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Waghmare SS

Department of Animal
Husbandry and Dairy Science,
College of Agriculture, Latur,
Maharashtra, Vasanttrao Naik
Marathwada Krishi Vidyapeeth,
Parbhani, Maharashtra, India

Ingale RR

Department of Animal
Husbandry and Dairy Science,
College of Agriculture, Latur,
Maharashtra, Vasanttrao Naik
Marathwada Krishi Vidyapeeth,
Parbhani, Maharashtra, India

Patange SB

Department of Animal
Husbandry and Dairy Science,
College of Agriculture, Latur,
Maharashtra, Vasanttrao Naik
Marathwada Krishi Vidyapeeth,
Parbhani, Maharashtra, India

Wavhal AS

Department of Animal
Husbandry and Dairy Science,
College of Agriculture, Latur,
Maharashtra, Vasanttrao Naik
Marathwada Krishi Vidyapeeth,
Parbhani, Maharashtra, India

Corresponding Author:**Patange SB**

Department of Animal
Husbandry and Dairy Science,
College of Agriculture, Latur,
Maharashtra, Vasanttrao Naik
Marathwada Krishi Vidyapeeth,
Parbhani, Maharashtra, India

Studies on sensory properties of *shrikhand* by using ginger powder

Waghmare SS, Ingale RR, Patange SB and Wavhal AS

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Abstract

Shrikhand is a semi-soft, sweetish sour, whole milk product prepared from lactic fermented curd, the curd is partially strained through a muslin cloth to remove the whey and thus produce a solid mass called *chakka*. Herbal sweet preparation is a new concept in dairy industry. Herbal such as ginger juice is being used in limited extent as a flavoring agent in tea by household, besides it has medicinal properties against cough, cold etc. and is used extensively in ayurvedic medicine. Ginger flavored *shrikhand* can be considered as herbal *shrikhand* looking to diversified benefits and medicinal value of ginger. It was thought to prepare *shrikhand* by incorporation of ginger powder. In the present study the *shrikhand* was prepared from buffalo milk using ginger powder at different level viz. 2 per cent (T₁), 4 per cent (T₂), 6 per cent (T₃), 8 per cent (T₄) of *chakka*. This prepared *shrikhand* was compared with control *shrikhand* (T₀) i.e. without ginger powder. From the results of the present investigation, it may be concluded that ginger powder could be successfully utilized for preparation of *shrikhand*. Addition of ginger powder in *shrikhand* improved the sensory quality and acceptability of the product. Besides typical flavor, it also adds medicinal properties to the product.

Keywords: *Chakka*, *Shrikhand*, sensory, ginger

Introduction

Shrikhand is a semi-soft, sweetish sour, whole milk product prepared from lactic fermented curd, the curd is partially strained through a muslin cloth to remove the whey and thus produce a solid mass called *chakka*. The dish is very popular in Gujarat, Maharashtra and Karnataka. The *shrikhand* word is derived from the Sanskrit root 'shrikha rani' meaning good nourishing food having high protein and calorific value. Singh *et al.* (2015). Value. Singh *et al.* (2015) the keeping quality of *shrikhand* largely depends upon its initial micro flora like yeast, mould and other microorganisms. Under ambient condition (30⁰ c) it tends to spoil within 2-3 days. Under refrigerated condition (5⁰ c) it can be kept for 40 days for deterioration. So in order to increase the milk availability during lean periods summer months the *shrikhand* preparation is best under Indian condition. Herbal sweet preparation is a new concept in dairy industry.

Herbal such as ginger juice is being used in limited extent as a flavoring agent in tea by household, besides it has medicinal properties against cough, cold etc. and is used extensively in ayurvedic medicine. Ginger flavored *shrikhand* can be considered as herbal *shrikhand* looking to diversified benefits and medicinal value of ginger. It was thought to prepare *shrikhand* by incorporation of ginger powder. Recently herbal products either in the form of cosmetics or food has become more popular in the world market. Epidemiological data as well as *in vitro* studies strongly suggest that food containing phyto-chemical with anti-oxidation potential have strong protective effect against major disease risks including cancer and cardiovascular disease. (Kaur and Kapoor, 2002) [5]. Looking to the benefits of medicinal value of ginger the present research project entitled "studies on method of preparation of *shrikhand* by using ginger powder"

Material and Methods

Present investigation was undertaken to prepare *shrikhand* with ginger powder (*Zingiber officinale* L.). The research was conducted in Department of Animal Husbandry and Dairy Science, College of Agriculture Latur, Vasanttrao Naik Marathwada Krishi Vidyapeeth, Parbhani. The materials used and method were adopted were as under.

Fresh standardized milk used for product preparation Good quality dried ginger was purchased from the local market. It was grinded in powder form, then that powder was strained through fine sieve. Dahi culture was prepared in the Departmental laboratory

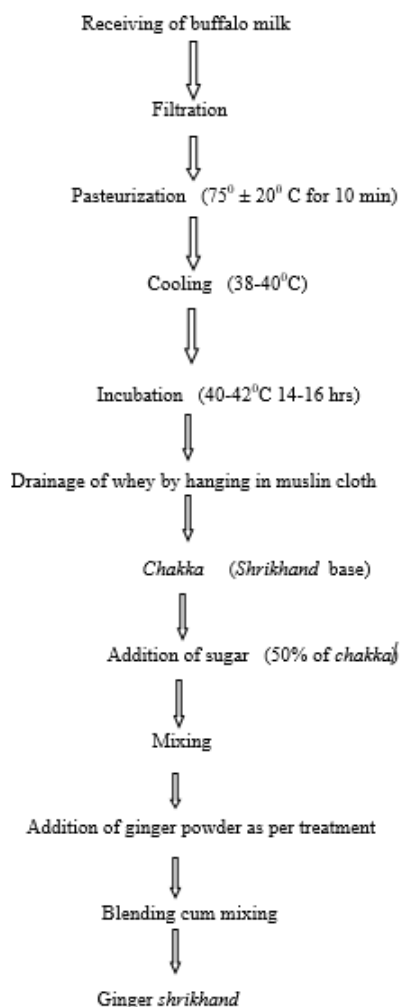


Fig 1: Preparation of *shrikhand* by using ginger powder

Treatment Details

The *chakka* and ginger powder will mixed (w/w) to prepare *shrikhand* in the following proportions.

Treatment	Chakka	Ginger
T ₀	100	00
T ₁	98	02
T ₂	96	04
T ₃	94	06
T ₄	92	08

T₀- Pure control *shrikhand*.

T₁- 98 parts of *shrikhand* + 2 parts of ginger powder.

T₂- 96 parts of *shrikhand* + 4 parts of ginger powder.

T₃-94 parts of *shrikhand* + 6 parts of ginger powder.

T₄- 92 parts of *shrikhand* + 8 parts of ginger powder

Result and Discussion

Sensory evaluation of finished product

The acceptability of the final product was measured in terms of sensory attributes such as, colour, flavour, consistency and taste using 9- point hedonic scale by a panel of five expert judges. The data so obtained were analyzed using Completely

Randomized Block Design (CRBD). The overall acceptability of the product was also worked out.

Colour and Appearance

Table 1: Score for colour and appearance of ginger *shrikhand*: (out of '9')

Treatment	Replication			Mean
	I	II	III	
T ₀	8.2	8.1	8.0	8.1 ^c
T ₁	8.4	8.2	8.4	8.3 ^{ab}
T ₂	8.5	8.6	8.4	8.5 ^a
T ₃	8.3	8.4	8.5	8.4 ^a
T ₄	8.1	8.2	8.3	8.2 ^{bc}

SE = ± 0.0596 CD at 5% = 0.1878

It is revealed from the table 1 that the score for colour and appearance attribute ranged between 8.20 to 8.33 for T₄ to T₁ combination, respectively. Score recorded for this parameter was found i.e. 8.1, 8.3, 8.5, 8.4, and 8.2 for T₀, T₁, T₂, T₃ and T₄ respectively. Treatment T₂ and T₃ was similar to each other but treatment T₀ is significantly differ from treatment T₂ and T₃. Among the levels of inclusion of *ginger powder*. The lowest score for colour and appearance was obtained at 8.1 which possessed more yellow appearance, unacceptable colour and liked by the evaluator. As far as the blends were concerned T₂ combination had been preferred by the judges for colour and appearance than the other treatment combinations. The result recorded in present investigation for flavor score were comparable with findings of below mentioned research workers.

Daadrwal *et al.* (2005) [1] observed that the *shrikhand* prepared by incorporation of fruit pulp in milk as well as in *chakka* with regard to colour and appearance the product prepared by addition of 5% pulps in milk and 10% pulp in *chakka* were at par with the product prepared with milk alone. Salunke *et.al* (2006) observed that the product made by manufactures within the city C₁, C₂, and C₄ were at par with each other with respect to colour and appearance scores, whereas for city C₃ the score of *shrikhand* for different manufactures differed significantly.

Flavour score

Table 2: Flavour score for the ginger *shrikhand*

Treatment	Replication			Mean
	I	II	III	
T ₀	7.8	7.7	8.0	7.8 ^a
T ₁	8.0	8.0	7.3	7.7 ^a
T ₂	7.5	7.2	7.5	7.4 ^{ab}
T ₃	7.2	7.3	6.4	6.9 ^b
T ₄	7.3	7.4	7.6	7.4 ^{ab}

SE = ± 0.1795 CD @ 5% = 0.5655

From table 2 resulted that the average score obtained for flavor of *shrikhand* by addition of *ginger powder* with different levels. The data regarding average score of *shrikhand* without addition of *ginger powder* (T₀) scored 7.8 followed by 7.7 and 7.4 at treatment T₁ and T₂, respectively.

This increase may be attributed to characteristic *ginger flavor* to *shrikhand*. However, at higher level of ginger powder the score was reduced to 7.7 and 6.9 at treatment T₁ and T₃, respectively. Thus decrease in score may be due to strong pungent aroma and taste which was not liked by the judges.

The perusal of data from Table 7 showed that the *shrikhand* prepared from T₂ level recorded highest score for flavour (7.4) followed by T₁ (7.7). The sensory score increased up to T₂ i.e. 10 per cent level of *ginger powder* and decreased simultaneously for T₃ and T₄. Lowest score was noticed for *shrikhand* blended with 6 per cent ginger powder (6.9). Dadarwal *et al.* (2005) [1] observed that the scores for flavor were better with guava and sapota pulp added in milk as well as with banana and guava pulps directly added in *chakka* than the control.

Sweetness score

Table 3: Sweetness score for *ginger shrikhand*

Treatment	Replication			Mean
	I	II	III	
T ₀	8.1	8.0	8.1	8.07 ^a
T ₁	7.5	7.9	7.4	7.60 ^{ab}
T ₂	7.8	7.9	7.8	7.83 ^a
T ₃	6.3	6.7	7.0	6.67 ^c
T ₄	6.8	7.2	7.8	7.27 ^b
S.E. = ± 0.1738 C.D. at 5% = 0.5476				

It is revealed that table no.3 means score for sweetness of *ginger shrikhand* 8.07, 7.60, 7.83, 6.67, and 7.27 for treatment T₀, T₁, T₂, T₃ and T₄ respectively. Treatment T₁, T₂, and T₄ were similar to each other, but treatment T₀ and T₃ is significantly differ from each other but treatment T₂ consider as superior over rest of treatments which was comparable with control. The result recorded in present investigation for sweetness score were comparable with findings of below mentioned research workers.

Miyani *et al.* (1984) reported that 35-40 per cent moisture and 40 per cent sugar was highly preferable with respect to sensory profile and consistency of the product.

Patel *et al.* (1985) reported that 41 per cent sugar level in *shrikhand* produced most desirable characteristics in product.

Body and texture score

Table 4: Body and texture score for *ginger shrikhand*

Treatment	Replication			Mean
	I	II	III	
T ₀	8.3	8.0	7.6	7.97
T ₁	7.9	8.3	8.5	8.23
T ₂	7.8	8.2	8.5	8.17
T ₃	7.5	8.0	7.9	7.80
T ₄	7.3	7.3	7.8	7.47
S.E. = ± 0.1813 C. D. at 5% = 0.5713				

It is observed from table no. 4 treatment T₀, T₁, T₂. But these treatments were significantly differing from treatment T₃. The body and texture score for *ginger shrikhand* samples were low as compare to control. The T₂ blend was comparatively preferred by judges as far as body and texture concerned. Treatment T₃ showed some grainy structure which was not preferred by judges. The result showed in present investigation of body and texture score were comparable with findings of below mentioned research workers.

Gavane *et al.* (2010) reported that, blending of maximum of 2 per cent of custard apple pulp had a positive appeal on the body and texture of *shrikhand*. Kumar *et al.* (2011) [6] observed mean body and texture scores decreased significantly with increasing level of apple pulp i.e. 6.52 to 7.20.

Overall acceptability

Table 5: Overall acceptability of *ginger shrikhand*

Treatment	Replication			Mean
	I	II	III	
T ₀	8.10	7.83	7.97	8.03
T ₁	8.33	7.77	8.23	7.60
T ₂	8.50	7.40	8.17	7.83
T ₃	8.40	6.97	7.80	6.67
T ₄	8.20	7.43	7.47	7.27
SE = ± 0.219 CD @ 5% = 0.6513				

From table no. 5 resulted that the mean overall acceptability of *ginger shrikhand* for treatments T₀, T₁, T₂, T₃ and T₄ was 7.6, 7.8, 7.9, 7.4 and 7.5 respectively. Treatments T₀, T₁ and T₂ was found at par with each other whereas other treatment i.e. T₃ and T₄ significantly differ from T₀, T₁ and T₂. It was observed that treatment T₂ was significantly superior. The lowest overall acceptability score i.e. 7.5 was found in treatment T₄ which decreased colour and appearance, body and texture, flavour and sweetness hence overall acceptability score was less as compared to T₂ treatment. Treatment T₂ scored at higher point. These result were comparable with findings of following workers.

Daadarwal *et al.* (2005) [1] observed overall acceptability of *shrikhand* prepared with 5% in milk before pasteurization and lactic fermentation or 10 per cent directly in *chakka* was comparable with the product prepared without fruit pulp.

Nigam *et al.* (2009) [10] observed that the fresh *shrikhand* of good overall acceptability could be prepared from 30 per cent level of sugar and 20 per cent of papaya.

Narayanan *et al.* (2013) [11] observed that the score for overall acceptability was highest in T₂ (8.6) and lowest in T₀ (8.0) and it was significantly affected due to blending of banana pulp at 20 per cent level.

From present study it can be concluded that the ginger powder is very well useful for enhancing sensory as well as medicinal properties for making *shrikhand*

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