilitate mixing and rapid evaporation. When the juice thickens, the fire is judiciously controlled in order to prevent it from caramelizing. Correct strike temperature is judged by patting a small quantity of the thickened mass in water and rolling in into ball shape. If ball forms into a hard one, the strike is over and the mass is moulded into moulds. The strike temperature can also be controlled through the use of thermometers. In order to facilitate easy removal of the blocks from the moulds, the moulds are either moistened with water or besmeared with fresh sweet oil before putting the thick mass into them. After allowing the gur to set for some time, the gur is removed from the moulds and packed. The quality gur is always hard, crystalline and golden-coloured.

## Liquid Palm Jaggery

Palm Jaggery is in liquid form or semi solid form. It is very fine and Chemical free liquid syrup.

## Palm Honey

It is produced at 78 Brix level. It is thick liquid syrup like honey. It is used as a table syrup as a sweetener in confectionary items like ice creams. It is a rich source of iron for anemic patients and hence it is mainly used in pharmaceuticals formulation.

## Palm Sugar

Crystalline sugar made from Neera or Palm Gur with or without clarification is known as Palm sugar. Ordinary Palm sugar has a polarisation value of 96° to 98°. The initial process of sugar making is practically the same as that of gur. In this case also, juice is delimed, filtered and boiled. Chocolates, toffees and confectionery items are made by Palm Sugar

## Palm Candy

Like palm gur, palm candy has also its importance among the products of neera. It is being produced and used since procuring sweet neera from palmyra has been known. It has got its various uses in Ayurvedic medicinal preparations.

## Molasses

Palm molasses is a sweet syrupy material obtained as a by-product of palm sugar. Golden syrup and cattle feed are the other products made from Molasses. Bio-chemical products like ethyl alcohol, acetic acid, citric acid etc., can be prepared out of molasses by fermentation methods.

## Palm Vinegar

Coconut vinegar can also be produced from the inflorescence sap other than from matured coconut water. Fresh sap is poured in a wide large plastic container with clean – netted cover to allow aeration and prevent entry of dirt and foreign objects. After about ten days fermentation in well ventilated room, the sap can be harvested as vinegar. Vinegar has extensive use as preservative in pickle industry and flavoring agent in food processing sector. The palm vinegar has good export potential as compared to the synthetic vinegar.

### Promotion and marketing of Neera

*Neera can be promoted as a soft drink.*

If neera could be filtered properly using a simple scientific method and if some preservatives added immediately after extraction, neera could be bottled or canned and stored for 45 days.

Chilled neera is a nutritious drink. It contains a number of minerals and salts; acids like ascorbic acid, nicotinic acid and riboflavin; and also proteins and vitamin C. It has less calorific value, apart from being sweet and delicious. It has been medically proved that neera is better than mineral water.

Once the shelf life of neera is increased properly stored and packed, the drink could be transported to longer distances. Neera could become a nutritious drink offering a healthy alternative to aerated beverages.