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## Studies on sensory qualities of shrikhand blended with guava (*Psidium guajava* L.) pulp

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### Abstract

This investigation was carried out to evaluate the sensory qualities and work out the cost of shrikhand prepared by blending with different levels of guava pulp. The treatment details were T<sub>1</sub> control sample, T<sub>2</sub> (95% shrikhand + 5% guava pulp), T<sub>3</sub> (90% shrikhand + 10% guava pulp), T<sub>4</sub> (85% shrikhand + 15% guava pulp) and T<sub>5</sub> (80% shrikhand + 20% guava pulp). For overall acceptability scores obtained were 94.00, 86.60, 89.40, 94.80 and 84.20 for the treatment T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub> and T<sub>5</sub> respectively. The treatment T<sub>4</sub> scored significantly highest scores for flavour, Body and Texture, colour and appearance and overall acceptability were found to be superior amongst all treatments. The cost of shrikhand preparation by using different levels of guava pulp were 128.10, 125.24, 123.92, 122.59 and 121.49 (Rs/kg) for the treatment T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub> and T<sub>5</sub> respectively. The acceptable quality of shrikhand can be prepared by using 15 per cent guava pulp.

**Keywords:** Shrikhand, guava pulp, sensory qualities, cost

### Introduction

Shrikhand is a semi solid, sweetish-sour fermented milk product prepared from dahi, whey is drained off from dahi to yield chakka. Sugar, flavour, colour and spices are mixed into chakka to form a soft homogenous mass that resembles sweetened curd of Germany. Shrikhand is popular desert and forms part of meal on festival occasion.

In order to improve the colour, flavour and an overall acceptability of milk product, it is common practice of adding of different colouring and flavouring agent in them. Shrikhand is not an exception to it. Guava (*Psidium guajava* L.) is the medicinal plant that could be incorporated into shrikhand. It is valued for its genetic influence on overall physiology of human beings. Guava fruits are higher in vitamins A and C and good source of pectin and dietary fiber. The leaves of guava are rich in flavonoids, folic acid, and the dietary minerals, potassium, copper and manganese [5].

### Materials and Methods

#### Materials

Cow milk was obtained from livestock instructional farm of Department of Animal Husbandry and Dairy Science and Guava fruits (L-49) obtained from research farm of Department of Horticulture, Dr. PDKV, Akola. The freeze-dried culture of *Streptococcus lactis* was procured from National Culture Collection Unit, NDRI, Karnal (Haryana). Cane sugar was procured from the local market. Electric mixer was used for grinding the guava pulp. Plastic cups were used for storing and serving of shrikhand. Stainless steel vessels of requisite capacity, blender, knives, muslin cloth, standard weight balance, gas stove, etc. were used for preparation of shrikhand blending with guava pulp.

#### Preparation of shrikhand from cow milk

Method was used for preparation of shrikhand suggested by Aneja *et al.* (1977) [2] with slight modification. Cow milk was standardized at 4 per cent fat and then it was heated to 71 °C for 15 sec. After heating it was cooled to 30 °C and inoculated with 1 per cent starter culture. Then it was allowed for incubation for 10-12 hours. After which it was followed by break down the coagulum and hanging in muslin cloth (for 6-8 hours) for drainage of whey. After expulsion of whey, sugar was added @ 45 per cent by weight of chakka and kneading with by using blender.

### Preparation of guava pulp

The normal ripe (greenish to cream coloured) guava fruits were washed with clean water, skin portion was removed and were cut into small pieces. The pieces worked in mixer to obtain pulp. Then pulp was passed through muslin cloth to remove seed material and utilized for preparation of shrikhand blending with guava pulp as per treatments.

### Preparation of shrikhand blending with guava pulp

The shrikhand prepared blending with different levels of guava pulp as per treatment combinations made and kneading with by using blender in stainless steel vessels. The shrikhand was packaged in plastic coated cups and stored at refrigerated temperature for further evaluation.

### Treatments Details

The treatments details for shrikhand blended with guava pulp were as follows:

T<sub>1</sub> = Control (chakka 100 per cent)

T<sub>2</sub> = 95 parts of chakka + 5 parts of guava pulp

T<sub>3</sub> = 90 parts of chakka + 10 parts of guava pulp

T<sub>4</sub> = 85 parts of chakka + 15 parts of guava pulp

T<sub>5</sub> = 80 parts of chakka + 20 parts of guava pulp

(In all treatments sugar was be used @ 45% by weight of chakka)

### Analytical methods

#### Sensory evaluation of shrikhand blended with guava pulp

The samples evaluated by the 100 numeric score card as prescribed by Pal and Gupta (1985) [8]. A panel of six semi trained judges were provided the treated samples of shrikhand blended with guava pulp for the sensory evaluation.

#### Cost of production of shrikhand blended with guava pulp

Calculating cost of production on the lines of procedure used by Gavane *et al.* (2010) [4].

### Statistical analysis

The data obtained analyzed by adopting Completely Randomized Design (CRD) as described by (Amble 1975) [1]. Treatments – 05, Replication – 05.

### Results and Discussion

#### Sensory evaluation of shrikhand blended with different levels of guava pulp

##### Flavour

The mean score of flavour of shrikhand using guava pulp for treatment T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub> and T<sub>5</sub> were 42.40, 39.60, 39.80, 42.80 and 38.00 respectively. The treatment T<sub>4</sub> was significantly superior over T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>5</sub> treatments. It was observed from above finding that 15 per cent guava pulp using shrikhand given good flavour. These results were supported by the result reported by Narayanan and Lingam (2013) [7].

##### Body and texture

It was observed that mean score of body and texture of shrikhand using guava pulp for treatment T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub> and T<sub>5</sub> were 32.20, 30.40, 31.60, 33.40 and 29.20 respectively. The

treatment T<sub>4</sub> was significantly superior over T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>5</sub> treatments. It was also observed from above finding that 15 per cent guava pulp blended shrikhand developed rich body and texture where the lowest noticed for shrikhand prepared with 5 per cent guava pulp. These finding also similar with Gavane *et al.* (2010) [4].

### Colour and appearance

It was observed that mean score of colour and appearance of shrikhand blended with guava pulp for treatment T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub> and T<sub>5</sub> were 18.40, 16.40, 17.20, 18.60 and 17.00 respectively. The treatment T<sub>4</sub> was significantly superior over T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>5</sub> treatments. It was also observed from above finding that 15 per cent guava pulp blended shrikhand given rich colour and appearance where the lowest recorded in shrikhand prepared with 10 per cent guava pulp. Similar result observed by Chavan *et al.* (2009) [3].

### Overall acceptability

It was observed that mean score of overall acceptability of shrikhand blended with guava pulp for treatment T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub> and T<sub>5</sub> were 94.00, 86.60, 89.40, 94.80 and 84.20 respectively. The treatment T<sub>4</sub> was significantly superior over T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>5</sub> treatments. 15 per cent guava pulp blended shrikhand given recorded highest score for overall acceptability and shrikhand prepared with 5 per cent guava pulp was observed lowest score. Similar results were presented by Mali *et al.* (2010) [6].

### Cost of production of shrikhand blended with guava pulp

It was noted that, cost of production of guava pulp shrikhand (per kg) for treatment T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub> and T<sub>5</sub> were Rs.128.10, 125.24, 123.92, 122.59 and 121.49 respectively. The cost of production of plain shrikhand T<sub>1</sub> (control) was considered to be higher than the shrikhand prepared with addition of guava pulp and treatment T<sub>5</sub> having a lowest price. Increased level of guava pulp showed decreased in cost of production of shrikhand. This difference was occurred due to the increasing the quantity of guava pulp. The best treatment selected by judges was T<sub>4</sub> (where addition of 15 per cent guava pulp into shrikhand) and the cost of production of shrikhand in this treatment was founded to be 122.59 Rs/kg. Similar observations were found with Gavane *et al.* (2010) [4].

**Table 1:** Score obtained of sensory evaluation of shrikhand blended with guava pulp

Treatments	Score of sensory evaluation*			
	Flavour (45)	Body and Texture (35)	Colour and Appearance (20)	Overall acceptability (100)
<b>Mean Score</b>				
T <sub>1</sub>	42.40	32.20	18.40	94.00
T <sub>2</sub>	39.60	30.40	16.40	86.60
T <sub>3</sub>	39.80	31.60	17.20	89.40
T <sub>4</sub>	42.80	33.40	18.60	94.80
T <sub>5</sub>	38.00	29.20	17.00	84.20
'F' Test	Sig.	Sig.	Sig.	Sig.
S.E(M) ±	0.424	0.303	0.352	0.632
CD at 5%	1.260	0.901	1.046	1.879

(\* Mean of five replications)

**Table 2:** Cost of preparation of shrikhand blended with guava pulp

Sr. No.	Particulars	Treatments									
		T <sub>1</sub>		T <sub>2</sub>		T <sub>3</sub>		T <sub>4</sub>		T <sub>5</sub>	
		Qty.	Amt.	Qty.	Amt.	Qty.	Amt.	Qty.	Amt.	Qty.	Amt.
1	Qty. of cow milk	1	40	900 ml	36	850 ml	34	800 ml	32	750 ml	30
2	Chakka obtained (gm)	250	-	225	-	213	-	200	-	187	-
3	Guava pulp (gm) 40 Rs/Kg	-	-	25	2.7	37	4.1	50	5.5	63	7
4	Sugar @ 45% 40 Rs/Kg	204	8.16	204	8.16	204	8.16	204	8.16	204	8.16
5	Miscellaneous cost (Electricity, labour, gas)	-	10	-	10	-	10	-	10	-	10
6	Total shrikhand obtained (gm)	454	58.16	454	58.86	454	56.26	454	55.66	454	55.16
7	Cost of shrikhand Rs/Kg	1	128.10	1	125.24	1	123.92	1	122.59	1	121.49

### Conclusion

Shrikhand prepared with blending 15 per cent guava pulp, which results in good flavour, body and texture, colour and appearance and overall acceptability having highest score. Cost of production was decreased with increased in the rate of addition of guava pulp. The cost of most acceptable treatment shrikhand prepared with 15 per cent guava pulp (T<sub>4</sub>) was 122.59 Rs/kg. Hence, it is concluded that acceptable shrikhand can be prepared by blending 15 per cent guava pulp. The guava pulp could be successfully utilized for preparation of shrikhand.

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