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## Standardization and development of products by using coconut

**Ankita Shukla, Dr. Mamta Jaiswal, Kiran Agrahari and Archana Singh**

#### Abstract

The objective of present investigation “Standardization and Development of Coconut Based Products” was to standardize and develop the products using coconut & their sensory evaluation. Coconut milk provides 230 calories and is 68% water, 24% total fat, 6% carbohydrates and 2% protein. The fat composition includes 21 grams of saturated fat, half of which is lauric acid. Coconut milk is a rich source of manganese and a good source of phosphorus, iron and magnesium, with no other nutrients. Developed products of Coconut were Cake, Cookies. The organoleptic evaluation of products was done by using (9-point Hedonic scale). The result of coconut based products for (Cake & cookies) (T1) was best in all treatments in case of all sensory attributes. The highest average score for overall acceptability was found in experimental samples. Developed products were accepted by members.

**Keywords:** Lauric acid, saturated fat.

#### Introduction

The coconut tree (*Cocos nucifera*) is a member of the family Arecaceae (palm family) and the only species of the genus *Cocos*. The term coconut can refer to the whole coconut palm or the seed, or the fruit, which, botanically, is a drupe, not a nut. The spelling cocoanut is an archaic form of the word. The term is derived from the 16th-century Portuguese and Spanish word *coco* meaning "head" or "skull", from the three indentations on the coconut shell that resemble facial features. Studies have shown that coconut water can reduce the risk of heart attacks, lower blood pressure, and hypertension.

Tender coconut water, preferably fresh, can be had once a day to improve cardiovascular health. Kidney stones occur when there is an accumulation of crystals in your kidneys that should have been flushed out through urine. Research has shown that coconut water reduces the amount of crystals deposited in the kidneys, which significantly reduces the occurrence of kidney stones.

Coconut water has an amazing alkalizing effect which helps restore a healthy pH in the body. So, next time you face a disturbing acidity and heartburn, don't think before sipping on this tasty drink. Coconut milk provides 230 calories and is 68% water, 24% total fat, 6% carbohydrates and 2% protein. The fat composition includes 21 grams of saturated fat, half of which is lauric acid. Coconut milk is a rich source of manganese and a good source of phosphorus, iron and magnesium, with no other nutrients of magnesium (36%), 0.33 milligrams of vitamin B1 thiamine (36%), 0.6 milligrams of manganese (33%), 7 milligrams of zinc (24%), 0.8 milligrams of vitamin B5 pantothenic acid (8%), 0.13 milligrams of vitamin B6 (11%), 55 milligrams of calcium (5%).

#### Objective

- To standardize and develop the products using coconut.
- Organoleptic evaluation of developed products.

#### Materials and Methods

To present investigation entitled “Efficacy and product development of Incorporated coconut product” was carried out to coconut products”. The study was conducted in the Department of Food and Nutrition, faculty of Home science, Kamala Nehru Institute of physical and Social Sciences, Sultanpur.

Justified, judicious and scientific methodological considerations are indispensable for any investigation to deduce meaningful interferences concerning the objectives of the study. The study design reflects to the logical manner in which units of study are assessed and analyzed for the purpose of drawing generalizations. Thus, with the view of the available resources, the best procedures for taking correct observation should be first sorted out in a logical manner so that unbiased interference can be drawn. This chapter delineates information pertaining to the research design and methodological steps used for the investigation. The research procedure has been distinctly described as under in the following heads:-

**Procurement of Material**

For the present investigation material e.g., coconut was produced from the local market of Gauriganj City. The procuring was done in single a lot to avoid variation compositional differences so that the quality differences should be ruled out.

**Processing of raw material**

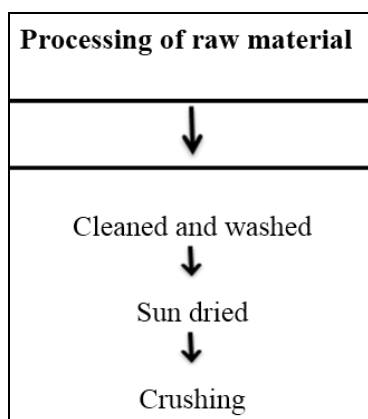


Fig 1: Flow chart of processing of raw material.

**Processing of Coconut**

These materials were subjected to cleaning, washing and scalp drying in following manner.

**Cleaning and washing**

Coconuts were washed 1-2 times with tap water and then rinsed with water to remove dust, dirt & other adhering impurities.

**Drying**

Coconut were spread on polythene sheet in shade and covered by muslin cloth to protect from foreign particles at room temperature at 27# 3 c for 1 day till they become brittle.

**Grated coconut making**

All above dried coconuts were converted into grated coconut separately through grinder and strained to get uniform grated coconut.

**A: Laddu**

Ingredients	Amount	
	Controlled	Experimental
Grated Coconut	-	250
Ghee (g)	50	50
Mawa (g)	250	250
Tagar (g)	300	300
Mewa(Cashews, Almonds)	1/2 cup	1/2 cup
Small Cardamom	8-10	8-10
Besan	250	

**Method**

- ❖ Roast mawa in a pan till it turns light pink. Cut cashews and almonds into small pieces and clean the chironji.
- ❖ Once the roasted mawa cools down, add grated coconut, mewa, and cardamom into it.
- ❖ Mix them well with the help of a ladle. Save little coconut powder for later use to dust the coconut laddus.
- ❖ Mix the ingredients well and shape the mixture into small laddus. Roll each laddu in the dried coconut powder.
- ❖ Coconut Laddu are ready. You can store these laddus for 10 days in the refrigerator.

**B: Coconut Kheer**

Ingredients	Amount	
	Controlled	150g.
Grated Raw Coconut	-	1L
Milk	1 L	1 cup
Ghee	1 Tbs	15 to 16
Cashew Nuts	15 to 16	25 to 30
Raisins	25 to 30	75g
Sugar	75g	4 to 5
		4 to 5

**Method**

- ❖ Pour milk in a thick based pan to boil.
- ❖ Grate the coconut, pour Ghee in a frying pan (kadhai) then put the grated coconut in it. Fry till coconut turns light brown.
- ❖ Once the milk comes to boil, add fried coconut to it, cook till the milk comes to boil again as you stir regularly with a spoon.
- ❖ Now mix cashew nuts and raisins in to the Kheer and cook till it turns thick. Stir from time to time to prevent Kheer from sticking at the base. Kheer is ready once coconut and milk have blended well together. Turn off the gas, put sugar and Elaichi in Kheer and mix properly.
- ❖ Coconut Kheer is ready, take t out in a bowl and garnish with almonds chopped into thin strip.

**Result and Discussion**

The data were collected on different aspects per plan were tabulated and analyzed statistically. The result from

**Organoleptic evaluation of coconut based products.**

**Organoleptic evaluation of coconut based products.**

- Flavor and taste
- Body and texture
- Color and appearance.
- Over all acceptability.

Table 1: Organoleptic evaluation of Kheer

Product	Flavor& taste	Body \ texture	Color& appearance	Overall acceptability
T0(controlled)	7.7	7.7	7.6	7.7
T1(experimental)	8.9	8.8	8.8	8.9

Table 1. Shows that the experimental (T1) obtained maximum 8.9, 8.8, 8.8 and 8.9 for flavour & taste, body & texture, color& appearance and overall acceptability; while control (T0) obtained 7.7, 7.7, 7.6, and 7.7 for flavor & taste, body & texture, color& appearance and overall acceptability respectively. This indicated that the experimental (T1) Kheer was found to be fallen under category of “Like Very Much to like extremely”.

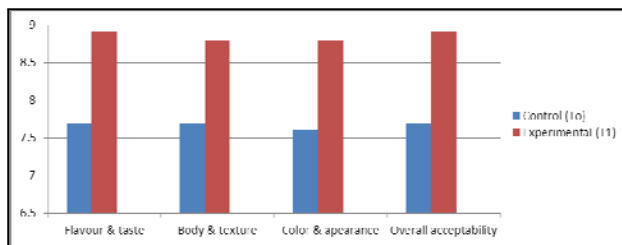


Fig 1: Mean overall acceptability of Kheer

Table 2: Organoleptic evaluation of Laddu

Product	Flavor& taste	Body \ texture	Color& appearance	Overall acceptability
T0(controlled)	8.0	8.1	7.9	8.0
T1(experimental)	8.9	8.9	8.8	8.9

Table 2 shows that the experimental (T1) obtained maximum 8.9, 8.9, 8.8, and 8.9 for flavor&taste, body & texture, color& appearance and overall acceptability; while control (T0) obtained 8.0, 8.1, 7.9, and 8.0 for flavor & taste, body & texture, color& appearance and overall acceptability respectively. This indicated that the experimental (T1) Laddu was found to be fallen under category of “Like Very Much to like extremely”.

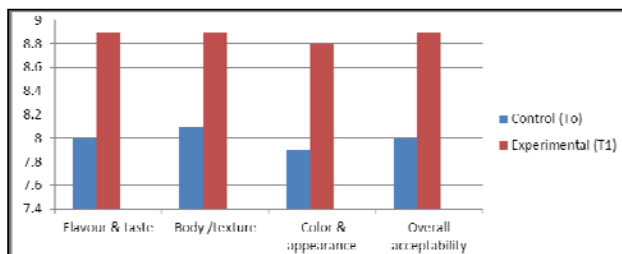


Fig 2: Mean overall acceptability of Laddu

Chuku, L.C, *et al* (2014) [3] studied that The mineral element content of coconut water from three different species was determined in samples gotten form Rivers State.

Ca, Na, K, Fe, Cu, S, P and Cl were determined using the Atomic Absorption Spectrometry (AAS) excluding chloride which was determined by titration method. The concentration of this mineral element studied lies within the ranges (ppm) with Ca (25-55), Na (40-85), K (110-165), Fe (0.542-1.625), Cu (0.000-0.018), S (10.35- 30.00), P (0.01-0.53), Cl (2050.00-2565.00). The protein content (i.e. % total protein) was determined as crude protein using the macro kjeldahl Markham distillation method. The values ranged between 0.30-0.40, 0.10-0.20, and 0.49-0.55 for the three different species respectively.

Alan B. Feranil, *et al* (2012) [2], studied that Coconut oil is a common edible oil in many countries, and there is mixed evidence for its effects on lipid profiles and cardiovascular disease risk. Here we examine the association between coconut oil consumption and lipid profiles in a cohort of

1,839 Filipino women (age 35-69 years) participating in the Cebu Longitudinal Health and Nutrition Survey, a community based study in Metropolitan Cebu. Coconut oil intake was estimated using the mean of two 24-hour dietary recalls (9.5±8.9 grams). Lipid profiles were measured in morning plasma samples collected after an overnight fast. Linear regression models were used to estimate the association between coconut oil intake and each plasma lipid outcome after adjusting for total energy intake, age, body mass index (BMI), number of pregnancies, education, menopausal status, household assets and urban residency. Dietary coconut oil intake was positively associated with high density lipoprotein cholesterol especially among pre-menopausal women, suggesting that coconut oil intake is associated with beneficial lipid profiles. Coconut oil consumption was not significantly associated with low density lipoprotein cholesterol or triglyceride values. The relationship of coconut oil to cholesterol profiles needs further study in populations in which coconut oil consumption is common.

**Summary and Conclusion**

Coconuts are known for their great versatility, as evidenced by many traditional uses, ranging from food to cosmetics. Coconuts are distinct from other fruits for their large quantity of "water", and when immature, they are known as tender-nuts or jelly-nuts and may be harvested for their potable coconut water.

In a 100 ml (gram) portion, coconut milk provides 230 calories and is 68% water, 24% total fat, 6% carbohydrates and 2% protein (table). The fat composition includes 21 grams of saturated fat, half of which is lauric HYPERLINK "https://en.wikipedia.org/wiki/Lauric\_acid" acid.

Coconut milk is a rich source (20% or more of the Daily Value, DV) of manganese (44% DV) and a good source (10-19% DV) of phosphorus, iron and magnesium, with no other nutrients in significant content.

The present investigation entitled “Standardization And Development of Products by Using Coconut with two objectives.

- ❖ To standardize and develop the products by using coconut.
- ❖ Organoleptic evaluation of developed products.

The experimental work was carried out in the department of food and nutrition, faculty of home science, K.N.I.P.S.S. Sultanpur. To standardized and development of coconut based products, requirement different materials like, crushed coconut, sugar, milk, dry fruits, etc. were used in the experimental would be purchased from local market of Gauriganj.

In view of the facts regarding nutritional quality of developed products Coconut (ICMR, 2010) was made the developed acceptable coconut based products.

(a) The experimental (T1) Kheer obtained maximum 8.6, 8.5, 8.5 and 8.6 for flavour &taste, body & texture, colour& appearance and overall acceptability; while control (T0) obtained 8, 8.4, 8.3, and 8.4 for flavour &taste, body & texture, colour& appearance and overall acceptability respectively. This indicated that the experimental (T1) Kheer was found to be fallen under category of “Like Very Much like extremely”.

(b) The experimental (T1) Laddu obtained maximum 8.9, 8.8, 8.8 and 8.9 for flavour &taste, body & texture, colour & appearance and overall acceptability; while control (T0) obtained 7.7, 7.7, 7.6 and 7.7, for flavor & taste, body &

texture, colour & appearance and overall acceptability respectively. This indicated that the experimental (T1) Kheer was found to be fallen under category of “Like Very Much to like extremely”.

The developed products were given to the panel of 10 judges products were tested for flavour and tested for flavour and taste, body and texture, colour and appearance, overall acceptability. The Organoleptic evaluation of products was done by using score card method (9-point hedonic scale). The result of coconut based products Kheer, Laddu.

The highest average score for overall acceptability was found in experimental products made by developed preserved food products were mostly accepted by panel member.

### **Recommendation**

- Standardize and develop the products by using coconut.
- Nutrient analysis of coconut & coconut based products.

### **Limitation of Study**

1-Since the study is carried out for short period so that and other resources are limited to an extent.

2-The market of this study was purchased for local market of Gauriganj.

3-It was an average method which has its own limitation of respondent dependent information without any alternative.

### **Acknowledgement**

All glory to the almighty, whose blessing in the success behind this project praise pride and perfection belong to almighty. So first of all I would like to express my deepest sense of gratitude to the omniscient power of the universe, the almighty God. This project would not have been possible without the support of many people. Word fails to express my sense of indebtedness and profound gratitude towards my honourable Advisor Dr. Mamta Jaiswal (Head), co-advisor Miss Kiran Agrahari & Co-advisor Miss Archana Singh, Faculty of Home science, Kamla Nehru Institute of Physical and Social Science, Sultanpur for her noble advice constructive criticism and valuable Suggestion. Many thanks to my honourable advisor for her innovative ideas. Valuable suggestion unending inspiration enduring fortified during my study. Her continued encouragement positive attitude towards my ability made the achievements of this goal easy to tackle and complete to my work in time. Idem it is rare opportunity and the proud privilege of my life to express my best regards senses of homage and gratitude to my reverent parents Mr. Akhilesh Chandra Shukla & Mrs. Asha Devi and my beloved Brothers & Sister. My Family's constant inspiration, everlasting affection, their blessing sacrifices emotion, financial and moral support are the prime fact which made me capable of doing this all. From the very special corner of my heart I wish to record my indebtedness to my friends for their kind help and express my manifold thanks to my brother Ankit Shukla my friend Alpana & Supriya Singh. I am also thankful to all respondents for giving me proper co- operation during the data collection.

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