

Development of Jelly Cake and its Sensory Evaluation by using Millet and Amla

Abstract:

One cereal with a short growth season that is resistant to disease, pests, and drought is millet. Future human needs will depend more and more on this agricultural product as the world's population rises and water supplies decrease. Grain free, millet can be used to make gluten-free dishes for those with celiac disease. To increase the baking capabilities of flour, it can be treated physically and with additions due to the inferior quality of baked goods prepared from gluten-free cereals.

Health professionals and customers are placing more and more pressure on food firms to produce healthier food products. Gluten-free flours (such as millet, soy, flax, etc.) are becoming more and more in demand, which presents food firms with new sales opportunities. In light of this, a study was conducted to create millet-based sponge cakes with amla jelly with the goal of enhancing the product's nutritional and sensory qualities. Apart from a reference sample that contained solely refined flour, an alternative cake was made by adjusting the proportions of millet flour. Sensory analysis with 30 semi trained panelist were carried out.

The findings showed that there were appreciable variations between these items in terms of visual puffiness, appearance, texture/mouthfeel, moistness, or fragrance acceptability.

Keywords: Amla jelly, Millet based cake, Gluten free dishes, Healthier foods, Sensory evaluation, Nutritional products.

Introduction:

Superior food products have grown more and more in demand from consumers and healthcare professionals in recent years. Food businesses, however, have addressed this task with comparably little success since people generally believe that choosing healthy food puts fun eating in direct contradiction. As a gluten-free diet, millet has been shown to be beneficial for those who have celiac disease, which is most brought on by consuming cereal proteins. Across the world, millet is a very variable tiny seed grass that is cultivated for food grains or cereals. It grows well in areas with hot temperatures and little rainfall, especially on dry, poorly fertilised soils. Its growing season is brief, yet it can yield good amounts of grain in poor conditions for most other cereals. Millet, like other cereals, has 75% complex

carbohydrate and 10% fat and fibre (roughage). It has been suggested that the high nutritious value of millet could improve family food security in Africa. Millet is very important for health and the economy. As an example, millet is considered a heart-healthy dietary option due to its high magnesium content (19% of the daily recommended amount) (Kwaw, 2013). In Indian pharmacopoeia, amla is utilised as a potent rejuvenator and is one of the highest sources of vitamin C (ascorbic acid 500–1,500 mg/100 g), pectin (2.25%–11.19%), and polyphenols (24.61%–31.12%). Amla is cultivated commercially all over India due to its excellent adaptability and favourable financial returns. The crop is ideal for marginal terrain, hardy, and low maintenance. This fruit is also widely available for a good portion of the year at fair market pricing. Amla has an astringent and sour flavour, which makes it less popular as a fresh fruit. Nonetheless, the fruit's nutritional and therapeutic qualities present a significant opportunity for value addition to goods such as sweets, pickles, preserves, juice, dried powder, and ready-to-serve beverages (Tuorila and Cardello, 2002).

Whole grains like millets are rich in minerals, fibre, protein, and antioxidants, and they may offer a number of health advantages:

- Blood sugar regulation

Millets are a great option for those with type 2 diabetes since they have a low glycemic index and include carbohydrates that help manage blood sugar.

- Loss of weight:

Because millets are high in fibre and low in calories, they may aid in weight loss.

- Cardiovascular well-being

Magnesium and vitamin B3, which are found in millets, can help control cardiac rhythm and lower triglycerides and cholesterol.

- Sentiment

Tryptophan, an amino acid found in millets, has the potential to alleviate symptoms of anxiety and depression.

- Protection from diseases

Barnyard millet helps maintain a healthy body temperature and strengthen immunity.

- Preventing asthma

Patients with asthma may have better breathing processes when using pearl millet, or bajra.

Some of the benefits of Amla:

- Anti-inflammatory substances

aid in the prevention of infections and reduce inflammation.

- Enhances skin (Saleh et al., 2013)

Amla extract can be ingested or applied topically to improve skin tone and texture, combat hyperpigmentation, and slow down the ageing process.

- Low glycaemic index of 15

which helps shield the body from high blood sugar processes, is beneficial for diabetes.

- High fibre and protein

content of this weight reduction solution can assist eliminate waste from the body and manage cravings.

- Hair care

Which slows down greying, stops breakage, and strengthens hair shafts.

increases immunity

- Vitamin C content

fighters viral infections and functions as an antioxidant.

- Reduces hypertension

elevated amounts of vitamin C lower cholesterol and lessen hypertension symptoms (Gul et al., 2022).

Methodology:

Making the Multi Millets Flour:

After sorting and washing the millet seeds to get rid of any undesired particles, they were left to soak for a full day. After soaking the seeds, the flour was sun-dried for a whole day.

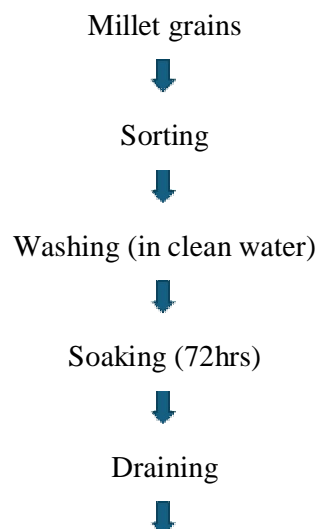




Figure: 1- Flow chart for millet flour production

Sponge Cake Production:

Cake recipe is described by the used millet flour and the ratio of flours used is shown below

Table 1 Ratio of flours for cake preparation

Sno.	Millet flour	Ratio (g)
1.	Ragi	25g
2.	Jowar	25g
3.	Bajra	25g

Method of preparation:

Preheat the oven for 20 minutes at 180 degrees Celsius



Measure all the flours and mix it in a bowl.



Now add baking soda and baking powder to the above dry mix.



In a separate bowl mix, jaggery, butter, milk, curd and water.



After measuring all the dry mix now sieve with them.



In the bowl of wet mix now slowly add the dry mix.



Use a cut and fold method to prepare the batter.



Grease The Tin with butter and then apply butter paper on it.



Now slowly put all the batter to the Tin and keep it in the oven for 35 to 40 minutes at 180 degrees Celsius.

Figure:2- Preparation of millet cake

Another cake was made by using refined flour as a standard cake and the method of preparation was same as shown in Fig. 2.

Table 2. Refined flour for standard cake

Sr no.	Flour	Ratio (g)
1.	Maida	75g



Fig: 3 - maida cake

Amla Jelly Preparation:

- *Gather Ingredients:* Wash fruit thoroughly and remove stems, pits, and any spoiled parts. Chop or crush fruit as needed.

- *Cook*: Place amla in a large pot or saucepan and add a small amount of water to prevent sticking. Simmer fruit until soft and pulpy.
- *Extract Juice*: Strain cooked fruit through a muslin cloth or jelly bag to extract juice. Allow juice to drip freely without squeezing.
- *Boil Mixture*: Bring the mixture to a rolling boil over high heat, stirring constantly.
- *Test for Gel Point*: Perform a gel test to determine if the jelly has reached the desired consistency. Optionally, use a candy thermometer to monitor temperature (usually around 220°F or 104°C).
- *Fill Jars*: Store in a cool, dark place (Kaviya, 2023).

Final Product:



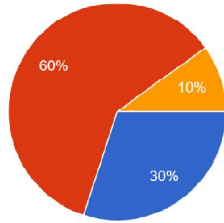
Fig: 4 - Millet cake with Amla jelly

Sensory Analysis

For the sensory analysis, thirty panels that had never been trained were chosen. After tasting each sample, the panellists were given samples (Tables 1.0 and 2.0) and water to rinse their mouths. On a 9-point hedonic scale, each panel assessed the samples for visual puffiness, appearance/colour, smell/aroma, taste, general texture/mouth feel, moistness, and overall like (1 being strongly disliked, 5 being neither much liked nor disliked, and 9 being highly liked). Following that, their evaluations were entered on a Sensory Analysis Form.

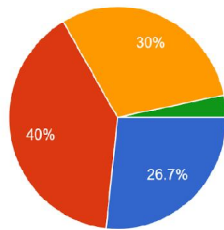
RESULTS AND DISCUSSION

APPEAREANCE / COLOUR -
30 responses



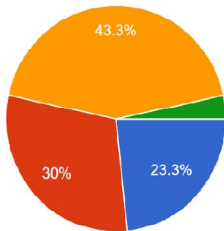
- like extremely
- like very much
- like moderately
- like slightly
- neither like or dislike
- dislike slightly
- dislike moderately
- dislike very much
- dislike extremely

TASTE / FLAVOUR -
30 responses



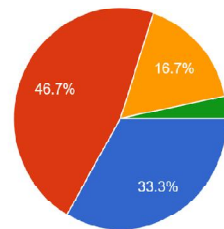
- like extremely
- like very much
- like moderately
- like slightly
- neither like or dislike
- dislike slightly
- dislike moderately
- dislike very much
- dislike extremely

SMELL / ODOUR -
30 responses



- like extremely
- like very much
- like moderately
- like slightly
- neither like or dislike
- dislike slightly
- dislike moderately
- dislike very much
- dislike extremely

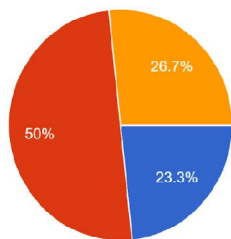
TEXTURE / MOUTHFEEL -
30 responses



- like extremely
- like very much
- like moderately
- like slightly
- neither like or dislike
- dislike slightly
- dislike moderately
- dislike very much
- dislike extremely

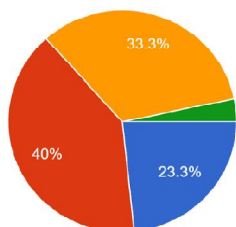
Fig 5. Sensory assessment of the millet-based cake

APPEAREANCE / COLOUR -
30 responses



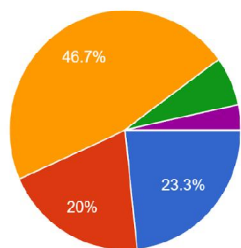
- like extremely
- like very much
- like moderately
- like slightly
- neither like or dislike
- dislike slightly
- dislike moderately
- dislike very much
- dislike extremely

TASTE / FLAVOUR -
30 responses



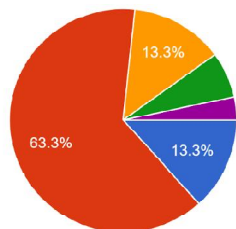
- like extremely
- like very much
- like moderately
- like slightly
- neither like or dislike
- dislike slightly
- dislike moderately
- dislike very much
- dislike extremely

SMELL / ODOUR -
30 responses



- like extremely
- like very much
- like moderately
- like slightly
- neither like or dislike
- dislike slightly
- dislike moderately
- dislike very much
- dislike extremely

TEXTURE / MOUTHFEEL -
30 responses



- like extremely
- like very much
- like moderately
- like slightly
- neither like or dislike
- dislike slightly
- dislike moderately
- dislike very much
- dislike extremely

Fig 6 Sensory assessment of the Maida cake

Discussion:

As the finished result, a multi-millet cake was created, with a base of millets, a flavour combination of coffee and vanilla, and an amla jelly included in the centre.

A fantastic flour for baking without gluten is millet. Its mild flavour and fine texture make it ideal for use in delicate cakes (Obilana, n.d.). It produces an all-in-one blend suitable for making cakes, fast bread without gluten, and other dishes. Millet's soft, starchy nature when processed to a flour makes it perfect for baking without gluten. Because millet can taste a little bitter when consumed raw, it is best blended with other mild flours to bring out the flavour notes of millet, which include buttery, nutty, and grassy. Amla is naturally sour and tangy, but when made into jelly, it's often combined with sugar or other sweeteners to balance out the tartness. Overall, it's a refreshing and flavourful treat enjoyed by many (Rotela et al., 2021).

Conclusion:

One healthy and beneficial component for making gluten-free cakes is millet flour. Physically modified flour and starch are becoming more popular because of customer desire for additive-free foods. This is because the modification changes the functionality of starch without adding any extraneous materials. Consequently, flour can be used to raise the calibre of bread foods without gluten.

The nutritional content of the formulation improved following the proximate analysis. The panel accurately differentiated between samples based on sensory qualities on a 9-point hedonic scale. Overall, the panel found both items acceptable.

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