

Studies on Sensory Evaluation of Herbal Shrikhand Prepared With Basil (*Ocimum Basilicum*) Extract

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ABSTRACT

Shrikhand is a popular Indian dessert prepared by fermentation of milk. It has a semi-soft consistency and is sweetish sour in taste. Preparation of Herbal Shrikhand was carried out by incorporating aqueous basil extract @ 1%, 2%, 3% and 4% , indicated as T₁, T₂, T₃ and T₄ respectively, where T₀ being the control sample with no basil extract and was evaluated on various Physico-chemical, organoleptic and microbiological parameters. Five treatments combination were replicated five times and used in the study. The samples were evaluated organoleptically by a group of five semi-trained panelists and rated the product using 9-point Hedonic scale. The sample was analyzed on attributes like colour & appearance, body & texture, flavour & taste and overall acceptability and was observed that T₃ was the most acceptable sample, followed by T₂, T₁, T₀ and lastly, T₄.

Key Words Herb, Shrikhand, Basil extract

Fermented milk and milk products occupy a place in satisfying nutritional requirements of human being since the time antiquity. Fermented milk products have been well recognized to have therapeutic, anticholesterolemic, anticarcinogenic properties (Boghra and Mathur 2000). Fermented milk products not only are consumed directly but often form starting materials from which other dairy products are also manufactured (Thapa, 2000). Shrikhand is a semi-soft, sweetish-sour, whole milk product prepared from lactic fermented curd (David 2006). The curd (dahi) is partially strained through a muslin cloth to remove the whey and thus produce a solid mass called chakka, the basic ingredient for shrikhand (Singh *et al* 2014). Shrikhand is one of the important fermented milk products which derive its name from the Sanskrit word “Shikharani” meaning a curd prepared with added sugar, flavouring agents (Saffron), fruits and nuts. It is popular in western part, especially in Maharashtra, Gujarat and Karnataka. Shrikhand is known for its high nutritive, characteristic flavour, taste, palatable

nature and possible therapeutic value. It is very refreshing particularly during summer months. It can be recommended as health food for specific patients suffering from obesity and cardiovascular disease due to its low fat and sugar contents (Swapna and Chavannavar 2013).

Ocimum basilicum L. (Lamiaceae), respectively, named basil, is an aromatic herb that has been used traditionally as a medicinal herb in the treatment of headaches, coughs, diarrhea, constipation, warts, worms and kidney malfunctions (Mahajan *et al.*, 2013). . It has a long history as culinary herb, thanks to its foliage adding a distinctive flavor to many foods. It is also a source of aroma compounds and essential oils containing biologically active constituents that possess insecticidal, nematocidal, fungistatic and antimicrobial properties (Kumar *et al.*, 2010).

The extracts obtained from the plant are extensively brought to use for curing various diseases such as the common cold, inflammation, malaria, heart disease, headaches, stomach disorders, kidney stones, heart disorders, and many more. The Indian basil Tulsi also aids in the purification of atmosphere. Tulsi plant serves as a fabulous repellent for fighting against flies, mosquitoes and insects. It is especially valuable in combating malarial fever. (Hakkim *et al.*, 2007, Kumar *et al.*, 2010)

MATERIALS AND METHODS

Preparation of curd

Standardized whole milk (6% fat and 9% SNF) is heated to 90p C and then cooled to 30-32p C. It is then inoculated @ 1% with the Shrikhand culture, which is mixed well, and incubated at 30p C till the curd sets firmly (acidity 0.7-0.8% lactic acid).

Preparation of Chakka

The curd so formed is broken and placed in a muslin cloth bag and hang on a peg for the removal

of whey for 8-10 hours, during this period, the whey from the curd will drain off and the solid mass thus obtained is called Chakka, which is the shrikhand base.

Preparation of Control Shrikhand

The chakka is then admixed with sugar (crystal or ground) and kneaded for uniform mixing. The product so obtained is the Control Shrikhand sample which has got no basil extract.

Preparation of Experimental Shrikhand

For the Experimental shrikhand, the chakka is mixed with the sugar and aqueous basil extract in different percentages i.e., 1% basil extract for T₁, 2% for treatment T₂, 3% for T₃ and 4% for treatment T₄. The product is then filled in cups followed by its cooling at 10-12p C. The samples were analyzed for Physicochemical, microbial and organoleptic qualities as per the procedure laid down by Anonymous, 1972.

Details of different treatments

Materials	Different treatments (Herbal Shrikhand made of Chakka 6% fat and 9% SNF)				
	T ₀	T ₁	T ₂	T ₃	T ₄
Basil extract	-	1%	2%	3%	4%

Organoleptic Evaluation of the prepared product:

Freshly prepared low cost paneer were served to taste to panel members consisting of 5 experienced persons. 9 point hedonic scale proforma as suggested by Amerine *et al.*, 1965.

Statistical analysis

The data obtained on different aspects as per plan were tabulated and statistically analyzed as per Chandel, 1991.

RESULT AND DISCUSSION

Organoleptic Parameters of Control and herbal shrikhand

Table 1 shows different organoleptic parameters of control and herbal shrikhand.

Colour and Appearance:

The highest mean score for colour and appearance of the herbal shrikhand (8.13) was obtained for the treatment T₃ followed by T₂ (7.92), T₀ (7.87) and T₁ (7.72). The minimum score (7.13) was obtained by T₄. There were significant differences found among the treatments. F Value was 37.519, indicating significant effect of treatment on colour and appearance.

Body and Texture:

The highest mean score for body and texture of the herbal shrikhand (8.11) was obtained for the treatment T₃ followed by T₀ (7.84), T₂ (7.79) and T₁ (7.66). The minimum score (7.43) was obtained by T₄. There were significant differences found among the treatments. F Value was 10.884, indicating significant effect of treatment on body and texture.

Flavour and Taste:

The highest mean score for flavour and taste of the herbal shrikhand (8.21) was obtained for the treatment T₃ followed by T₂ (7.98), T₀ (7.63) and T₁ (7.58). The minimum score (7.16) was obtained by T₄. There were significant differences found among the treatments. F Value was 15.048, indicating significant effect of treatment on flavour and taste.

Organoleptic Parameters

Overall Acceptability:

The highest mean score for overall

Table 1. Organoleptic Parameters of Control and herbal shrikhand

Parameters	Control and herbal shrikhand					F-Value	C.D.
	T ₀	T ₁	T ₂	T ₃	T ₄		
Colour and Appearance	7.87	7.72	7.92	8.13	7.13	37.519*	0.186
Body and Texture	7.84	7.66	7.79	8.11	7.43	10.884*	0.226
Flavour and Taste	7.63	7.58	7.98	8.21	7.16	15.048*	0.311

* Significant at 5 % level

** Non-significant at 5 % level

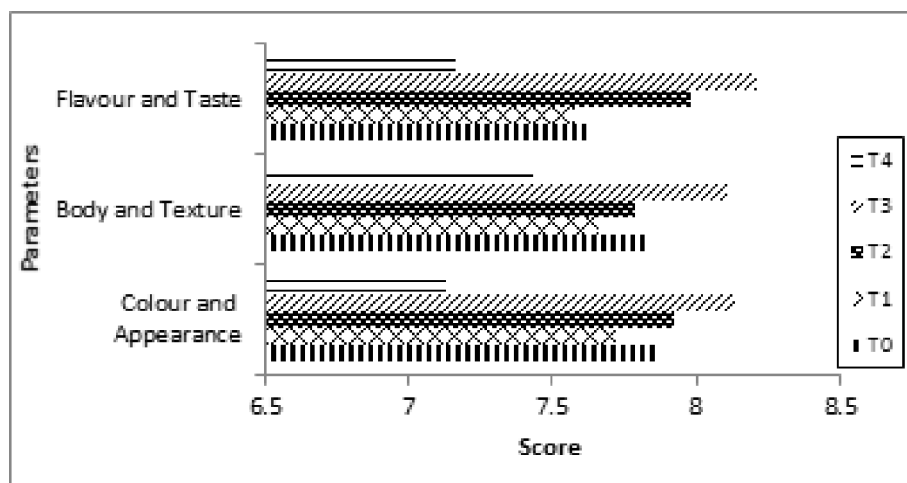


Fig. 1: Organoleptic Parameters of Control and herbal shrikhand.

acceptability of the herbal shrikhand (8.06) was obtained for the treatment T₃ followed by T₂ (7.90), T₁ (7.73) and T₀ (7.66). The minimum score (7.42) was obtained by T₄. There were significant differences found among the treatments. F Value was 12.956, indicating significant effect of treatment on overall acceptability.

Cost Analysis of Control and herbal shrikhand

Table 3 shows Cost Analysis of Control and herbal shrikhand. The cost estimated for different treatments are Rs. 128.57, 129.86, 131.14, 132.43 and 133.72 for a kg of sample of T₀, T₁, T₂, T₃ and T₄ respectively by T₄.

Taking the experimental results of the present

investigation into considerations, it can be concluded that the Herbal shrikhand prepared by incorporating the 3% basil extract i.e., Treatment 3 (T₃) outlaid the better organoleptic properties viz, Colour and Appearance, Body and Texture, Flavour and Taste and Overall Acceptability followed by treatment 2 (T₂) i.e., with 2% basil extract. The physico-chemical analysis results shows that treatment 4 (T₄) with 4% basil extract possess maximum moisture, protein, ash content, Antioxidant Activity, Acidity and pH while the control sample (T₀) has maximum Total Solids and Fat content. Also, as per FSSAI guidelines, all the nutrients were in prescribed range. The microbial count was found to be within the limit. There was significant difference between and within the treatments.

Table 2. Overall acceptability of control and herbal shrikhand

Replication	Control and herbal shrikhand					F-Value	C.D.
	T ₀	T ₁	T ₂	T ₃	T ₄		
R ₁	7.60	7.67	7.90	8.00	7.70	12.956*	1.952
R ₂	7.07	7.50	7.77	7.90	7.12		
R ₃	7.90	7.80	7.89	8.11	7.61		
R ₄	7.80	7.87	8.00	8.08	7.33		
R ₅	7.91	7.81	7.95	8.20	7.33		
Mean	7.66	7.73	7.90	8.06	7.42		

* Significant at 5 % level

** Non-significant at 5 % level

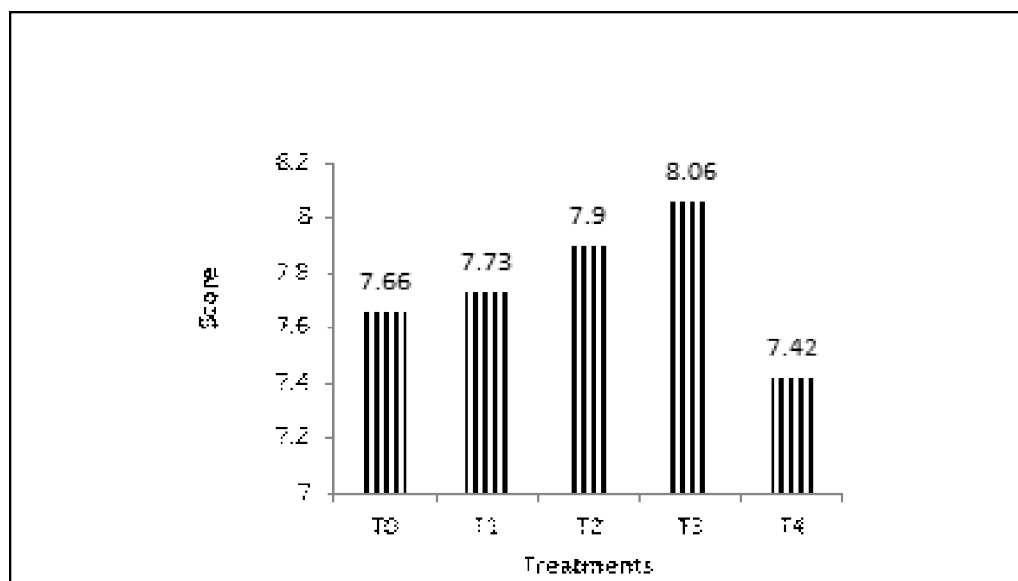


Fig. 2. Overall acceptability of control and herbal shrikhand

Table 3. Cost Analysis of Control and herbal shrikhand

Parameters	Control and herbal shrikhand				
	T ₀	T ₁	T ₂	T ₃	T ₄
Total Cost (Rs/kg)	128.57	129.86	131.14	132.43	133.72

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Received on 23-08-2015

Accepted on 28-08-2015