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## Shelf Life Study and Organoleptic Evaluation of the Developed Value Added Instant Puran Mix

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### **Abstract:**

A dehydrated puran mix with additional functional value of Tulsi leaves (*Ocimum sanctum*) was developed, standardized and analyzed for its acceptability by sensory evaluation tests. The mix makes puran used in puran poli which is a high biological value protein traditional food item. Also, tulsi leaves adds on to the medicinal value of the product without interfering the actual taste of the dish. The instant mix was packaged with an appropriately designed nutritional label and budgeting aspects were calculated. The developed product had the shelf life of 30 days after packaging.

**Keywords:** Tulsi, Instant mix, Puran, Puran Poli, Shelf life study.

### **1. Background**

Puran is a traditional Indian dish, most saught often as puran poli, is eaten while celebrating festivals or happy occasions; all over Maharashtra. It is also eaten in other states of India like Gujrat, South Indian states etc. with typical variations. It is also known as Boli in malyalam/ Tamil, Bobbatlu (Telgu), Holige, Obbattu in Kannada, Ubbatti, or simply Poli ([https://en.m.wikipedia.org/wiki/puran\\_poli](https://en.m.wikipedia.org/wiki/puran_poli)).

### **2. Product Description**



Figure 1

In the present study, the puran or the filling inside the Puran Poli is developed into an instant puran mix with value added of tulsi leaves (*Ocimum sanctum*), which upon hydration yields puran, ready to be stuffed and rolled into a Puran Poli. (Figure. 1)

Tulsi (*Ocimum sanctum*) leaves have been added into the instant mix as it has proven excellent functional qualities. It is a medicinal herb recommended for the treatment for relieving chemical, physical and metabolic stress (Cohen M. M., 2014). The phytochemicals

in tulsi, namely eugenol, rosmarinic acid, apigenin, myretenal, luteolin, beta-sitosterol and carnosic acid increases antioxidant activity. (Baliga M. S. 2013). Although dehydration of tulsi leaves cause certain amount of phytonutrient losses(29%), the medicinal value is still increased substantially upon incorporation of tulsi leaves in the respective product (Lalitha, 2012).

Organic jaggery was selected for instant puran mix in place of conventional jaggery as organic jaggery has significant difference in the nutritional quality and acceptability as compared to conventional jaggery. (o. Venkatasubramanian, 2011). Also, jaggery is most nutritious in terms of additional minerals and salts among all the sweeteners (Sing et. al; 2013).

This instant mix although standardized to be used in puran preparation, can also be part of other recipes such as laddoos, sweet samosas, sweet puris etc.

The main purpose of our product is to overcome the time barrier associated in the preparations of nutritional traditional recipes by preparing an instant mix; with additional functional value added by way of tulsi leaves.

### 3. Objectives

- 1) To develop a standardized product with tulsi as a functional element.
- 2) To study the shelf life using sensory evaluation tests on the developed product.
- 3) To estimate the amount of iron and phosphorus in the sample through AOAC method.
- 4) To select a suitable packaging material.
- 5) To design a nutrition label for the product.
- 6) To understand the budgeting aspects.

### 4. Materials and Methods

#### 4.1. Standardization

For the preparation of value added instant puran mix, the proportion of ingredients was standardized using a preference test, conducted on a semi-trained panel. 3 sets of the sample namely, A<sub>1</sub>, A<sub>2</sub> and A<sub>3</sub> were prepared with varying ratios of Bengal gram dal, jaggery and tulsi leaves.

	Split Bengal gram dal	Organic jaggery	Tulsi leaves
A1	30gm	40gm	10gm
A2	30gm	20gm	10gm
A3	30gm	30gm	30gm

Table 1

Out of all the three compositions, A1 was finalized as it had highest acceptability scores (91%). Hence, Split Bengal gram dal, organic jaggery and tulsi were standardized in the ratio of 3:4:1 respectively. Nutmeg powder and cardamom powder were added for taste.

#### 4.2. Preparation of the Value Added Instant Mix

The split Bengal gram dal was steamed to cook.

Organic jaggery was then mixed into the cooked dal along with crushed tulsi leaves.

Until the mixture was warm, it was grinded in the puran machine to obtained puran

The puran was dehydrated in a controlled temperature for approximately 3 to 4 hours as dehydration in a controlled temperature is known to yield better organoleptic and nutritional characteristics compared to sun drying and roller drying methods (Grade, 2010).

The dehydrated mixture was grounded into fine powder.

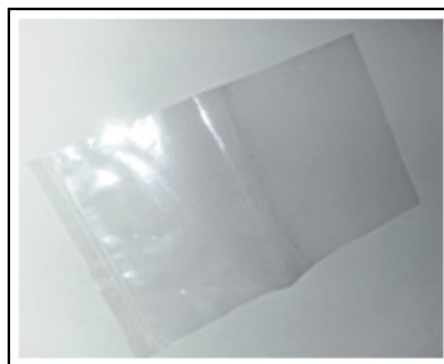


Figure 2

4.3. Packaging

The dry, dull yellow powder of a fine consistency was packed and sealed into polypropylene pouches of 200 gauge. (Figure.2) The selected packaging material was moisture resistant which was necessary to maintain the moisture content of the packaged product. The product was kept away from sun light as the polypropylene pouches did not prevent interference of UV rays. The packets were stored in a dry place, at room temperature.

4.4. Estimation of Iron and Phosphorus

Organic jaggery claimed to have high amounts of inorganic minerals. Hence laboratory estimation of iron and phosphorus was carried out using 5 gram sample of instant puran mix. The sample was subjected to ashing in a muffle furnace for 6-7 hours. The aliquote of the ash obtained was made up to the volume of 250 ml. The solution thus obtained was used to estimate iron and phosphorus content by AOAC procedures and using a calorimeter. It was observed that 100 gm. instant puran mix contained 9.5mg of iron and 147.75mg of phosphorus.

4.5. Nutritional Labelling

The nutrition label was designed to have the product name, ingredients in descending order of their composition, net weight of the powder, nutritive value of the instant mix, storage information, manufacturing date and the expiry date. Also, the procedure to use the instant puran mix was included in pictorial flow diagram for the consumers. (Figure. 3 and Figure. 4)



Figure 3

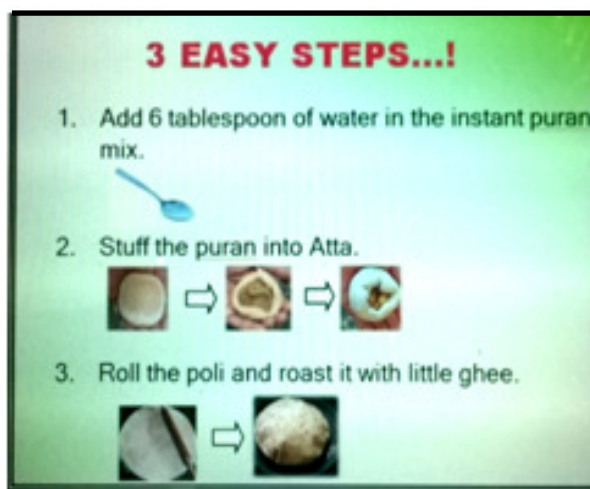


Figure 4

Nutrient	Amount
Energy	246 kcal
Protein	6.24 gm.
Carbohydrates	48.19 gm.
Iron	2.5 mg
Phosphorus	59.1 mg

Table 2: Nutritive value per 50 gram

5. Budgeting

The cost price of each 50gm packet was 12 rupees and the selling price was 20 rupees. The profit margin for each 50 gm. Packet hence was 8 rupees. The turnover of 100 packets of 50 gm. would be therefore 800 rupees and for 1000 packets would be 8000 Indian rupees.

6. Shelf Life Study and Sensory Evaluation

Shelf life studies were carried out by testing these packets after every 7 days for sensory scores; using a composite scoring test.

- The sensory evaluation test was conducted by using the following score card:-

6.1. Score Card

Name - \_\_\_\_\_

Date - / /2016

Product - \_\_\_\_\_

You are given a sample. Taste it carefully for the quality characters to be evaluated and give score for the sample accordingly. You can re taste the sample.

Characteristics	Possible Score	Given Score
Taste	40	
Flavor	20	
Masticability	10	
Absence of defects	10	
Color	10	
Overall acceptability	10	

Table 3

- Remarks (e.g.: any aftertaste) - \_\_\_\_\_
- Results:

The sensory evaluation tests which were conducted weekly were interpreted and mean scores for each characteristic was calculated.

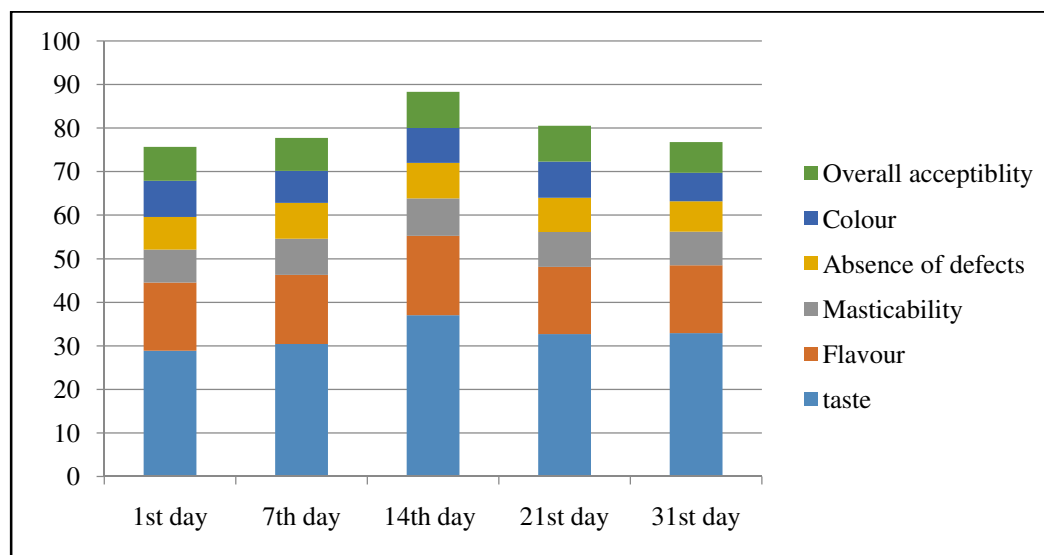


Figure 5

From the figure 5, we observe that, all the sensory attributes except the taste, showed more or less the same scoring every week. The taste has shown the peak score on the 14<sup>th</sup> day probably due to ripening effect of the jaggery. After 14<sup>th</sup> day, scores for taste had relatively declined but was still higher compared to the first two results. The flavor of the product have scores within the acceptable range which means addition of tulsi leaves has not interfered with the actual taste of puran Poli. The product was successfully accepted by the sensory panel till the 31<sup>st</sup> day of the shelf life study, without the use of any added preservatives. After the 31<sup>st</sup> day, the color of the puran was darker and not acceptable which was considered the end point.

## 7. Discussions

Tulsi leaves can be successfully incorporated in the instant puran mix which enhanced the nutritional quality of the product as desired. Similar experiments was carried by Anbarasu. K et.al (2007) to improve the shelf life of protein rich tofu from 3 to 4 days to extended 7 to 8 days of normal storage, using tulsi. Also, tulsi yogurt developed by Chowdhury B.R. (2008) had the highest beta galactosidase enzymatic activity compared with yogurts made from other herbs.

## 8. Limitations

Dehydrated tulsi is used in the study which has resulted in loss of certain amount of antioxidant values. Techniques can be developed to incorporate tulsi leaves or other parts of tulsi plants without dehydration in order to obtain maximum benefits. Also, two or more herbs can be added simultaneously and the acceptability of the product can be checked. Products with still longer shelf life can be developed.

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