

Standardization and Sensory Assessment of Value-added Desserts with the Incorporation of *Hordeum vulgare* and *Ipomoea batatas* Dried Flour

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Abstract

The inter-relationships between poverty and nutrition are well known; poverty restricts access to food required to meet daily requirements or ensure dietary diversity and thus leads to malnutrition, while malnutrition can adversely affect educational and economic attainments, thus perpetuating poverty. Dessert is a course or a sweet dish typically served at the end of a meal. It is intended to provide a satisfying and indulgent treat, often comprising a variety of flavors, textures, and ingredients that are specifically designed to satisfy the palate's craving for sweetness. Desserts can include cakes, pies, pastries, ice creams, puddings, chocolates, fruit salads, and other confections that are typically served after the main course. Locally available foods which contains various nutrients like carbohydrates, proteins, essential amino acids, Vitamins and Minerals. Desserts are most favourite for all the age group peoples. Value addition is the enhancement of a product or service before it is offered to the customers. Germination of cereals is important both from nutritional as well as functional point of view. It is not only improving the bioavailability of the various minerals, vitamins and dietary fibers along with the nutritional profile of the seed grains, but also reduces some anti-nutritional factors which reflects the beauty of this method. Sweet potato flour can serve as a source of energy and carbohydrates, beta carotene (pro-vitamin A), minerals (Ca, P, Fe and K) and dietary fibre which can add natural sweetness, colours and flavour to processed food products. Hence this study planned to standardize low-cost value-added desserts like Gulab Jamun and Cookies with the incorporation of malted barley flour and sweet potato flour and found the acceptability of the formulated low-cost desserts.

Key words: Desserts, Sweet potato, Barley malt

The interrelationships between poverty and nutrition are well known; poverty restricts access to food needed to meet daily requirements or ensure dietary diversity and thus results in malnutrition, while malnutrition can negatively affect educational and economic attainments, thus perpetuating poverty. Dessert is a course or a sweet dish typically served at the end of a meal. Desserts are often served after the main meal and might include cakes, pies, pastries, ice cream, puddings, chocolates, fruit salads, and other sweets. Foods that are readily available in the area and contain a range of nutrients, including vitamins, minerals, vital amino acids, carbohydrates, and proteins. Desserts are everyone's favourite food, regardless of age. Before a product or service is made available to customers, it is improved to add value. Therefore, the goal of this study was to standardize low-cost, value-added desserts.

Without understanding the biology involved, cereal germination has been utilized for generations to soften the structure of the kernel, boost nutrient content and availability, lower the quantity of antinutritive chemicals, and introduce novel flavors. Therefore, from a nutritional and practical standpoint, grain germination is crucial. The benefits of this

process include reducing some antinutritional elements while also increasing the bioavailability of the numerous vitamins, minerals, and dietary fibers as well as the nutritional profile of the seed grains.

Barley is one such significant cereal grain that children do not typically consume. It is an excellent grain with lots of health advantages. Health specialists are paying attention to barley because of its fiber content, especially -glucan, which has been linked to weight loss, lowered blood pressure, blood cholesterol, and blood glucose in Type 2 diabetes, as well as the prevention of colon cancer. It is easily available and affordable grain. It contains both soluble and insoluble fiber, protein, vitamins B and E, minerals, selenium, magnesium and iron, copper, flavonoids and anthocyanins.

The beta carotene (pro-vitamin A), minerals (Ca, P, Fe, and K), and dietary fiber found in sweet potato flour can be used to give processed foods a natural sweetness, color, and flavor. While wheat flour is often used to make cookies, other cereal flours or starches can also be added in very small amounts to give them unique flavour or structural characteristics. The demand for meals with high fiber contents has significantly

expanded in recent years. Cookies with high dietary fiber supplements have been made by substituting cereal by products like barley husk, rice bran, or maize bran for wheat flour. Instead of effective production techniques, the majority of research has been concentrated on the development of new goods using sweet potato flour. . Most of the research has been focused on the development of new products using sweet potato flour rather than on efficient methods to produce and store the flour (Hagenimana *et al.* 1992).

Objective of the study

- To formulate malted/germinated malted barley flour and sweet potato flour.
- To standardize the value-added desserts (Cakes and Gulab Jamun) by incorporating malted barley flour, and sweet potato flour.
- To determine the acceptability of the formulated desserts using sensory analysis.

MATERIALS AND METHODS

Phase I

- Preparation of Malted Barley Flour
- Preparation of Sweet Potato Flour and Beetroot juice

Phase II

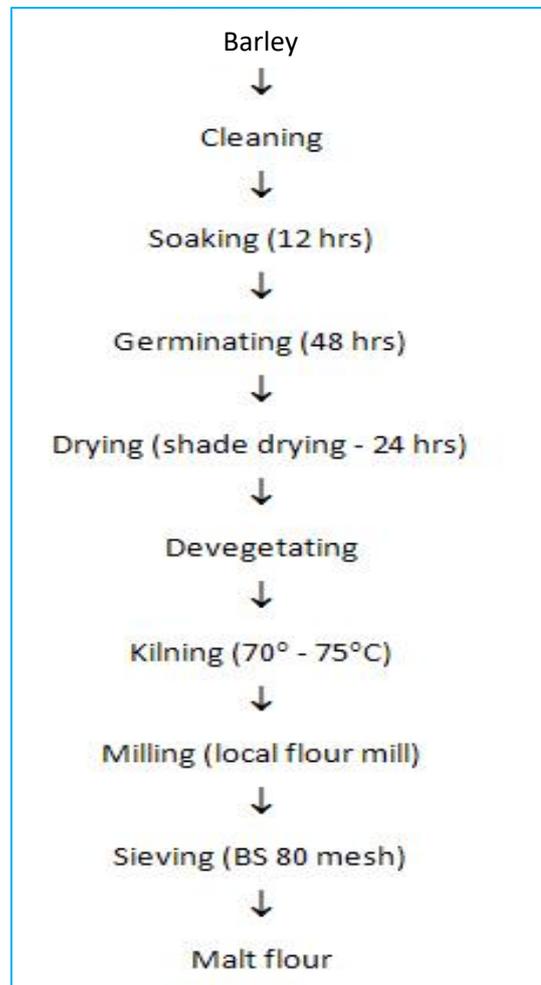
- Formulation of Value-added Cakes
- Formulation of Value added Gulab jamun

Phase III

- Sensory Evaluation of the formulated desserts by using 9-point Hedonic Scale

Phase I

Preparation of malted barley flour



Preparation of Sweet potato flour



Phase II

Treatments of the products

The basic recipes were serving as control (TC)

Detail of treatment of products

The details of the different treatments of low-cost desserts will be given in the following (Table 1).

Table 1 Treatment of products

S. No.	Food products	Treatments			
		TC	T ₁	T ₂	T ₃
1.	Cake				
	• Wheat Flour	100%	50%	50%	90%
	• Malted Barley Flour	-	50%	-	-
	• Sweet Potato Flour	-	-	50%	-
	• Beetroot Juice	-	-	-	10%
2.	Gulab Jamun				
	• Gulab Jamun Mix	100%	50%	50%	90%
	• Malted Barley Flour	-	50%	-	-
	• Sweet Potato Flour	-	-	50%	-
	• Beetroot Juice	-	-	-	10%

Phase III

Sensory evaluation of the products

Sensory evaluation of the products: Using a nine-point hedonic scale scorecard, a panel of judges made up of five faculty members from the Department of Food Science and Technology will assess the sensory acceptability of the food products by rating them for their color and appearance, body and texture, taste and flavor, and overall acceptability (Srilakshmi, 2010).

Sensory science is “a scientific discipline used to evoke, measure, analyze, and interpret reactions to those characteristics of food and other materials as they are perceived by the senses of sight, smell, touch, taste, and hearing” (Stone and Sidel, 2004).

The sensory attributes of the sweets namely appearance, colour, aroma, texture, taste, flavour, overall acceptability were allotted a maximum of 9 rank each. The scoring was 9 (like extremely), 8 (like very much), 7 (like moderately), 6 (like slightly), 5 (neither like nor dislike), 4 (dislike slightly), 3 (dislike moderately), 2 (dislike very much) and 1 (dislike extremely). (Ranganna, 1993). A nine-point hedonic scale score card was provided to the panelists to adjudge the quality of the product prepared by three different variations with respect to appearance, color, flavour, taste and overall acceptability.

RESULTS AND DISCUSSION

Sensory Evaluation deals with analyzing and interpreting the qualities of food as they are perceived by the sense of

appearance, color, flavor, consistency, taste, flavor, overall acceptability. Sensory evaluation is designed to reflect common preferences and to maintain the quality of food at a given standard condition. All three variations and control of the desserts like cakes and Gulab jamun were prepared and each was tested by a panel of 20 members.



Fig 1 Value added desserts

Table 2 Sensory evolution of formulated desserts

Desserts	Factors	Control	T ₁ : Barley flour	T ₂ : Sweet potato flour	T ₃ : Beetroot juice
		%	%	%	%
Cake	Appearance	82.5	83.3	83.2	82.3
	Colour	85.0	85.0	84.3	79.5
	Texture	90.0	84.4	83.0	82.2
	Taste	87.0	83.3	84.0	80.2
	Flavour	83.2	80.0	81.0	80.0
	Overall acceptability	85.0	83.6	82.5	79.0
Gulab Jamun	Appearance	90.5	88.4	88.2	87.3
	Colour	91.0	87.0	87.3	86.1
	Texture	87.0	85.3	86.0	85.0
	Taste	87.2	86.7	86.0	85.4
	Flavour	85.2	80.5	81.0	81.1
	Overall acceptability	87.0	84.7	85.2	79.4

Sensory evaluation of the final product (e.g., beverage) is the most important determinant of knowing if the technology is effective in masking the off taste/odour of the

actives (Akashe 2014). The expert panel evaluated the formulated value-added desserts for their sensory attributes namely appearance, colour, texture, taste, flavour and overall

acceptability. The findings are given in (Table 2), which exhibits the overall ranking score for the value-added desserts cakes and Gulab Jamun in different proportions. In cake sample, including control all the three samples were marked with more than 78 percentage, and the overall acceptability of sample 1, that is malted barley flour incorporated cake was scored high next to control. In Gulab jamun the overall

acceptability was high in Sample 2, that is sweet potato flour followed then control.

CONCLUSION

the development of desserts with the incorporation of malted barley flour, sweet potato flour and beetroot juice with the basic ingredients could increase the nutritional and functional values and also provide a variety in desserts.

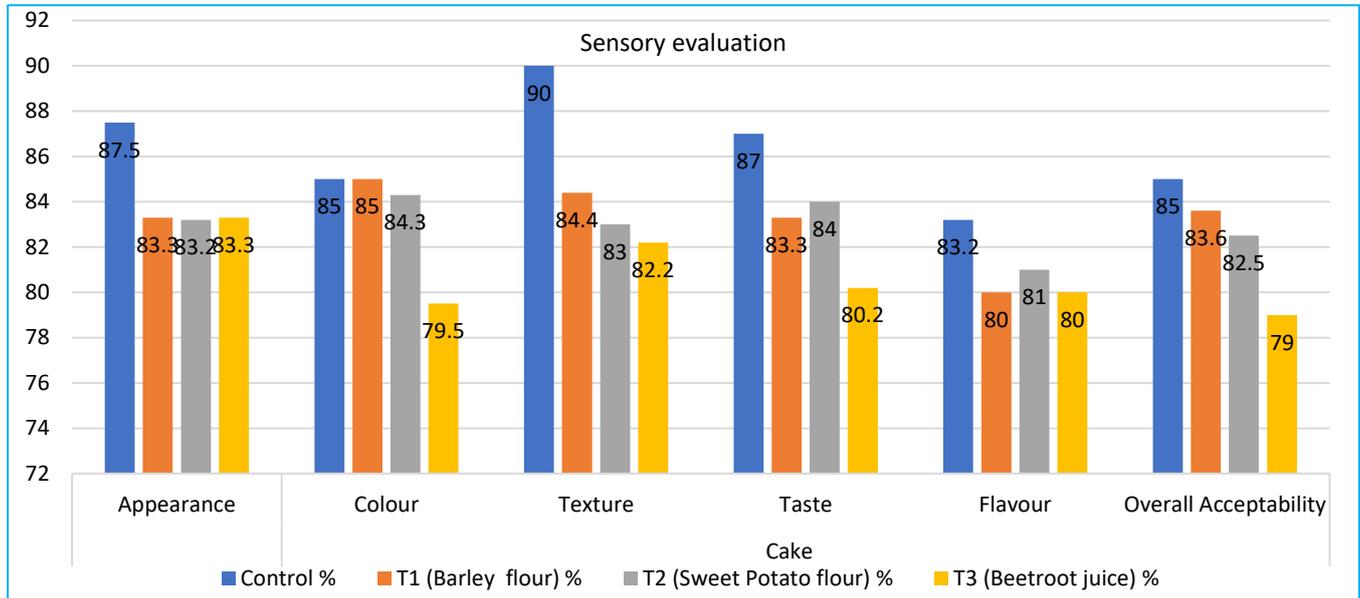


Fig 2

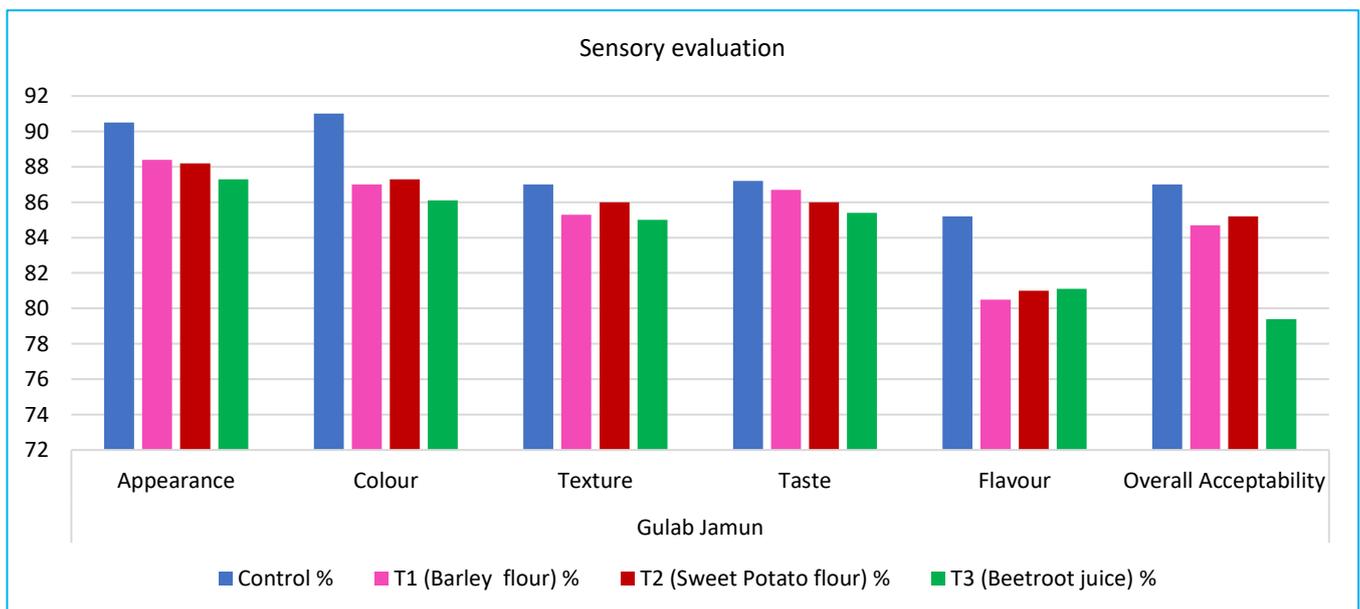


Fig 3

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