

## International Journal of Advanced Biochemistry Research



ISSN Print: 2617-4693  
 ISSN Online: 2617-4707  
 IJABR 2024; 8(5): 469-472  
[www.biochemjournal.com](http://www.biochemjournal.com)  
 Received: 16-02-2024  
 Accepted: 19-03-2024

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## Physico-chemical and antioxidant properties of shrikhand when incorporated with ginger and lemongrass

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DOI: <https://doi.org/10.33545/26174693.2024.v8.i5f.1107>

### Abstract

Present days consumer are becoming more health conscious and preferred food that promote good health, prevent disease, rich in nutritive value and therapeutic values that improves the digestive system by strengthening immune system. As shrikhand is a very popular Indian fermented dessert, it is consumed on a large basis. Shrikhand is easily available cost effective and can even be prepared in home. So its accessibility is easy. This is one of the major reasons to use shrikhand as the base produce. Shrikhand an Indian fermented dairy product is known for its sweet-sour taste, help to improve the overall quality of diet. The investigation was carried out to increase its antioxidant and physico-chemical properties as well as therapeutic, properties by adding herbs Ginger and Lemongrass was added at different level of combination (i.e.1%, 3%, 5%) with different levels of Lemongrass (i.e. 2.5%, 4.5%, 6.5%) respectively to increase its antioxidant and Physico-chemical properties as well as therapeutic value in shrikhand. Whole study was deeply analysed with these level of herbs in shrikhand (i.e. Carbohydrate, Protein, Fat, Ash, Total Solids, Moisture, Acidity) and Antioxidant in which T<sub>9</sub> (5% ginger and 6.5% Lemongrass) was found to be best in Antioxidant among the treatments. Hence, the shrikhand prepared have high therapeutic and nutritional value such as anti -oxidative property, immune strengthening, prevent disease etc. the used components are considered as natural ingredients and therefore this product can also be considered in the range of herbal product. No artificial additives have been added. The whole product is palatable, digestive with good aroma and flavour. As the ingredients used are easily available and cheap therefore the product is cost effective.

**Keywords:** Shrikhand, ginger, lemongrass, antioxidant, physico-chemical

### Introduction

In India the process of food fermentation was probably known to the people inhabiting India in the Paleolithic and Neolithic times judging from the record of food habits. In the early Vedic period in fermented food especially dairy product have long enjoyed a reputation of enhancing the life of man. The prolongation of life, propounded that the longevity of Bulgarian was in past due to this ingesting large quantities of milk fermented with lactobacilli. Shrikhand contains appreciable amount of milk protein and phospholipids and this obtained by lactic acid fermentation through the action of *Lactobacillus bulgaricus*, *Streptococcus lactis* and *Streptococcus thermophilus*. There will continue to be a demand for traditional, high quality dairy product, despite increasing competition from non dairy based products (Rathore *et al.*, 2007) [13]. Shrikhand is a popular Indian dessert prepared by fermentation of milk. It is semi solid and known for its sweet sour taste and therapeutic value. In Gujarati cuisine, shrikhand is eaten as either a side-dish with breads such as poori (usually "khaajapoori", which is savory fried flaky bread) or as a dessert. It is commonly served as part of a vegetarian thali in Gujarati restaurants and is popular as part of wedding feasts. It is often served chilled as a counterpoint to hot and spicy curries. Dried and fresh fruit such as mango are also added.

### Ginger

Ginger has a spicy aromatic taste and smell. It has been increasing interest in the use of natural food additives and the incorporation of health promoting substances into the diet. In ginger there are large number of nutrients, such as amino acids, starch, vitamin, Phenolic

compounds and gingerols etc. Therefore ginger can be used in detoxification, anti-tumour, enhance immune function etc. (Sharma *et al.*, 1996) [14].

### Lemongrass

Lemongrass (*Cymbopogon flexuosus*) has therapeutic properties included relief of rheumatic and other pain and healing effect on ulcers. Flavonoids extracted from lemongrass are of considerable interest as natural plant components with antioxidant and antifungal activity. It is having flavourful leaves. It yields aromatic oil that is used as flavouring, and perfumery and medicine. Herbal tea of lemon grass is used as immune stimulant in India. The extract acts as a good appetizer and at the same time makes the products more palatable and acceptable to a large group of consumers. Lemongrass has been used in several food stuffs including baked and confections. It is widely used as an essential ingredient in Asian cuisines due to its sharp lemon flavour. Herbal tea of lemon grass is used as immune stimulant in India. The extract acts as a good appetizer and at the same time makes the products more palatable and acceptable to a large group of consumers.

### Materials and Methods

#### Procurement of raw materials

##### Milk

Whole milk was collected from the local market of Allahabad and standardized to (6% fat and 9% SNF). All the primary operations like filtration, clarification was carried out.

#### Preparation of Ginger Juice

Fresh ginger juice was prepared by washing ginger with

clean water and the skin is removed with the help of knife. The ginger rhizomes were then rewashed and chopped into small sizes for blending and the juice was extracted by a juicer and filtered with a clean muslin cloth. The juice was stored in glass bottle in a refrigerator at 2 °C. Nikhil *et al.*, (2018) [10].

#### Preparation of lemongrass juice

Fresh lemongrass leaves were collected from horticulture department of SHUATS, Allahabad. Leaves of lemongrass was washed thoroughly and kept for drying. Dried leaves of lemongrass were grinded in a grinder to make a powder. Juice of lemongrass leaves were prepared by boiling the powder material at solid: liquid ratio 1:10 with distilled water for 5 minutes. The vessel containing the solution was then covered and removed from the heat and allowed to cool for 5 minutes. The herbal material and liquid was then strained through cheese cloth and the resulting juice placed into 100 ml reagent bottles which had been kept for use. (Shaaban *et al.*, 2010) [15].

#### Treatment Details

T<sub>1</sub> = Shrikhand with 1% Ginger + 2.5% Lemongrass

T<sub>2</sub> = Shrikhand with 1% Ginger + 2.5% Lemongrass

T<sub>3</sub> = Shrikhand with 1% Ginger + 2.5% Lemongrass

T<sub>4</sub> = Shrikhand with 3% Ginger + 4.5% Lemongrass

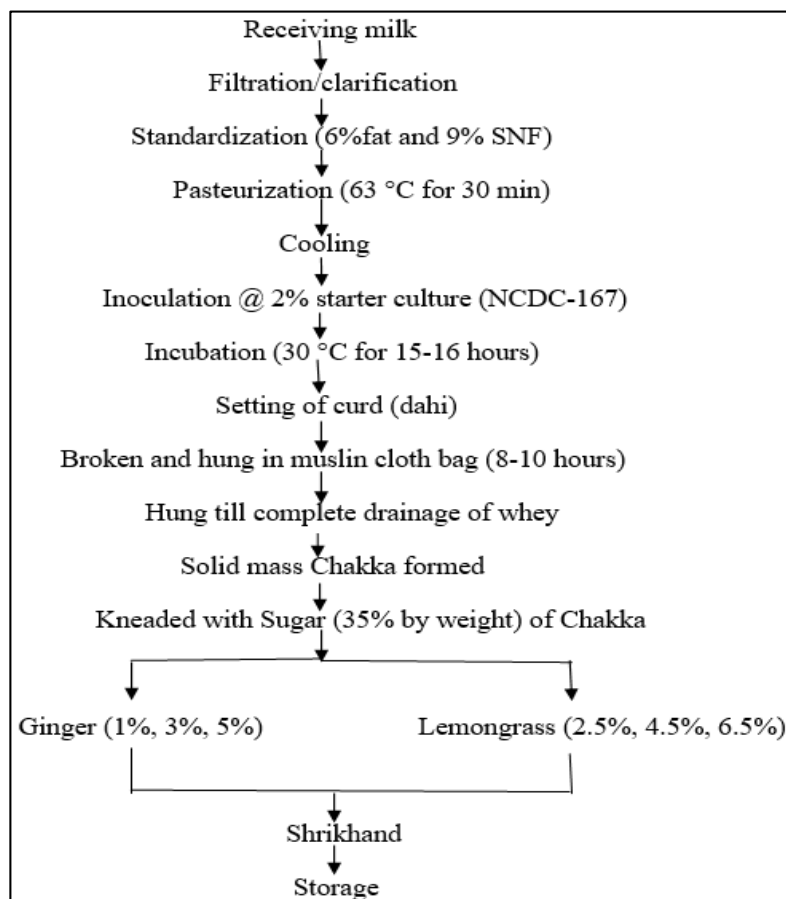
T<sub>5</sub> = Shrikhand with 3% Ginger + 4.5% Lemongrass

T<sub>6</sub> = Shrikhand with 3% Ginger + 4.5% Lemongrass

T<sub>7</sub> = Shrikhand with 5% Ginger + 6.5% Lemongrass

T<sub>8</sub> = Shrikhand with 5% Ginger + 6.5% Lemongrass

T<sub>9</sub> = Shrikhand with 5% Ginger + 6.5% Lemongrass



Flow diagram adopted for manufacturing of experimental product

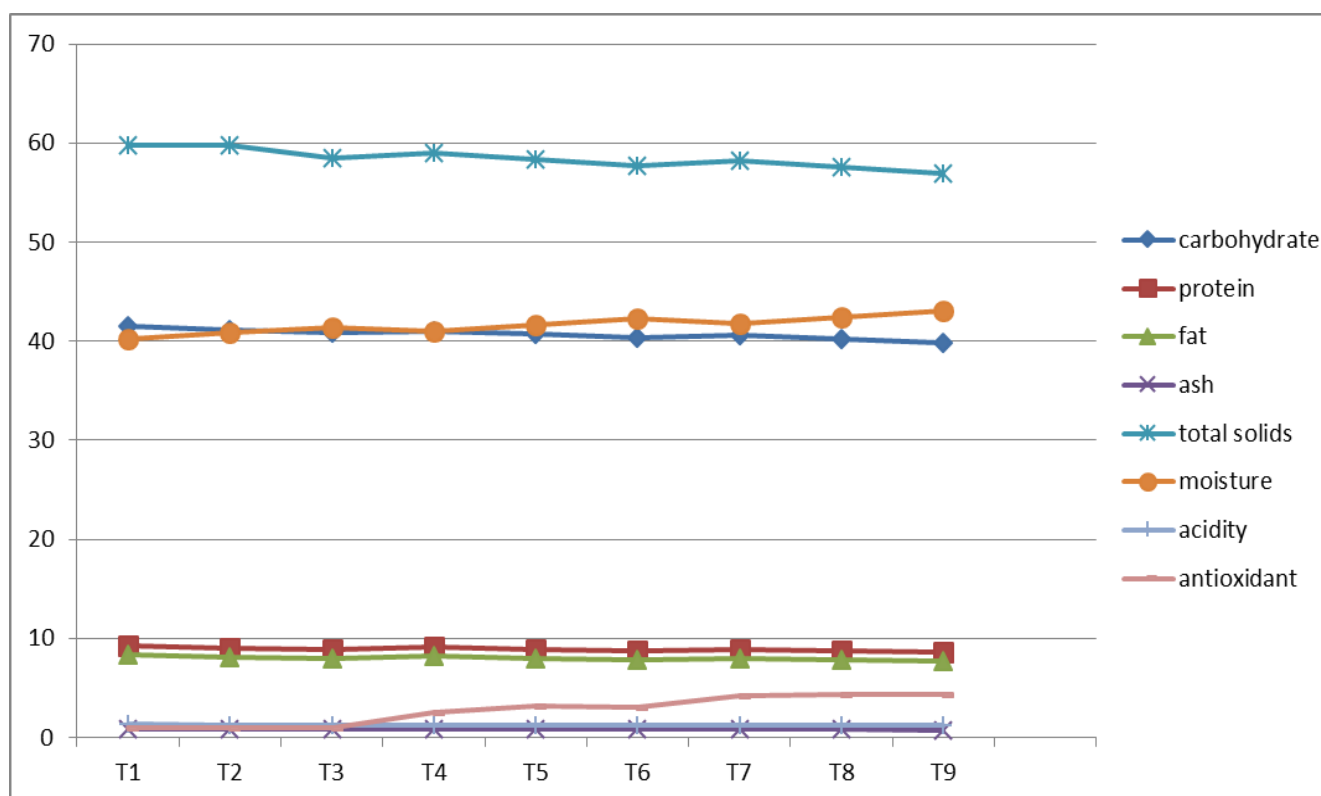
## Results and Discussion

**Table 1:** Physico-chemical and Antioxidant analysis of Shrikhand

Parameters	Carbohydrate	Protein	Fat	Ash	Total Solids	Moisture	Acidity	Antioxidant
T <sub>1</sub>	41.53	9.23	8.32	0.83	59.81	40.18	1.29	0.9
T <sub>2</sub>	41.19	9.06	8.13	0.84	59.83	40.81	1.26	0.91
T <sub>3</sub>	40.86	8.93	8.00	0.87	58.55	41.44	1.21	1.02
T <sub>4</sub>	40.99	9.07	8.16	0.83	59.02	40.98	1.26	2.53
T <sub>5</sub>	40.71	8.92	7.99	0.84	58.39	41.61	1.25	3.23
T <sub>6</sub>	40.37	8.77	7.84	0.87	57.75	42.24	1.22	3.04
T <sub>7</sub>	40.55	8.91	8.00	0.83	58.21	41.78	1.26	4.24
T <sub>8</sub>	40.22	8.76	7.83	0.84	57.58	42.41	1.23	4.29
T <sub>9</sub>	39.89	8.62	7.68	0.73	56.95	43.04	1.20	4.33
Mean	40.70	8.92	7.99	0.83	58.45	41.61	1.24	2.72
C.D Value	0.024	0.038	0.025	0.034	0.024	0.041	0.030	0.02
Result	S	S	S	S	S	S	S	S

\*Significant at 5% level (S)

\*\*Non-Significant at 5% level (NS)



**Fig 1:** Physico-chemical and Antioxidant Analysis

### Conclusion

Based on above results it may be concluded that shrikhand enriched with Ginger and lemongrass was very well utilized. In our study treatment T<sub>9</sub> (5% Ginger with 6.5% Lemongrass) was analysed hence, increased antioxidant and physiochemical properties as well as nutritional and therapeutic value of shrikhand were considered as acceptable shrikhand and used for further study.

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