



STANDARDIZATION AND FORMULATION OF NUTRIRICH KAJU KATLI

¹S.Dhaniyasri, ²Dr.K.U.Pavitra krishna,

¹UG Student, ²Head & Assistant professor Department of Food Science and Processing Management, Subbalakshmi Lakshmi pathy College of Science, Madurai.

Abstract: Beetroot (*Beta vulgaris* L.) is the most common root in the class of beets produced in the world. Beets are high in fiber and promote the growth of good bacteria in your gut. The carrot is a biennial plant in the umbellifer family, Apiaceae. It is a good source of Vitamin C, Lutein, Zeaxanthin, Vitamin K, dietary fiber etc. Dragon fruit (*Hylocereus polyrhizus*) peel is high in antioxidants and fiber. The peel of dragon fruit is a potential source of pectin. It is a good source for maintaining healthy diet snack prepared by incorporating beetroot, Carrot, Dragon fruit peel extract added in kaju katli. It is estimated by a panel of judges using score card with five point hedonic rating scale. The panel members are mostly preferred beetroot incorporated kaju katli. Shelf life analysis has experienced to examine the shelf life of a product Change with environmental conditions. The cost of Nutririch kaju katli were anatomized by taking into account. The fixed and variable cost during the course of processing. In conclusion, Nutririch kaju katli represent a Valuable supplement with potential health promoting properties.

Introduction:

Generally kaju katli is a classic Indian delicacy prepared with cashew nuts but this Nutririch kaju katli prepared with equal amount of cashew nuts and almonds. Normal kaju katli are typically wrapped with edible silver foil. Silver foil is adulterated with aluminium. This dangerous metal accumulates within the body and cause severe damage by entering into the brain. Most of the people prefer kaju katli because of that outer look. Children's are always preferring coloured foods. This Nutririch kaju katli is Incorporated with Beetroot extract, Carrot Extract, Dragon fruit peel Extract.

Beetroot, Carrot, Dragon fruit peel contains many nutritions like sodium, potassium, Iron, Calcium, Vitamin D, Vitamin C, Magnesium, Betacyanin, etc.. It is good for our health also. It boost our Immune system. It improve stamina and performance over time. They also help removing toxins from the body, etc.

Beetroot, Carrot, Dragon fruit peel have nutritive values and enormous health benefits. These are incorporated with different products like biscuits, noodles, candies, soups mix etc or can be mixed with vegetables broths. The extracts are incorporated at the level of 20%, 30%, 40%.

The developed product was evaluated for its Acceptability and that is organoleptic of sensory evaluation.

Sensory evaluation also referred as organoleptic evaluation, is a scientific method that provides objective information on how products are experienced by the consumer.

When the quality of the food product is assessed by means of human sensory organ, the evaluation is said to be a sensory or subjected or organoleptic evaluation. Sensory quality is a combination of different senses of perception coming and eating a food. Appearance, flavour, and mouth feel decides the acceptance of the food. Organoleptic evaluation of food product is essential in ensuring products with organizational and customer requirements. Sensory assessment interpreting human reactions to food characteristics. Nutri rich kaju katli were prepared by incorporating at the level of 20%,30%,40% respectively. It was evaluated by a panel of judges using score card with five point hedonic rating scale.

Packaging is the process of providing a protective and informative covering to the product in such a way that it protects the product in during material holding, storage, and movement and also provides useful information to all the concerned parties about the contents of the package. Packaging is more than just our products pretty face. Package design may affect everything from breakage rates in shipment to whether stores will be willing to stock it. Labelling is a part of branding and enables product identification. The cost of Nutririch kaju katli were analysed by taking into account of the fixed and variable cost including during the course of processing and production.

Objectives of developed product:

- To Formulate the dragon fruit peel, carrot, Beetroot extract Incorporated in kaju katli
- To Standardize the dragon fruit extract, beetroot extract, carrot extract, sugar, ghee, Almonds, Cashew nuts
- To Evaluate the Acceptability of Dragon fruit, Beetroot, carrot flavour by Sensory Evaluation.
- To Estimate the nutrient content of the Dragon fruit peel, Carrot, Beetroot extract by standard method.

Screening of the product:

The aim of screening to retain the successful idea and eliminate the ideas which could be failures. Much easier to write than to carry out in practice. The components in idea screening are product idea description or concept screening factors and screening techniques.

Materials and methods:

Procurement of raw materials:

The raw material such as Almonds, Cashew nuts, Sugar, Dragon fruit peel extract, Carrot Extract, Beetroot extract.

Chemicals:

The chemicals and reagents used for the study were laboratory reagent (LR), Analytical reagent (AR), Guarantee reagent (GR) grades.

Utensils:

Stainless steel, spatula, plates, bowl, saute pan, spoon, vessels, were used for preparing and serving the developed products.

Energy source:

Electric current and liquid petroleum gas were used as heating sources.

Equipments:

- Weighing machine
- Electric balance
- Mixer
- Hot air oven
- Muffle furnace
- Refrigerator
- Microwave oven
- UV spectrophotometer
- Bomb calorie meter
- Autoclave

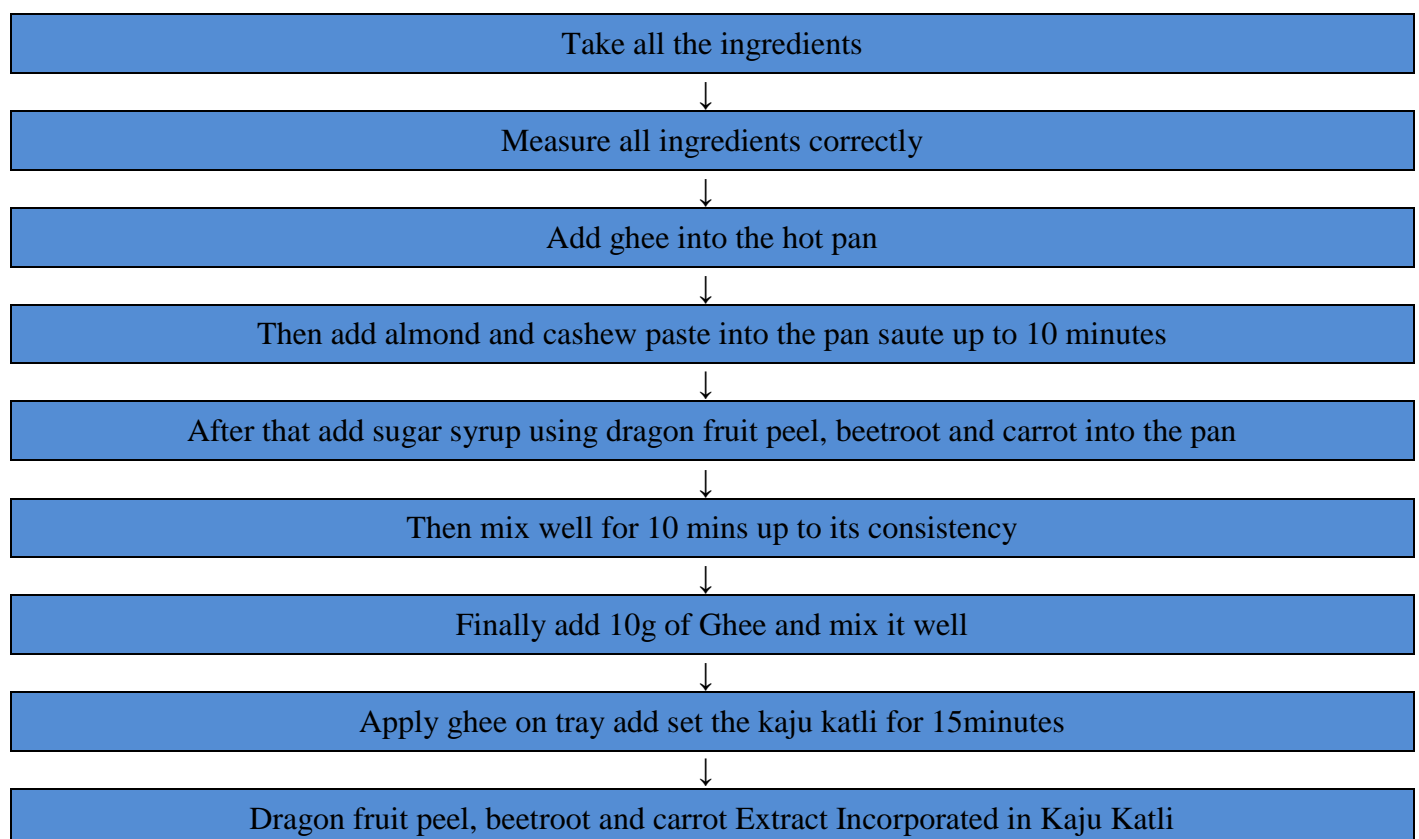
Preparation of Nutririch Kaju Katli:**Outline Procedure of Nutririch Kaju Katli****NRK – Nutririch Kaju Katli****Figure – 1**



Plate - 1



Plate - 2



Plate - 3



Plate - 4



Plate - 5

Development of NRK:

The proportion of ingredients used to prepare Nutririch Kaju Katli and its variations are given below.

Table – 1

S.No	Ingredients	Quantity			
		Control	NRK1	NRK2	NRK3
1.	Almond	50g	50g	50g	50g
2.	Cashew nuts	50g	50g	50g	50g
3.	Ghee	15g	15g	15g	15g
4.	Dragon fruit peel	-	20g	30g	40g
5.	Carrot Extract	-	20g	30g	40g
6.	Beetroot Extract	-	20g	30g	40g
7.	Sugar	100g	100g	100g	100g

Organoleptic or Sensory Evaluation:

Sensory assessment interpreting human reactions to food characteristics. Nutririch Kaju Katli were prepared by Incorporating at the level of 20%, 30%, 40% respectively. It was evaluated by a panel members using score card with five point hedonic rating scale.



Plate – 6

Overall meanscore of the sensory evaluation is depicted in Table 2:

Table - 2

Sensory attributes	Colour	Flavour	Texture	Taste	Appearance	Overall mean score
NRK A	4.63	4.21	4.10	3.98	4.01	20.93
NRK B	4.98	4.99	4.62	4.79	4.81	24.27
NRK C	4.00	4.21	3.78	3.64	3.11	18.74

Among the developed product, the overall mean score in NRK B was highly acceptable.

Nutrient Analysis:

Nutritional Quality can be assessed by Chemical or Instrumental analysis for specific nutrients (Norman et al., 2005). Results of nutrient analysis is depicted in Table – 3

Table - 3

S.No	Nutrients	Percentage
1.	Moisture	12%
2.	Protein	5%
3.	Fat	10%
4.	Carbohydrates	13%
5.	Calories	120%
6.	Iron	8%

Shelf Life Analysis:

The Standardized NRK are placing it in room temperature from the day of development till the physical and chemical composition of product changes. The nature of the product is observed in daily basis. There is no adding of chemical preservatives. So, exactly 2 weeks the product can sustain its composition.

Packaging & Labelling:

Packaging is one of the most important roles in product development. The Developed Product has to reach its destination. The Packaging material should be moisture resistant & air tight.

Labelling includes all information about the product like Nutritional Values, Expire Date, Manufacturing Date, Brand Name, Logo Etc.

Results & Discussion:

Sensory Evaluation:

Among the developed product the Overall mean score in NRK B was highly acceptable. NRK B has highest score. The appearance, colour, texture, flavor, taste of NRK B was highly acceptable. Result of Sensory Evaluation is depicted in Figure 3.

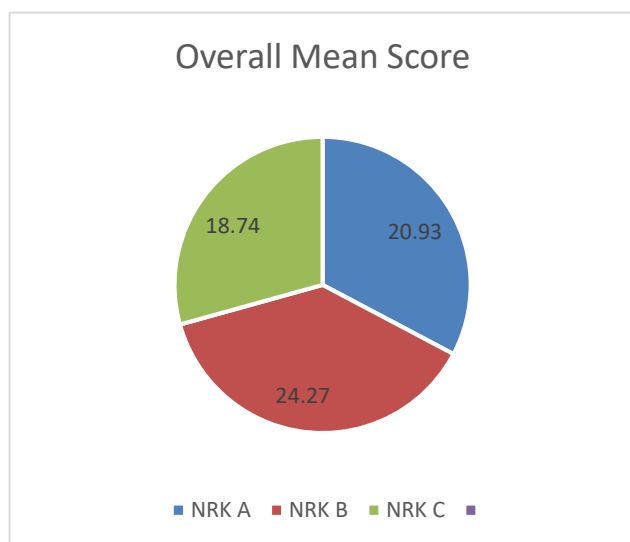


Figure - 2

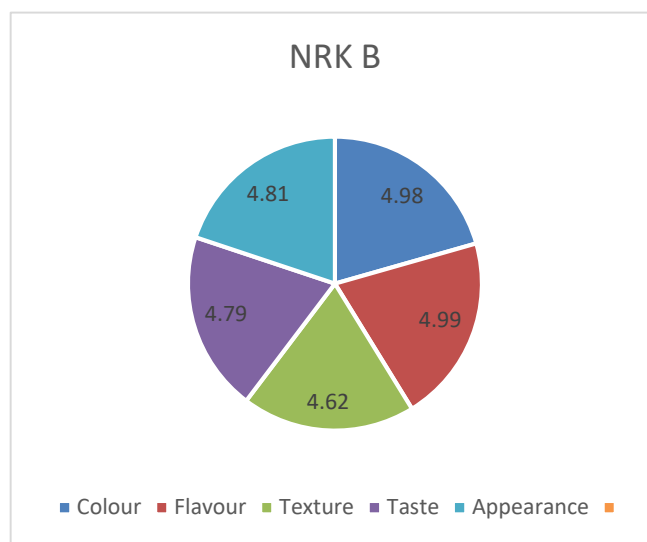


Figure - 3

Nutrient Analysis:

Results of Nutrient Analysis is depicted in Figure 4

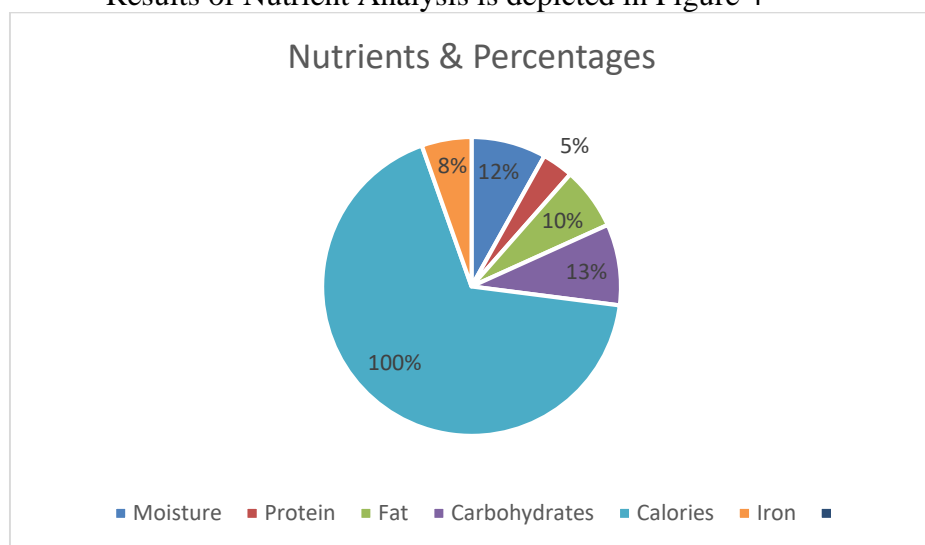


Figure - 4

Summary & Conclusion:

Three different variation of products with different proportions of Beetroot, Dragon fruit peel, carrot. The Overall mean score in NRK B was highly acceptable. All age group people can consume this Nutririch Kaju Katli. Mostly Childrens preferred this. So, it can be recommended to them. Shelf life of the product is “12 days” from packaging.

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