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A SHELF LIFE STUDY OF NUTRITIOUS LADOO

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A shelf life study was done to standardize an innovative product for consumer acceptance which is nutritious. The product made was a NUTRITIOUS LADOO which was mainly a galactogogue, made with the following ingredients dried dates, Garden Cress Seeds, Dry Coconut, Jaggery, Dink, Ghee. Shelf life study included sensory evaluation by composite scoring test. The attributes used were taste, texture, sweetness and overall acceptability. The other aspects covered in the shelf life study were packaging, budgeting, marketing, making a nutritional label. Packaging material BOPP was used It is cost effective and has excellent clarity, transparency and gloss which gives clear information to customer about the laddoo. Budgeting which is an important aspect of product development has also been taken into consideration. Nutritional label consists of ingredients of the product, nutritional facts, whether veg or non-veg, price, manufacturing date, expiry date, net weight, any special recommendations, etc.

Keywords: Galactogogue, Dried dates, Garden cress seed, Composite scoring, Budgeting, BOPP

INTRODUCTION

Laddoos are ball shaped sweet popular in India's Subcontinent. They are made up of different flours, sugar with added ingredients (Bhargavi Naidu, 2012).

In the present study laddoo was made up of different ingredients like dried dates,grated coconut, ghee and functional food like garden cress seeds and dink to be given as a galactogogue. A galactogogue is generally given to a lactating women which helps increasing the breast milk production. Laddoo is rich in fiber and other nutrients like calcium, phosphorous, iron, carotene, niacin and essential amino acid.

The objective of the study is

- 1) To standardize an innovative nutritious product which is also cost effective as per consumer acceptance.
- 2) To study the shelf life of the product using sensory evaluation.

- 3) To design an innovative label.
- 4) Packaging
- 5) To understand the budgeting and marketing aspects and to develop entrepreneurship skills.

A food product had to be designed and developed under the course Food Product Development in the undergraduate third year studies. Based on our interest highly acceptable products like oats papad, brown rice nankhatai, brown rice khakra, curry leaves chutney and laddoo were prepared and sensory evaluated. The product Nutritious laddoo was finalized based on consumer acceptability and sensory testing The Nutritious laddoo was developed for lactating women to increase the breast milk production. The laddoo contains kharak, dried coconut, dink, jaggery and garden cress seeds. Major ingredient of laddoo is dried kharak. It is a rich source of energy and nutrients. It also helps new mothers in improving lactation while boosting their health and immunity (Sharif Hossain, 2015). Dates also provide

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vitamins, fiber, fat, protein, minerals, calcium, magnesium, iron. Dried dates also have less sugar which is good for diabetic patients (Sharif Hossain, 2015) garden cress seeds are the functional foods. It helps to increase the milk production during breast feeding (Falana, 2014). It is also a good source of energy, protein, fats, iron, calcium and phosphorous (Agarwal Nidhi, 2013).

Dink or edible gum is known to be beneficial for pregnant ladies as it strengthens back bone. Dink ladoos are given to lactating mothers as they help in increasing the production of milk (Bhargavi Naidu, 2012).

Ghee is a good source of energy (Promila Kanwar, 2011).

STANDARDIZATION

Many food products were thought off like: oats papad, brown rice nankhatai, brown rice khakra, curry leaves chutney and ladoo. Out of all these products a paratha was made with curry leaves chutney and nutritious ladoo both were prepared and a sensory evaluation test was carried out. Based on the sensory evaluation test scores and its acceptability Nutritious Ladoo was finalized as the product to be tested.

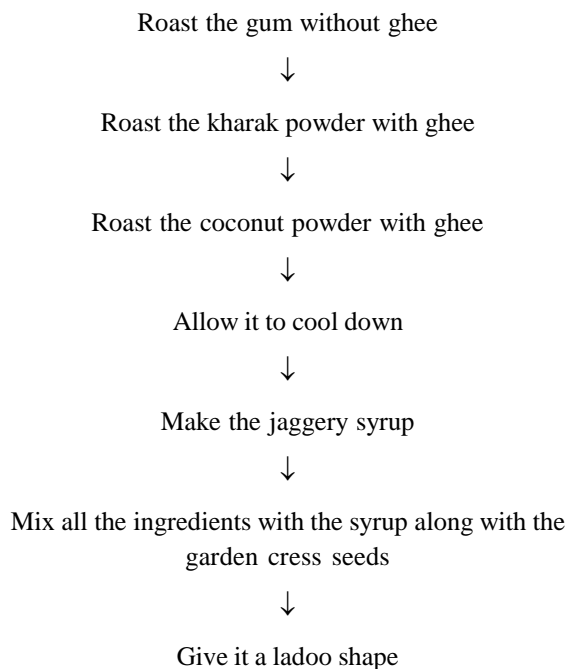
The materials that were used to prepare this product were dried dates, garden cress seeds, dried coconut, jaggery, dink and ghee.

STANDARDIZED PRODUCT

Sensory evaluation was carried out by 12 panelists. It was done by scoring test. The different characteristics on which the product was rated are taste, texture, sweetness and overall acceptability. Sensory evaluation helped us to finalize the product.

Ingredients	Amount
Dried dates	7 gm
Garden cress seeds	1 gm
Dry coconut	3 gm
Jaggery	3 gm
Dink	3 gm
Ghee	3 gm

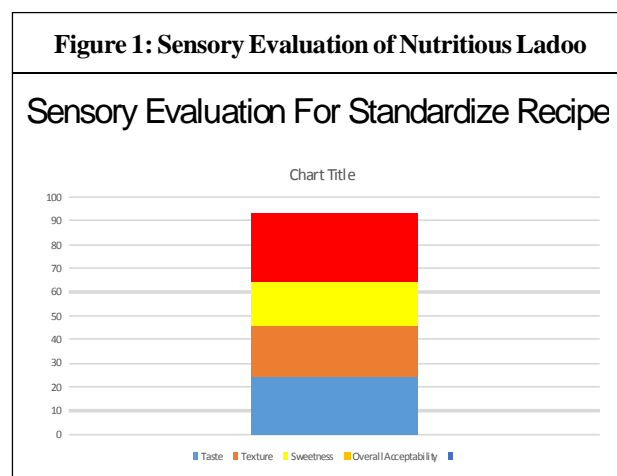
METHODOLOGY



SENSORY EVALUATION FOR STANDARDIZED RECIPE

Sensory evaluation is done to know whether the product is acceptable by the consumer or not. Sensory evaluation of the standardized recipe was done with a semi trained panel of 12 panelists. Composite scoring test was carried out to know the taste, texture, sweetness and overall acceptability. Out of 100 taste was marked out of 25, texture out of 25, sweetness out of 20 and overall acceptability out of 30.

The result of the sensory evaluation was out of 100, product got 94 where taste (blue color) scored as 24 out of 25, texture (orange color) scored 22 out of 25, sweetness



(grey color) scored 19 out of 20 and overall acceptability (yellow color) 29 out of 30.

PACKAGING MATERIAL – BOPP (BI AXI ALLY ORIENTED POLYPROPLENE

Packaging provides protection, tampering resistance to any physical, chemical damage to the product. Packaging material used was BOPP. It has a very low moisture transmission rate which is used to increase the shelf life and maintain the softness of ladoos which is sensitive to moisture. It is cost effective. BOPP has excellent clarity, transparency and gloss which gives clear information to customer about the ladoo (www.Plastemart.com).

NUTRITIONAL LABEL

It is an important marketing tool for the product. And informs the costumer the details of nutrients which he can have or not accordingly. Label consists of ingredients of the product, nutritional facts, whether veg or non-veg, price, manufacturing date, expiry date, net weight, any special recommendations, etc. It should also be eye catching and attractive to improve sales.

Figure 2: Bopp



BUDGETING

Budgeting is an important aspect to be considered in product development. It should be cost effective so that all income groups can afford it. For bulk production food items were brought from wholesale market to reduce the cost.

Table 2: Nutrient Content of the Nutritious Ladoo

Ingredients	Amount	Energy	Protein	Iron	Calcium	Phosphorous	Fats
Kharak	8 gm	25.36	0.2	0.5	9.6	4	-
Garden cress seeds	1 gm	4.5	0.2	0.1	3.7	7.2	-
Dry coconut	3 gm	19.8	0.2	0.2	12	6.3	1.8
Jaggery	3 gm	11	-	0.1	2	1	-
Ghee	2 gm	18	-	-	-	-	1
Total		77.6 kcals	0.6 gm	0.9 gm	27.3 gm	17.5 gm	2.8 gm

Nutritious Ladoo

“Appealing Outside, Tasty and Healthy Inside”

Ingredients: Kharak, Garden Cress Seeds, Dry Coconut, Jaggery, Dink, Ghee.

Net Wt: 60 gm

Mfg. Date:

Exp.Date: 20 days from mfg.date

Rs: 30/-



Table 3: Cost Calculation for the Ingredients of 60 Ladoos

Ingredients	Wholesale Price (Rs)
Dried kharak (420 gm)	Rs 76
Garden cress seeds (60 gm)	Rs 9
Dry coconut (180 gm)	Rs 30
Jaggery (180 gm)	Rs 11
Dink (180 gm)	RS 16
Ghee (180 gm)	Rs 58
Packing material	Rs 10
Label printout	Rs 30
Gas	Rs 100
Electricity	Rs 70
Labour	Rs 90
Total	Rs 500

Total 20 products were made out of which 18 were sold and 2 were kept for sensory evaluation. Total Cost for production of Nutritious laddoo was Rs 500, per packet price was Rs 30. After selling product total gain was Rs 540 out of which profit was Rs 40. Even the ingredients purchased were at wholesale so profit was more.

SENSORY EVALUATION FOR SHELF LIFE STUDY

To study the shelf life study of nutritious laddoo, sensory evaluation was conducted every week which was done by 12 semi trained panelists. The method used for sensory

evaluation was composite scoring test. It includes taste, texture, sweetness, overall acceptability. Out of 100 taste was marked out of 25, texture was out of 25, sweetness out of 20 and overall acceptability out of 30. Sensory evaluation of laddoo was done for 3 weeks after bulk production. The result of evaluation is shown in Figure 3.

CONCLUSION

Nutritious laddoo is a product providing variety of nutrients like fiber, calcium, vitamins, iron, minerals, etc., and can be recommended for all age group and specially recommend as a galactogoge for lactating women. It can be consumed by diabetic patient also. It has shelf life of 20 days. Nutritious laddoo can be improved by adding dryfruits.

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Figure 3: Sensory Evaluation of Standardised Nutritious Ladoo Recipe

