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Preparation of dairy based value-added food product using coconut milk

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Abstract

Background: The desire for high-quality, nutrient-dense meals by consumers has sparked a lot of interest in the creation of innovative methods for preparing food. Both business and academics have progressed non-thermal technology advancements to tackle the issue of creating safe processed food of superior quality. The aimed of this study to prepare value-added food products using coconut milk.

Methods: These methods may be used to ensure sterility and a longer shelf life for goods prepared from coconut. Fresh coconut and fruits were used for the process. The grated coconut was used to make coconut milk. From the prepared coconut milk, coconut yoghurt and ice cream were made by adding different flavors, like blackberry, coconut, and kiwi.

Result: In the result, the flavored added sample was better than control. Among flavor added sample kiwi was much nutritious.

Conclusion: Additionally, a wide variety of different food items that meet human nutritional and physiological needs have been made from coconut. Beverages, yoghurt, jam, jelly, chips, spread, milk, spray-dried coconut milk powder, coconut cream, goods are a few examples of value-added products made from coconut.

Keywords: Coconut, value addition, preservation, processing, shelf life

1. Introduction

One of the most priceless gifts from nature to humanity is the coconut. Each component of a coconut tree has a specific usage or purpose. The common names for this tree include "Tree of Heaven," "Tree of Abundance," "Tree of Life," and "kalpavriksha." The coconut was formerly referred to as *Nux indica*, the Indian nut, and the Nargil tree, throughout the mediaeval era. The coconut palm is referred to in Western literature by the Malayalam word "Tenga," which is connected to Tamil "Tennai" and is said to have been brought over from Sri Lanka. The coconut palm, known scientifically as *Cocus nucifera* Linn, is a monocotyledon, which is a member of the family *Palmae* and the order *Arecaceae*. In Hinduism, coconuts have long been ceremonially linked to the work of Gods and Goddesses. Its mention in *Kishkinda kand* and *Coconut Tree Aranya kand* in the *Valmiki Ramayana* provides strong evidence for its antiquity in Indian mythology^[1, 2].

The coconut palm tree supplies housing, utensils, and clothes, thus it continues to be a vital source of income for those who reside in the coastal states that produce coconuts. Because of its many benefits, the locals loved and reverently praised the coconut plant as "Kalpavriksha." The importance of the coconut palm's several uses among the oilseed palm species barely needs to be emphasised. The fact that this tree crop is produced in more than 90 nations over an area of 14.231 million hectares and yields around 57.514 billion nuts or

10.52 million tonnes of copra speaks volumes about its economic significance. However, 78% of the land and production are in the Philippines, Indonesia, India, and Sri Lanka. India is the third-largest producer of coconuts in the world, producing 16.9 billion nuts annually from an average area of around 1.89 million hectares of planting^[3].

Several oleochemicals that come from coconut oil have numerous uses in a variety of industries. Biodiesel may also be produced using it. The residue left behind after the oil was extracted from copra, known as coconut oil cake, is a beneficial cow feed. The toddy produced by the coconut palm is used to make jaggery, vinegar, and arrack. As well as being used to build homes, coconut wood is also utilised to create floor tiles, wall panels, and display items. The delicate coconut is a foundation for many ayurvedic remedies and is used to make a healthy health and sports drink. Vinegar, jelly, Nata de coco, and wine are among the items that mature nut water produces^[4].

Along with being utilised as fuel, the shell is also used to make a variety of commercial goods, including ice cream cups, shell-based activated carbon, shell powder, utilitarian items, and showpieces. Eating and nutrition may be found in the delicate palm bud. A delicious treat that may be used as a commercial value-added product is the haustorium, which is a soft ball-like structure that develops within the nut over time. In order to thatch homes, palm leaves are employed. In addition to being a community lamp, dried leaves are utilised as fuel. In traditional dances, the spindle leaf is employed as props and clothing^[5].

Despite the extensive price support measures implemented, the price of coconut oil has fallen over the last several years because of substantial imports of less expensive vegetable oil, particularly palmolein. Demand for healthy food items has risen, as seen by the rising popularity of so-called soy milk, oat milk, coconut milk, and almond milk, which are mostly formed of nuts and grains with a long history in both east and west cultures^[6]. This research paper focus on Preparation of dairy based value-added food product using coconut milk.

2. Methodology

2.1 Site of an experiment

The study was conducted at the 'Warner School of Food and Dairy Technology Research Laboratory' at the Sam Higginbottom University of Agriculture, Technology, and Sciences in Prayagraj, UP, and the Nutrition Research Laboratory in the Food Nutrition and Public Health Department at Ethelind College of Home Science

2.2 Methodology

Raw, fully ripe coconut, blackberry, orange, and kiwi were used to prepare different flavoured ice creams. Coconut yoghurt and coconut ice cream have been made with different fruit pulps from coconut milk that has been made from fresh fruits. Four samples were taken. Sample 1 was used as a control, while samples 2, 3, and 4 had blackberry, orange, and kiwi added to them for flavor, respectively.

2.3 Preparation of coconut milk

Coconuts were cleaned by removing outer fiber material. Cleaned coconuts were cut into two equal parts to facilitate grating. White coconut meat was extracted out in shredded form by using coconut grating instrument. After grating, shredded coconut meat was mixed with water at the ratio of 1:2 (w/w) and ground for better milk extraction. This mixture was kept for 10 min in undisturbed condition and later white liquid milk was extracted by passing through a muslin cloth. Fresh coconut milk was prepared every time during the study.

2.3 Preparation of orange, kiwi, and blackberry pulp

Peeled, middle-seed-portion-removed orange, kiwi, and blackberry fruits were ground into a smooth paste after being well-ripened. To stop browning, the same was added right away to the finished product. Yogurt and coconut-based ice cream were then applied to the created mixture.

2.4 Yoghurt preparation

Four sets of different frozen yoghurt combinations were made. Fat content was set at 8%, milk solids at 12% excluding fat, sugar at 16%, stabilizer/emulsifier at 0.8%, and vanilla at 0.3%, and all combinations were standardized to these percentages. The materials in each treatment were homogenized using a modified version of the procedure

described and then heated to 80 °C for 30 minutes. The batches were all aged at 5 °C for 24 hours. On the other hand, 4 ice cream mixtures were frozen after spiked with prepared yoghurt at a 10% volume-to-volume ratio. For 24 hours at 18 °C, the samples were frozen in a horizontal batch freezer before being analyzed. With the help of the stabilizer, the frozen yoghurt was blended with skim milk, sugar, and emulsifier to get a consistent texture. Homogenization occurred at a temperature of 65 °C, after heating the sample to 60–65 °C in a double-jacketed vat. Pasteurization (90–95 °C/30 min) in a double jacketed vat, inoculation (2.0%), chilling (42–43 °C), and incubation (42 cups to LA 0.8%) typified the sample treatment technique. Several different fruit pulps, including blackberry, orange, and kiwi, were mixed with coconut pulp before being frozen at 3 °C to 4 °C.

2.5 Ice cream preparation

The ice cream mix was prepared in 100 ml batches. 5 g of cream, 5 g of skimmed milk powder (SMP), 10g sugar, 1 drop blackberry, orange, and kiwi, for flavor and 0.2g stabilizer added to the milk sample. All the essential requirements such as milk solids-non-fat, milk fat, sugar, and stabilizer as well as water was thoroughly mixed to make ice cream mix. The mixture of Ice cream was pasteurized at 80°C for 30 seconds followed by immediate cooling and homogenized. After this, the ice cream mix was aged at 4°C for 8 hours. Before freezing the ice cream mix, blackberry, orange, and kiwi, flavors were also added.

2.6 Analysis of prepared dairy products

The various frozen yoghurt and ice-cream treatment samples were examined for Organoleptic quality, Antioxidant activity by the DPPH method and Physicochemical analysis.

2.7 Statistical analysis

The data obtained for different parameters were analyzed statistically by using paired t-test, and critical difference test at a 95 percent significance level

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