



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.03

TPI 2019; 8(9): 434-437

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www.thepharmajournal.com

Received: 25-07-2019

Accepted: 27-08-2019

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## Effect of rose petal powder on shelf life of Shrikhand

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### Abstract

The Shrikhand prepared by using rose petal powder in suitable combination after optimization in the laboratory of department of animal husbandry and dairy science, college of agriculture Latur, VNMKV. Parbhani during the 2019-20. Shrikhand was prepared by adopting standard procedure. The product was served to a panel of semi trained judges to know its acceptability. The data so obtained was pooled and overall acceptability was worked out. There was no noticeable difference between treatments for all sensory properties. All treatments were found acceptable up to 16<sup>th</sup> days of storage at refrigerator condition. But the sensory score was found decreasing order from 0 day to 20<sup>th</sup> day of storage period.

**Keywords:** Shrikhand, rose petal powder, shelf life

### Introduction

Indigenous dairy products had played an important role in socio- economic life of Indians since times immemorial accounting for over 90% of dairy products consumed. Milk products were prepared to increase the shelf life and preserve its nutritive value as milk is the most perishable product. Shrikhand is one amongst the most preferred dairy product in western India. Shrikhand is a traditional indigenous fermented semi soft, sweetened whole milk product prepared using *chakka* (strained *dahi*). Further taste and the appearance of the product can be improved by adding sugar and other ingredients like nuts, colours etc. It may be considered the western equivalent to quarg yogurt. (Srinivas *et al.* 2017) [9]. It has semi solid consistency, typical sweetish- sour taste and very popular dessert of Gujarat, Maharashtra and part of Karnataka. Shrikhand is prepared by fermentation of milk with lactic acid bacteria, expulsion of whey from the curd, followed by mixing with sugar, flavouring, spices and other ingredients like fruit pulp, nuts etc. to form soft homogenous mass. (Sonawane *et al.* 2007) [7].

Rose (*Rosa indica*) is most important flower crop in tropical and sub tropical region of the world. It is one of the most important commercial flower crops in the world and known as king of flower. The rose belongs to the family *rosaceae*. The rose petals are used in making rose oil that is steam distilled by crushing. Rose essence is rich in flavanoids, tannins, antioxidant and vitamin A, B<sub>3</sub>, C, D and E making it beneficial in skin care and the therapeutic properties of Baladi rose petals oil, namely: antidepressant, antiphlogistic, antispasmodic, antiviral, aphrodisiac, astringent, bactericidal, choleric, cicatrissant, depurative, emmenagogue, haemostatic, hepatic, laxative, nervous system sedative, stomachic and a tonic for the heart, liver, stomach and uterus. (Sowmya *et al.* 2017 and Hanan *et al.* 2012) [8, 2].

All Roses have edible petals, rose petals have been traditionally uses as nerve and muscle relaxant, body coolant, body tonic treat allergies and gastrointestinal problems. It has used in various therapeutic forms including rose petal marmalade or gulkand, rose water, rose petal tea etc. Rose petals contain mostly fibers, vitamin C, Vitamin A and other minerals. However the medicinal benefits of rose can be attributed to presence of phytochemicals present. Rose petals contain terpenes, glycosides, flavonoids and anthocyanins which have beneficial effect on health. Compounds like  $\beta$ - citronellol, carboxylic acid, myrcene, nonadecane, quercetin, geraniol, nerol, Phenethyl alcohol heneicosane and kaempferol are present in rose flowers. (Nadaf *et al.* 2012) [5].

### Material and Methods

The materials used and methods employed for this investigation, are as under.

### Collection of buffalo milk

Already standardized fresh buffalo milk was procured from local market of Latur city, of Natural Milk Pvt., Ltd., Latur having 6.0 per cent fat and 9 per cent SNF.

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### Collection of Rose petal powder

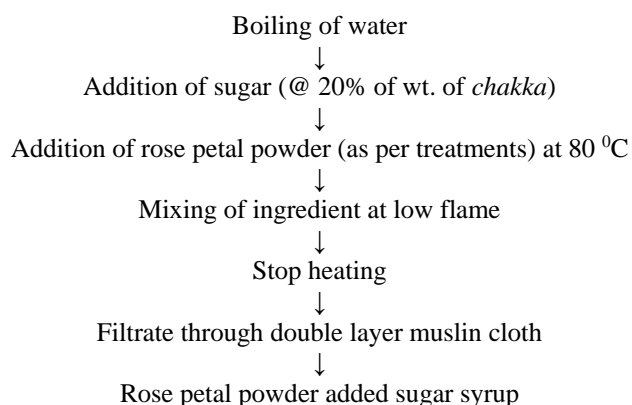
Ready to use rose petal powder (Indus valley) was purchased from local market of Latur.

### Methodology

The following method/ procedure were followed during experiment.

### Preparation of rose petal powder added sugar syrup

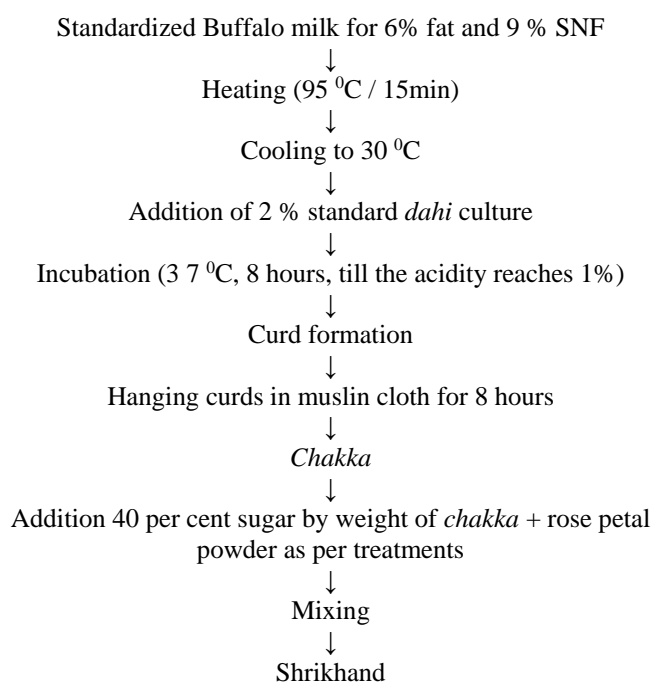
In pretrial worked it was observed that the rose petal powder was not mixed properly in *chakka* and gave abnormal colour and texture of Shrikhand. To solve this issue the rose petal powder was mixed in sugar syrup at 80 °C temperatures as per treatments. The sugar syrup was prepared by mixing sugar (half of 40 per cent) with water in the proportion of 1:1.



**Fig 1:** Flow chart for preparation Rose Petal Powder added Sugar Syrup

### Preparation of Shrikhand

Shrikhand was prepared by using rose petal powder with buffalo milk's *chakka* as per the method described by Sukumar De, 2004 with slight modification.



**Fig 2:** Flow chart for preparation of Shrikhand (Ref: Sukumar De, 2004)

### Procedure

For preparation of Shrikhand blended with rose petal powder.

The buffalo milk was heated at 95 °C for 15 minute and cooled up to temperature 30 °C. After cooling the standard *dahi* culture was added in milk @ 2 per cent and incubated at 37 °C for 8- 10 hrs, till the acidity reached up to 1 per cent. The curd so obtained was tied in muslin cloth and hanged for drain off the whey for 6- 8 hrs. The *chakka* and whey obtained after draining were weighed. The *chakka* was used as base material for preparation of Shrikhand. Then 40 per cent ground sugar by weight of *chakka* was mixed with *chakka* for control treatment and 20 per cent (half sugar) for rose petal powder added treatments. Whereas, remaining half sugar was added with rose petal powder as a syrup for well mixed of rose petal powder in *chakka*.

### Shelf-life of Shrikhand

Shelf life of Shrikhand was evaluated on the basis of sensory score for its shelf-life after interval of three days at cold storage condition by a semi expert panel of five judges and common consumer.

### Statistical analysis

The data were analyzed statistically by using Completely Randomized Design (CRD) as per Panse and Sukhatme (1967). The significance of the result was evaluated on the basis of critical difference. In all four replication was carried out.

### Results and Discussion

The results of the present study as well as relevant discussions have been presented under following sub heads:

#### Organoleptic quality of Shrikhand

The Shrikhand prepared from buffalo milk added rose petal powder with different levels were subjected for the storage life of Shrikhand samples of different treatments were assessed at refrigerator temperature by semi expert panel of judges and data of average score of 4 days interval were recorded up to the minimum acceptable score (6.0 or less than 6.0) on nine-point Hedonic scale.

#### Colour and appearance

The score for colour and appearance of Shrikhand are presented in Table 1. The colour and appearance score varied from 7.50 to 8.38 on fresh Shrikhand sample. A gradual decrease in the colour and appearance score was noticed during 0 to 4<sup>th</sup> day of storage, but gradual decline was also observed in the colour and appearance score during storage after 4<sup>th</sup> day of storage. All treatment is become acceptable up to 16<sup>th</sup> day of storage. T<sub>0</sub> had highest colour and appearance score as 8.38 while T<sub>1</sub> had lowest colour and appearance score as 7.50.

**Table 1:** Effect of rose petal powder on colour and appearance of Shrikhand during storage

Treatment	Storage period (days)					
	0	4	8	12	16	20
T <sub>0</sub>	8.38	8.10	7.65	6.90	6.50	5.80
T <sub>1</sub>	7.50	7.35	7.05	6.80	6.40	5.75
T <sub>2</sub>	7.66	7.70	7.50	7.00	6.80	5.90
T <sub>3</sub>	7.75	8.00	7.60	7.00	6.80	5.90

#### Flavour

The score on organoleptic evaluation of Shrikhand for flavor attribute are presented in Table 2, statistically significant. It is

apparent from the data presented in Table 2 that flavour values slowly decreased continuously during storage period. The flavour, a most important component of sensory quality did not show significant difference among the treatments. A gradual deterioration was observed in the flavour score during storage. Treatment T<sub>0</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>3</sub> was acceptable up to 16<sup>th</sup> day of storage. Treatment T<sub>3</sub> had highest flavour score as 8.28 over other treatment while Treatment T<sub>1</sub> had lowest flavour score as 8.28 over other treatment.

**Table 2:** Effect of rose petal powder on flavour of Shrikhand during storage

Treatment	Storage period (days)					
	0	4	8	12	16	20
T <sub>0</sub>	8.20	7.90	7.50	7.00	6.40	5.80
T <sub>1</sub>	7.50	7.10	6.80	6.40	6.00	5.70
T <sub>2</sub>	8.13	7.80	7.40	6.90	6.20	5.75
T <sub>3</sub>	8.25	8.00	7.70	7.30	6.50	5.85

### Taste

The score for taste of Shrikhand are presented in Table 3. The colour and appearance score varied from 7.50 to 8.15 on fresh Shrikhand sample. A gradual decrease in the taste score was noticed during 0 to 16<sup>th</sup> day of storage, but gradual decline was also observed in the colour and appearance score during storage after first day of storage. All treatment is become acceptable up to 16<sup>th</sup> day of storage. T<sub>2</sub> had highest taste score as 8.15 while T<sub>1</sub> had lowest taste score as 7.50.

**Table 3:** Effect of rose petal powder on taste of Shrikhand during storage

Treatment	Storage period (days)					
	0	4	8	12	16	20
T <sub>0</sub>	8.00	7.75	7.30	6.90	6.50	5.90
T <sub>1</sub>	7.50	7.10	6.80	6.60	6.10	5.70
T <sub>2</sub>	8.15	7.90	7.40	6.90	6.30	5.75
T <sub>3</sub>	8.00	7.60	7.10	6.70	6.10	5.60

### Consistency

The score on organoleptic evaluation of Shrikhand for consistency attribute are presented in Table 4, statistically significant. The consistency score of fresh samples ranged from 7.77 to 8.00 and on 16<sup>th</sup> day of storage ranged from 6.0 to 6.50. All treatment is become acceptable up to 16<sup>th</sup> day of storage.

**Table 4:** Effect of rose petal powder on consistency of Shrikhand during storage

Treatment	Storage period (days)					
	0	4	8	12	16	20
T <sub>0</sub>	8.00	7.50	7.10	6.80	6.10	5.60
T <sub>1</sub>	7.77	7.50	6.90	6.40	6.00	5.70
T <sub>2</sub>	8.00	7.70	7.20	6.90	6.50	5.30
T <sub>3</sub>	8.00	7.70	7.40	7.00	6.50	5.20

### Overall acceptability

**Table 5:** Effect of rose petal powder on overall acceptability of Shrikhand during storage

Treatment	Storage period (days)					
	0	4	8	12	16	20
T <sub>0</sub>	8.13	7.81	7.38	6.90	6.37	5.30
T <sub>1</sub>	7.57	7.26	6.88	6.55	6.50	5.77
T <sub>2</sub>	7.98	7.77	7.37	6.92	6.12	5.67
T <sub>3</sub>	8.00	7.57	7.45	7.00	6.47	5.63

The score for overall acceptability of Shrikhand are presented in Table 5 statistically significant. The overall acceptability score varied from 7.57 to 8.13 of fresh sample of Shrikhand. A gradual decrease in the overall acceptability score was noticed during 0 to 20<sup>th</sup> day of storage. Treatment T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> became acceptable up to 16<sup>th</sup> day of storage. Earlier research workers mentioned their conclusion regarding storage period of Shrikhand as blows, which was comparable to present research.

Nigam *et al.* (2009) [6], reported similar decline in the sensory parameters of various dairy products during refrigerated storage. Kumar *et al.* (2011) [3], observed that a significant effect of storage was observed on the entire sensory parameters. The mean values of colour and appearance, flavour showed a significantly decreasing trend with increasing storage days for both control as well as treatment samples. The mean scores of overall acceptability also showed a significantly decreasing trend with increasing storage days for both control as well as treatment samples. Landge *et al.* (2011) [4], observed that Shrikhand prepared by addition of 0.5 percent *ashwagandha* powder T<sub>2</sub> was superior in organoleptic parameter followed by T<sub>3</sub>, T<sub>1</sub>, and T<sub>0</sub>, respectively. The treated product was acceptable up to 52 days of storage under refrigerated temperature. Nadaf *et al.* (2012) [5], observed the mean values of colour and aroma decreases significantly over a storage period. It ranged from 8.12 to 6.00 and 8.37 to 6.25 respectively for treatment samples.

### Conclusion

The sensory parameters of Shrikhand i.e. colour and appearance, flavour, taste, consistency and overall acceptability were decreased progressively in all treatments within 16<sup>th</sup> days. There were no noticeable differences between treatments for all sensory properties. All treatments were found acceptable up to 16<sup>th</sup> days of storage at refrigerator condition. But the sensory score was found decreasing order from 0 day to 20<sup>th</sup> day of storage period.

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