

# Nutritional Power of Coconut Neera - Beyond a Health Drink to Food as Medicine

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The commercial potential of coconut palm is unique and different from other tropical crops due to its diversified health products for the existence of human life. Hence, the people of tropical world use the eulogistic epithet, “tree of life” for coconut palms. Coconut palm is an oleaginous crop cultivated in more than 85 countries for the production of edible oil and for the harvesting of coconut neera and sweet toddy from the spadix. As an energy health drink, the nutritional value of Coconut Neera (CN) is unquestionable. Based on the perishable nature of neera, proper scientific care is indispensable in order to prevent the auto fermentation at harvesting and processing level. Otherwise, it deteriorates the quality, which in turn reduces the shelf life of this valuable natural drink. Some of the competent research labs in Kerala have put their efforts for the prevention of innate fermentation of neera during harvesting and processing by physical and chemical measures. However, none of them was fully successful at industrial scale. The unscientific approach during the implementation of anti-fermentation methods and the lack of proper training for technicians may be the possible reason for this lacuna. Moreover, it affects the nutritional quality and natural aroma of this health drink. Altogether, the harvesting, processing and bottling of coconut neera was not satisfactory in Kerala. Moreover, the synthetic drinks gradually suppressed the marketing strategy of coconut neera, even though they are not at all competent with coconut based on its nutritional merits.

In order to overcome these constraints of neera harvesting and processing, the research team of Scopeful Bioresearch (SBR), the biotech company in Bionest, Kinfra Kochi has formulated a different approach in the processing of harvested neera. They standardised a processing protocol of harvesting neera for developing neera concentrate by maintaining all the nutritional quality. A semi-



Figure 1. Condensed Coconut Neera

liquid product of thick consistency and transparent with delicious taste and aroma of natural Neera was developed successfully by SBR with the shelf life of 24 months at room temperature (Fig.1). The protocol has been filed for Indian patent with trade name Nutricon C (NC) (Fig 2.a) and the company has started its production in retail by using the FSSAI license.



Figure 2.a. Nutricon C

The attractive part during the production of Nutricon C is the yield of neera water as the sub product that can be utilised as drinking water by further processing. In every trial of 50L of neera, an amount of 40L of neera water was collected along with the main product Nutricon C (10kg).

### Merits of Nutricon C

Nutricon C is readily soluble in water so that the natural neera drink can be prepared by mixing 3-4 teaspoon NC (15-20g) in 100ml water (Fig 2.b). In other words, one bottle of Nutricon C (200g)



Figure 2.b. Neera drink prepared from condensed neera

processed from 1 L of harvested neera can be used for the preparation of 5 bottles of neera drink of 200ml capacity. It is understood from the storage study that the shelf life of Nutricon C was 24 months without diminishing the nutritional quality from the date of manufacture. On par with previous reports on the nutritional composition of processed neera, Nutricon C has 16% moisture with calorie value of 326 Kcal/100 g with rich content of proteins, sugars, essential minerals, vitamins and aminoacids. In the case of minerals, all essential minerals needed for human metabolism like sodium, potassium, calcium, magnesium, iron, zinc, copper and selenium were present in NC. The presence of 18 amino acids inevitable for protein synthesis in body system was observed in NC. Besides the use of NC as a drink, based on the texture, aroma, nutritional value and the delicious taste, NC can be used as a bread spread as well as for preparation of protein rich jams with the trade name 'Protee Jam' without preservatives unlike the conventional jam preparation. Using NC, SBR has developed the protocol of preparing 8 types of jams using the fruits gooseberry, fig, peanut, banana, pineapple, cashew nut, chocolates and that are not popular today in jam industry (Fig 3.a & b). More over the nutritional value of NC was exploited by SBR in developing a herbal formula in



Figure 3.a. Jams prepared from Nutricon C (Protee Jams)- Peanut, Pineapple, Dates & Cashew nuts



Figure 3.b. Protee Jams – Chocolate, Banana, Gooseberry

consultation with Dhanwanthari, the pioneers in Ayurveda for increasing intelligence, immunity and memory in children and the product is labelled as the trade name 'DeliKids' (Fig4.). Thus, the potential of preparing diversified nutraceuticals and dietary supplements from Nutricon C (condensed neera) is enormous which may develop a different commercial platform in Neera industry.



Figure 4. Delikids- A nutraceutical from Nutricon C

### Quality analysis of Nutricon C

Regarding the profile of vitamins in NC, it contains Vitamin A (Retinol), Vitamin B1 (Thiamine), Vitamin B2 (Riboflavin), Vitamin B3 (Niacin), Vitamin B5 (Pantothenic Acid), Vitamin B6 (Pyridoxine) Vitamin B7 (Biotin) Vitamin B9 (Folic acid), Vitamin B12 (cyanocobalamin) and Vitamin C (Ascorbic acid). Further microanalysis of NC at SBR has shown the presence of two essential nutrients - Vitamin D3 (cholecalciferol- the 'sun shine' vitamin) and the amino acid Taurine.

### Vitamin D in Nutricon C

This is the first-time report indicating the presence of vitamin D3 in Nutricon C. It is estimated that NC contains 400 IU (10µg) Vitamin D3 per 100g NC. Vitamin D3 content in NC makes it an essential one for human metabolism for children and adults. Except fortified drinks, milk (cow, buffalo, goat) the

presence of Vitamin D3 in other natural drinks is highly negligible. It has been reported that human system requires 10-15µg (400-600 IU) Vitamin D3 per day. Vitamin D3 deficiency is a global threat of 50% of the human population hence it has become an important public health issue. Emerging research supports the physiological role of Vitamin D3 in strengthening bones, muscles and activates immune system. Vitamin D3 also increases the absorption of calcium by the body.

**Taurine in Nutricon C**

Taurine is a β-amino acid, with diverse cytoprotective activities. In human metabolism it is an essential nutrient. Today taurine has been approved for the treatment of heart diseases and other impaired functions of the body. It is estimated that NC has 10-13mg taurine per gram NC. However, Taurine is abundantly found in poultry, meat, seafoods, and dairy products, its presence in plant food and drink is unknown. People who eat meat and seafood have plentiful taurine intake whereas vegetarians consume much less, because plants do not contain taurine in appreciable amounts. As an

essential element of the body, taurine is added as a supplement in popular energy drinks for fortifying them by the manufacturing companies. Therefore, the presence of taurine in NC is unique for all the vegetarians as a therapeutic element essential for body metabolism. Taurine plays an essential role in digestion and it helps in liver function properly. It has been reported that taurine has widespread anti-inflammatory action as well as other beneficial effects in the treatment of major diseases like epilepsy, cystic fibrosis and diabetes.

Precisely, Nutricon C is a natural product processed from harvested neera, the wonderful gift from the tree of heaven. Proper scientific research in utilising the therapeutic benefits of neera for the production of its derived products as nutraceuticals and dietary supplements will promote the food industry and Ayurveda to a different scale. Thus, nutraceutical industry especially the development of herbal formulations in Ayurveda sector will certainly promote the economy of coconut farmers of all coconut-growing states in India and other coconut growing countries of tropical word.

**Statement of ownership and other particulars about  
INDIAN COCONUT JOURNAL  
FORM IV  
(See Rule 8)**

- |   |   |   |
|---|---|---|
| 1. Place of Publication   | : | Kochi - 11  |
| 2. Periodicity of Publication   | : | Monthly   |
| 3. Printer's Name   | : | Mini Mathew   |
| Nationality   | : | Indian  |
| Address   | : | Assistant Director,<br>Coconut Development Board,<br>Kochi - 11, Kerala.  |
| 4. Publisher's Name   | : | Mini Mathew   |
| Nationality   | : | Indian  |
| Address   | : | Assistant Director,<br>Coconut Development Board, Kochi - 11, Kerala  |
| 5. Editor's Name  | : | Deepthi Nair S  |
| Nationality   | : | Indian  |
| Address   | : | Director,<br>Coconut Development Board, Kochi - 11, Kerala  |
| 6. Names and addresses of individuals who own the newspaper and partners or shareholders holding more than one percent of the total capital | : | The periodical is owned by the Coconut Development Board which is a body corporate set up by the Government of India under the Coconut Development Board Act, 1979. |

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Date : 01-03-2024