



ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2021; SP-10(11): 2650-2653
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www.thepharmajournal.com
Received: 25-09-2021
Accepted: 27-10-2021

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Sensory quality of khoa *Burfi* blended with guava (*Psidium guajava* L.) pulp

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Abstract

The *khoa burfi* blended with Guava (*Psidium guajava* L.) Pulp” was prepared and subjected to sensory evaluation to optimize the levels of guava pulp in *burfi* and to investigate sensory quality of *burfi* prepared using guava pulp.

The *burfi* prepared by blending with 14 per cent guava pulp (T₂) had highest sensory score for colour and appearance (8.50), The flavour score (8.52) further treatments show dull yellow to green colour, sour flavour, the body and texture score (8.20) decreases as increase the level of pulp. The overall acceptability score (8.40 out of 9) and ranked as the most acceptable treatment. Hence, it is concluded that best quality *burfi* might be prepared by using 14 per cent of guava pulp, 25 per cent sugar and 4 per cent skimmed milk powder.

Keywords: *Burfi*, guava, sensory quality

Introduction

Burfi is a *khoa* based indigenous milk product of considerable economic and nutritional importance. It is one of the most popular milk based sweet in India. It is prepared by heating a mixture of concentrated milk solids (*khoa*) and sugar to a near homogenous consistency followed by cooling and cutting into small cuboids. Beating and whipping operations prior to cooling are sometimes practiced to obtain a product with smooth texture and closely knit body. The most popular varieties of *burfi* are fruit, nut, chocolate, saffron and *rawa burfi*. These ingredients can be used single or in combination (Aneja *et al.*, 2002)^[2]. Good quality *burfi* is characterized by moderately sweet taste, soft and slightly greasy body and smooth texture with very fine grains. Colour should be uniform, white or slightly yellowish depending on the type of the milk used (Pal and Raju, 2006)^[12]. The shelf life of *burfi* is about 7–10 days under ambient conditions (Khan *et al.*, 2008)^[7].

Guava (*Psidium guajava*) is a member of dicotyledon family *myrtaceae*. It is considered important fruit because of its hardy nature, high vitamin C content. it is also regarded as “Apple of Tropics” (Singh, 1988)^[14]. It has been demonstrated to have several biological activities such as anti-cough, antibacterial and anti-spasmodic action (Abdelrahim *et al.*, 2002)^[1]. Recently, it has been reported high potential for antioxidant activity.

Guava is highly perishable fruit after ripening the ripened guava fruit are mostly deteriorate before reaching to the market. Such a fully ripened guava fruits can be processed in to good quality value added products, like *burfi*, Jain and Asathi (2004) evaluated the different cultivars of guava for pulp, which can be used as a raw material for guava *burfi*. Thus preparation of guava pulp by simple technology and its utilization for *burfi* making has great scope.

Materials and Methods

Materials

The fresh, clean, composite samples of crossbreed cow’s milk were procured from Research-Cum-Development Project (RCDP) on Cattle, MPKV, Rahuri, Dist. Ahmednagar (Maharashtra) for preparation of *burfi* samples. Guava (*Psidium guajava* L.) fruits of Cv. Sardar (L-49) were freshly harvested from the orchard of Horticulture Farm and Central Nursery, Department of Horticulture, MPKV Rahuri. Good quality cane sugar (crystalline) and Good quality Govind Skimmed milk powder was procured from local market.

The *khoa* and *burfi* samples were prepared in iron *karahi* with 31 cm diameter and 8.5 cm depth and the stainless steel ladle was used for stirring and scraping, the stainless steel cutting knife was used to cut *burfi* pieces of desirable size.

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The rectangular stainless steel trays (size 28 x 23 x 3.5) were used to cool, flatten and shape of *burfi*. The Electronic precision balance (BT 2245, Sartorius ISO 9001) was used for weighing samples and chemicals during research work.

Methods
Preparation of Guava Pulp

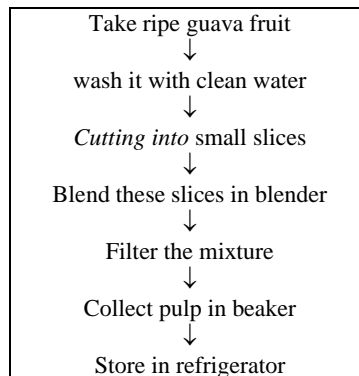


Fig 1: Flow diagram for preparation of guava pulp

Preliminary trails were conducted to decide the levels of sugar, guava pulp and SMP in *burfi*. On the basis of results of sensory evaluation 11, 14 and 17 per cent guava pulp levels,

25 per cent sugar levels and 4 per cent SMP levels were selected for experimental trails.

Treatment Details

T ₀ (Control)	Khoa + 25 % Sugar + 0% guava pulp
T ₁	Khoa + 25 % Sugar + 4% SMP + 11% guava pulp
T ₂	Khoa + 25 % Sugar + 4% SMP + 14% guava pulp
T ₃	Khoa + 25 % Sugar + 4% SMP + 17% guava pulp

Methodology

Preparation of Guava Burfi

The *burfi* samples were prepared by using standard procedure

described by Aneja *et al.* (2002) ^[2] with suitable modifications as per given in Preliminary trials.

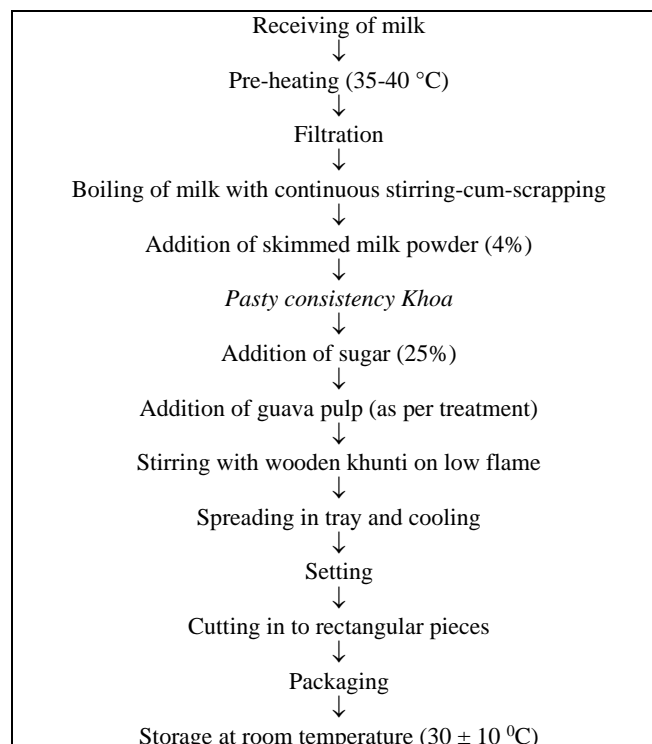


Fig 2: Flow diagram for preparation of guava *burfi*

Sensory Evaluation

The sensory evaluation of guava *burfi* samples prepared under preliminary trails and experimental trails was done by using the method described by Nelson and Trout (1964) ^[11] using 9

point Hedonic scale. A panel of five semi-trained judges was formulated for this purpose. The samples were coded every time to conceal their identity and were offered to the judges for evaluation of sensory attributes.

Statistical design

The data were analyzed as per the Completely Randomized Design in which four treatments were replicated four times. Data was analyzed by giving the statistical treatments to the findings describe by Gomez and Gomez. (1984) [5].

Results and Discussion

Sensory Quality/ Evaluation of *Burfi*

Colour and Appearance

Sensory score for colour and appearance of *burfi* prepared under different treatments is presented in Table 1 and graphically in Fig.1.

Table 1: Effect of different levels of guava pulp on sensory score of *burfi*

Treatment	Colour and appearance	Flavour	Body and texture	Overall acceptability
T ₀	7.71 ^c	7.58 ^c	8.87 ^a	8.05 ^c
T ₁	8.08 ^b	8.19 ^b	8.45 ^b	8.24 ^b
T ₂	8.50 ^a	8.52 ^a	8.20 ^c	8.40 ^a
T ₃	7.44 ^d	7.42 ^d	7.50 ^d	7.45 ^d
S.E±	0.044	0.045	0.009	0.016
CD at 5%	0.138	0.139	0.028	0.049

The mean sensory score of colour score of the *burfi* are presented in Table 1. and graphically in Fig.1. from the above Table that the sensory score of colour and appearance ranged from 7.44 to 8.50. The *burfi* prepared by using 14 per cent guava pulp (T₂) was superior amongst all the treatments in colour and appearance which secured the maximum score of (8.50) followed by T₁ (8.08) and T₀ (7.71). The lowest score was obtained by the product T₃ (7.44) with 17 per cent guava pulp because in this treatment the colour of finished product was dull yellow to green which were not liked by the judges. The colour and appearance score of *burfi* was significantly ($P < 0.05$) influenced by the level of guava pulp, which is in agreement with the studies of Kolhe (2003) [8] indicated change in colour and appearance up to desired level due to addition of 40 per cent papaya pulp in *burfi*. However, he indicated deterioration of colour with increased level of papaya pulp above 40 per cent. Patil (2012) [13] indicated change in colour and appearance up to desired level due to addition of 15 per cent dried date in *burfi*. However, she indicated deterioration of colour with increased level of dried date above 20 per cent.

Flavour

Flavour is an important criterion for acceptance of any food article. Flavour is combined effect of "taste" and "smell". Every milk product has its typical flavour. The mean flavour score of guava *burfi* are presented in Table 1 and graphically in Fig.1. It is evident from above Table that the effect of various treatment combinations on flavour of the product was statistically ($P < 0.05$) significant. The score for flavour of guava *burfi* under different treatment combinations are 7.58, 8.19, 8.52, and 7.42 for T₀, T₁, T₂, T₃ treatments respectively. As levels of guava pulp goes on increasing the flavour of the product goes on increasing upto certain level. But at T₃ score suddenly goes on decreasing (7.42) as it gives sour flavour to the product. T₂ (8.52) obtained highest score. Treatment T₃ secured lowest score i.e. 7.42 with 17 per cent guava pulp. These results are in close agreement with the results obtained by Patil (2012) [13] prepared date *burfi* and observed that, the flavour increased with increase in proportion of dried date (20 %) in *burfi*. Datarkar (2012) [4] prepared singhara *khoa burfi*

and observed that, as the level of singhara flour increased above 15 per cent there was decrease in flavour of *burfi*. Same results was observed by Mohod *et al.*, (2020) [10] who prepared finger millet (*Eleusine coracana*) *burfi*.

Body and Texture

Body and texture is another most important criteria to judge acceptability of the product. Smooth texture is the desirable feature of *burfi*.

The mean body and texture score of the *burfi* are presented in Table 1. and graphically in Fig.1. From the above Table it was revealed that the effect of various treatment combinations on body and texture of the product was statistically ($P < 0.05$) significant. The highest score was obtained by the T₀ (8.87) followed by T₁ (8.45), T₂ (8.20). Lowest score secured by treatment T₃ (7.50). Increase in level of guava pulp show loose body and sickness which was not like by judge Hence in case of body and texture treatment T₀ was liked very much by judges.

Lahankar *et al.* (2018) [9] who observed that high score for body and texture was obtained (8.63 out of 9) by the *burfi* prepared without green peas (T₁) while lowest score was (6.93 out of 9) by the *burfi* prepared with 10 parts of green peas (T₄).

Kamble *et al.* (2019) [6] reported that score for body and texture is goes on decreasing with increasing the level of sugar and green chickpea.

Overall Acceptability

The mean score of overall acceptability of the guava *burfi* are presented in Table 1 and graphically in Fig. 1. From the above Table it was seen that, the effect of various treatment combinations on overall acceptability score of the product was statistically ($P < 0.05$) significant. The *burfi* prepared by using 14 per cent guava pulp (T₂) scored highest score (8.40) followed by treatment T₁ (8.24), lowest score given to T₃ (7.45) with 17 % guava pulp.

On the basis of overall sensory parameter score the treatment T₂ secured highest score and was liked very much by judges. The results were already discussed in individual table.

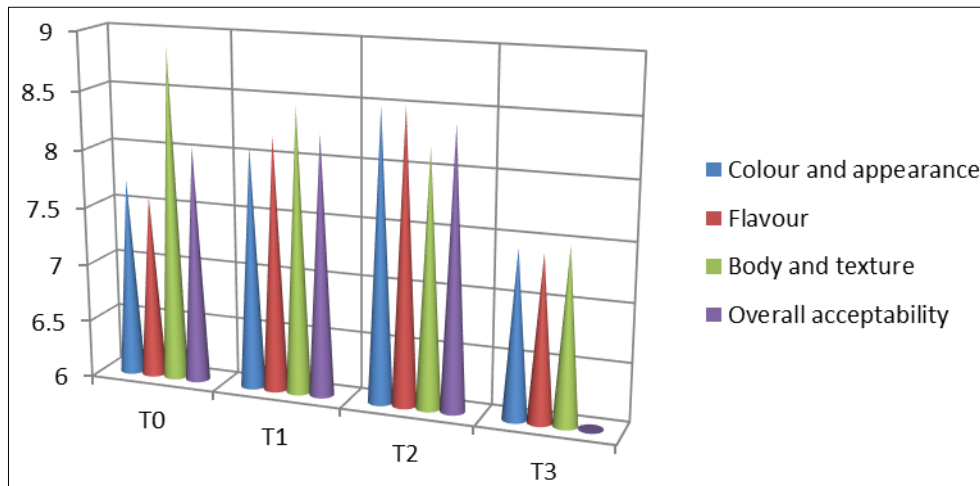


Fig 1: Effect of different levels of guava pulp on sensory attributes of *burfi*.

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