

# “Comparative study of nutritional composition of soya and coconut milk based orange flavored shrikhand”

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## Abstract -

In recent years soya milk and coconut milk have gained importance as functional foods. A study was concluded to evaluate nutritional quality of soya and coconut milk orange flavored shrikhand. Soya and coconut milk orange flavored shrikhand was prepared and nutritional properties was evaluated in terms of moisture, ash, protein, carbohydrate, citric acid, fat, vitamin C and crude fiber in soya milk orange flavored shrikhand were 45.1%, 0.81%, 8.21%, 37.24%, 0.67 g, 8.63 %, 56.44 mg and 0.95 g. Average content of moisture, ash, protein, carbohydrate, citric acid, fat, vitamin C and crude fiber in Coconut milk orange flavored shrikhand were 49.64 %, 0.48 %, 7.46 %, 32.58 %, 0.35 g, 9.83 %, 32.12 mg, 0.58 g, respectively. From the result of sensory evaluation of all the treatments (SOS<sub>1</sub>, COS<sub>2</sub>). For various attributes, it concludes that orange flavor could be incorporated in the formation of shrikhand without affecting their sensory quality. The mean score for treatment COS<sub>2</sub> were 8.4 (sweetness), 8.4 (flavor), 8.4 (color), 7.6 (texture) and for treatment SOS<sub>1</sub> were 7.2 (sweetness), 7.6 (flavor), 8 (color), 8.4 (texture) respectively. The overall acceptability of treatments (SOS<sub>1</sub> and COS<sub>2</sub>) are 7.6, and 8.6 respectively. The flavor, color and sweetness of COS<sub>2</sub> sample shrikhand with orange flavor substitution are highly acceptable as compared to other treatment shrikhand samples SOS<sub>1</sub> but the texture of sample SOS<sub>1</sub> are highly acceptable.

**Key Words:** soya milk, coconut milk, orange flavoured shrikhand, nutritional quality, overall acceptability.

## 1. INTRODUCTION

Shrikhand is one of the important fermented milk products which derive its name from the Sanskrit word “Shikhand” meaning a curd prepared with added sugar, flavouring agents (Saffron), fruits and nuts. It is the indigenous fermented milk product prepared by the fermentation of milk by using known strain of lactic acid bacteria. Fermented milk products have been well recognized to have anti-cholesterol, emic and anti-carcinogenic properties [1]. Coconut milk has been found to be delicious and nutritional product. Coconut (Cocosnucifera) milk is being used by confectionaries, bakeries, biscuits and ice cream Industries worldwide to enhance flavor and taste of various products. Coconut milk was found to be rich in calcium. The milk was reported to be high in minerals and vitamin content while total saturated fat was 10% of the total energy. Yoghurt

obtained by using coconut milk has been found to be delicious and nutritional product. [2]

Soy milk is an aqueous extract of soya beans (Glycine max) and is quiet similar in appearance to cow milk. It is commonly characterized as having a beany, grassy or soy flavor, which reportedly can be improved by lactic acid fermentation, as in yoghurt-like products. The fats present in soy milk are much larger which make milk easy to digest. Micro-organisms possess endogenous  $\beta$ -glucosidases which can be utilized to hydrolyze predominant isoflavoneglucosides in soy milk to improve biological activity. The problems of soy milk can be improved by lactic fermentation, so production of fermented soy milk such as soya yoghurt is important. [3]

Oranges form a rich source of vitamin C, flavonoids, phenolic compounds and pectins. Just one orange provides 116 % of the daily requirement for vitamin C. Vitamin C is good for preventing cold, cough and recurrent ear infections. Orange (citrus sinensis) is well known for its nutritional and medicinal properties throughout the world. From times immemorial, whole Orange plant including ripe and unripe fruits, juice, orange peels, leaves and flowers are used as a traditional medicine [4].

## 2. Materials and Methods

**2.1 Materials:** The materials used for the experiment are Microwave oven, digital weighing balance, gas burner, Domestic mixer and refrigerator. Chemical Reagents.

**2.2 Preparation of Shrikhand by incorporating soy milk and orange fruit:** Shrikhand was prepared by blending soy milk with orange fruit pulp flavored. Soya milk orange flavored Shrikhand is a sweetened cultured product made from curd of soy milk and orange pulp and is being produced and sold at commercial scale. Soyabean seed Soak in tap water for 8-12 hours. Then the Soy milk was heated (95°C/15 min) and cooled up to temperature 30°C. After cooling the standard culture was added in milk 2 % and Incubated (8 hours, till the acidity reaches 1%). The curd so obtained was tied in muslin cloth and hanged for drain off the whey for 6-8 hrs. The chakka obtained after draining were weighed. The chakka and orange flavored was used as base material for preparation of shrikhand.

**2.3 Preparation of Shrikhand by incorporating coconut milk and orange fruit:** Coconut milk Shrikhand was prepared by incorporating orange pulp. Orange pulp were used for

preparation. Take a fresh mature coconut and remove the shell from coconut. Take the coconut grating in a blender jar. Add one cup of water and blend the coconut is ground well for couple of minute. Then press on coconut shreds so that all the milk is strained away. There is no need to heat the coconut milk. After that the standard culture was added in milk 2%. Stir until the mixture is smooth. The curd so obtained was tied in muslin cloth and hanged for drain off the whey for 6-8 hrs. The chakka and whey obtained after draining were weighed. The chakka was used as base material for preparation of shrikhand. And also add the orange flavored into it.

## 2.4 Experimental design

**Table 1:** Experimental Design

Soy milk based Orange flavoured shrikhand (SOS <sub>1</sub> )		Coconut milk base Orange flavoured shrikhand (COS <sub>2</sub> )	
Materials	Quantity	Materials	Quantity
Soybean seeds	500 g	Coconut	500 g
Stevia powder	160 g	Stevia powder	45 g
Orange juice	900 ml	Orange juice	250 ml
Cornflour	25 g	Cornflour	10 g
Elaichi	20 g	Elaichi	5 g
Dry fruits	10 g	Dry fruits	10 g
Curd culture	25 g	Curd culture	15 g

**2.4 Nutritional quality:** The percentage Protein, Crude fiber, Carbohydrate, Ash content, Fat, Citric acid, Vitamin C of the product samples were evaluated as per standard procedure.

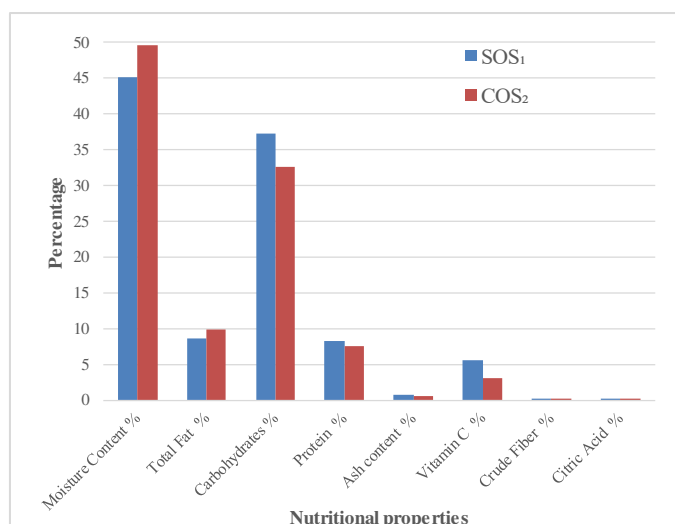
**2.6 Sensory evaluation:** In the process of food development the sensory evaluation are the main steps, without which others effects may be fruitful less. When product pass in this stage, then the achievement be in the hands of developers. The acceptability of soya milk blended with cow milk was measured in terms of sensory attributes such as, color and appearance, flavor, body and texture, sweetness and overall acceptability using 9 point hedonic scale by a panel of five judges. The scores represented the following: 1-dislike extremely, 2-dislike very much, 3-dislike moderately, 4-dislike slightly, 5- neither like nor dislike, 6- like slightly, 7-like moderately, 8- like very much and 9-like extremely, Then to have a composite and stable value of each characteristic, all 10 values are averaged and reported.

**2.7 Cost estimation of soya and coconut milk based orange flavoured shrikhand:** The cost of production of soya and coconut milk orange flavored shrikhand was calculated on the basis of market price of ingredient.

## 3. Results and discussion

**Table 2:** Nutritional Properties of soya and coconut milk based orange flavored shrikhand.

Parameters	Soya milk orange flavoured shrikhand (SOS <sub>1</sub> )	Coconut milk orange flavoured shrikhand (COS <sub>2</sub> )
Moisture (%)	45.1 ± 0.57	49.64 ± 0.41
Citric acid (g)	0.67 ± 0.01	0.35 ± 0.01
Protein (%)	8.21 ± 0.17	7.46 ± 0.59
Fat (%)	8.63 ± 0.24	9.83 ± 0.97
Crude fibre (g)	0.95 ± 0.08	0.58 ± 0.09
Carbohydrate (%)	37.24 ± 1.19	32.58 ± 1.9
Vitamin C (mg)	56.44 ± 1.74	32.12 ± 1.30
Ash (%)	0.81 ± 0.03	0.48 ± 0.07



**Figure 1:** Bar Graph of Nutritional Comparison analysis of Soya and Coconut Milk based Orange Flavoured Shrikhand

As shown in Figure 1 Bar Graph of Nutritional Comparison analysis of Soya and Coconut Milk based Orange Flavoured Shrikhand, the shrikhand with treatments SOS<sub>1</sub> and COS<sub>2</sub> The Soymilk orange flavored shrikhand contents greater amount of Carbohydrates, Proteins, Ash content, Vitamin C, Crude fiber and Citric acid as compared to coconut milk orange flavored shrikhand.

**Table 3:** Average sensory evaluation rating of soya and coconut milk orange flavored shrikhand

Sample Name	Sensory Attribute				
	Color	Texture	Flavor	Taste	Overall Acceptability
SOS <sub>1</sub>	8.0	8.4	7.6	7.2	7.6
COS <sub>2</sub>	8.4	.6	8.4	8.4	8.6

Coconut milk orange flavored shrikhand improve sensory properties (taste, flavor, color). The coconut milk orange flavored shrikhand have delicious taste as compared to soymilk orange flavored shrikhand. As compare to coconut milk orange flavored shrikhand, the physical texture properties of soymilk orange flavored shrikhand was best. The texture score of soya milk orange flavored shrikhand was highly affected by moisture content.

The cost of soymilk orange flavored shrikhand is cheaper as compare to coconut milk orange flavored shrikhand. Our health objectives soymilk looks like healthier choices because it course high in nutritional properties. And coconut milk orange flavored shrikhand improve the taste. As per above discussion, we can conclude that the commercial dairy milk shrikhand can be replaced soymilk and coconut milk orange flavored shrikhand.

The shelf life of the soymilk orange flavored shrikhand is up to 10 days of refrigeration storage at 5<sup>0</sup> C and the shelf life of the coconut milk orange flavored shrikhand is up to 8 days of refrigeration storage at 4<sup>0</sup> C.

#### 4. CONCLUSIONS

On evaluating nutrition quality of soya and coconut milk based orange flavored shrikhand, it is concluded that soya milk based orange flavored shrikhand has a good nutritive value, low moisture content can increase its shelf life. The presence of citric acid in soymilk orange flavored shrikhand used as chemical preservative to extend shelf life of the product. The physical texture properties of soymilk orange flavored shrikhand was best. The texture score of soya milk orange flavored shrikhand was highly affected by moisture content. The fat present in soymilk orange flavored shrikhand are much larger which make easy to digest which are healthy fats that your body cannot form its own. The sensory parameters of coconut milk orange flavored shrikhand i.e. color, flavor, sweetness and overall acceptability was increased but texture goes on decreased as compared to Soya milk orange flavored shrikhand sample. Hence, sensory acceptable. The relatively economic cost of the soymilk orange flavored shrikhand is less as compared to coconut milk orange flavored shrikhand.

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#### REFERENCES

1. Devi R., Argade A., Bhardwaj P., Vaquil and Ahlawat S., Soy milk and fruit based shrikhand: A novel fermented milk product, *The Pharma Innovation Journal*, 7(3): 458-461, ISSN (E): 2277- 7695, 2018.
2. Sanful R. E., Promotion of coconut in the production of yoghurt, *African Journal of Food Science*, Vol. 3 (5), pp. 147-149, ISSN 1996-0974, 2009.
3. Opara C., Ahiazunwo N., Okorie. O, Production of soy yoghurt by fermentation of soymilk with *Lactobacillus*

Isolated from Nunu, *International Journal of Science and engineering investigations*, Vol. 2, issue 12, January 2013.

4. Milind P. and Chaturvedi D., Orange: Range of benefits, *International research journal of pharmacy*, ISSN 2230-8407, 2012.
5. Food Safety and standards Authority of India, Manual of methods of Analysis of Foods Milk and Milk products, 2016.
6. Sanful R. E., Promotion of coconut in the production of yoghurt, *African Journal of Food Science*, Vol. 3 (5), pp. 147-149, ISSN 1996-0974, 2009.
7. Priya S. And Ramaswamy L., Preparation and Quality Assessment of Yoghurt Prepared from Dairy Milk and Coconut (*Cocosnucifera*, L) Milk Cord, 2016.
8. Parhad M., Desai B., Burte R., DandekarV. And Dhekale J., Chemical composition of soy milk and coconut milk compare to goat milk fed to experimental kids, *International journal of Chemical studies*, 2018.