



# **Studies on the Sensory Quality of Milk Pudding Blended with Sapota Pulp (*Achras sapota* L.)**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## **ABSTRACT**

Milk pudding was prepared from buffalo milk (standardized with 6 per cent fat and 9 per cent solids-not-fat) with constant level of sugar (8 per cent by volume of concentrated milk) and different levels of (10, 15, 20 and 25 per cent) sapota pulp. It was observed that the overall acceptability score for treatment T1, T2, T3, T4 and T5 were 7.20, 7.55, 7.92 and 7.43 respectively. As the level of sapota pulp in milk pudding increases the overall acceptability score also increases upto treatment T3, thereafter it was decreased. The treatment (T3) comprises sapota pulp @ 15 per cent secured maximum score with 7.92 and lowest score was found to be 7.20 in treatment T0.

**Keywords:** *Sensory evaluation; milk pudding; sapota pulp; flavour; color and appearance; body and texture and overall acceptability.*

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## 1. INTRODUCTION

Milk is a food of outstanding interest, not least because it was designed to be a complete food for young growing animals. A balanced diet is essential for proper health and growth. Milk pudding is one of the milk products which have good potential in the world market. The consumption of milk and dairy products is associated with a markedly reduced prevalence of the metabolic syndrome, and these items therefore fit well into a healthy eating pattern [1-3]. Pudding is quite popular in western countries as a dessert and party item. In India, it is considered as a luxury and party product at present. It is produced abroad more frequently at industrial as well as at home level. However, slowly the demand of this product is also increasing in Indian market. Milk pudding by utilizing Karonda syrup. Sweetened condensed milk was used as a base material. Karonda syrup was used @ 4, 8 and 12 per cent and sugar level used @ 4, 6 and 8 per cent of the base material. The most accepted quality milk pudding was obtained at 8 per cent level of Karonda syrup and 8 per cent level of sugar dhakane (2005) [4].

Sapota (*Achras sapota* L.) is considered as energy giving fruit and having high nutritive value. It contains higher percentage of vitamin C. It is rich in carbohydrates and provide good amount of proteins and minerals like calcium, phosphorous and iron. Sapota pulp is used for making sweets and halawas. Sapota is rich source of antioxidants, which helps in lowering incidence of degenerative diseases. The present investigation was undertaken to standardize the technique of manufacturing milk pudding by using sapota pulp. Hence, considering the benefits of fruits in the human diet with respect to its Nutritional, medicinal values and technological properties, it was decided to undertake Research work on, "To Study the Sensory Quality of Milk Pudding Blended with Sapota Pulp (*Achras Sapota* L.)".

## 2. MATERIALS AND METHODS

### 2.1 Treatment Details

Sapota pulp was added at different levels viz., 10, 15, 20 and 25 percent on the basis of parts of milk in T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub>.

#### Treatment details:

Preparation of milk pudding blended with sapota pulp following treatment combinations was taken for study:

### 2.2 Level of Sapota Pulp

T<sub>1</sub> – 10 per cent of condensed milk  
T<sub>2</sub> – 15 per cent of condensed milk  
T<sub>3</sub> – 20 per cent of condensed milk  
T<sub>4</sub> – 25 per cent of condensed milk

In above all preparation, sugar was added @ 8 per cent of original volume of milk and gelatin at 2 per cent level.

### 2.3 Preparation of Sapota Milk Pudding

#### 2.3.1 Condensed milk

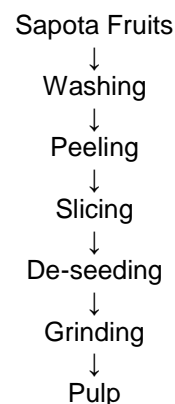
For preparation of condensed milk fresh-pooled buffalo milk, preferably from the morning milking was procured from Dairy unit of College of Agriculture, Dapoli. This milk was filtered through 2 folds muslin cloth to remove any visible dirt particles, after that milk was continuously boil in ratio of 2.5:1. In this grounded sugar @ 8 % of original milk was added and contents were mixed thoroughly so that sugar will get dissolved completely. This condensed milk was stored in refrigerator and was used as base material for preparation of sapota milk pudding.

#### 2.3.2 Pudding ingredients

Sugar and stabilizer (Gelatine) were purchased from the local market.

#### 2.3.3 Sapota pulp

Sapota pulp was prepared from ripened sapota fruits procured from local market as per the procedure given by Jadhav. P.V. [5]:



### 2.4 Preparation of Pudding

At the time of preparation of pudding for every treatment 500 gm of condensed milk prepared as mentioned was heated slowly at simmering temperature. When temperature reaches upto 45<sup>0</sup>C, 10 gm of gelatine was added in this mass.

This mixture was mixed thoroughly and after that sapota pulp was added as per treatment i.e. 50 gm for T<sub>1</sub>, 75 gm for T<sub>2</sub>, 100 gm for T<sub>3</sub> and 125 gm for T<sub>4</sub>. After that these contents again mixed well filled in cups of 30 gm capacity and kept in refrigerator for setting for 3-5 hr. Quantity of each ingredient required for preparation of sapota milk pudding has been presented in Table 1.

**Table 1. Quantity of ingredients used**

Treatments	Quantity of ingredients used (g)		
	Condensed milk	Gelatine	Sapota pulp
T <sub>1</sub>	500	10	50
T <sub>2</sub>	500	10	75
T <sub>3</sub>	500	10	100
T <sub>4</sub>	500	10	125

### 2.5 Sensory Evaluation of the Product

Sensory evaluation of of sapota milk pudding was carried out by the panel of judges selected from the staff of Department Of Animal Husbandry and Dairy, College of Agriculture, Parbhani. It was evaluated for colour and appearance, flavour, body and texture, and overall acceptability. Score cards were will provided to all judges, comparing “9-point hedonic scale” developed by Quarter Master Food and Container Institute, U.S.A. (Gupta, 1976) [4].

### 2.6 Statistical Analysis

The data obtained was analyzed statistically by using Completely Randomized Design (CRD) as per Panse and Sukhatme (1985) [6].

## 3. RESULTS AND DISCUSSION

### 3.1 Flavour

The average flavour score was recorded at 10, 15, 20 and 25 per cent level was 7.29, 7.72, 8.10 and 7.56 respectively. The highest score recorded at T<sub>3</sub> i.e. (20 per cent level of sapota) was 8.10 and lowest score recorded at T<sub>1</sub> (10 per cent level of sapota) was 7.29. It was observed that addition of sapota pulp upto level of 20% provided very pleasant flavour to product. It was complimentary and supplementary to the original taste & blend of pudding; However at 25% level

of incorporation it exhorted over masking effect on original taste similarly typical granular texture of sapota pulp was factor of disadvantage as it was giving different taste to tongue during eating.

### 3.2 Colour and Appearance

Colour of any product is ideal and basic sensory cognition that appeals to the consumer for its acceptability or rejection. From the Table 2 it was observed that treatment differences are statistically significant at 1 per cent level of significance, which indicates that there is significant difference in colour and general appearance of milk pudding due to addition of sapota pulp. Treatment T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> were statistically different from each other whereas treatment T<sub>2</sub> & T<sub>4</sub> were found to be statistically at par with each other.

The result indicated that there was gradual increase in score from T<sub>1</sub> to T<sub>3</sub>, whereas for T<sub>4</sub> there was reduction in score for colour and appearance. It may be due the fact that addition of sapota pulp upto 20% might have resulted in providing glossy texture & appearance to product but when proportion goes upto 25% typical ashy dark brown colour developed which resulted in decreased the score.

### 3.3 Body and Texture

Body and texture of sapota milk pudding under different treatment combination was determined. The variation in the score for body and texture due to different treatments was found to be significant. The observed value for body and texture for pudding at 10, 15, 20 and 25 per cent level of sapota pulp was 7.11, 7.42, 7.86 and 7.32 respectively.

The pudding with lowest score at 10 per cent level of sapota pulp had comparatively loose body and lacked characteristic gel structure (7.11). Increase in the level of sapota pulp to 20 per cent, improved the body and texture of pudding (7.86). Further, increase in the level of sapota pulp to 25 per cent, however, produced slightly inferior quality pudding as compared to the product with 20 per cent sapota pulp (7.86). It was observed to possess slightly rough and compact body and reduced jelling effect of the product.

**Table 2. Effect of various level of sapota pulp on sensory properties of milk pudding**

Treatments	Flavour	Colour and appearance	Body and texture	Overall acceptability
T1	7.29	7.21	7.11	7.20
T2	7.72	7.52	7.42	7.55
T3	8.10	7.81	7.86	7.92
T4	7.56	7.40	7.32	7.43
<b>CD@5</b>	<b>0.20</b>	<b>0.21</b>	<b>0.19</b>	<b>0.09</b>

### 3.4 Overall Acceptability

From the average figure of overall acceptability in Table 2, it is seen that highest overall acceptability score was recorded for milk pudding with 20 per cent level of sapota pulp (7.92) and lowest score was noticed with 10 per cent level sapota pulp (7.20). The sensory score increased upto T<sub>3</sub> i.e. 20 per cent sapota pulp and decreased simultaneously for T<sub>4</sub> i.e. 25 per cent sapota pulp. The values were recorded 7.20, 7.55, 7.92 and 7.43 at 10, 15, 20 and 25 per cent level of sapota pulp respectively.

The above results for sensory parameters are comparable with the finding of following research workers.

Rajadhyax (1998) utilize tender coconut for preparation of milk pudding. He analyzed tender copra and found T.S. content as 12.9. He prepared pudding by blending with tender copra at 5, 15 and 25% levels. He reported that there was reduction in T.S. content (50.72 to 46.22) as level of copra increases [7].

Holmukhe (2002) used jackfruit pulp for preparation of pudding. T.S. content of jackfruit pulp was 23.92 and he also observed same trend in T.S. content of pudding (reduce from 70.69 to 63.32) with increase in level of jackfruit pulp [6].

Dhakane (2005) utilized karonda syrup at 4, 8 & 12 per cent for preparation of pudding. The T.S. content of karonda syrup was 68.23%. She observed reverse trend than Rajadhyax and Holmukhe. The T.S. content of milk pudding showed increasing trend (51.92 to 53.55) due to higher T.S. of karonda syrup (68.23%) [4].

This discussion clearly indicates that the T.S. contents of final product depend upon T.S. content of blending material. If T.S. of blending material is less than base material i.e. condensed milk, the milk pudding will show decreasing trend with increase in the level of blending material and vice-versa [8].

The statistical analysis of the data presented in Table 2 revealed that the results are significant at 5 per cent level of significance indicating that there was a significant difference in overall acceptability of the product due to addition of sapota pulp [9].

On the basis of results obtained, we can affirmatively state that amongst levels of sapota pulp used, 20 per cent (T<sub>3</sub>) was found most acceptable by the judges.

### 4. CONCLUSION

From the results of present investigation, it may be concluded that the sapota pulp could be successfully utilized for preparation of milk pudding using gelatin as a jelling agent. Addition of sapota pulp in pudding improved sensory quality and acceptability of the product. The most acceptable quality pudding can be prepared by using 20 per cent sapota pulp which was found equally good.

### CONFERENCE DISCLAIMER

Some part of this manuscript was previously presented in the conference: 3rd International Conference IAAHAS-2023 "Innovative Approaches in Agriculture, Horticulture & Allied Sciences" on March 29-31, 2023 in SGT University, Gurugram, India. Web Link of the proceeding: <https://wikifarmer.com/event/iaahas-2023-innovative-approaches-in-agriculture-horticulture-allied-sciences/>

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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