



# ORGANOLEPTIC EVALUATION OF COOKIES PREPARED FROM COMPOSITE FLOUR AND JAMUN (*SYZYGIUM CUMINI*) SEED POWDER

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## Abstract

This study was aimed to analyze sensory quality variations of biscuits prepared from composite flour which consist of ragi, chickpea flour and dried jamun seed powder during fresh and after 2 weeks of storage period. Two replications were prepared for sensory evaluation. Those were, Batch A- 70:30 (70% of composite flour (ragi & chickpea flour) and 30% of jamun seed powder) and 50:50 (50% of composite flour (ragi & chickpea flour) and 50% of jamun seed powder). From the overall acceptability rating, the cookie sample prepared from composite flour with 70% ragi and chickpea flour, 30% jamun seed powder had the highest mean value compared with batch B cookie, 50% of ragi and chickpea flour and 50% of jamun seed powder. Based on the sensory analysis of preliminary studies, most preferred cookies samples were selected for storage studies. Half of the cookies were wrapped in butter paper and half cookies were placed in an airtight container and stored at normal temperature to observe the changes in its texture, taste, color and appearance. The sensory evaluation carried out at the end of 2<sup>nd</sup> week, revealed that there were differences for the sensory characteristics between the fresh and stored cookies. Cookies that were stored in normal condition showed an increased amount of moisture, softness and exhibited an unusual color. There was also the presence of mold and a little spotting making them inedible to eat after a 2 week. Although, air tight containers provided an extended shelf life, there acceptability and freshness was accepted by the panelists. Therefore, cookies A (70:30) were most acceptable by the panelists and same taste for the consumption upon 2 weeks of storage.

## Keywords

Organoleptic evaluation, composite flour, ragi, chickpea, moisture, mold, panellist

## 1. Introduction

Jamun (*Syzygium cumini*) is valued for its high nutritional content and therapeutic properties. It has a variety of pharmacological effects, and the plant's bark, leaves, seeds, fruit, and other parts have all been used as medicines to treat a range of illnesses (Singh et al., 2020). Jamboline, a biochemical found in the jamun fruit, its juice, and the seed, is thought to prevent the pathological conversion of starch into sugar in the event that glucose production is elevated. Jamun seeds are well known for their medical properties to treat blood pressure, diabetes, diarrhoea, and other conditions (Marufa et al., 2019). These may be brought on by a number of bioactive phytochemicals, such as polyphenols, which contain the purple pigment anthocyanin. Consuming jamun seed powder has been shown in studies to have potential advantages during chemotherapy and radiation treatments. Iron and vitamin C are both adequately present in jamun seeds. The black plum's iron content is beneficial for raising haemoglobin levels. The iron in jamun seeds serves as a blood purifier. It is helpful for skin and beauty since it is a method of purifying blood. When a woman has her period and loses blood, iron is helpful. Due to its high iron content, jamun seed should be consumed by those who have anaemia and jaundice (Kanan and Puraikalan, 2013).

It has become quite common to consume cereal-based snack foods like biscuits, cookies, and shortbread. These biscuits have a number of appealing qualities, including as widespread consumption, a lengthy shelf life, and good eating quality. In addition to milk, salt, flouring agent, and aerating agent, the main ingredients are flour, oil, sugar, and water. A biscuit is a baked food item that is mostly made of flour (Kumar S. et al., 2018).

Composite flour is an amalgamation of various flours derived from cereal, legume, or root crops that is made to meet particular functional requirements and nutrient content. Cereals and legumes or cereals and tubers could be included (Kumar S. et al., 2018).

Therefore, present study was undertaken to assess the consumer acceptability of cookies prepared from composite flour and jamun seed powder after formulation and after 2 weeks of formulation.

## 2 Methods and materials

### 2.1 Purchase of raw materials

Ragi and chickpea flour were purchased from the local market and jamun were collected from a nursery at Chandigarh.

### 2.2 Drying of Jamun seeds

First, separate the seeds from the fruit and thoroughly wash them to remove any remaining fruit meat. For at least three to four days, keep the seeds on a clean cloth to dry in the sun. Once the outer shell has dried, remove it and only keep the seed's green inner core. The seeds can be pressed to split the core in half. Then let it dry in the sun for a few additional days. Put them in a grinder after they have completely dried. Repeat this process until the majority of the seed powder is fine enough to pass through the sieve, then sieve the coarse powder. Jamun seed powder should be kept in an airtight container.

### 2.3 Development of cookies

Two variants of cookies were prepared by incorporating jamun seeds (50:50 flour and jamun seed powder and 70:30 flour and jamun seed powder) in different ratio. Mix ragi, chickpea flour, jamun powder and add baking powder in it. Add some milk and vanilla essence mix it well and make dough. Add honey and pinch of salt in dough (Dough must be hard like chapati dough). Now, take tray and add dough on butter paper like balls. Pre heat the oven at 180 degree for 15 minutes. After that, set tray in an oven at 250 degree for 30 mins. After 30 minutes, cookies are ready cool them and store in air tight lid container.

### 2.4 Storage of cookies

Some of the cookies were wrapped in butter paper and stored at normal temperature to observe the changes in its texture and calculate its shelf life. A few more cookies were placed in an airtight container and kept under an observation.

### 2.5 Organoleptic evaluation

A panel of 15 people who were trained in organoleptic evaluation evaluated the developed cookies. The organoleptic evaluation sessions were held in good temperature, humidity, and lighting conditions an hour before lunch. The panelists were asked to give an overall score on the basis of color, appearance, flavor, texture, taste and overall acceptability of the composite flour and jamun seed powder cookies on a scale of 9 point hedonic scale.

#### Performa for Sensory Evaluation

#### 9 Point Hedonic Rating Test

Name:

Product name:

Date:

Dislike extremely

Dislike Very much

Dislike moderately

Dislike slightly

Neither like nor dislike

Like slightly

Like moderately

Like very much

Like extremely

Attributes	S	A	B	C	D
Color					
Appearance					
Flavor					
Texture					
Taste					
Over all acceptability					
Suggestions, if any .....			Signature		

## 2.6 Statistical Analysis

The data were processed for the analysis of mean and standard deviation by Microsoft office excel.

## 3 Results and Discussion

Organoleptic qualities analysis for the cookies prepared from composite flour (ragi, chickpea flour) and jamun seed powder was done fresh and after 2 weeks of storage period by the panel of 15 semi-trained judges. The panel assessed overall acceptability, colour, texture, taste, and flavour. For this, a nine-point hedonic scale was employed (Fennema, 1996). Sensory characters of cookies stored at ambient temperature were changed slightly than freshly made biscuits.

### 3.1 Sensory Evaluation of Cookies

Organoleptic analysis results show (table no. 3.1) that the mean scores of the developed cookies (A) was in the ranges of liked extremely to liked very much in all attributes i.e. color, appearance, flavor, texture, taste and overall acceptability ( $9.30 \pm 0.67$ - $8.20 \pm 0.69$ ) and in comparison with standard cookies (S), developed cookies (A) was similarly liked in color and appearance attribute. The results of developed cookies (B) were liked very much to liked slightly in attributes like appearance, flavor, texture, taste and overall acceptability ( $8.40 \pm 1.5$ - $6.70 \pm 1.67$ ). Therefore it can be seen from the results of the mean scores of the organoleptic evaluation that developed cookies (A) was the most acceptable cookie got highest scores among the all samples and liked extremely by the semi trained panel members on 9 point hedonic scale.

**Table 3.1 Mean sensory scores of developed cookies**

<b>ATTRIBUTES</b>	<b>S</b>	<b>A (70:30)</b>	<b>B (50:50)</b>
<b>Color</b>	9.20±1.03	9.10±0.87	8.40±0.69
<b>Appearance</b>	9.40±0.69	9.30±0.82	7.50±1.71
<b>Flavor</b>	9.30±0.67	8.70±0.66	7.90±0.73
<b>Texture</b>	9.80±0.70	8.60±1.50	7.70±1.25
<b>Taste</b>	9.30±0.67	8.70±0.67	6.70±1.25
<b>Overall Acceptability</b>	9.20±0.82	8.20±0.63	7.30±0.82

Values represents as Mean±SD

### 3.2 Sensory evaluation of cookies during Storage

The procedure of storage study can be used to examine the presence of any product without any change in quality. One crucial factor that affects the quality of any food product while it is being stored is moisture (Marufa et al., 2019). Cookies that had been stored normally had an increased level of moisture, were softer, and had an unusual tint. Organoleptic analysis results show (table no. 3.2) that the mean scores of the developed fresh cookies (A) was in the ranges of liked extremely to liked very much in all attributes i.e. color, appearance, flavor, texture, taste and overall acceptability (9.30±0.67-8.20±0.69). The results of after 2 weeks of developed cookies (B) were liked slightly to disliked slightly in attributes like appearance, flavor, texture, taste and overall acceptability (6.40±1.5-4.30±1.67). Therefore it can be seen from the results of the mean scores of the organoleptic evaluation that developed fresh cookies (A) was the most acceptable cookie got highest scores among the all samples and liked extremely by the semi trained panel members on 9 point hedonic scale.

**Table 3.2 Mean sensory scores of developed fresh and after 2 weeks cookies**

<b>ATTRIBUTES</b>	<b>Fresh Cookie A (70:30)</b>	<b>After 2 weeks B (70:30)</b>
<b>Color</b>	8.09±0.87	6.40±0.66
<b>Appearance</b>	9.30±0.82	6.50±1.12
<b>Flavor</b>	8.70±0.66	5.10±0.53
<b>Texture</b>	8.60±1.50	4.70±0.25
<b>Taste</b>	8.70±0.67	5.70±1.25
<b>Overall Acceptability</b>	8.20±0.63	4.30±0.82

Values represents as Mean±SD

#### 4. Conclusion-

Cookies made with composite flour offer improved nutrition and beneficial benefits for children and adults in underdeveloped nations. A cookie made with such composite flour contributes significantly to the diet. Therefore, this study was conducted to discover whether quality changes occurred during the 12 weeks of storage under ambient environmental conditions. Incorporating the specially made cookie with jamun seeds powder into a diabetic diet can be both safe and beneficial. In addition to lowering blood glucose levels, it also has significant anti-inflammatory and antiviral effects that have a positive impact on overall health. Apart from that, it will offer increased convenience to the common population and have a good palatability and organoleptic rating. Therefore, encouraging the need of more intense research on jamun fruits and developing of latest jamun fortified products and cookies along with effective advertising.

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