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PROSPECTS OF VALUE ADDITION IN  
**COCONUT**



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**National Agriculture Higher Education Project**  
**Centre of Advanced Agricultural Science & Technology**  
Department of Agricultural Engineering  
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Thrissur, Kerala- 680 656

be the second best edible oil in the world, after Olive oil.

### Virgin Coconut Oil

Virgin coconut oil is extracted from fresh coconut kernel without any chemical processes. It is the purest form of coconut oil and water white in colour. This is done on a small scale by the traditional method which is now partially mechanised on a large scale by adopting wet processing technology. High quality of this oil makes it ideal massage



oil for babies. Coconut milk is fermented and then by mechanical process, water is separated from oil. No heating or application of sunlight or dryer is done for the process. Virgin coconut oil (VCO) is abundant in vitamins, minerals and anti-oxidants, thus making it as the 'mother of all oils'. It has got an extended shelf life. Virgin coconut oil is a major source of Lauric Acid and Vitamin E, Vitamin C and also slows down the ageing process. Technology for production of VCO have developed under Centre of Excellence in Post-harvest Technology, Kerala Agricultural University.



### Tender coconut water

Coconut water refers to the liquid endosperm of a tender coconut at an age of approximately nine months from time of pollination, the period before the solid endosperm or white meat forms. The water of tender coconut, technically the liquid endosperm, is the most nutritious wholesome beverage that the nature has provided for the people of the tropics to fight the sultry heat. This make coconut water



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particularly suitable for the burgeoning sports drink market. Young tender coconuts are still the best way to preserve coconut water (inside its natural container) but the nuts cannot be stored for more than 6 days at ambient temperature. Hence the preserved and processed coconut water has got good market potential.

### Neera

Neera is popular as a delicious health drink. Neera is a sap extracted from the inflorescence of various species of toddy palms and used to quench thirst. It is sweet and



translucent in colour. It is susceptible to natural fermentation at ambient temperature within a few hours of extraction. So it needs to be stored in cold storage after extraction. It is good for digestion, facilitates clear urination and prevents jaundice. Diversified value added products like coconut flower syrup, jaggery and coconut palm sugar are produced from Neera. Due to the wide application and health benefits Centre of Excellence in Post-harvest Technology, Kerala Agricultural University has taken effort for development of technology for collection and processing of Neera.

### Coconut vinegar

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.

### Coconut jelly

Product obtained from the upper parts of fermented coconut water is coconut jelly. This hard portion can be dipped in sugar and can be used as sweet after dishes.



## Coconut milk

Coconut milk comes from the flesh of the coconut. Coconut milk is an emulsion of two fluids: coconut cream and coconut water. Sterilised coconut flesh is formed to paste with the use of hammer mill and then pass through screw press and vibratory screens to produce coconut milk in industrial level. It is a major ingredient in our dishes, so that there exist a great demand for coconut milk. Coconut milk is purified and mixed with coconut water and pure water to dilute it. Then add 10-12 % sugar and 2 % stabilizer, emulsifier and flavour. After sterilization of this mix, it is packaged in bottles and marketed. It can be used for patients with lactose allergy due to the absence of lactose in coconut milk. It is a very good substitute to cow milk.



## Coconut Milk Powder

Coconut Milk Powder is meant to be a very fine powder, It is made by evaporating coconut milk by spray drying. To use it can be reconstituted in water. The instant powder is designed to mix more easily than the regular. Coconut powder is available in cans and tetra packs. The product has advantages such as less storage space, bulk packaging possible at low cost and long shelf life. Coconut powder and other Ready to eat extruded products can also be prepared from the coconut after extraction of Coconut Milk.



## Coconut chips

Coconut chips, as any other chips, it is a ready to eat snack food. Matured coconut kernels, after removing testa are sliced and dehydrated prior to seasoning. After proper dehydration slices are added with salt, spices or sweetened as per the end use. Coconut chips can be stored upto six months period without affecting nutritional and biochemical changes. In order to avoid breakage of chips during transportation, nitrogen flushing is usually done in pouches. Technology for preparation of coconut chips is developed under Centre of Excellence in Post-Harvest Technology.



## Coconut Snowball

The snowball is white coloured and ready to serve product. The white ball contains the tender coconut milk, which can be consumed by just inserting a straw through the top of the kernel. Since the coconut milk is not exposed to the atmosphere it retains its sterility. If the snowball is individually packed and refrigerated under hygienic conditions, its shelf life can be prolonged to more than 10 days.



## NAHEP - CAAST

To give a boost to coconut farming in the State, Kerala Agricultural University (KAU) has set up a Centre for Advanced Agricultural Science & Technology ( CAAST) for developing knowledge and skill in coconut-based secondary agriculture under the National Agricultural Higher Education Programme. KAU has selected coconut as the focus of the project considering the State government's thrust on coconut farming and the need to support the crop by all possible means & to ensure revival of coconut farming and support to growers with scientific protocols for value addition & processing.

The activities and research achievements under CAAST are spread over a number of thematic areas such as Conservation Agriculture, Precision farming / Farm Mechanization, Secondary Agriculture, Specialty agriculture, Renewable Energy Sources, Integrated Farming System (IFS), Agriculture Market Intelligence, Good Agricultural Practices, Hitech/Protected Cultivation, Climate Resilient Agriculture, Food Safety, Big Data Analysis and Genomics-assisted Breeding.

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