



Coconut Neera and Its Value Added Products

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Abstract

Coconut neera, a naturally occurring sap extracted from the inflorescence of the coconut tree, is a traditional and nutritious beverage widely consumed in tropical regions. It is rich in essential nutrients, including vitamins, minerals, and amino acids, making it a highly beneficial drink. Neera is typically collected early in the morning before sunrise and is consumed fresh, though it can be processed into products like coconut sugar and jaggery. Rich in electrolytes like potassium and magnesium, neera is considered a natural energy booster and is often used as a hydration aid. Beyond its use as a beverage, coconut neera has been recognized for its health benefits, including its antioxidant properties, ability to promote digestive health, and potential to support skin and immune functions.

Keywords: Coconut neera, glycemic index, antioxidant, coconut palm sugar, palm jaggery

Introduction

Coconut (*Cocos nucifera* L.) is one of the most important tropical crops, cultivated mainly for its nuts, oil, and fibre. However, the sap derived from its inflorescence, commonly known as neera, remains underutilized despite its high

nutritional and economic potential. Neera is a natural, non-alcoholic beverage rich in vitamins, minerals, and amino acids, making it a potential alternative to synthetic energy drinks (Gupta and Kumar, 2021). Coconut sap is an important product harvested from coconut trees in an informal manner and is mainly consumed by rural populations. It is believed to have digestive benefits, aid in clear urination, and help prevent jaundice. The sap, a sugary solution, is collected from the coconut inflorescence.

Despite its nutritional benefits, fresh neera undergoes rapid fermentation due to microbial activity, limiting its shelf life. To overcome this challenge, researchers and industries have developed value added products that not only preserve its nutritional integrity but also enhance its commercial viability. This paper explores the various value-added products derived from coconut neera, their processing techniques, and their potential role in sustainable economic development.

Health Benefits of Neera

Coconut neera is primarily composed of water (80-90%), natural sugars (10-15%), and trace amounts of proteins, vitamins (B-complex, C),



minerals (potassium, magnesium, iron, zinc), and phytonutrients (Rethinam and Dhanalakshmi, 2020). It is low in fat and contains antioxidants, making it beneficial for human health. Studies indicate that neera possesses anti-diabetic, anti-inflammatory, and immune boosting properties (Shanmugavelu *et al.*, 2022).

Biochemical constituents

Coconut sap is rich in sugar, minerals and proteins. It is a rich source of ascorbic acid and carbohydrate with sucrose as the major sugar. Coconut sap contains high amounts of essential elements such as N, P, K, Mg and micronutrients. The biochemical, minerals and vitamin composition of freshly collected.

Table 1. Biochemical and mineral composition of freshly collected coconut neera

Biochemical parameters	Range	Average
pH	6.57-7.50	6.98
Total sugar (g)	10.08-14.50	13.18
Reducing sugar (g)	0.439-0.647	0.554
Amino acids (g)	0.123-0.338	0.245
Protein (g)	0.150-0.177	0.165
Sodium (mg)	69.4-117.5	90.6
Potassium (mg)	146.1-182.4	168.4
Phosphorus (mg)	2.0-6.4	3.9
Copper (mg)	0.028-0.035	0.031
Zinc (mg)	0.018-0.026	0.020
Iron (mg)	0.049-0.058	0.053

(Source- Technical bulletin no. 92, ICAR CPCRI, Kasaragod, Kerala)

Value-Added Products of Coconut Neera

Due to the perishable nature of fresh neera, several processing techniques have been

developed to convert it into stable and commercially viable products.

1.Palm Jaggery

Neera jaggery is a traditional sweetener produced by heating neera until it solidifies. It is a healthier alternative to refined sugar due to its rich mineral content and lower glycemic index (Kumar and Suresh, 2021). Coconut sap jaggery is a byproduct derived from the sap of coconut inflorescences, with a pH ranging from 6.5 to 7.0. The fresh sap is boiled slowly in small batches to evaporate the water. This simple process is carried out without the use of advanced equipment like vacuum evaporators and does not require any additives or enzymes. A comparison is made between the biochemical and mineral composition of coconut jaggery made from freshly collected sap (without lime) and sap collected with lime, as well as with the jaggery made from sugarcane available in the market.

2.Palm syrup

It is produced by boiling sap over moderate to low heat, resulting in a golden-brown, sticky liquid rich in minerals. It contains no fats or cholesterol, with a sucrose level of 50% and a glycemic index of 35 GI. This syrup can be used in healthy food recipes, as a topping for a variety of appetizers, desserts, or beverages, and is also utilized in Ayurveda and other traditional medical practices.

3.Palm Vinegar

Fermentation of neera using *Acetobacter* species results in the production of neera vinegar. This organic vinegar is widely used as



a culinary ingredient and possesses antimicrobial and digestive benefits (Joseph *et al.*, 2020).

4. Neera Wine and Other Fermented Beverages

Controlled fermentation of neera produces neera wine, which is gaining popularity as a natural, low-alcohol beverage. It undergoes a fermentation process similar to grape wine and contains beneficial bioactive compounds (Fernandes *et al.*, 2021). Other fermented products, such as neera-based probiotic drinks, are also being explored for their functional health benefits.

5.Coconut Palm Sugar

Coconut sugar is obtained by crystallizing neera and is considered an eco-friendly and sustainable alternative to cane sugar. It has a lower glycemic index and retains essential micronutrients, making it suitable for diabetic individuals (Shivashankar *et al.*, 2019). Coconut sap sugar is produced by boiling freshly collected neera (coconut sap) at moderate heat (around 115°C) to evaporate the water. During this process, any scum that forms is removed. Once the liquid thickens into syrup, it is continuously stirred to prevent burning and to encourage granulation. At this point, the syrup solidifies as it cools. The lumps are broken up, and the sugar is sifted to ensure a consistent particle size, resulting in a high-quality product. Compared to brown sugar (made from sugarcane molasses), coconut sugar contains twice as much iron, four times the magnesium, and over ten times the zinc.

Challenges and Future Prospects

Despite its potential, large-scale commercialization of neera-based products faces challenges such as:

i.Short Shelf Life: Fresh neera ferments within hours, requiring rapid processing or preservation methods.

ii.Regulatory Constraints: Many countries have restrictions on neera tapping due to concerns about its misuse for toddy production.

iii.Standardization and Quality Control: Variability in neera composition due to environmental factors necessitates improved standardization techniques.

Future research should focus on improving preservation technologies, enhancing production efficiency, and promoting sustainable harvesting practices. Adoption of modern processing techniques such as freeze-drying, vacuum evaporation, and membrane filtration can help extend neera's shelf life while retaining its nutritional value.

Conclusion

Coconut neera is a highly nutritious natural beverage with immense potential for value addition. Products like jaggery, syrup, vinegar, wine, and coconut sugar offer economic opportunities for farmers and entrepreneurs. However, overcoming technical and regulatory challenges is essential for widespread commercialization. With continued research and innovation, neera-based products can play a significant role in sustainable agriculture, rural livelihoods, and the global functional food market.



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