

## Sensory evaluation of Pedha using different levels of banana pulp and storage period

HC BADGUJAR, KH PUJARI and PP RELEKAR

Post Graduate Institute of Post Harvest Management

Dr Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Ratnagiri 415712 Maharashtra, India

Email for correspondence: hcbadgujar@gmail.com

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### ABSTRACT

The study was undertaken to standardize the process of preparation of banana Pedha was made using different levels of banana pulp and was kept in storage instead of using Khoa, a valuable dairy product. The organoleptic evaluation was carried out by semi-expert panel of judges by using a nine-point hedonic scale. The data were analyzed by using factorial completely randomised block design. Significant colour variation was recorded due to pulp levels, storage period and their interactions. Highest score for colour (8.17) was reported with 150 g followed by 100 g banana pulp treatment (7.98). Maximum colour score (7.93) was recorded at 10 days of storage followed by 5 days storage treatment (7.74). The treatment combination of 150 g pulp and 0 day storage treatment gave highest score (8.50). In respect of flavour and texture of Pedha the significant variation was recorded due to pulp content and highest scores of 7.88 and 7.42 respectively were found with 150 g banana pulp treatment. Overall acceptability (7.71) was recorded for treatment having 150 g pulp. The influence of storage period and interaction of storage period and pulp content on flavour and texture of Pedha was found non-significant.

**Keywords:** Banana; Pedha; pulp; colour; texture; flavour; storage

### INTRODUCTION

Sweets have always played an important role in socio-economic life of Indians since long and among them dairy products like Pedha, Burfi, Ladoo etc contribute more than 90 per cent of total dairy products consumed. Pedha is popular dairy-based sweet product of India. Normally it is prepared by using Khoa, a milk product and sugar. Various types of Pedha are prepared by using different quantities of sugar and dry fruits. Now a days the fortification of various dairy products by addition of fruit pulp or pieces of fruits is common such as mango Burfi, sapota Burfi, annona Rabadi etc. In the present study the major emphasis was given on the issue whether Khoa could be replaced with banana pulp. Addition of banana pulp might increase nutritional value of Pedha.

### MATERIAL and METHODS

Fresh banana fruits at ripe stage and other ingredients such as sugar, corn flour, milk powder and

butter (Amul) were procured from local market of Roha, Raigad, Maharashtra and used for the preparation of Pedha. The factorial completely randomized design was used with 20 treatments replicated thrice. The treatments comprised different levels of banana pulp viz T<sub>1</sub> (100 g), T<sub>2</sub> (150 g), T<sub>3</sub> (200 g), T<sub>4</sub> (250 g) and T<sub>5</sub> (300 g). The banana Pedha was prepared by adding sugar (200 g), milk powder (135 g), corn flour (20 g) and butter (5 g) in different levels of banana pulp as per treatments. The sub-treatments comprised four storage periods viz S<sub>1</sub> [Initial (0 day)], S<sub>2</sub> (5 days), S<sub>3</sub> (10 days) and S<sub>4</sub> (15 days) at ambient conditions. The experimental product under study was organoleptically evaluated on the basis of colour, flavour, texture and overall acceptability by a panel of judges using 9-point hedonic scale (Amerine et al 1965) as given in Table 1.

The scores of various treatments in respect of colour, texture, flavour and overall acceptability were worked out. The data obtained were analyzed as per Panse and Sukhatme (1985).

Table 1. Sensory score for evaluation of product under 9-point hedonic scale

Score	Rating
9	Liked extremely
8	Liked very much
7	Liked moderately
6	Liked slightly
5	Neither liked nor disliked
4	Disliked slightly
3	Disliked moderately
2	Disliked very much
1	Disliked extremely

## RESULTS and DISCUSSION

The Pedha prepared with different banana pulp levels was evaluated for its sensory characteristics by a panel of five experienced judges on 9-point score card and the mean scores are given in Table 2.

### Colour

The data show that the results with respect to the changes in the sensory score for colour of the banana Pedha prepared by five different banana pulp levels were statistically significant. Besides the storage period significantly influenced the colour of Pedha

irrespective of the treatments. The mean colour score was significantly higher (8.17) in the treatment under 150 g banana pulp while it was least (7.23) under 300 g pulp. The sensory score for colour decreased significantly during storage. Maximum (7.93) mean colour score was observed at 10 days of storage while minimum (7.41) at the end of 15<sup>th</sup> day of storage.

The interaction effect of treatments and storage period was found to be significant at 5 per cent level of significance. The maximum (8.50 and 8.43) sensory scores for colour were recorded in the treatments of 150 and 100 g banana pulp respectively at 0 day of storage and the score was minimum (6.73) under 300 g pulp treatment under 15 days of storage at ambient conditions. A significant decrease in the colour score during storage could be due to increase in the non-enzymatic browning under 15 days of storage (Aruna et al 1999). Similar decreasing trend of colour score was reported by Shobha and Bharati (2006) in ber Burfi, Bankar et al (2013) in pineapple Burfi and More (2015) in mango Pedha.

### Flavour

It was observed that there were significant variations in sensory scores for flavour due to the various treatments during storage.

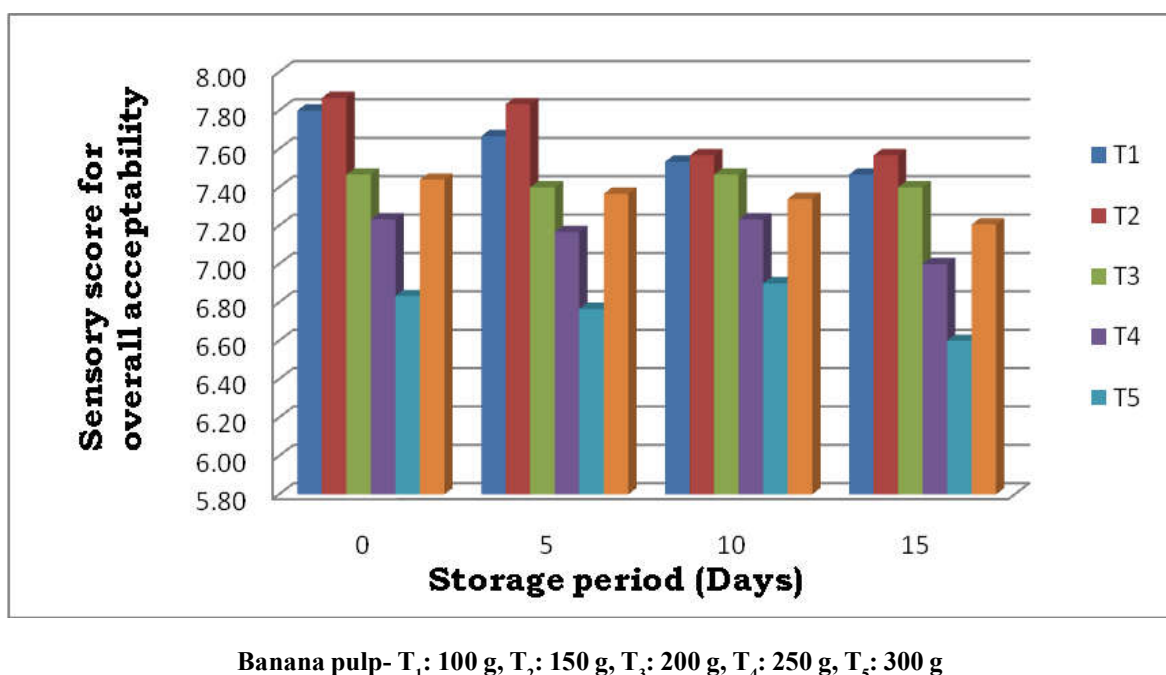


Fig 1. Effect of treatments of banana pulp content and storage period on sensory score for overall acceptability of banana Pedha during storage at ambient conditions

Table 2. Sensory score of banana Pedha as influenced by different treatments of banana pulp content and storage period of banana Pedha

Treatment	Colour	Flavour	Texture	Overall acceptability
<b>Banana pulp</b>				
T <sub>1</sub>	7.98	7.71	7.33	7.62
T <sub>2</sub>	8.17	7.88	7.42	7.71
T <sub>3</sub>	7.56	7.51	7.25	7.43
T <sub>4</sub>	7.26	7.01	7.21	7.16
T <sub>5</sub>	7.23	6.70	6.33	6.78
SE±	0.04	0.14	0.22	0.11
CD <sub>0.05</sub>	0.13	0.42	0.62	0.32
<b>Storage period</b>				
S <sub>1</sub>	7.78	7.57	7.23	7.44
S <sub>2</sub>	7.74	7.36	7.13	7.37
S <sub>3</sub>	7.93	7.31	7.07	7.34
S <sub>4</sub>	7.41	7.20	7.00	7.21
SE±	0.05	0.16	0.25	0.12
CD <sub>0.05</sub>	0.14	NS	NS	NS
<b>Banana pulp x Storage period</b>				
T <sub>1</sub> x S <sub>1</sub>	8.43	8.00	7.50	7.80
T <sub>1</sub> x S <sub>2</sub>	7.73	7.83	7.33	7.66
T <sub>1</sub> x S <sub>3</sub>	8.00	7.50	7.16	7.53
T <sub>1</sub> x S <sub>4</sub>	7.73	7.50	7.33	7.47
T <sub>2</sub> x S <sub>1</sub>	8.50	8.16	7.60	7.86
T <sub>2</sub> x S <sub>2</sub>	8.00	8.00	7.66	7.83
T <sub>2</sub> x S <sub>3</sub>	8.17	7.67	7.17	7.57
T <sub>2</sub> x S <sub>4</sub>	8.00	7.66	7.16	7.56
T <sub>3</sub> x S <sub>1</sub>	7.50	7.73	7.33	7.47
T <sub>3</sub> x S <sub>2</sub>	7.73	7.73	7.00	7.40
T <sub>3</sub> x S <sub>3</sub>	7.50	7.40	7.33	7.40
T <sub>3</sub> x S <sub>4</sub>	7.50	7.17	7.33	7.40
T <sub>4</sub> x S <sub>1</sub>	7.23	7.23	7.17	7.23
T <sub>4</sub> x S <sub>2</sub>	7.50	6.73	7.33	7.17
T <sub>4</sub> x S <sub>3</sub>	7.23	7.07	7.33	7.23
T <sub>4</sub> x S <sub>4</sub>	7.07	7.00	7.00	7.00
T <sub>5</sub> x S <sub>1</sub>	7.23	6.73	6.50	6.83
T <sub>5</sub> x S <sub>2</sub>	7.73	6.50	6.33	6.77
T <sub>5</sub> x S <sub>3</sub>	7.23	6.90	6.33	6.90
T <sub>5</sub> x S <sub>4</sub>	6.73	6.67	6.17	6.60
SE±	0.10	0.33	0.50	0.25
CD <sub>0.05</sub>	0.29	NS	NS	NS

T<sub>1</sub>: 100 g, T<sub>2</sub>: 150 g, T<sub>3</sub>: 200 g, T<sub>4</sub>: 250 g, T<sub>5</sub>: 300 g, S<sub>1</sub>: Initial (0-day), S<sub>2</sub>: 5 days, S<sub>3</sub>: 10 days, S<sub>4</sub>: 15 days

The mean flavour score was significantly highest (7.88) in the treatment of 150 g banana pulp which was at par with the treatments 100 (7.71) and 200 (7.51) g banana. The affect of storage period on flavour was found non-significant. The interaction between treatments and storage period was also found to be statistically non-significant. A gradual decrease in sensory score for flavour during storage is also

reported by Bankar et al (2013) in pineapple Burfi and More (2015) in mango Pedha.

### Texture

The changes in texture of banana Pedha prepared by using 5 different banana pulp levels were statistically significant. The storage period did not significantly influence the texture of the banana Pedha. Maximum (7.42) mean score for texture was recorded by the treatment of 150 g banana pulp and minimum (6.33) under 300 g. The interaction between treatments and storage period was also found to be statistically non-significant. A linear decrease in texture score during storage also reported by Shobha and Bharati (2006) in ber Burfi, Bankar et al (2013) in pineapple Burfi and More (2015) in mango Pedha.

### Overall acceptability

The mean overall acceptability score was considerably higher (7.71) in the treatment of 150 g banana pulp and lowest (6.78) under 300 g which was at par with the treatment of 250 g banana pulp (Fig 1). The effect of storage period on overall acceptability was non-significant. The decrease in the overall acceptability of the product could be due to loss of colour, flavour as well as the texture. The interaction between treatments and storage period was also found to be non-significant. A decline in the overall acceptability score of the product during storage is reported by Aruna et al (1999) in papaya bar and More (2015) in mango Pedha.

On the basis of sensory evaluation Pedha prepared with 150 g banana pulp showed dominating results with respect to high colour score, better flavour, texture and overall acceptability. Thus this proved that the treatment of 150 g banana pulp was more (7.71) acceptable than that of other treatments. Likewise the treatments of 100, 200 and 250 g banana pulp showed promising results with scores 7.62, 7.43 and 7.16 respectively for overall acceptability. The parameter colour of banana Pedha decreased significantly during 15 days of storage at ambient conditions.

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