



Coconut in Dairy industry

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There always exists a good and prospective market for dairy based products such as ice cream, kulfi, yogurt, milk shakes etc. Coconut milk can be the best substitute for dairy milk especially for those in the Asian countries where coconut is abundantly available and is an integral part of the daily diet. An increased demand for non-dairy probiotic products also have come mainly from lactose intolerance, vegetarianism and milk cholesterol content. Present scenario of price fluctuation in coconut has put the coconut farmers in agony. Value addition is the imperative alternative to improve the farmer's income and livelihood security. Incorporation of coconut products in ice cream and other frozen desserts is being practiced in countries like Thailand, Malaysia and Indonesia. In India, coconut pulp is added to ice cream to convert it into a premium product and sold as tender coconut ice cream by several brands including Naturals, Meriiboy, Lazza etc. According to FSSAI, ice cream means frozen milk product obtained by freezing a pasteurised mix prepared from milk or other products derived from milk, or both, with or without the addition of nutritive sweeteners and

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Coconut milk based ice cream

This is another innovation mainly formulated in response to the demand by one of the coconut processing industries to target the common public. Here, the fat source is coconut milk. In the view of the cost of tender nut, skimmed milk powder was used as source for Solids Non Fat (SNF). Refined suagr was used as sweetner. The product is having a total fat content of 11%. The standardized formulation was commercialized to M/s. Dinesh foods, Kannur. For technology support for coconut based delicacies, entrepreneurs can contact ICAR- CPCRI.



other permitted non-dairy ingredients. The said product may contain incorporated air and shall be frozen hard, except in case of softy ice cream, where it can be frozen to a soft consistency. Frozen desserts or frozen confections mean the products obtained by freezing a pasteurised mix prepared with edible vegetable oils or fats or vegetable protein products, or both. It may also contain milk fat and other milk solids with the addition of nutritive sweeteners and other permitted non-dairy ingredients. Similar to ice cream, the said product may contain incorporated air and may be frozen hard or frozen to a soft consistency. The only difference between frozen dessert and ice cream is that frozen desserts use vegetable fat in place of milk fat. The constituents of an ice cream are milk fat, milk-solids -non fat, sugar, stabilizers, emulsifiers, flavor and colour. Milk fat enriches and mellows the ice cream, giving it a

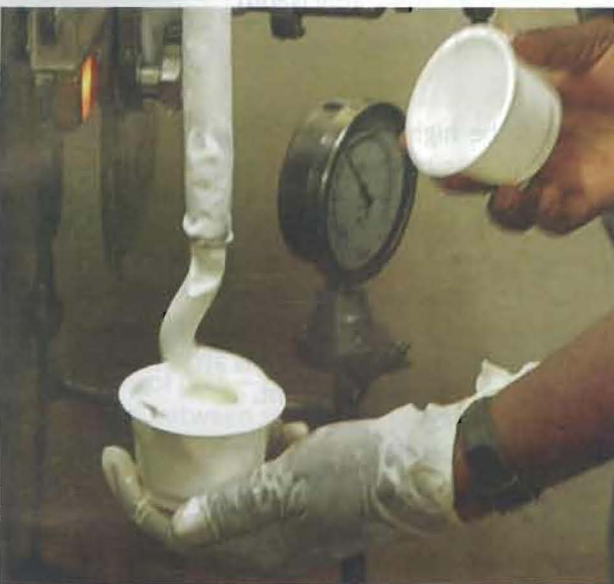


Frozen coconut delicacy containing coconut sugar



it adds to the sweet taste. The protein helps to make the ice cream more compact and smooth. Sugar is added to increase the acceptability of the product. It is the cheapest source of total solids in the mix. Stabilizers are added to prevent the formation of large ice crystals during storage. Emulsifiers provide uniform whipping quality to mix and also to produce ice cream with smoother body and texture. We have tried to substitute the major source of fat and solids non fat (SNF) in ice cream ie. cream and skimmed milk powder with coconut milk and tender coconut pulp respectively. The first step for making ice cream is the selection and preparation of ice cream mix. Knowledge of calculation of ice cream mix is helpful for properly balancing a mix, in establishing and maintaining a uniform quality and in making a product that conforms to legal standards. Before making the mix, proximate composition of the major ingredients should be estimated and accordingly ice cream mix can be made with the addition of water for making upto hundred percentage. Tender

full, rich, creamy flavour. The fat also contribute to the body and melting resistance of ice cream while producing a smooth texture. Cream or butter are the common sources. Solids non fat consists of proteins, milk sugars, and mineral matter. It mainly improves the body and texture. The sugar present in



coconut water obtained after the extraction of pulp was added in place of potable water used for dilution. Refined sugar was replaced with coconut sugar which is a good source of vitamins, amino acids, minerals besides calories. Dairy milk contains a fat percent of maximum 3-3.5 % and that of coconut milk is 27-33%. Ice cream should have a fat percent of 10-12%. The challenge is to decrease the coconut milk fat to 10-11% either by cream separation or by dilution. Efforts were made to optimize the level of ingredient and machine parameters for getting an acceptable product. The optimized product was named as 'Frozen Coconut delicacy'.

Frozen coconut delicacy

The delicacy envisaged has exclusive coconut products such as coconut milk and tender coconut (pulp and water), coconut sugar apart from other

Ice cream unit at ICAR-CPCRI



Pasteurizer

Homogenizer

Ageing vat

Continuous Freezer



Hardener

ingredients such as stabilizer and emulsifier. Suitable stabilizers and emulsifiers for coconut milk were standardized. Here the fat content of coconut milk is reduced to 11%. The methodology followed were mixing, pasteurization at 75°C for 15 min, two stage homogenization at 2000 psi/ 1000 psi, ageing for an hour at 4°C, and freezing using a continuous freezer (-5°C) and hardening at -28°C. The technology was commercialized to M/s. Hangyo Ice creams Pvt. Ltd. The firm has branded it as 'Vegan Coconut Delicacy'. Cocoa flavoured delicacy was also made and named as 'Choconut'. It is a premium product and was launched by Shri. Radha Mohan Singh, the then Hon'ble Union Minister of Agriculture and Farmers' Welfare at New Delhi during the 90th ICAR foundation day celebration held on 16th July 2018. With the help of Coconut Development Board, Kochi an ice cream plant was established at ICAR-CPCRI, Kasaragod.

Cost economics of frozen coconut delicacy (100 Litre mix)

Particulars	Economic analysis of Frozen coconut delicacy made of Coconut milk+ Coconut sugar+ tender coconut (Rs.)
Cost of Machinery	
(50 L capacity)	18,60,000
Working capital	76,36,000
Selling cost	150/ L
Unit cost of production	81.02258
Breakeven period	58.0683
Net profit %	46