



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; SP-11(6): 2659-2662
© 2022 TPI
www.thepharmajournal.com
Received: 19-04-2022
Accepted: 22-05-2022

Sanket Chopade
School of Agriculture,
Lovely Professional University,
Phagwara, Punjab, India

Ajay Gavhane
School of Agriculture,
Lovely Professional University,
Phagwara, Punjab, India

Mahendra Gunjal
School of Agriculture,
Lovely Professional University,
Phagwara, Punjab, India

Corresponding Author
Sanket Chopade
School of Agriculture,
Lovely Professional University,
Phagwara, Punjab, India

Shrikhand: Nutritional composition, types and associated health benefits

Sanket Chopade, Ajay Gavhane and Mahendra Gunjal

Abstract

Shrikhand is a semi-soft, sweetish-sour Indian dairy dish that is made with whole milk. It is popular in Gujarat, Maharashtra, and some parts of Karnataka, Madhya Pradesh, and Rajasthan. To prepare chakka, roughly mix strained curd/yoghurt with sugar and flavouring seasonings. Shrikhand has a significant nutritional content, as well as a nice aroma, flavour and therapeutic potential. It aids the digestive system by strengthening the immune system. The objective of this review article is to describe how Shrikhand is important into our diet as a healthy supper.

Keywords: Shrikhand, chakka, dairy, nutritional, therapeutic potential

1. Introduction

Functional foods are gaining popularity in the food industry because they have been shown to improve human health. Because of their nutritious importance, dairy products are projected to remain key dietary components in the future, making the dairy business particularly vital to the Indian economy. Lactic acid fermentation is used to make it. Chakka is produced by combining strained yoghurt/curd, sugar, and other ingredients in a coarse blender. It's nutrient-dense, just like fermented milk products. It's refreshing, similar to Dahi (curd), and especially good in the heat. It's popular because to its distinct flavour, taste, and edible qualities, as well as the possibility of therapeutic benefits. (Yadav *et al.*, 2018) [26]. Traditional dairy products prepared in India via coagulation, desiccation, and fermentation include ghee, makkhan (33%), dahi/yoghurt/Shrikhand (7%), khoa (7%), and chhana/paneer (3%). (Pugazhenthii *et al.*, 2020) [18]. Shrikhand, is a semisolid light, sweetish sour fermented dairy product, was created in response to contemporary consumer demands for decreased or low-fat diets that can help to lower the risk of chronic degenerative diseases. (Sharma *et al.*, 2021)

Shrikhand is a well-known fermented milk product known for its flavour and medicinal benefits. Shrikhand has a considerable quantity of milk protein and phospholipids and is created from lactic acid fermentation by *Lactobacillus bulgaricus*, *Streptococcus lactis*, *Streptococcus diactylactis*, *Lactobacillus citrovorum*, and *Streptococcus thermopiles*. (Gupta *et al.*, 2018) [7]. Shrikhand is well-known in the western region of India's southern peninsula. The product with historical records is gaining appeal in other nations, in addition to the United States. Protein, vitamins, and minerals abound in this dish. (Hole *et al.*, 2017) [8]. Dahi (curd), Shrikhand (sweetened concentrated curd), and lassi (stirred curd) are three popular fermented milk products in India that are similar to yoghurt, quarg, and stirred yoghurt in the West. The nutritional and therapeutic significance of Dahi and Shrikhand has long been acknowledged. (Sarkar *et al.*, 2018) [22].

Shrikhand is made by blending chakka with 50-100 percent sugar. Despite Shrikhand's popularity and growing market in India and beyond, organised marketing choices are limited due to a lack of systematic packaging and shelf life studies. (Khojare *et al.*, 2018) [11]. Today's shoppers are looking for foods that promote good health and disease prevention. Low-fat fermented foods are advised as part of a balanced diet for those with obesity and cardiovascular disease because they help the human body produce vitamin B complex and avoid gastrointestinal issues. (Singh *et al.*, 2017) [23]. Fermented foods have long been recognized for their nutritional and therapeutic properties, and they play an important role in the creation of the vitamin B complex in the human body. These products also protect stomachic problems since certain lactic organisms produce natural antibiotics. (Devi *et al.*, 2018) [5]. Curd is particularly nutritious because to the increased vitamin content due to the employment of certain cultures in its production.

Yogurt is good for avoiding bacterial growth and digestive ailments such as constipation, diarrhea, and dysentery. It has a longer shelf life than milk and curd. Yogurt aids in the reduction of blood cholesterol levels. (Mane *et al.*, 2017) [14]. The objective of this review article is to study the nutritional profile of Shrikhand and different fruit pulp added in Shrikhand.

1.1 History of Shrikhand

Shrikhand is a fermented and sweetened milk product from India, derived from the Sanskrit word 'shrikhirmi,' which means sugared curd. It is popular in Gujarat, Maharashtra, and

some parts of Karnataka, Madhya Pradesh, and Rajasthan. Its distinctive sweet-sour flavour, on the other hand, is gaining appeal in other parts of the country. Shrikhand has a semi-solid consistency, smoothness, firmness, and palatability, making it ideal for snacking or eating with 'puree' or bread right after a meal. (Jaybhai *et al.*, 2019) [9].

2. Nutritional Composition of Shrikhand

The Nutritional composition of Shrikhand shown in (Table no.1) and mineral composition of Shrikhand shown in (Table no. 2)

Table 1: Nutritional composition of Shrikhand

Sr. No.	Parameter	Amount	Reference
1.	Carbohydrates	30 to 32%	Srinivas <i>et al.</i> , (2017) [24]
2.	Protein	7 to 8%	Singh <i>et al.</i> , (2017) [23]
3.	Total soluble solid	55 to 60 brix	Dhotre <i>et al.</i> , (2017) [6]
4.	Fat	12 to 14%	Ojha <i>et al.</i> , (2018) [17]
5.	Moisture	39 to 41%	Kushwaha <i>et al.</i> , (2019) [13]
6.	Titration acidity	0.70 to 0.90	Kumar <i>et al.</i> , (2019) [12]
7.	Ash	0.70 to 0.85%	David <i>et al.</i> , (2015) [2]

3. Different Flavoured Shrikhand

3.1 Apple fruit pulp incorporated in Shrikhand

Sahu *et al.*, (2021) [20] make goat milk shrikhand by including apple fruit pulp into the chakka at 15, 20, and 25% apple fruit pulp concentrations. Apple fruit pulp with a concentration of 25% was found to be acceptable. Fruits are essential components of human life since they are high in macro and micronutrients and provide fibre. The addition of apple fruit pulp increased the consistency, cohesiveness, and work of cohesion of goat milk shrikhand while also masking the goaty flavour. Orange peel extract incorporated Shrikhand.

3.2 Orange pulp extract incorporated Shrikhand

Pugazhenthii *et al.* (2020) [18] perform the functional shrikhand by incorporating aqueous and ethanol extracts of fresh, dried orange fruit peels at various concentrations. When the functional shrikhand with 20% aqueous and 15% ethanol extracts of fresh and dried orange fruit peels was compared to the control, it was discovered that the functional shrikhand with 20% aqueous and 15% ethanol extracts of fresh and dried orange fruit peels was the best. It was discovered that aqueous extracts (20%) of fruit peels with shrikhand can be used as a value-added functional dairy product in the human diet. Shrikhand is a traditional fermented milk product made from chakka that has a pasty texture and a moderate sweetish sour flavour. Fruit peel extracts added to the shrikhand would provide value not only in terms of diversity, but also in terms of healthfulness. The technology packages for such food products also encourage the efficient utilisation of fruit waste.

3.3 Shrikhand by blending papaya and banana pulp

According to Gupta *et al.*, (2018) [7] Shrikhand is prepared by

blending papaya and banana pulp. Shrikhand was prepared with whole milk chakka, varied levels of papaya and banana pulp, and varying levels of sugar (30 percent by weight of chakka) at the rate of quantity of chakka 50, 40, and 30% treatment. The use of whole milk, as well as the addition of papaya and banana to the blended Shrikhand, resulted in an excellent recipe. Shrikhand from treatment T1 was found to have the best organoleptic features and received the highest organoleptic score (colour & appearance, body & texture, flavour & taste, overall acceptability). Date pulp incorporated Shrikhand

3.4 Date pulp incorporated Shrikhand

Deshmukh *et al.*, (2022) [4], investigated date pulp incorporating shrikhand at three different levels of date pulp: 10%, 20%, and 30%. Date pulp is a type of fruit that can improve the nutritional and compositional quality of food while also enhancing, conserving, and expanding the functions of food. The date pulp might be utilised to produce shrikhand successfully. It aids in the functional, nutritional, and storage properties of the product.

3.5 Shrikhand production from soymilk

Soymilk, is a popular non-dairy milk alternative made from nutritious soybeans, is a popular non-dairy milk substitute. Soyshrikhand is a low-cost, high-protein, versatile soybean-based cuisine. Soyshrikhand contains more protein and has less fat than buffalo milk shrikhand. The goal of this research was to investigate whether there was a way to use coagulation, desiccation, and fermentation to generate soymilk and transform it into a product (Kadam *et al.*, 2016) [10].

4. Health benefits Associated to Shrikhand

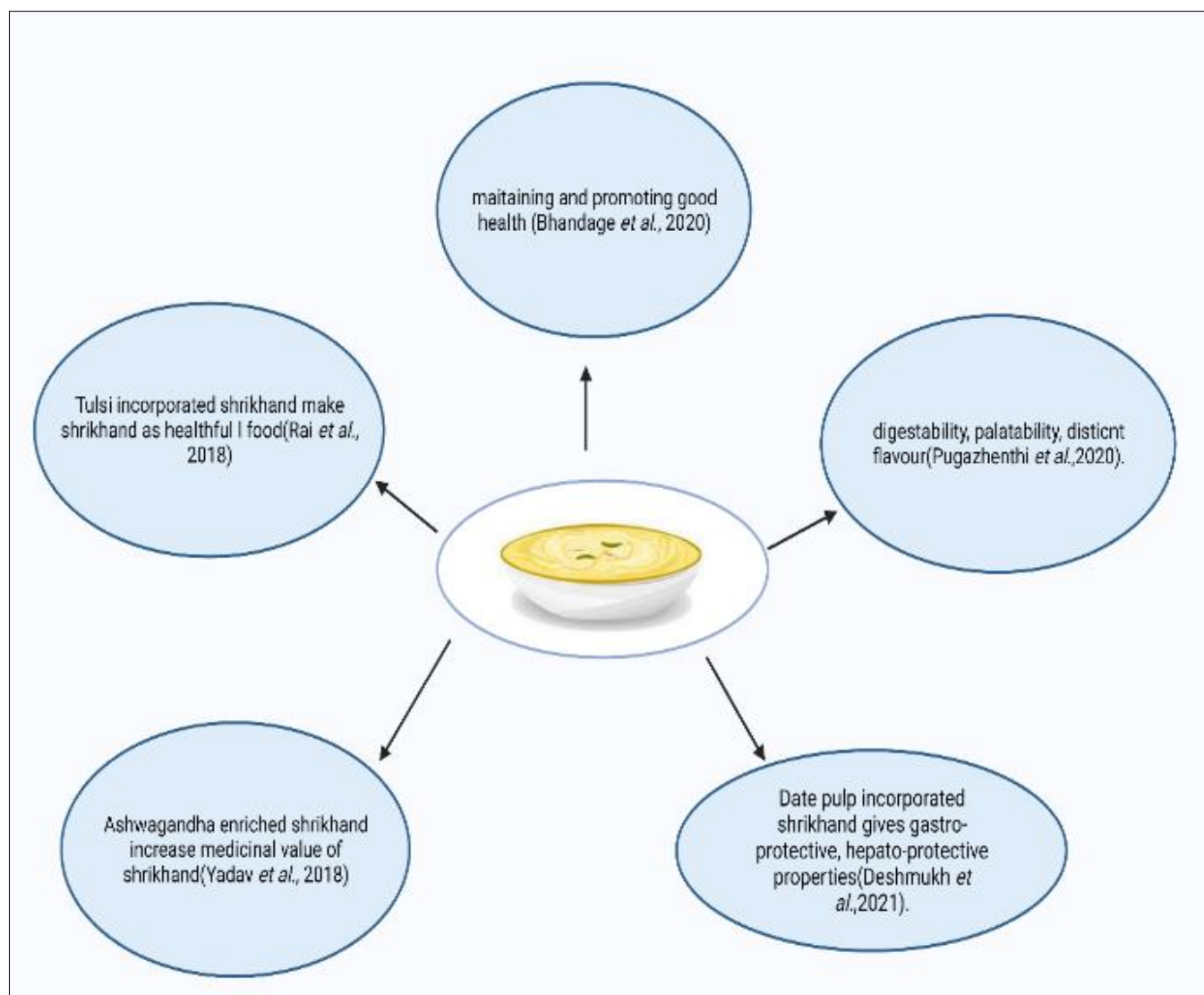


Fig 1: Associated Health benefits of Shrikhand

Shrikhand is made by fermenting milk with lactic acid bacteria. These lactic acid bacteria are well-known for their role in the fermentation of dairy products, but they can also serve as excellent ambassadors for the microbial world, which is frequently misunderstood. They are crucial not only for economic reasons, but also for maintaining and increasing human health. Lactic acid bacteria help to lower cholesterol levels in the bloodstream while also increasing vitamin B levels in the product. (Bhandage *et al.*, 2020) ^[1].

Shrikhand is a fermented milk product with a number of advantages over fluid milk, including ease of digestion and palatability, distinct flavour, richness, delicacy, variety, and a longer shelf life. Pomegranate fruit peel includes phytochemicals, which make food more functional and beneficial to health by acting as an antioxidant, anti-cancer, and anti-inflammatory agent. (Pugazhenthil *et al.*, 2020) ^[18].

Tulsi extract, which is found in shrikhand, can help us with a range of health issues, including preventing diabetes, protecting the heart, decreasing stress, dissolving kidney stones, preventing cancer, quitting smoking, keeping our skin healthy and radiant, and repairing respiratory diseases. Tulsi is used to make Shrikhand, a healthful food. (Rai *et al.*, 2018) ^[26]

Functional foods is essential for maintaining one's health and

providing the nutritional requirements of the body. Food with functional components could be added to increase customer desire and acceptability. The ashwagandha augmented shrikhand has a high protein, ash, total solids, acidity, and fat content. Medically relevant herbs in food products are not readily accepted due to their bitter taste and ugly look. Incorporating whole herbs into culinary goods may result in undesirable dietary effects. Botanical extracts with active components could be a preferable option for nutraceutical foods. (Yadav *et al.*, 2018) ^[26].

Date pulp in shrikhand offers a wide range of therapeutic effects, including antihyperlipidemic, anticancer, gastro-protective, hepato-protective, and nephro-protective properties, in addition to antioxidant, antimutagenic, and immune-modulatory properties. (Deshmukh *et al.*, 2021).

5. Conclusion

Shrikhand has a high nutritional content, flavour, taste, pleasant quality, and potential health benefit, regardless of whether it is produced from curd or yoghurt. Shrikhand is a refreshing Indian fermented dairy dish that strengthens the immune system while also improving digestion. We may infer that shrikhand is a health food based on all of the above nutritional benefits.

6. References

1. Bhandage BB, Chavan KR, More NM. Physico-chemical evaluation of Shrikhand by using kiwi (*Actinidia deliciosa*) fruit pulp. *Journal of Pharmacognosy and Phytochemistry*. 2020;9(6):661-663.
2. David J. Preparation of herbal Shrikhand prepared with basil (*Ocimum basilicum*) extract. *The Pharma Innovation*. 2015;4(8B):81.
3. Deshmukh AP, Padghan PV, Shinde SP. Effect of rose petal powder on shelf life of Shrikhand. 2019.
4. Deshmukh MS, Padghan PV, Jadhav SB. Studies of Physico-chemical properties of date pulp added Shrikhand. 2022.
5. Devi R, Khanna N, Vaquil AA, Ahlawat SS. Utilization of soy milk in strawberry pulp based Shrikhand for development of a novel fermented milk product. *The Pharma Innovation Journal*. 2018;7(4):91-93.
6. Dhotre AV, Bhadania AG. Acceptability of thermized Shrikhand during storage at ambient temperature (37 ± 2 C). *Indian Journal of Dairy Science*. 2017;70(6):665-673.
7. Gupta G, David J, Shukla G, Dubey S, Shukla A. Studies on quality of Shrikhand by blending papaya and banana pulp. *The Pharma Inno J*. 2018;7(8):415-417.
8. Hole DV, Kahate PA, Shelke RR, Ingle ST, Khandare NO. Studies on keeping quality of Shrikhand prepared from cow milk blended with unripe banana. *Asian Journal of Dairy and Food Research*. 2017;36(1):26-29.
9. Jaybhay VB, Kamble DK, Jadhav SR. Studies on physico-chemical quality of Shrikhand sold in Kolhapur city. *Journal of Pharmacognosy and Phytochemistry*. 2019;8(6):2436-2438.
10. Kadam GP, Narawade SR, Mahale MP. Production of Shrikhand from soymilk and chemical analysis of their product. *International J. of researches in bio sciences, agr & technology*. 2016;4(1):6-9.
11. Khojare AS. Moisture sorption characteristics of Shrikhand at 20 °C and 30 °C. *Indian J Dairy Sci*. 2018;71(4):381-388.
12. Kumar D, Rani R, Wasnik P, David J, Kumar S. Development of evaporated milk Shrikhand and vitamin C enrichment by using Malta orange juice. *IJCS*. 2019;7(5):2331-2338.
13. Kushwaha S, Shukla S. Studies on quality parameters of Shrikhand prepared using kiwi fruit pulp. *Journal of Pharmacognosy and Phytochemistry*. 2019;8(5):466-469.
14. Mane R, Padghan P, Patil S, Patil R. Studies on physico-chemical properties of Shrikhand from buffalo milk blended with sweet corn milk. *Asian Journal of Dairy and Food Research*. 2017;36(4):295-297.
15. Ms Prija P, Ms Akhila V, Ms Grace AT, Rahila M. Effect of Saffron wood Extract and Saffron on Physico Chemical, Microbial and Organoleptic Properties of Shrikhand. *Chemical Analysis*, 14, 16.
16. Narayanan R, Lingam J. Sensory analysis of banana blended Shrikhand. *African Journal of Agricultural Research*. 2013;8(44):5518-5521.
17. Ojha N, Chandra R, Rathor K, Satwani D, Kumar A, Srivastava S. Process optimization of herbal Shrikhand by incorporating tulsi and turmeric powder. *The Pharma Innovation Journal*. 2018;7(6):100-102.
18. Pugazhenthii TR, Agalya A, Bharathidhasan A, Elango A. Development of functional Shrikhand incorporated with orange peel extracts and its sensory evaluation. *Journal of Pharmacognosy and Phytochemistry*. 2020;9(2):2120-2124.
19. Pugazhenthii TR, Agalya A, Sowmya V, Elango A, Jayalalitha V. Preparation of functional Shrikhand with pomegranate fruit peel extracts. *Pharmacognosy and Phytochemistry*. 2020;9(2):2416-2424.
20. Sahu V, Pathak V. Development and comparison of goat milk Shrikhand with apple fruit pulp Shrikhand prepared with goat milk. 2021.
21. Sameem M, Singh A, Hossain SA. Studies on preparation of Shrikhand by using dragon fruit pulp. *The Pharma Innovation Journal*. 2018;7(8):455-458.
22. Sarkar S, Sur A, Sarkar K, Majhi R, Chatterjee K, Sikder B, *et al*. Process standardization for the manufacture of Shrikhand spread. *Journal of Nutritional Therapeutics*. 2018;7(1):22-30.
23. Singh SB, Kumar P. Study of wood apple blended Shrikhand. *The Pharma Innovation*. 2017;6(3B):77.
24. Srinivas J, Suneetha J, Maheswari KU, Kumari BA, Devi SS, Krishnaiah N. Nutritional analysis of value added Shrikhand. *Journal of Pharmacognosy and Phytochemistry*. 2017;6(5):1438-1441.
25. Thakur SN, Kant R, Chandra R. Preparation of Shrikhand by using mango pulp. *Bioved*. 2014;25(1):79-82.
26. Yadav AK, Rai DC. Comparative study of the physico-chemical and functional properties of Ashwagandha root extract enriched Shrikhand and control Shrikhand during storage. *Journal of Pharmacognosy and Phytochemistry*. 2018;7(2):1172-1179.