

## Development of Colourful Frozen Dumplings

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### Abstract

In the present study, attempts were made to develop colourful frozen dumplings, regionally in Uttar Pradesh (UP) India, these are also known as “faare” which is a nutritious, oil free and cost-effective snack item which can be used as an alternative to other available oily snack dishes. Ingredients such as, rice flour, moong dal, urad dal, onion, oil, spices, beet root, curry leaves were used in different combinations in trials. To make dumplings attractive food colour was used in one of the formulations and in another formulation beet root was used to give natural pink colour. Shelf-life study of was carried out both at refrigerated and room temperatures and it was found that the product has shelf life of 2 days at room temperature and 15 days at refrigerated temperature. Results obtained from various analysis indicate that the production of colourful frozen dumplings is practically possible, is cost effective and has numerous nutritional advantages over other fried snacks available in market.

### 1. Introduction

Faare is basically dumplings. It is a typical North Indian dish which is very popular in eastern Uttar Pradesh, India and is made during special and auspicious occasion. Faares are usually served with different chutney and usually eaten as snacks.

Peetha, Gujha, gooja, Fara or Gointha are some synonyms of faare. Name of this dish varies with the place For example in Banaras, India, it is usually called as Peetha and in Bihar, India is famous by the name Faraa. In some places, rice flour is combined with whole wheat flour (atta) in 50:50 ratio which is then kneaded to make the dough. Rice flour in faare is used for outer covering and colors can be added to it to make it more attractive.

These are dumplings made of rice or whole-wheat flour pocket stuffed with ground lentils and some traditional Indian spices then boiled like pasta or steamed like idli/momo's without oil. This dish is a great mix of right amount of carbohydrate, fibre and proteins and if eaten along with any chutneys or curry as its traditionally eaten in some areas of Bihar, it becomes a complete snack food by providing required minerals and vitamins in diet.

#### 1.1 Benefits of Colourful faare

- It is a traditional dish unknown to many cultures, preserving it and introducing it to a new market will help in exchanging culture and taste.
- Convenient to make, store and eat.
- Nutrient rich & healthy snack since it is steamed not fried.
- Budget friendly.

Various methods can be used to make Faara for example traditionally these are made by using some ghee on top, however to make it crispy in texture and give altogether a new dimension it can be made by shallow frying (pan fry) in little oil too. In the present study, efforts were made to make faara by both the methods and with different cereal & pulse variations.

As per the study done by Zhu Meiyun et al. in 2008 revealed that by adding appropriate food improvers, controlling fast freezing condition, creating proper storage and conveying environment will reducing the cracked rate of glutinous rice dumplings and improving the quality of fast frozen glutinous rice dumplings

As per the study conducted by Huang Li *et al.*, in 2013 on frozen pork dumpling filler. It was found that with extended storage times, the percentage of unsaturated fatty acids (in the total lipids content) decreased. Levels of volatile compounds with pleasant odours decreased with time, while levels of compounds giving off pungent tastes and smells increased. Dumplings stored at higher freezing temperatures for long time had significantly lower acceptability scores ( $P < 0.05$ ) due to the oxidation during frozen storage.

Another study done by Zhang Hua in 2013 showed that as the number of temperature fluctuations increase and the extension of the cold chain interruption time, the moisture of frozen dumplings constantly lower, the acid value and cracking rate continues to rise.

### 1.2 Role of ingredients in the product:

Moong dal and urad were used as the stuffing for the faare, moong dal is easy to digest. There are numerous health advantages of moong beans, apart from high source of nutrients; it provides desired texture to the product (Alpana *et al.*, 2017)

Onions were used to give taste to the stuffing and provide desired crunchy texture. Apart from the sensory aspects they also contain thiosulphinates, which are effective in killing many common bacteria. Onions also provide some benefit in treating cardiovascular diseases, they have hypolipidemic effects and has antiplatelet actions, thus retarding thrombosis (K. P. Sampath *et al.*, 2010)

Oil was used to fry the spices and gives taste to stuffing.

Spices such as green chilli, red chilli kasuri methi, celery, salt, turmeric, asafoetida, cumin, and garam masala were used to impart taste, flavor and aroma to the stuffing

Beetroot juice was used to impart color to the faara and adds up the nutritive value. Beetroots are rich source of phytochemical compounds and also contain group of highly bioactive pigments known as betalains (Georgiev, V.G *et al.*, 2010) & (Wootton-Beard *et al.*, 2011)

Curry leaves were used to give a distinctive flavor to faare. Curry leaves are rich in many minerals and trace minerals such as iron, zinc and copper. And if eaten regularly, these may have good effect on diabetes.

Some modifications were done in the original traditional recipe to make faare more appealing and colourful and make them different from that of traditional product.

- Organic colour such as beetroot juice was added in the dough to make it more appealing and to target children.
- Freezing was done to increase the shelf life of the product.
- The recipe will have modified flavor and spices than that of traditional recipe makes it unique.

Hence the present study was undertaken with the following objectives:

1. To develop colourful faare using different cooking techniques with varying amount of ingredients and match consumer acceptability for overall quality.
2. To analyze the physiochemical, sensory & microbiological properties during storage of faare.

## 2. Materials and Methods

Colourful Faare were made using blends of, rice flour, moong dal, urad dal, onion, oil, salt, beet root, curry leaves, red chili powder, garam masala. Following methodology was followed for developing faare.

### i. Procurement of raw material

Raw ingredients for preparation of faare that includes rice flour, moong dal, urad dal, onion, oil, salt, beet root, curry leaves, red chili powder, garam masala were procured from a local market situated in Delhi, India.

### ii. Standardization of Recipe

Farra is a traditional dish, so that dish was prepared as per the control recipe given below in table 1. Which was later modified with different ingredients given in the table no 3 to meet the objectives of the study. This traditional recipe would be used as control recipe/ control sample and various trials were performed to standardize the trial recipe.

**Control Recipe:**

**Table 1: Table showing Recipe for Traditional product:**

S no.	Ingredients	Amount
1	Rice flour	100 gm
2	Urad dal	200gm
3	Onion	100gm
4	Asofoetida/ Hing	1t
5	Salt	1t
6	Red chilli powder	¼ t
7	Food color	3 drops

**Methodology:**

1. Firstly, soak urad dal for 4-5 hours then grind and add all spices.
2. Make the dough of rice flour and add food color to it.
3. Fill dal in dough like Dumpling.
4. Put it in steamer for 15-25mins.

**Picture –**



**Recipe outcome:**

- The taste of hing was too strong and was unacceptable.
- Colour was too strong.

**Sensory Evaluation of Control/ Traditional Recipe:**

Sensory evaluation was performed by ten semi trained panelist and its average score was recorded below:

**Table 2: Table showing the sensory evaluation of control/ traditional recipe**

S no.	Sensory Characteristics	Average score
1	Appearance	2.33
2	Color	1.3
3	Flavor	2.3
4	Texture	4.3
5	Overall acceptability	2.33

Various trials were performed to arrive at the following standardized recipe:

Standardized Recipe :			Methodology :
S.no	Ingredients	Amount	
1	Rice flour	100 gm	<ol style="list-style-type: none"> <li>1. Soak the moong dal for 4-5 hours and ground it in mixer grinder</li> <li>2. Put oil in the pan, add all masalas in it, add filling and toss it a little.</li> <li>3. Prepare the dough of rice flour and add beetroot juice to it for colour.</li> <li>4. Stuff the dal in dough like dumpling.</li> <li>5. Steam it for 15-25mins in steamer.</li> <li>6. Cut them in small portions</li> <li>7. Freeze it in bags.</li> <li>8. When required take it out, thaw, saute with mustard seeds and garnish with curry leaves.</li> <li>9. Serve with chutney/ sauces.</li> </ol>
2	Moong dal	300gm	
3	Onion	100gm	
4	Mustard oil	1 T	
5	Garam masala	½ t	
6	Salt	1t	
7	Red chilli powder	½ t	
8	Dhania powder	½ t	
9	Curry leaves	6-10 No.	
10	Green chilli	2No	
11	Mustard seed	½ t	
12	Beetroot juice	5 drops	

**Table 3: Table showing Standardized Recipe**

Pictures –



**Recipe outcomes:**

- Taste was perfect
- Colors came out beautiful and natural

Sensory Evaluation of final recipe

**Table 4: Table showing Sensory Evaluation of final recipe or standardized product.**

S.No.	Characteristics	Average score
1	Appearance	4.6
2	Texture	4.6
3	Flavor	4.6
4	Texture	4.6
5	Overall acceptability	5

Panelist liked the product and suggested no need for further modification. This recipe was tried and resulted in same product every time.

### 3. Result Analysis

#### i. Sensory Analysis

Sensory analysis is the first step towards standardizing any recipe, it uses human senses to objectively analyze foods for various sensory attributes like appearance, taste & flavor, colour and texture or mouth feel etc. The sensory analysis was performed to provide useful information and suggestions about the developed

products by a group of sensory panelists. The information shared by them is used in research, quality control and quality assurance. It is also used to find out most acceptable product and in standardizing the product. The result of sensory analysis are tabled below in table no 5.

**Table 5: Table showing Comparison of Sensory Evaluation of traditional recipe and standardized recipe.**

Sensory Parameter	Product developed by Traditional Recipe	Product developed by Standardized Recipe
Appearance	2.33	4.6
Texture	1.3	4.6
Flavour	2.3	4.6
Colour	4.3	4.6
Overall Acceptability	2.33	5

Sensory evaluation of the faare was conducted organoleptically. The sensory evaluation was done on hedonic scale by semi trained panelist who were the students of SPM college. The panelist was trained over a period of three months, the average scores given by panelist is shown in the table no. 5. It was observed that standardized trial recipe having moong dal and spices was the most accepted recipe among all trials performed.

**ii. Shelf life analysis**

Shelf life is an important parameter of marketability, consumer acceptance of any food by a consumer. Shelf life study was done at room temperature for 5days at room temperature and for 30 days at freezing temperature.

**Shelf life analysis at room temperature**

No. of days	Sensory analysis at room temperature	Microbiological analysis at room temperature
0th day	Taste was good, appearance was good and good was texture	-
2nd day	Taste was ok, texture was ok, color reduced	Microbiological growth can't be seen
5th day	Texture was soggy and colour has totally faded	Mold growth was seen

**Sensory analysis at frozen temperature**

**Table 6: Table showing shelf life of standardized product.**

No of days	Sensory analysis at frozen state	Microbiological analysis at frozen state
0th day	Taste good, appearance was good and good texture	No microbiological growth
2nd day	appearance was good and good texture	No microbiological growth
7th day	Appearance was good and good texture	No microbiological growth
15th day	Appearance was good and good texture	No microbiological growth
30th day	Color was little faded and texture looks crusty	Little microbiological growth was seen

From the results, it can be concluded that the standardized product has shelf life of 2 days at room temperature and 15 days at freezing temperature.





various analyses indicate that the production of colourful faare is practically possible, cost effective and has numerous advantages when compared with other snack foods available.



**ACKNOWLEDGMENT:** Authors acknowledges the work done by Purna Tripathi and Garima Singh at Shyama Prasad Mukhrejji College for Woman as a part of their project work.

#### **REFERENCES:**

1. Alpana Singh, Dr. Mamta Jaiswal, Kiran Agrahari, Archana Singh. Standardization and development of moong dal based products. *Int J Home Sci* 2017;3(1):358-362.
2. Georgiev, V.G., Weber, J., Kneschke, E.M., Denev, P.N., Bley, T., Pavlov, A.I., Antioxidant activity and phenolic content of betalain extracts from intact plants and hairy root cultures of the red beetroot *Beta vulgaris* cv. Detroit dark red., *Plant Foods Hum. Nutr.* 2010, 65, 105–111
3. H Zhang, Q Duan, X Li, J Si, Effect of temperature changes on quality of frozen dumplings during storage, *Food Science and Technology*, 2013, en.cnki.com.cn
4. Huang L, Xiong YL, Kong B, Huang X, Li J. Influence of storage temperature and duration on lipid and protein oxidation and flavour changes in frozen pork dumpling filler. *Meat Science*. 2013 Oct;95(2):295-301.
5. K. P. Sampath Kumar, Debjit Bhowmik, Chiranjib, Biswajit and Pankaj Tiwari, *Allium cepa*: A traditional medicinal herb and its health, *J. Chem. Pharm. Res.*, 2010, 2(1): 283-291
6. S Singh, PK More, SM Mohan - CURRY LEAVES (*Murraya koenigii* Linn. Sprengal)- A MIRACLE, *Indian Journal of Scientific Research*, 2014
7. Wootton-Beard, P.C.; Ryan, L. A beetroot juice shot is a significant and convenient source of bioaccessible antioxidants. *J. Funct. Foods* **2011**, 3, 329–334.
8. Z Meiyun, R Hongtao, L Rong, Analysis of Causes on Common Quality Problems and Countermeasures for Fast Frozen Glutinous Rice Dumplings, *Cereal & Feed Industry*, 2008, en.cnki.com.cn