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Effect of ginger powder on physico-chemical properties of *Shrikhand* prepared by buffalo milk

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Abstract

An attempt was made to improve the nutritional quality of desert '*Shrikhand*' with supplementation 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. The most acceptable quality *shrikhand* can be prepared by using 04 per cent ginger powder followed by normal *shrikhand*. Fat, protein, ash, total solid content of *Shrikhand* is determined.

Keywords: Buffalo milk, ginger powder, *shrikhand*, chemical composition

Introduction

In the recent year trend of cautious towards health, fitness and figure has increased. Energy imbalance between calories expended and excessive consumption of sugary foods along with more fat, especially saturated fat leads to obesity in Indian population. So the growing health awareness today has increased demand for food product that support better health consumers are demanding greater variety of low fat, sugar free, that is low calorie products as they strive to make healthier food choices. Shelke *et al.* (2014) stated that India has very rich variety of fermented foods prepared from milk, pulses, cereals, vegetables, fruits and fishes, milk and milk products like curd, buttermilk, lassi and *shrikhand* is indispensable dish in a regular diet of Indians. In all these milk based products, the bacterial change is the production of lactic acid from lactose by lactic acid bacteria like lactococci, streptococci and lactobacilli. Fermented milk products constitute a vital component of the human diet in many regions of the world. In the Indian sub-continent such products are also classified as "Indigenous milk products" like *dahi* (curd), *lassi*, *shrikhand* etc. which are prominent in peoples diet. Swapna *et al.* (2013) [5]. The keeping quality of *shrikhand* largely depends upon its initial micro flora like yeast, mould and other microorganisms. Under ambient condition (30⁰ c) it trends 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. Singh *et al.* (2015). *Shrikhand* is pre-prepared on small scale in a highly unorganized manner, which has great impact on microbiological characteristics of *shrikhand*. The large variation have been reported in the organoleptical, microbiological and chemical qualities of *shrikhand*. Sarkar and Mishra (1997) showed its variation in preparation of production technique. 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. Ginger has a several medicinal properties. *Shrikhand* is served as special delicacy during festivals and ceremonial occasions. Consumption of *shrikhand* is reported to be effective in treatment of many diseases like diarrhoea, acidity, gastro-intestinal (Patel and Schequen, 1999).

The medicinal properties of ginger in preventing cough and cold are well documented (Buchman, 1980). There was tendency of some people to refrain from consuming sour sweet product for fear of catching cold. Ginger *shrikhand* however, may be acceptable to them; lately there were tendency among people to assume a high degree of confidence in whole wholesomeness and safety of nature foods and natural flavors than those based on chemical.

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Material and Methods

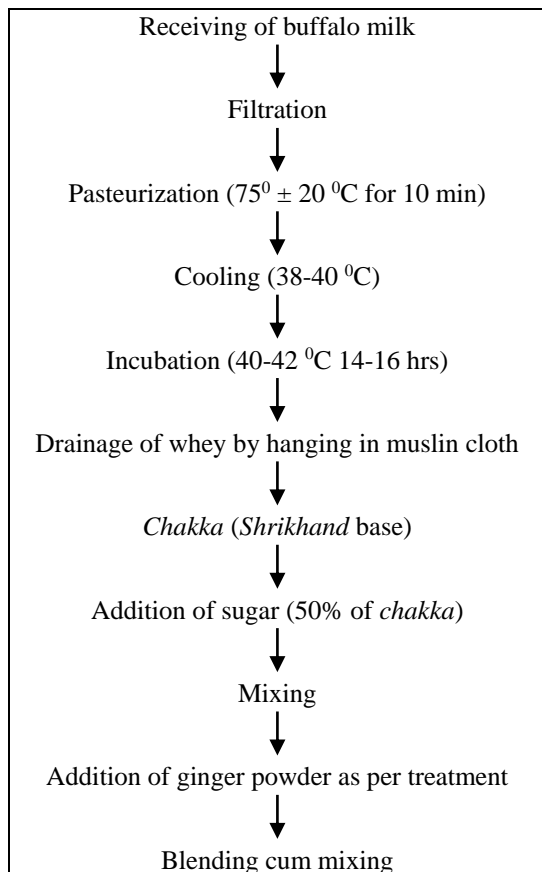
Materials

The whole fresh and clean buffalo milk required for present study was collected from Department of Animal Husbandry and Dairy Science, College of Agriculture, Latur. Milk was clarified before use to remove dirt and other extraneous matter. Good quality dried ginger was purchased from the local market. Dahi culture, muslin cloth, sugar, electric mixer, glassware.

Methods

Preparation of *shrikhand* from buffalo milk blended with ginger powder

Standardized buffalo milk and ginger powder were taken.



Flow Chart for Preparation of *shrikhand* From *ginger powder*
Prepared by Blending Buffalo Milk

Analysis of *Shrikhand*

A) *Shrikhand*

1. Total solids

The total solids were determined by Gravimetric method as per IS: 1479 (Part-II), 1961.

2. Fat

The fat content was determined by Gerber method as described in IS: 1224 (Part-I), 1977.

3. Protein

The protein was determined by estimating the per cent nitrogen by Micro Kjeldhal method as recommended in IS: 1479 (Part- II), 1961. The per cent nitrogen was multiplied by 6.38 to find out the protein percentage in *shrikhand*.

4. Ash

The ash content was determined as per the method described in A.O.A.C.1975.

5. Titratable acidity

The acidity was expressed as per cent lactic acid was determined according to IS:1479 (part1),1960.

6. Ginger powder

The percent total solids, fat, protein, ash, and acidity were determined by adopting the procedures as described in A.O.A.C (1975).

7. Sensory Evaluation

The product was served to a panel of judges for organoleptic evaluation. They were provided with nine points hedonic score card for evaluation as per IS: 6273 (Part II) 1971. The *shrikhand* was evaluated by the judges for sensory attributes like general appearance, body, texture and flavor.

Results and Discussion

Treatments	Fat	Protein	Total sugar	Moisture	Ash	Total solids
T ₀	14.98 ^a	8.49 ^a	47.30 ^a	34.21 ^a	1.10 ^a	65.78 ^a
T ₁	13.66 ^b	7.85 ^b	48.56 ^b	34.71 ^b	1.01 ^b	65.28 ^b
T ₂	12.10 ^c	7.31 ^c	50.95 ^c	35.51 ^c	0.90 ^c	64.43 ^c
T ₃	10.26 ^d	6.87 ^d	51.32 ^d	35.86 ^d	0.81 ^d	64.13 ^d

Effect of Ginger Powder on Fat Content

The fat content in the formulated products ranged between 6.10 to 9.17 percent. All treatments were differed significantly from each other. The highest fat content was recorded for treatment T₀ (9.17 percent) and lowest fat content were recorded for treatment T₄ (6.10 percent), the fat content in the finished product was decreased due to the addition of ginger powder.

Effect of Ginger Powder on Protein Content

The average protein content of finished product were to be found as 8.98, 8.60, 8.28, 7.60, and 7.35 per cent in treatments T₀, T₁, T₂, T₃, and T₄ respectively. It was also observed that the highest protein content was in T₀ and lowest was found in T₄.

Effect of Ginger Powder on Total Ash Content

The ash content in the finished product was found to be 0.82, 0.75, 0.64, 0.44, and 0.40 for treatment T₀, T₁, T₂, T₃, and T₄ respectively. All treatments were different significantly from each other at 5 per cent level of significance.

Effect of Ginger Powder on Moisture Content

It was observed that the average moisture content of treatment T₀, T₁, T₂, T₃, and T₄ were 32.17, 33.80, 34.07, 35.33, and 37.53 respectively. From the table 4.8 it is evident that the average moisture percent in *shrikhand* was increased from treatment T₀ to T₄. The moisture content was lowest in T₀ (32.17) percent and highest T₄ (37.53) percent. All treatments significantly differed from each other.

Effect of Ginger Powder on Total Solids Content

In evident from table no. 22 that the average total solid content of the finished product were found to be 67.07, 67.40, 64.53, 63.83, and 63.20 percent for treatment T₀, T₁, T₂, T₃, and T₄ respectively. The highest total solid content was recorded for treatment T₁ i.e. 67.40 lowest total solid contents was recorded for treatment T₄ i.e. 63.20 per cent. All the

treatments were found to be significantly differed over each other. A total solid of the product is counter part of the moisture content parameter of the product. Moisture content of the product decrease the total solid content.

Effect of Ginger Powder on Overall Acceptability

The most acceptable product in the present study was observed to be the *shrikhand* prepared by 4 per cent ginger powder (T₂) with overall acceptable score of 7.9 followed by *shrikhand* prepared with 2 per cent (T₁) scoring 7.8 while the lowest score was obtained by *shrikhand* with 8 per cent ginger powder (T₄) scoring 7.4.

Conclusion

The product obtained was subjected for chemical analysis and organoleptic evaluation by panel of judges. It was observed that as the blending of ginger powder increased, there was decrease in fat, protein, ash, total solid and increase in total sugar and moisture content.

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