

Phytochemical Screening of Value-Added Cookies Developed from Underutilized Jowar and Jamun Seed

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Abstract

Millets are a group of small-seeded, extremely varied plant species that are native to many parts of the world. They are perfectly suited to thrive in hot, dry, and infertile environments. Millets are good for reducing diabetes, maintaining intestinal inflammation, and protecting cardiovascular health. One of India's most significant millet crops is jowar (sorghum). Jowar is used because of its high fibre, Phosphorus, iron and calcium content, which helps to prevent diabetes mellitus and cardiovascular diseases. Vitamin C and B complex vitamins are found in jamun seeds. It is beneficial for those with diabetes and aids in the healing of wounds. Despite having numerous medical properties, jamun seeds have not been widely used. Hence the study on "Phytochemical Screening of Value-Added Cookies Developed from Underutilized Jowar and Jamun Seed" was conducted. In this study, Control was prepared by using the standard ingredients such as wheat flour, butter and icing sugar. Sample A, sample B, and sample C were developed by using the jowar and jamun seed powder by replacing the wheat flour in different proportions. The developed value-added cookies were standardized by using the sensory evaluation with the help of semi trained panel members by using five-point Hedonic scale. The selected standardized value added cookies and control were subjected to phytochemical screening.

Key words: Millets, Jowar, Jamun seed, Sensory evaluation, Phytochemical

A group of small-seeded, extremely varied plant species known as millets are native to many parts of the world. They can thrive in settings with low soil fertility, little precipitation, and high ambient temperatures. Millets maintain intestinal inflammation, safeguard cardiovascular health, and prevent diabetes. Although millets play a smaller role in Indian agriculture than other food crops, they are nonetheless crucial for regional and family food security.

Because of its whole grain deliciousness and lack of gluten, jowar is referred to as the "new quinoa" throughout the world. English speakers refer to it as sorghum. Nowadays, there is a lot of interest in jowar. This ancient crop was overshadowed in terms of popularity by wheat and rice. Due to a change in how people view eating millets, jowar has experienced a resurgence. The health advantages of jowar range from enhanced heart health to weight loss. The benefits of jowar include the fact that it is gluten-free, high in protein, rich in iron, manages blood sugar levels, and free of other harmful ingredients(<https://www.netmeds.com>). The high protein, carbohydrate, and dietary fibre content of jowar makes it an excellent cereal for weight tremendous quantity of these minerals, which include calcium, iron, phosphorus, potassium, and treating cancer, improving heart health, controlling diabetes and irritable bowel syndrome, boosting energy, raising

haemoglobin levels, and aiding in weight loss. The Jamun seed powder is quite effective at lowering blood sugar levels. It helpful digestion and is good for the heart and liver health.

The following are the objectives set forth for this study:

- To develop the value-added cookies using jowar and jamun seed
- To standardized the value-added cookies
- To find out the phytochemical and microbial analysis of the selected standardized value-added cookies
- To find out cost for the selected standardized value-added cookies

MATERIALS AND METHODS

The methodology adapted for this study are discussed under the following headings:

Ingredients Used for the Development of Value-Added Cookies

Ingredients such as butter, icing sugar, jowar, jamun seed flour, and wheat flour were used to develop the value-added cookies. Wheat flour and icing sugar were used to prepare the control.

Development of Value Added cookies by using jowar and jamun seed

Value added cookies were developed by following the trial and error method. Three different sample such as sample A, sample B, sample C were developed. In sample A, jamun seed powder jowar were used in 5% and 15% respectively. In sample B, jamun and jowar were used in 10% and 20% respectively and sample C was developed by using jamun seed powder and jowar in 15% and 25% respectively. Control was prepared by using standard proportion of ingredients.

Standardization of Value Added Cookies

Developed value added cookies were standardized using sensory evaluation by using five point hedonic scale with the help of 10 semi trained panel members. Each panelist evaluated the developed value added cookies in the aspects of colour, flavour, taste, texture, and appearance. Each parameter was given a sensory score, and the mean score was obtained after statistical analysis.

Statistical Analysis

The value added cookies and control were analysed statistically by using mean and standard deviation.

Phytochemical Analysis

The phytochemicals such as Alkaloids, Saponin, Tannin and Flavonoids were analysed qualitatively by following the standard procedure for the selected standardized value added cookies and control.

Microbial Analysis

Microbial analysis was carried out for the selected standardized value added cookies and control to find out the shelf life of the product.

At the 15th and 30th days, a microbial count was performed on the millet cookie product. The item was kept at room temperature for storage.

RESULTS AND DISCUSSION

Sensory evaluation of value-added cookies

The mean scores obtained from the Sensory evaluation of sample A, B, C and control is presented in the following (Table 1).

Table 1 Mean Scores Value of the Sensory Evaluation of Value Added Cookies

Cookies	Control	Sample A	Sample B	Sample C
Colour	4.3	4.8	4.4	3.9
Flavour	4.4	4.7	4.6	3.9
Texture	4.3	4.7	4.6	4
Taste	4.2	4.7	4.6	3.9
Appearance	4.4	4.7	4.6	4

Above (Table 1, Fig 1) shows that the result of sensory evaluation of millet cookies. In this result sample A (4.8, 4.7, 4.7, 4.7) had high mean score value than the sample B, Control and sample C.

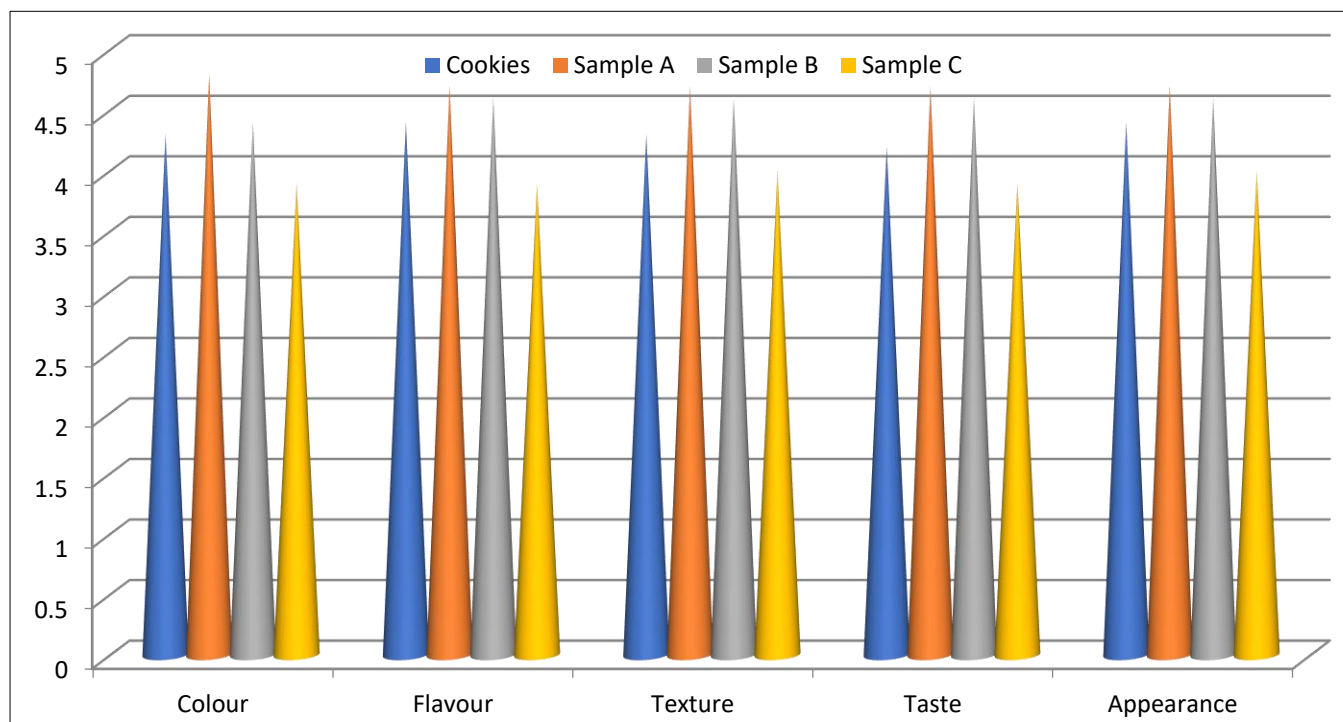


Fig 1 Statistical Analysis of the Selected Standardized Value Added Cookies

Phytochemical Analysis for Selected Standardized Value added Cookies

The results of the Phytochemical Analysis of Selected Standardized Value Added Cookies and control is presented in the (Table 2). In the (Table 2) shows that the result of phytochemical analysis of selected standardized value added cookies and control. In this analysis, it was found out that alkaloids, saponin, tannin and flavonoids were present in the selected standardized value added cookies but in control only alkaloids and saponin were presented.

Table 2 Phytochemical Properties of the Selected Standardized Value Added Cookies

Phytochemicals	Cookies Control	Cookies Sample
Alkaloids	Presence	Presence
Saponin	Presence	Presence
Tannin	Absence	Presence
Flavonoids	Absence	Presence

Microbial Aanalysis of Selected Standardized Value Added Cookies

Table 3 shows that the microbial count was calculated in the initial, 15th day and 30th day. In this developed value added cookies and their microbial count on 15th day and 30th days were too high to count. From this analysis, it was found that the developed product can be kept at room temperature for 15 days.

Table 3 Microbial Aanalysis of Selected Standardized Value Added Cookies

Sample	Initial	15 th day	30 th day
Cookies (control)	-	13×10 ⁵	29×10 ⁵
Cookies (sample)	-	16×10 ⁶	36×10 ⁶

Table 4 Cost for the Selected Standardized Value Added Cookies

Products	Control Cost (Rs per 100g)	Sample Cost (Rs per 100g)
Cookies	45	51

Cost for the Selected Standardized Value Added Cookies

The (Table 4) shows that the cost of the developed value added cookies and control. Control and value added cookies cost per 100g was Rs.45/- and Rs.51/- respectively. From this analysis, it was found out that samples cost was slightly higher than the control but nutrient aspect it had more nutrient than the control.

CONCLUSION

Childhood and adolescent malnutrition is increasing especially among the low- and middle-income countries of the world. Protein and micronutrient deficiencies are often major nutritional problems of these children. Utilization of jowar and Jamun seed powder in different food products can help in effective utilization of wastage of Jamun seed as well as to get nutritional products. Jowar is gluten-free, high in resistant starch and a rich source of nutrients. Most of the affected children suffer from hidden hunger because their diets are mainly carbohydrate based. Intakes of this type of millet products are very healthy and feasible to the people.

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