

Flavored Coconut Milk - the processing Technology

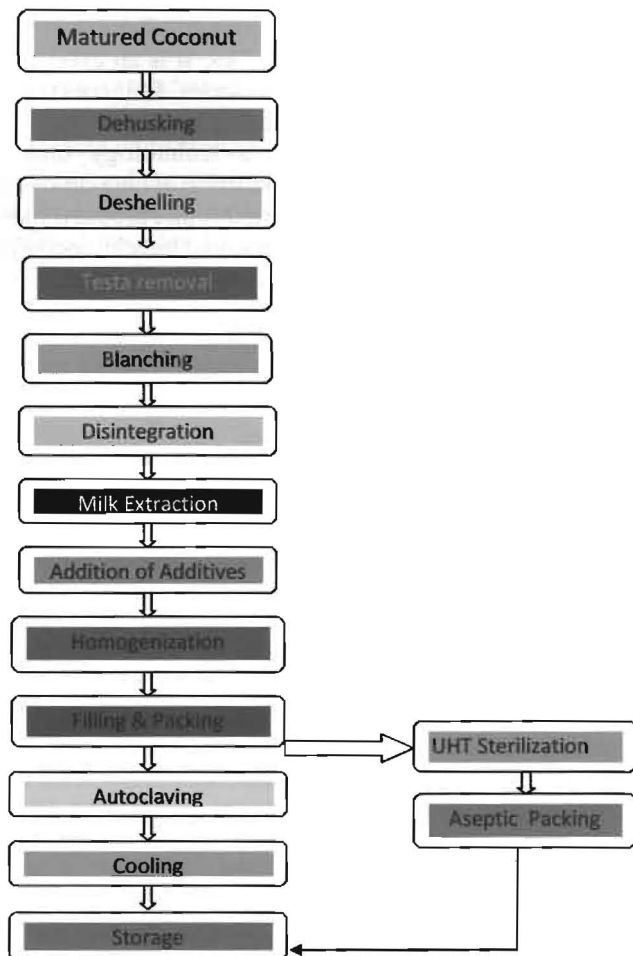
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Coconut milk is immensely rich in vitamins and minerals. Coconut milk can be processed as a nutritional health beverage with varying flavours according to consumer acceptability. Unlike cow's milk, coconut milk is lactose free and can be used as a milk substitute for those who are lactose intolerance. Coconut milk is derived from the flesh of coconut and requires processing. Since coconut juice is higher in natural oils, there are chances for early spoilage. Proper hygienic monitoring is required during each stage of processing.

Coconut juice is obtained by manual or mechanical extraction of comminuted coconut meat, with water. Coconut juice is rich in moisture, neutral in pH and rich in nutrients, and is an excellent medium for many kinds of microorganisms'. Coconut juice may possibly support the growth of *Bacillus* spp, *Pseudomonas* fluorescence, *Ecoli*, *Streptococcus faecalis*, *Saccharomyces cerevasiae*, *Clostridium* spp, *Lactobacillus* spp and *Salmonella typhinurium*. Special precautions are necessary to ensure that contamination does not occur.

Fresh matured coconuts are dehusked and deshelled manually using hand tools. The deshelled coconut kernels in the form of round balls are pared using scrapers to remove the testa. The pared kernel balls are then cut open to drain off the water and then washed thoroughly in fresh water. The white coconut meat is blanched in hot water/live steam. The blanched white coconut meat is then ground into a fine mass using disintegrator and milk is extracted using a milk extractor. Some portion of the fat is removed from the milk so as to minimize the fat content in the final product. Extracted coconut milk is added with purified drinking water, sugar and permitted food additives. The solution is diluted in such a way to make it a ready to drink beverage. Careful cleaning procedures are adopted to eliminate most of the microorganisms. Strict hygienic practices are followed for scrapping, squeezing, filtering and homogenization so as to minimize the bacterial load in the juice. Equipments and utility items should be strictly bacterial free and the pasteurized coconut juice has to be packed in sterile bottles only. Hygienic handling and aseptic packing prevent microbial contamination.

Various time temperature combinations are adopted to find out the stability of product in ambient condition.



Trials are being conducted for shelf life studies of flavored coconut milk. Autoclaved samples are being packed in glass bottles at different temperatures and different time duration. Autoclaved samples are cooled immediately to prevent the growth of thermophilic bacteria surviving heat treatment. Sterilized coconut milk at 120°C for 30 min (Autoclave) is found microbiologically safe. Sterilization at 120°C for 30 min is sufficient to destroy the most heat resistant spore forming pathogenic organisms without affecting the physical and organoleptic characters of flavored coconut milk.



Flavoured Coconut Milk

Nutritional values of Flavoured Coconut Juice*

Parameters	Flavored coconut milk
Energy Value (per 100 ml)	75 Kcal
Total fat Cholesterol	1- 3% Nil
Total Carbohydrates)	15-16%
Total minerals	0.39-0.42%
Protein	1-1.2%
Total Solids	21-22%

* (Data generated at CDB lab)

Project cost

The costing for setting up UHT plant for flavored coconut milk with a capacity of 4000 liter/shift is given below. The project cost involves the combination of land and building, plant and machinery, pre-operative expenses and working capital. The estimated project cost for the plant is calculated to be Rs.176 lakhs. The detailed broad item-wise breakup of project cost is given below.

S.No	Particulars	Amount (Rupees in Lakhs)
1	Land (50 cents)	-----
2	Building 4000 sq.ft	40.00 (@ Rs.1000/- per sq.ft)
3	Plant & Machinery	111.00
4	Preoperative Expenses	5.00
5	Working capital(margin)	20.00
Total		176.00

Land and Building

S.No	Particulars	Amount (Rs. in Lakhs.)
1	Processing area	12.00
2	Raw Material store	5.00
3	Finished goods store	6.00
4	Office room	6.00
5	Lab	5.00
6	Workers room	4.00
7	Reception	2.00
	Total	40.00

Sl. No.	Item	Qty	Unit	Unit Cost (Rs. In lakhs)	Amount (Rs. in Lakhs)
1	Desheller	3	no.s	1.5	4.50
2	Pairing unit	3	no.s	1.75	5.25
3	Washing	1	no.s	3	3.00
4	Precutter	1	no.s	2	2.00
5	Disintegrator	1	no.s	3	3.00
6	Screw press	1	no.s	3	3.00
7	Aquatic tank	1	no.s	1.5	1.50
8	Filter	1	no.s	3	3.00
9	Homogenizer	1	no.s	5	5.00
10	UHT	1	no.s	30	50.00
11	Packaging unit	1	no.s	8	8.00
12	Pipelines	1	lot	2	2.00
13	Diesel generator	1	no.s	5	5.00
14	CIP Unit	1	no.s	5	5.00
15	Laboratory equipments	1	lot	2	1.00
16	Plant IT system & networking	1	lot	3	3.00
17	Installation Charges & Labour	1	lot	5	5.00
18	Miscellaneous	1	lot		1.75
	Total		111.00		

Flavored coconut milk contains essential nutrients, which are having several health benefits and is considered a healthy drink. Coconut milk is an economically feasible and commercially viable product which offers a promising future for coconut sector and coconut farmers.