

ORIGINAL ARTICLE

Standardization of Recipe for Banana Burfi

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ABSTRACT

Banana burfi was prepared from fully ripe fruits of cv. Martaman with varying proportions of pulp, sugar and milk viz., T₁: 5% banana pulp+ 20% sugar + 75% Milk; T₂: 15% banana pulp+ 20% sugar + 65% Milk; T₃: 25% banana pulp+ 20% sugar + 55% Milk; T₄: 35% banana pulp+ 20% sugar + 45% Milk; T₅: 5% banana pulp+ 30% sugar + 65% Milk; T₆: 15% banana pulp+ 30% sugar + 55% Milk; T₇: 25% banana pulp+ 30% sugar + 45% Milk; T₈: 35% banana pulp+ 30% sugar + 35% Milk. To assess the quality, sensory quality test was carried out using a hedonic scale of 9. It was found that sensory score of burfi for colour (8.8), flavour (8.5), texture (8.5) and overall acceptability (8.6) was maximum in T₆ followed by T₂ (colour: 8.3; flavour: 8.1; texture: 8.3 and overall acceptability: 8.2). Thus banana burfi containing 15% banana pulp was significantly better than other burfi samples containing varying proportion of banana pulp.

Keywords: banana, burfi, milk, sensory quality, sugar

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INTRODUCTION

Banana is one of the oldest fruits known to mankind. It is one of the widely grown and consumed fruits due to their distinct aroma and taste, in all parts of the world. It is highly nutritive and every part of the plant is useful. For these reasons it is often referred as 'Apple of Paradise' and 'Tree of paradise'. It is a good source of vitamin A, C and B₂. Fruits are rich source of minerals like magnesium, sodium, potassium, phosphorous, calcium and iron. The ripe fruits are delicious and are used for table purpose. Many products are made from banana such as banana chips, fig, soft drink, flour and jam. Banana flour is prepared from unripe fruits and banana powder from ripe fruits.

India is the largest producer of banana in the world. In West Bengal, banana is cultivated in an area of 45,500 ha with a production of 1.09 million tonnes for the year 2013-14 [1]. Moreover, with increasing population and urbanization leading to conversion of agricultural land in to industrial areas it is hardly possible to make an increase in area under cultivation. Instead, if we minimize the postharvest losses, automatically there will be increase in production. However, this high production will have significance only when it reaches consumers in good condition. Faulty handling practices coupled with underdeveloped and exploitive marketing systems results in postharvest losses to the extent of about 30% and value deterioration, leaving little quality surpluses for export and processing [2].

In Nadia district of West Bengal most of the banana produced is consumed in fresh form. Thus processing of banana into value added products will reduce postharvest losses and add value to it. People in this region are fond of sweets. Innovative products like banana burfi will gain prominence in this region. It will also help small scale industries and provide employment to rural youth and women. Therefore, keeping these points in view a research programme entitled "Standardization of recipe for banana burfi" was undertaken.

MATERIALS AND METHODS

Extraction of banana pulp

Banana fruits of cultivar 'Martaman' were procured from the farm maintained by AICRP on Tropical fruits, Mandoli, Nadia district. The present study was conducted in the Postharvest Technology Laboratory, Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, West Bengal during 2012-2015. Hands were ripened at room temperature. Healthy, unblemished fruits were selected for the preparation of burfi (Figure 1). Peeled fruits were washed and cleaned, and the pulp was extracted manually. It was homogenized in a deluxe pulper (mixer) machine to obtain fine pulp.

Standardization

Banana burfi was prepared as per the procedure laid down by Sachdeva and Rajorhia [3], with slight modification. Buffalo milk standardized to 6% fat and 15% total solids was concentrated in a stainless steel karahi (pan) by open pan boiling with continuous stirring and scraping until a semi-solid mass of paste-like consistency was obtained. Sugar @ 20% and 30% of khoa was added to sweeten the product. When the product showed a tendency to form compact mass, the temperature was lowered to 88–90 °C and selected levels of banana pulp (5, 15, 25 and 35 %) were added. Finally, this mixture was heated on a low fire with gentle stirring till the desired consistency of banana burfi was obtained. Just before the finish point potassium sorbate @ 0.2% was added which acts as preservative. It was then spread uniformly in a tray with ghee and allowed to cool. After setting, banana burfi was cut into blocks of 25×25×25 mm (Figure 2). These levels of banana pulp addition yielded various proportions of ingredients, which were considered as a treatments as shown below. Total of eight treatments i.e. (T₁: 5% banana pulp+ 20% sugar + 75% Milk, T₂: 15% banana pulp+ 20% sugar + 65% Milk, T₃: 25% banana pulp+ 20% sugar + 55% Milk, T₄: 35% banana pulp+ 20% sugar + 45% Milk, T₅: 5% banana pulp+ 30% sugar + 65% Milk, T₆: 15% banana pulp+ 30% sugar + 55% Milk, T₇: 25% banana pulp+ 30% sugar + 45% Milk, T₈: 35% banana pulp+ 30% sugar + 35% Milk) with three replications were planned for the study.

Observations

To obtain the best treatment combination a panel of 15 judges were selected to perform the sensory tests like colour, texture, flavour and overall acceptability.

Details of observations

A total of 15 male and female panellists were selected and trained for scoring. Each panellist was first briefed with the important sensory evaluation conceptual knowledge. Each panellist received and evaluated the same amount of duplicate coded sample chips in a controlled sensory evaluation laboratory with separate boxes for each panellist. The samples were evaluated on the basis of their texture, flavour, colour and overall acceptability. Furthermore, all panellists given scores for the samples for each quality feature using a hedonic scoring scale of 1 to 9 on the provided evaluation sheet according to Gupta [4] given in table 1.

Statistical design

The data obtained from the three replications were subjected to the analysis of variance by 'F' test for Completely Randomized Design [5].

Table 1. Score acceptability for panellists

| Score | Acceptability |
|-------|-----------------------------------|
| 9 | Extremely desirable |
| 8 | Very much desirable |
| 7 | Moderately desirable |
| 6 | Slightly desirable |
| 5 | Neither desirable nor undesirable |
| 4 | Slightly undesirable |
| 3 | Moderately undesirable |
| 2 | Very much undesirable |
| 1 | Extremely undesirable |

RESULTS AND DISCUSSION

The sensory quality of banana burfi as influenced by various pulp and sugar concentration has been presented in table 2. The colour score of burfi samples was significantly higher (8.8) for T₆ (15% banana pulp + 30% sugar + 55% Milk) compared to other treatments but it was at par with T₂ (15% banana pulp+ 20% sugar + 65% Milk). T₅ (5% banana pulp+ 30% sugar + 65% Milk), T₃ (25% banana pulp+ 20% sugar + 55% Milk) and T₁ (5% banana pulp+ 20% sugar + 75% Milk) recorded low colour scores 7.0, 7.1 and 7.2 respectively.

The scores of flavour for T₆ was maximum (8.5) followed by T₅ (5% banana pulp+ 30% sugar + 65% Milk), T₁ (5% banana pulp+ 20% sugar + 75% Milk), T₂ (15% banana pulp+ 20% sugar + 65% Milk), T₃ (25% banana pulp+ 20% sugar + 55% Milk) and so on in that decreasing order. Textural studies of different treatments for burfi samples revealed that T₅ recorded highest score (8.6) which is comparable with T₆ (8.5), T₂ (8.3) and T₁ (8.1). Highest overall acceptability score of 8.6 was recorded in T₆ which was at par with T₂ (8.2) and T₅ (8.0). Minimum scores were recorded in T₈ (6.9) and T₇ (7.2). Thus sensory scores revealed that banana burfi containing 15% banana pulp was significantly ($P \leq 0.05$) better than other burfi samples containing varying proportions of banana pulp.

The above observation from the table 2 clearly indicates that highest liking was for T₆ (i.e. burfi with 15% banana pulp + 30% sugar + 55% Milk) which may be due to acceptable colour character, fine textural property with good banana flavour. Poor acceptability of other treatments with high banana pulp content may be due to masking effect of pulp colour admixture while cooking resulting in low preferential scores by panelists [6]. It was observed that higher the pulp content, darker the colour (Figure 3). The present investigation is in agreement with Kolhe [7] who indicated that increasing the level of papaya pulp upto 60% affects the colour of the finished product. Similar reports were given by Kohale and Rokhade [8] while working on preparation of sapota burfi. But Jayalakshmi [9] obtained higher scores for the treatments of fresh sapota pomace with equal amounts of sugar while working on sapota burfi. Overall acceptability of burfi prepared with 15% pineapple pulp had higher scores due to its flavor, texture and colour [10]. Analogous reports were given by Kohle [7] while working on papaya burfi and Wankhede [11] on mango pulp burfi. All these previous information corroborate the findings of the present investigation where 15% pulp was found ideal and the treatment T₆ with 15% pulp+ 30% sugar +55% milk was evaluated to be the best.

Table 2. Sensory quality of burfi as influenced by various concentrations of pulp and sugar

| Treatments | Colour | Flavour | Texture | Overall acceptability |
|--------------------|--------|---------|---------|-----------------------|
| T ₁ | 7.2 | 8.2 | 8.1 | 7.8 |
| T ₂ | 8.3 | 8.1 | 8.3 | 8.2 |
| T ₃ | 7.1 | 7.6 | 7.2 | 7.3 |
| T ₄ | 7.4 | 6.5 | 6.5 | 6.8 |
| T ₅ | 7.0 | 8.3 | 8.6 | 8.0 |
| T ₆ | 8.8 | 8.5 | 8.5 | 8.6 |
| T ₇ | 7.6 | 6.6 | 7.5 | 7.2 |
| T ₈ | 7.9 | 6.2 | 6.8 | 7.0 |
| SEm | 0.19 | 0.24 | 0.30 | 0.24 |
| CD _{0.05} | 0.56 | 0.73 | 0.90 | 0.73 |

T₁: 5% banana pulp+ 20% sugar + 75% Milk, T₂: 15% banana pulp+ 20% sugar + 65% Milk, T₃: 25% banana pulp+ 20% sugar + 55% Milk, T₄: 35% banana pulp+ 20% sugar + 45% Milk, T₅: 5% banana pulp+ 30% sugar + 65% Milk, T₆: 15% banana pulp+ 30% sugar + 55% Milk, T₇: 25% banana pulp+ 30% sugar + 45% Milk, T₈: 35% banana pulp+ 30% sugar + 35% Milk

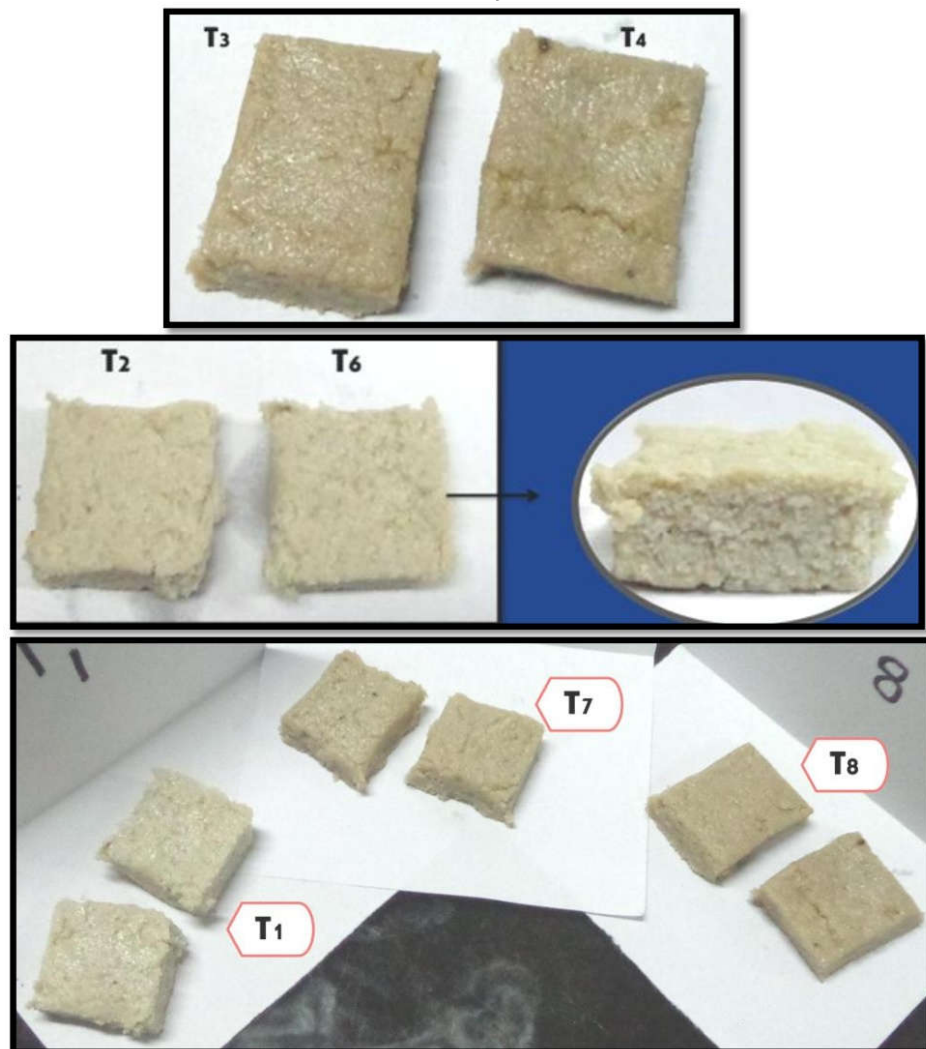
Figure 1. Fully ripened banana fruits used for burfi preparation



Figure 2. Freshly prepared banana burfi



Figure 3. Different treatments with textural profile of T₆ (15% banana pulp + 30% sugar + 55% Milk)



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