



Preparation and Standardization of Coconut, Dry Dates & Jaggery "Ladoo" and its Storage Study

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ABSTRACT

The calcium and iron is common problem in children's lack of nutrients is one of the factors. Coconut dry dates & Jaggery was used for the development of ready-to-eat Indian traditional sweet meal commonly known as "ladoo" with rich source of calcium, iron, and dietary fibers. In the present study was formulated to develop mineral added nutrient ladoo with the incorporation of dates and Jaggery in different proportion of coconut, jaggery, dates & other nuts. According to 9 points hedonic scale was observed that 32:30:28:10 ratios found best combination. The changes in the quality of coconut dry dates and Jaggery 'ladoo' packed in polypropylene (PP, 75µ) and during storage to establish the shelf life under ambient temperature conditions (20-30 °C). Nutrient analysis protein (8 g), fat (14 g), carbohydrate (46 g), crude fiber (2gm), calcium (2gm), moisture (6.66gm) and ash (2gm) were carried and showed better quality of ladoo. During storage it was observed that the product stored up to 2 months after 2 months the moisture and fat in the product was reduced hence dates and Jaggery supplemented ladoo suitable for children's.

Keyword: Coconuts, Dates, Jaggery, Calcium, Ladoo, Iron and Polypropylene

INTRODUCTION

It is indigenous traditional food. The past centuries discover the scientist devans mystery deshmane rehaman and pratik deshमुख store the knowledge of ladoo. It is a simple and sweet innovative new product. Ladoo is often prepared for festival and family event such as wedding and birth or given as a prasad. Hindu temple especially at tirumala and

amaranth. Ladoo is consider as traditional eid festival in some Muslim. Ladoo is a ball shaped sweet popular in the Indian sub constitute. Ladoo is various type found in the india that is khoa, peda ladoo, coconut and dates padel, malai ladoo, besan ladoo, basundi ladoo. The ancient year found the ladoo in world that is Bangladesh, Pakistan, Shri Lanka, India (sangita devi dundoo, madhulkha das 2004)

Ladoo preparation is main ingredient coconut. Coconut tree are the hard losers dry climates and cannot grow there with frequent arrogation. It is growing of 13 meter (98 feet) tall with premace leaves 4-6 cm long. Coconut gives nutritional value 354 kcal in carbohydrate (15.23 gm), fat (33.49gm), protein (3.33 g), vitamin (thiamine, navin, vit-c), minerals (mg ca, iron). India is a 3rd rank in the world in coconut production. Total production coconut in India is 11.1 million ton. (William Bought chitra her colouonery 2003)

Dates cultivated for it's edible sweet fruit. The species in many tropical or subtropical region in worldwide. The leaves long 4-6 meter (13 feet) single root system and 2 meter (0.7 feet) crown range . It is used as the snacks food for syrumping. It is nutritive value 1.178 kcal such as carbohydrate 75.03 gm , fat 0.39 gm , protein 2.45 gm , vitamin 0.549 mg (vit-A, vit-C, vit-E) and minerals 0.2 mg (iron, ca , mg, p, k). (Chemnuvi trib 1920-1935)

Jaggery is a traditional non centrifugal cane sugar consumed in Aecia. jaggery is made up type of cane and the palm tree. It is nutritive value 38.3 kcal., such as protein 0.1 gm, carbohydrate 9.89 gm, vitamin

0.011 mg (naicin) and minerals 0.30 mg (Fe, ca, p). (karta jis and das gupta 1986). Cardimum is used as flavoring cooking spices in both food and drink as the medicine. It is expansive spice for import. India is a 4th rank production in world and total production in India is 100 million tone's. (Oscer, Majus , kloeftr in 1914).

The cashew tree is a tropical evergreen tree that produces the cashew nut and cashew apple. It is used in India as a cuisine. It is the produce cashew oil. It is used in medicine to process of allergic diseases. It is 2nd rank in world production. Total production is 172,719 tone's. The nutritive value is 553 kcal such as carbohydrate 30.19gm, fat 43.85gm, protein 18.22 gm, vitamin 34.01 mg, (vit-C, vit-K, vit-E.) Minerals 5.20 mg (ca, iron, mg, p). (Morton Julijaf 1987.).

The almond is used for almond butter and almond milk. It is commonly used for powder from in any other products. It is used culinary uses. It is nutritive value 2.408 kcal such as carbohydrate 21.69 gm, fat 49.42 gm , protein 21.22 gm vitamin 21.2 mg (vit-A, vit-C, vit-D, vit-E) and minerals 3.08 mg (iron, mg, ca) (fraz Eugene konlar 1897, Bailey z. 1976, Rush forth Keith 1999).

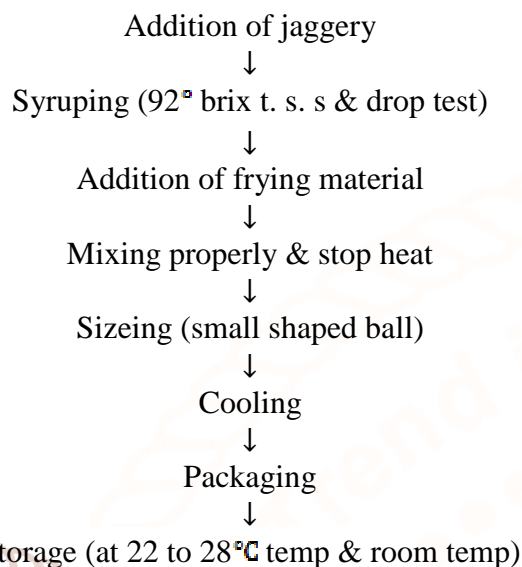
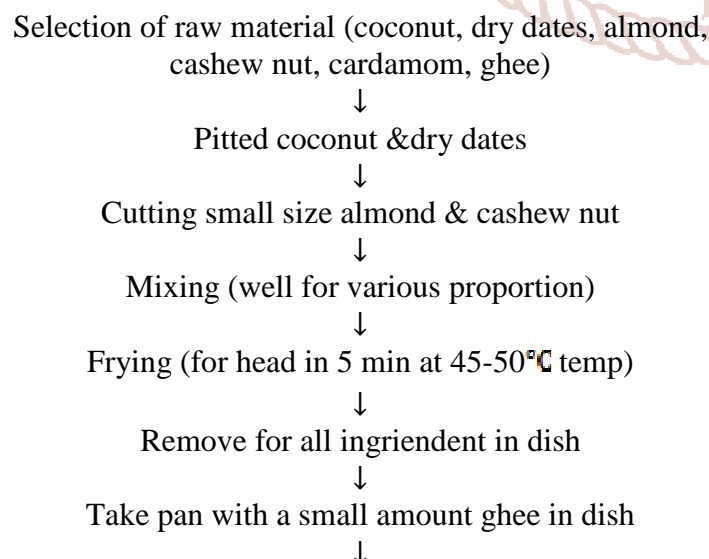
METHODOLOGY

MATERIALS

Dry Coconut, Dry Dates & Jaggery

Coconut, dry dates, jaggery and minor ingredients Almond, cashew nut, ghee, cardamom were purchase from the local market Saralgaon Maharashtra.

Flowchart 1: Flowchart for the Preparation Dry Coconut, dry dates & jaggery laddoo



Process of Making Dry Coconut, Dry Dates & Jaggery Laddoo (250gm)

The measure ingredient by the weigh balance. (Dry Coconut, Dry Dates, Jaggery, Almond, Cashew nut, Cardamom & ghee). To scrap & pitted the coconut & dry dates then after the cutting small size almond & cashew nut. After mixing the ingredient in various proportion. The scrap of coconut & dry dates in pan with ghee fryng at 45-45°C for 5 min. The removing the scrap dry dates & coconut in dish. Then take the pan with small amount ghee. After the addition of jaggery in pan . To prepare the syrup without water of the jaggery at the 92° brix T.S.S. by refractometr or drop test. Then after the addition of frying ingredient in jaggery syrup. To check the mixing well properly & stop the heating. Then sizing the ball shaped by the handling process. Then preparing laddoo is cool at room temp (22-28°C temp). Then preparing laddoo is packaged in polyethylene bag (75 micro m). The prepared laddoo put the store condition at room temperature.

Treatments of Laddoo

Table1: The control and variation treatment of coconut and dates laddoo.

Test Material	T ₀	T ₁	T ₂	T ₃	T ₄
Coconut (%)	30	26	28	32	34
Dates (%)	30	34	32	28	26
Jaggery (%)	30	30	30	30	30
Almond (%)	3	3	3	3	3
Cashewnut(%)	3	3	3	3	3
Ghee (%)	3	3	3	3	3
Cardamom(%)	1	1	1	1	1

(All sample are take in grams).

The ladoo preparation is a constant for all material in T0 sample (30:30:30:3:3:1). this proportion is used for standardization of ladoo. then the prepared the ladoo good and flavour, taste, texture and overall acceptability is also good. The variation for the coconut and dates proportion. Then variation of other test is some other like that T1 (26:34:30:3:3:1), T2 (28:32:30:3:3:1), T3 (32:28:30:3:3:1), and T4 (34:26:30:3:3:1). All above mentioned ingredients in varied ratio were mixed to each other threads consistency and small round balls (ladoo) were carried out Sensory Evaluation process.

Sensory Evaluation-

Sensory quality of coconut and dates ladoo was evaluated by a semi-trained panel of 10 members by nine point hedonic scale.

Table 2: Mean value for sensory evaluation of coconut and dates ladoo by nine point hedonic scale.

Sam ples	Parameters				
	Colo ur	Text ure	Tast e	Flav our	Overall accepta bility
T ₀	8.4± 0.55	8.6± 0.55	8.2± 0.44	8.2± 0.45	8.5±0.3 5
T ₁	7.2±0 .45	7.2± 0.84	7.4± 0.55	7±1	7.5±0.1 7
T ₂	7±1	6.4± 1.14	7±1. 22	7±1	6.8±0.9 2
T ₃	8±0.7 1	8±0	7.6± 1.14	7±1	7.9±0.6 9
T ₄	7.4±0 .83	7.2± 1.30	6.6± 0.89	6.2± 1.48	6.8±0.7 7

(Mean value for sensory evaluation of iron rich supplements by score card method)

Nutrient analysis

Nutritional evaluation of the most accepted coconut date ladoo was done. In the present study, coconut date ladoo was analyzed in once for moisture, crude oil protein, crude fat and crude fibre by AOAC (1995). Carbohydrate was estimated by difference. Ascorbic acid content in the fresh samples was determined using method given by AOAC (1995). Total iron and ionisable iron were determined according to the procedure given by Pranati (2005). All nutrients were estimated in once

Storage studies

The best accepted ladoo was stored for 60 days at room temperature in polypropylene bags. Observations were recorded at intervals of 15 days, 30 days, 45 days and 60 days for microbial and sensory characteristics.

RESULTS AND DISCUSSION

Dry Coconut (*Cocos nucifera*), & Dry dates (*Phenix dactylifera*) & Jaggery is an ancient fruit that is widely consumed in the form of ladoo. Coconut & Dry dates is a fruit tree of culinary, pharmaceutical, nutraceuticals and industrial uses. Coconut & Dry dates has a long history in Ayurvedic medicine as it was traditionally used to treat sores, dermatitis, diarrhea, dysentery, ear infection, child malnutrition, adolescent, lack of calcium & iron nutrient and to facilitate digestion. Coconut seeds are used for the oil extraction. That oil is called Coconut oil & derived the coconut fresh is called as copra and used in cooking, frying, soaps cosmetics, medicines, and costly. Dry Coconut, Dry dates & Jaggery ladoo is an important culinary agent and is used as festival for meal by people living in Maharashtra, costal Karnataka Goa, Tamil nadu and Kerala India. In any season the prepared ladoo are ground in blender with sugar and cardamom and consumed as a meals. Addition of Ladoo is supposed to enhance the taste of coconut-based curries and to remove the unpleasant smell of mackerel and sardines. Ladoo's are also used in some festival such as rakshbandhan, dipawali, ramjan, eid as prashad dishes. The prepare ladoo is benefit to our body gives nutritive value. These ladoo are used with or like an delivery women, lack of calcium & iron child after meal digestive. The dry coconut, dry dates & jaggery ladoo are supposed to be digestive and to relieve gastric problems. The coconut is also used in cosmetics, medicines, and costly confectionery preparations in foreign countries. The ladoo acts as anti-oxidant and appetite stimulant and helps in improvement child malnutrition and cholesterol. The ladoo is digestive tonic and used to improve height of child health.

The efforts were also made to analyze the various physiochemical properties of raw material viz. Dry coconut, dry dates, jaggery and lauric acid etc. The prepared extract was utilized with varying proportion in standardization of coconut, dry dates, jaggery ladoo.

Preliminary efforts for consumer acceptability were also done by sensory evaluation with the help of semi trained panel. The organoleptically selected sample was then evaluated for effect of laddoo and artificial sweeteners on physiochemical and organoleptic quality of prepared dry coconut, dry dates, & jaggery laddoo. Selected beverage was assessed for physicochemical properties along with the active constituent. Further the energy value of the product and its techno economic feasibility were also determined.

Physico chemical properties of laddoo

The data on chemical properties laddoo moisture, fat, protein, carbohydrates, ash and crude fiber was carried out and the results obtained were tabulated in Table 8. It was evident from Table 3 that moisture content in laddoo was found to be 6.66% and fat content was low in concentration 12.00%. laddoo was found carbohydrate content 46.00% and ash content of laddoo was found to be 2.57% and crude fibre content was 10.00% respectively.

Table no.3 : Chemical properties of laddoo

Chemical parameters	Results (100gm)
Moisture	6.66±0.83g
Fat	12±0.76g
Protein(N×6.25)	8±1.3g
Carbohydrate by Difference	46.00±1.6g
Total Ash	2±2.26g
Crude fiber	10±0.53g
Calcium	24.81±1.23mg
Energy	483.23±1.06kcal

Organoleptic evaluation of base Dry coconut, Dry dates and jaggery laddoo store at room temperature (22-28°C)

During storage of laddoo from 0 to 60 days there was decrease in sensory score for overall acceptability was found from 7.6 to 5.5 on 60th day of storage. There was significant increase and decrease in Sensory score for Texture and decrease in sensory score for Colour, flavour, taste and overall acceptability were reported by the panel members. There was no significant evidence of microbial spoilage.

It could be concluded from the table that Dry coconut, Dry dates and jaggery laddoo can be stored for 60 days at room temperature (22-28°C) without affecting sensorial parameters. However its acceptability score was slightly decreased and liked moderately. Similar

results were reported during storage of low calorie laddoo.

Table no. 4: Organoleptic evaluation of base Dry coconut, Dry dates and jaggery laddoo store at room temperature (22-28°C).

Days	Colour	Texture	Taste	Flavour	Overall acceptability
0 day	8±0.55	8±0.55	7.6±0.46	7±0.45	7.6±0.11
15 days	7.8±0.69	8.2±0.15	7.6±0.48	6.8±0.15	7.4±0.15
30 days	7.4±0.33	8.4±0.69	7.1±0.15	6±0.36	6.2±0.16
45 days	7±0.44	8.2±0.11	6.5±0.19	5.5±0.96	5.8±0.11
60 days	6.5±0.13	8±0.19	6.3±0.42	5±0.4	5.5±0.45

CONCLUSION

Dry Coconut, dry dates & jaggery laddoo is an ancient fruit that is widely consumed in the form of laddoo. Dry Coconut & dry dates is a fruit tree of culinary, pharmaceutical, nutraceuticals and industrial uses. Coconut & dry dates has a long history in Ayurvedic medicine as it was traditionally used to treat sores, dermatitis, diarrhea, dysentery, ear infection, child malnutrition, adolescent, lacks of calcium & iron nutrient of children to facilitate digestion. Coconuts are used for the oil extraction. That oil is called coconut oil and used in curries, cosmetics, medicines, and costly confectionery preparations in foreign countries. Laddoo is an important culinary agent and is used as an acidulate for curries by people living in Maharashtra, costal Karnataka tamilnadu, jammu Kashmir & Goa, India. In winter the coconut & dry dates are ground in blender with sugar and cardamom and consumed as a meal.

Sensory evaluation of Dry coconut, dry dates & jaggery laddoo was carried out was sample T3 observed highest score followed by T1, T2 and T4. The control sample had scored higher for appearance followed by T3 and T1. The taste of the samples significantly affected with addition of fresh laddoo.

It was evident from Table 3 that moisture content in laddoo was found to be 6.66 per cent and fat content was in concentration 12.00 per cent. Ladoo was found carbohydrate content 46.00 per cent and ash content of laddoo was found to be 2.00 per cent and crude fibre content was 14.00 per cent respectively. These all chemical parameters were found more or less similar with result.

The formulation and standardization of recipe for Dry Coconut dry dates & jaggery laddoo was carried out successfully. The health benefits of laddoo are well known so the product is having some enrichment than the other marketed products. The economic feasibility can be found Rs.222.68 /1kg that is more chipper than marketed laddoo, so the product can be satisfy the consumer in aspects of quality, cost, health.

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