



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.03

TPI 2018; 7(6): 100-102

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www.thepharmajournal.com

Received: 21-04-2018

Accepted: 23-05-2018

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## Process optimization of herbal shrikhand by incorporating tulsi and turmeric powder

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### Abstract

Awareness about nutrition in food and it promote the consumer demand for high nutritive value product. The present fact finding was carried out to valuation by the adding Tulsi and turmeric powder into Shrikhand honey used as sweetener. Ratio of Tulsi and turmeric powder@ 0.3, 0.4, 0.5 and 0.3, 0.5, 0.7 and 35% honey used as sweetener. Shrikhand samples of different treatment were analyzed for fat percent lactic acid percent, protein percent, moisture, total solid percent and organoleptic characteristics like flavor, taste, appearance, consistency, color & overall acceptability and microbiological characteristics like yeast, molds, & coli form count Shrikhand contains a good amount of milk protein and phospholipids and is obtained by lactic acid fermentation and the microorganisms involved in this action are lactobacillus bulgaricus, streptococcus lactis, streptococcus diacetyl lactis and streptococcus thermophilus, Tulsi. The sensory evaluation revealed that 70% of the panelist extremely like T<sub>2</sub> combination as compared T<sub>3</sub> and T<sub>4</sub>. The samples were stored at 7 degree Celsius and sensory and microbiological activity evaluated at regular interval.

**Keywords:** Chakka, shrikhand, shelf life

### Introduction

In India, almost 50-55% of milk is converted to variety of milk products using any of the following processes such as coagulation, desiccation and fermentation. Fermented milk products occupies a good place in Indian diet such products may include products like Dahi, Lassi, Shrikhand etc. Shrikhand is prepared by fermentation of milk by using few known strains of lactic acid bacteria, Shrikhand is a indigenous fermented milk product prepared by the process of fermentation using known strains of lactic acid bacteria. A lactic acid bacterium refers to a large group of beneficial bacteria that are having similar properties. It is used as a sweet dish. Honey is used as a sweetening agent and few additives to enhance its flavors and medicinal properties like Tulsi, turmeric. Lactic acid bacteria acts as a probiotic, are widespread in nature and are also found in our digestive system. Lactic acid bacteria are therefore excellent ambassadors for a microbial world. The technology of application of probiotic organisms in fermented products consist of potential health benefits along with their ability to grow in milk, resulting in a nutritious and healthy products. The obtained from Shrikhand was tested for Milk is an excellent medium to carry live and active cultured dairy products. The aim of carrying probiotic organisms in dairy products is to provide a nutritionally healthy and desirable product for the consumers. The reason to add herbs like Tulsi in Shrikhand that it can address physical, chemical, metabolic and psychological stress through a unique combination of pharmacological actions. It works to counter metabolic stress through normalization of blood glucose levels and psychological stress through positive effect on memory and cognitive function through its anti-depressant properties. Ingredient Turmeric is one of the cheapest spice and has antiseptic properties. It is used to treat digestive problems, fighting infections and some cancers. Tulsi has been found to be mounted evidence that it can address physical, chemical, metabolic and psychological stress through a unique combination of pharmacological action and broad spectrum antimicrobial activity. Honey has been known to possess anti-microbial and wound healing properties. It has been used as a natural sweetener. The antimicrobial activity in most honeys is due to the enzymatic production of hydrogen peroxide. Fermentation occurs by the help of lactobacillus bulgaricus, streptococcus lactis, streptococcus diacetyl lactis and streptococcus thermophilus.

**Material and method**

Tulsi and Turmeric are very powerful herb used in *Ayurveda medicine* and other traditional medical treatments for thousands of years.

Fresh cow milk was taken for curd preparation and fresh culture taken from Daver Research dairy section was stored at 5 °C in a refrigerator and all work that should have done to prevent contamination was complete. PATANJLI brand honey is taken for preparation of herbal Shrikhand.

**Treatment details**

For the preparation of *Shrikhand* by blending with Tulsi and Turmeric powder, the following treatment combination was taken for study.

T0: *Shrikhand* prepared from Chakka + 40% Sugar

T1: *Shrikhand* prepared from Chakka + 35% Honey

T0= Control Sample

**Table 1:** Treatment combination of Tulsi and Turmeric

A <sub>1</sub> =0.3 % Tulsi powder	B <sub>1</sub> = 0.3% Turmeric powder
A <sub>2</sub> = 0.4% Tulsi powder	B <sub>2</sub> = 0.5% Turmeric powder
A <sub>3</sub> =0.5% Tulsi powder	B <sub>3</sub> = 0.7% Turmeric powder

**Treatment details**

For the preparation of *Shrikhand* by blending with Tulsi and Turmeric powder, the following treatment combination was taken for study.

**Treatment combination**

T0: *Shrikhand* prepared with 100% packed milk.

T1: Addition of 0.3% Tulsi powder in *Shrikhand* on the basis of Chakka.

T2: Addition of 0.4% Tulsi powder in *Shrikhand* on the basis of Chakka.

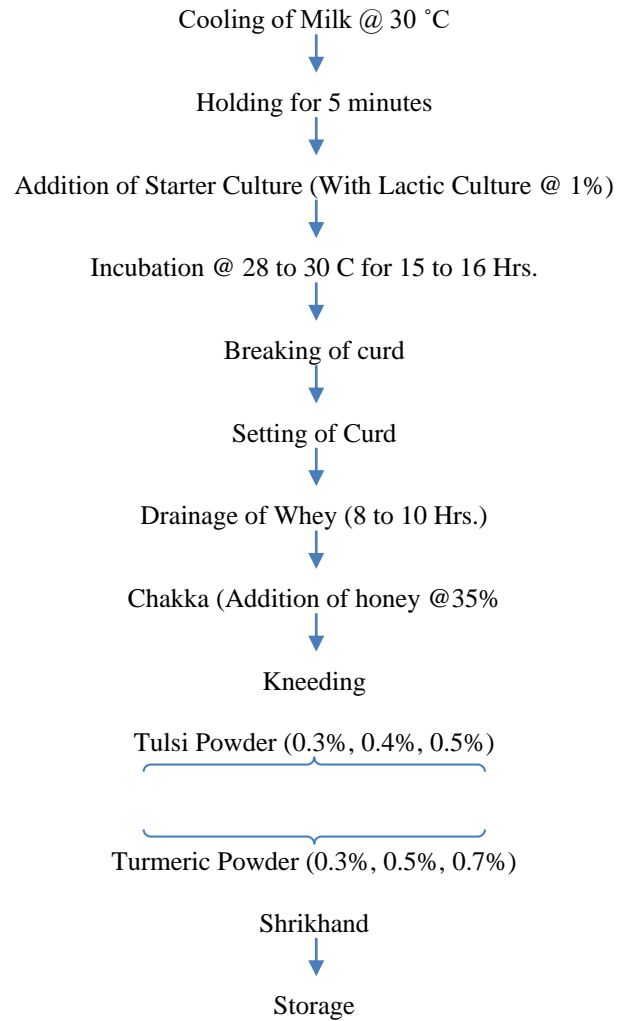
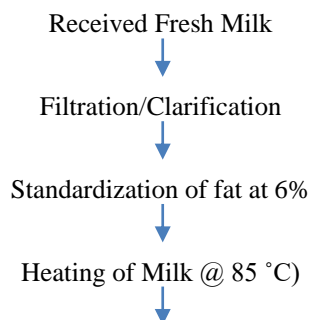
T3: Addition of 0.5% Tulsi powder in *Shrikhand* on the basis of Chakka.

T1: Addition of 0.3% Turmeric powder in *Shrikhand* on the basis of Chakka.

T2: Addition of 0.5% Turmeric powder in *Shrikhand* on the basis of Chakka.

T3: Addition of 0.7% Turmeric powder in *Shrikhand* on the basis of Chakka.

**Herbal Sample**



**Detail of experimental technique will be as follows**

**Procurement of ingredients**

- Turmeric powder will be collected from the local market
- Tulsi powder will be collected from the local area.
- Milk will be collected from the local market.
- Honey will be collected from the local market.

**Chemical Analysis of control and experimental Shrikhand**

- Fat percentage
- Protein percentage
- Moisture percentage
- Ash percentage

**Microbiological Analysis (At an interval of 0, 5, 10 and 15 days)**

- SPC
- Coli form test
- Yeast & Mould count

**Table 2:** Summary of Analysis

Sample	Nutritional Content in Herbal Shrikhand									
	Moisture	Carbohydrate	Protein	Fat	Total Sugar	Ash	Titration Acidity	Total Plate Count	Yeast & Mould	Coliform
Control Sample	35.11	1.09	5.79	12.40	1.09	0.88	0.9	7.40	3.01	0
Trial 1	49.16	1.07	6.12	12.33	1.11	0.89	1.09	7.41	4.01	0
Trial 2	49.26	1.08	6.01	12.34	1.19	0.87	1.03	7.5	3.90	0
Trial 3	49.10	1.09	6.10	12.37	1.12	0.86	1.04	7.51	3.89	0

### Compositional analysis

The Shrikhand was analysed for total solids, fat, protein, carbohydrate, ash and titrable acidity. The fat percentage of Shrikhand was determined as per procedure laid down in IS: 1166-1973. Determination of protein was done as per the procedure suggested by Maneffee and Overman (1940). Determination of carbohydrate was done according to SP: 18, Part XI, 1981. Determination of ash content was done as per the procedure laid down in IS: 5962, 1970. Determination of titrable acidity was done according to IS: 1166-1973. As per compositional analysis honey little increase moisture content as compared to control sample.

### Results and Discussion

#### Quality of Shrikhand

##### Physical parameters

The score of colour & appearance, consistency, flavour & tastes as well as the overall acceptability of different types of Shrikhand were compared. It was observed that the individual and total score of physical parameters were significantly changed when Tulsi and Turmeric added in Shrikhand. These properties could further be change significantly. The result of this experiment shows that physical properties of Herbal Shrikhand was higher than the at of control Shrikhand.

**Table 3:** Sensory Evaluation of Herbal Shrikhand

Sample	Sensory Evaluation of Herbal Shrikhand					
	Appearance	Color	Taste	After Taste	Mouth Feel	Overall Acceptability
Control Sample	8	8	8	8	8	8
Trial 1	3	4	3	3	4	4
Trial 2	8	8	9	9	9	8
Trial 3	4	5	3	6	4	4

### Chemical parameters

The total solids (%), fat (%), protein (%), carbohydrate (%), ash (%) and acidity (%) of different types of Shrikhand were compiled in Table 2. A significantly change in trend was observed in the fat, protein, carbohydrate and ash content of Shrikhand change level of the Tulsi and Turmeric

combination. The probable major change in moisture content with control sample due to the higher moisture content in honey. Shrikhand prepared by using medicinal herbs. Similar observations were also reported in papaya pulp incorporated Shrikhand (Nigam *et al.* 2009) <sup>[5]</sup>.

**Table 3:** Microbial attributes of herbal Shrikhand

Treatments	SPC (*104 CFU/gm)				Yeast and mould (per gm)				Coliform
	0 days	5 days	10 days	15 days	0 days	5 days	10 days	15 days	
T <sub>0</sub>	7.40	51.60	101.80	0.00	0.00	5.40	18.40	0.00	0.00
T <sub>1</sub> A <sub>1</sub> B <sub>1</sub>	4.40	38.40	46.20	59.60	0.00	3.20	7.80	16.80	0.00
T <sub>1</sub> A <sub>1</sub> B <sub>2</sub>	4.00	27.80	42.40	58.80	0.00	1.80	6.80	14.60	0.00
T <sub>1</sub> A <sub>1</sub> B <sub>3</sub>	3.40	24.20	38.60	57.20	0.00	0.60	4.60	9.20	0.00
T <sub>1</sub> A <sub>2</sub> B <sub>1</sub>	4.80	32.20	48.20	61.80	0.00	2.40	7.20	14.20	0.00
T <sub>1</sub> A <sub>2</sub> B <sub>2</sub>	4.40	30.20	44.60	59.20	0.00	1.00	6.20	12.60	0.00
T <sub>1</sub> A <sub>2</sub> B <sub>3</sub>	3.60	24.80	34.60	58.00	0.00	0.40	5.60	11.40	0.00
T <sub>1</sub> A <sub>3</sub> B <sub>1</sub>	3.20	22.60	31.20	56.00	0.00	0.00	3.80	8.00	0.00
T <sub>1</sub> A <sub>3</sub> B <sub>2</sub>	4.40	24.80	45.40	60.60	0.00	1.00	4.80	11.80	0.00
T <sub>1</sub> A <sub>3</sub> B <sub>3</sub>	3.80	23.40	38.20	58.40	0.00	0.20	4.20	9.60	0.00
T <sub>1</sub> A <sub>1</sub> B <sub>1</sub>	3.00	16.60	32.80	57.20	0.00	0.00	3.40	7.00	0.00
T <sub>1</sub> A <sub>2</sub> B <sub>2</sub>	2.60	8.60	35.20	55.20	0.00	0.00	3.20	5.40	0.00
T <sub>1</sub> A <sub>3</sub> B <sub>3</sub>	3.80	17.00	40.60	58.80	0.00	0.40	3.20	7.20	0.00

### Microbiological Analysis

As per microbiological study herbal Shrikhand acceptable for 10-days. After 15 days study product get more spoilage because curd is a perishable product easily grow microbes in under refrigerated condition. Product shelf life acceptability less as compared to other product.

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