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Studies on Organoleptic Evaluation of *Shrikhand* Prepared From Soya Milk Blended With Cow Milk.

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ABSTRACT
Shrikhand was prepared from soya milk by blending of cow milk at 10 per cent, 20 per cent and 30 per cent with 60 per cent sugar on the weight basis of chakka. The product obtained was subjected for organoleptic evaluation by panel of judges. It was observed that the colour and appearance score for treatment T_1, T_2, T_3 and T_4 was 6.88, 7.13, 7.25 and 7.63, respectively. Flavour score was 6.25, 6.88, 7.00 and 7.38 respectively. Body and texture was 6.75, 7.25, 7.50 and 7.75, respectively. Sweetness score was 7.00, 7.13, 7.25 and 7.50, respectively. It was observed that the overall acceptability score for sensory was 6.72, 7.10, 7.25 and 7.57, respectively for T_1, T_2, T_3 and T_4. It was observed that as the level of cow increased the overall acceptability score increased.
KEY WORDS- *Shrikhand, chakka, soya milk, cow milk*

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INTRODUCTION

*Shrikhand*is semi solid; sweetish-sour fermented milk product is prepared by fermentation of milk with lactic acid bacteria expulsion of whey from the curd to yield *chakka* andby adding it with sugar, flavoring agent, fruits and nuts. It is popular in western part, especially in Maharashtra, Gujarat and Karnataka. It is known for its high nutritive, characteristic flavor, taste, palatable nature and possible therapeutic value. It is very refreshing particularly during summer months [9]. Generally cow or buffalo milk is used for manufacture of *chakka* which gives higher overrun and receives consumer's preference [2]. Fermentation preserves the food, and produce beneficial enzymes, B-vitamins, Omega-3 fatty acids, and various strains of probiotics. Natural fermentation of foods has also been shown to preserve nutrients in food and break the food down to a more digestible form [17]. Typically *shrikhand* constitutes 39.0% moisture and 61.0% of total solids of which 10.0% is fat, 11.5% proteins 78.0% carbohydrates and 0.5% ash, on a dry matter basis. It has a pH of about 4.2–4.4. The advantage of *shrikhand* is that the shelf-life of s*hrikhand* is more than milk and *dahi*. [3].

The rapid growing population in the developing countries is facing acute shortage of protein in diet, which inadvertently has led to an increase in the instances of malnutrition [16].The implication of using the two different milk sources in the diet is the high contents of protein and fat. The total energy value of the milk is from the fat content hence, higher fat content is an indication of more total energies available [4].

Soybean is, primarily, an industrial crop, cultivated for oil and protein. As the world population expands, there will be a greater pressure for the consumption of plant products. Today soybean is one of the most economical and valuable agricultural commodities because of its unique chemical composition and multiple uses as food, feed and industrial materials. Soybean has the highest protein content among cereal and other legume species, and the second highest oil content among all food legumes. Soya milk is a plant based drink produced by soaking dried soybeans and grinding them in water and contains protein 2.86 g, fat 1.61 g and carbohydrate 1.74 g per 100 gm and the energy value is 33 kcal (138KJ) per 100 gm.

It is inexpensive, highly digestible; it is rich in water soluble protein, carbohydrate and oil nutrient. It is rich in polyunsaturated fatty acids, linoleic acid [7]. Soy protein isolate has a Protein Digestibility Corrected Amino Acid Score (PDCAAS) of 100% which means that it has all the essential amino acids required to support growth and maintenance. It is also good source of lecithin and vitamin E [8].

Soya milk contains greater amounts of the amino acids arginine, alanine, aspartic acid and glycine. Arginine slows the growth of cancers by strengthening the immune system, alanine aids in the metabolism of sugars, aspartic acid increases stamina and plays a vital role in metabolism by acting as an antioxidant, glycine is necessary for brain and nervous system functioning and muscle/energy metabolism [18]. Soya milk resembles bovine milk in physical appearance and consistency and contains less amount of fat and higher amount of Fe and Cu as compared to cow milk, therefore it can be blended with milk [19].

In recent years farmers of Maharashtra have given overwhelming response to soybean cultivation. Acceptability of soya milk products is less as compared product made from cow milk, therefore, for fulfilling the requirement, there is a wide scope for replacement of soya milk by cow milk in preparation of various milk products, viz. Soya milk, Soya *Paneer*, Soya *Amrakhand*, Soya Fortified Biscuits etc.

Preparation of Soya Milk

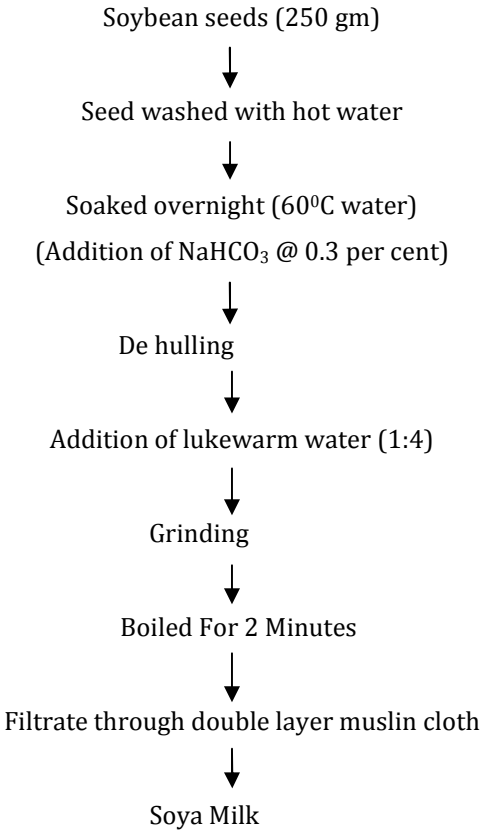

Fig. No. 1 Flow chart for preparation soy milk [15]

Preparation of *Shrikhand*

Shrikhand was prepared as procedure given by Aneja *et al.* [1] with slight modification. The soya milk and cow milk was mixed as per treatment combinations. Then the milk was heated at 95^{0}C for 5 minute and cooled up to temperature 37^{0}C. After cooling thestandard culture was added in milk @ 2 per cent and incubated at 37^{0}C for 10-12 hrs. 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*. This *chakka* was mixed with ground sugar @ 60 per cent by weight of *chakka* and cardamom @ 1 gm/kg was added as flavouring agent. Control *shrikhand* was prepared using soya milk only and adopting the same procedure and stored at 5^{0}C for further studies.

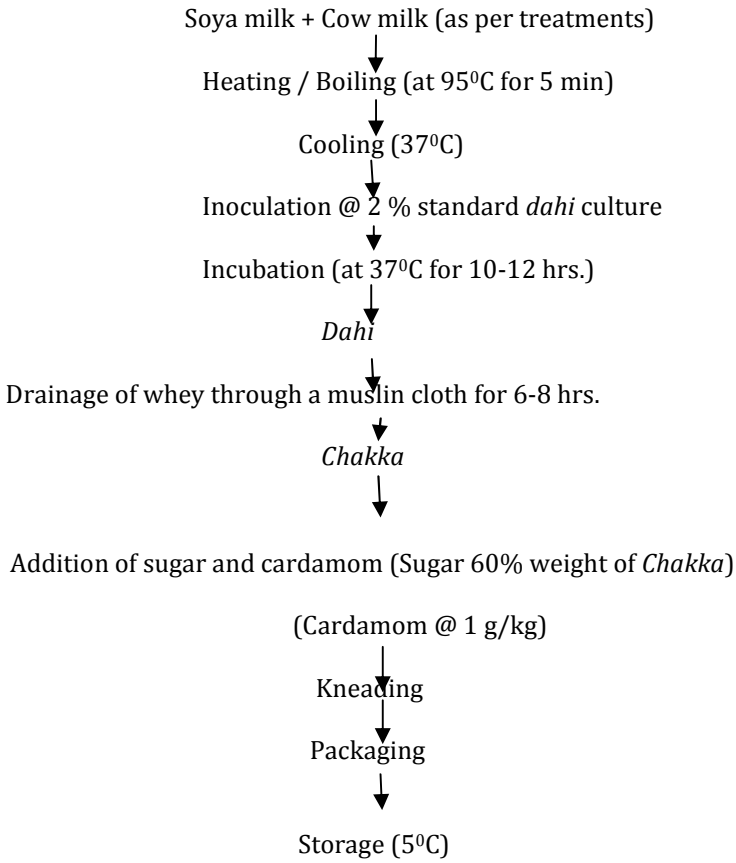

Fig. No.2 Flow chart for preparation of *shrikhand* [1]

RESULT AND DISCUSSION

Organoleptic / sensory evaluation of Finished Product

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, colour and appearance, flavour, body and texture, sweetness and overall acceptability using 9 point hedonic scale by a panel of five semi-expert judges. The data so obtained were analyzed using Completely Randomized Block Design (CRBD) and shown in forth coming table 1.

Table.No.1. Organoleptic evaluation of *shrikhand* prepared by soya milk blended with cow milk score detailed discuss in below table.

Sr. No.	Parameters	Treatments					
		T_1	T_2	T_3	T_4	S.E. ±	C.D. at 5%
1)	Colour and Appearance	6.88^{b}	7.13^{b}	7.25^{ab}	7.63^{a}	0.13	0.40
2)	Flavour	6.25^{c}	6.75^{b}	7.00^{b}	7.38^{a}	0.11	0.35
3)	Body and Texture	6.75^{c}	7.25^{b}	7.50^{ab}	7.75^{a}	0.12	0.38
4)	Sweetness	7.00^{b}	7.13^{b}	7.25^{ab}	7.50^{a}	0.09	0.29
5)	Overall Acceptability	6.72^{c}	7.10^{b}	7.25^{ab}	7.57^{a}	0.11	0.34

The mean score of colour and appearance for the treatments T_1, T_2, T_3 and T_4 were 6.88, 7.13, 7.25 and 7.63, respectively. The lowest colour and appearance score was recorded for treatment T_1 (6.88 per cent). This indicates that the higher proportion of soya milk in the control sample (T_1) decreased the colour and appearance score of *shrikhand*. Dull colour and appearance was observed in control sample. Treatment T_1 was significantly at par with T_2 and T_3. While, treatment T_3 was significantly at par with T_4 and the treatment T_4 was significantly differ from treatment T_1 and T_2. Similar result observed by Chaudhary [5] decreased average score for colour and appearance in the *kheer* prepared from soya milk plus cow milk as the soya milk increased in the proportion of the cow milk. Kumar *et al.* [12] also found similar trends the appearance score showed a declined trend with increased in apple pulp, though the decline was non-significant.

The score of flavour attribute for the treatments T_1, T_2, T_3 and T_4 are 6.25, 6.75, 7.00 and 7.38, respectively. Flavour score was lowest for T_1 (6.25) and highest in T_4 (7.38). As the proportions of soya milk in T_1 was more there was decrease in flavour score due to the beany flavor in finished product. Treatments T_2 and T_3 were significantly at par to each other. Whereas T_1 and T_4 significantly differs from rest of treatments. Similar result found by Chede [6] observed that concentration of soya milk increased the flavour score of prepared *shrikhand* was decreased and the Krupal [11] also studied that the proportion of soymilk increased there was decrease in flavour score of *yoghurt*.

The mean score for body and texture of *shrikhand* was recorded for treatment T_1, T_2, T_3 and T_4 was 6.75, 7.25, 7.50 and 7.75, respectively. This indicates that increased proportion of soya milk in the blend decreased the score for body and texture of the *shrikhand*. It was observed that treatment T_1 significantly differs over T_2, T_3 and T_4. Treatment T_2 was at par with T_3 while T_4 was at par with T_3. Similar result to be initiated by Nadaf *et al*. [13] decreasing trend in the body and texture score of *yoghurt* prepared from cow milk blended with soymilk and *shrikhand* prepared by using different level of *gulkand,* respectively.

Chaudhary [5] was also reported that the average score in the *kheer* prepared from soy and cow milk decrease body and texture score of *kheer* by increasing level of soya milk.

Score of sweetness for the treatments T_1, T_2, T_3 and T_4 as, 7.00, 7.13, 7.25 and 7.50, respectively. Treatment T_1 was significantly at par with T_2 whereas T_2 was significantly at par with treatment T_3.but the treatment T_4 significantly differs from treatments T_1 and T_2 .Similar result was noticed by Narayan and lingam [14] on banana blended *shrikhand* was no significant difference in sweetness in all the treatment samples indicating that the sugar blended was equal in all treatments.

The overall acceptability score of *shrikhand* for treatment T_1, T_2, T_3 and T_4 was 6.72, 7.10, 7.25 and 7.57, respectively. The lowest score of overall acceptability was recorded for treatment T_1 (6.72 per cent) and the highest overall acceptability score was recorded for treatment T_4 (7.57 per cent). It is observed that the overall acceptability score were found to be in increasing order from T_1 to T_4. As the proportion of cow milk in the blend increased there was increase in overall acceptability of finished product. It was observed that treatment T_4 significantly differ from T_1 and T_2 but treatment T_4 was significantly at par with T_3. While treatment T_3 was at par to treatment T_2.

The acceptability score was reduced proportionately with the increased in proportion of soya milk. This result was also in agreement with the results noted by Krupal [11] and Yadav *et al*. [19] and Katara and Bhargava [10] observed that the overall acceptability score for *rasogolla* increased with increased proportion of cow milk in the blend.

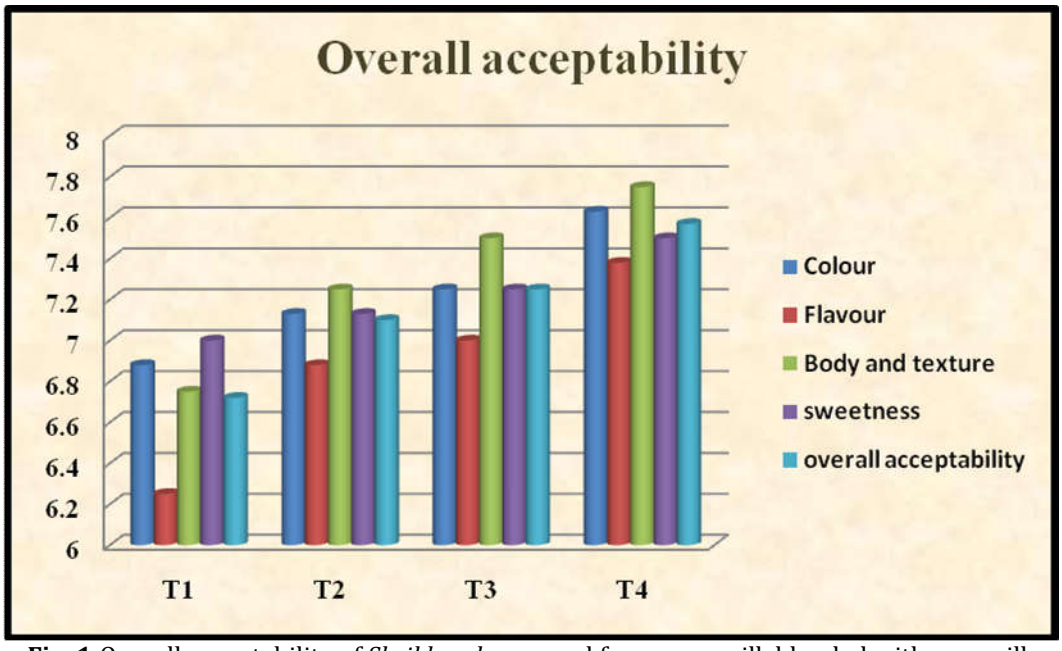

Fig. 1: Overall acceptability of *Shrikhand* prepared from soya milk blended with cow milk

CONCLUSION

Since from current investigation it can be concluded that treatment T_4 with 75 per cent soya milk and 25 per cent cow milk was significantly superior over treatment T_1,T_2 and T_3 which had the highest sensory score with respect to colour and appearance, flavor, body and texture, sweetness,. It was observed that the overall acceptability score increased as proportion of cow milk is increased. Use of soya milk to

produce *shrikhand* can be made effectively but efforts should be taken to remove the beany flovour of soya milk and products made from soya milk.

REFERANCES

1. Aneja, R. M., Mathur, B. N., Chandan, R. C. and Banerjee, A. K. (2002). Desiccated milk based products in technology of Indian milk products. *A dairy Indian publ.* pp.122-125.
2. Aneja, R. P., Vyas, M. N., Nanda, K. and Thareja, V. K. (1977). Development of an industrial process for the manufacture of *shrikhand.J. Food Sci. Tech.,***14**: 159-163.
3. Boghra, V. R. and Mathur, O.N. (2000).Physico-chemical status of major milk constituents and minerals at various stages of *shrikhand* preparation.*J. of Food Science and Tech.* **37**(2): 111-115.
4. Belewu, M. A. and Belewu., K. Y. (2007). Comparative physico- evaluation of tiger-nut, soybean and coconut milk sources. *Int. J. Agric. Biol*.**9**: 785-787.
5. Chaudhary, S. V. (2006) Studies on preparation of *kheer* from cow milk blended with soy milk. Thesis submitted to Dr. PDKV, Akola.
6. Chede, Rajesh (1993). Formulation of soya *shrikhand*. Thesis submitted to VNMKV, Parbhani.
7. Deshpande, S., Bargale, P. C. and Jha**,** K. (2008). Suitability of soy milk for development of *shrikhand. J. Food Sci Tech.* **45** (3): 284-286.
8. Hati, S. (2012).Bio-functional properties of probiotic Soy *dahi*. Ph.d thesis submitted to NDRI.
9. Karche, R. V., Thakare, V. M., Bhagat, A. V. and Shirsath, S. A. (2015). Microbiological quality of cow milk *shrikhan d* blended with sapota pulp. *International Journal of Food, Agriculture and Veterinary Sciences.* **5** (1) 18-22.
10. Katara, R. V. and Bhargava, V. N. (1990).Yield and quality of *channa* as influenced by addition of soymilk to cow milk.*Asian J. Dairy res*. **9**(4): 189-190.
11. Krupal, R. G. (2003) Utilization of soy milk and cow skim milk in different combinations for *yoghurt* preparation. M.Sc. Thesis (Unpub). Dr. PDKV, Akola.
12. Kumar, H., Rao, H. and Venkatesh, M. (2012).Effect of whey protein concentrate on the quality of enriched probiotic *shrikhand*. *Mysore Journal of Agricultural Sciences.***46**(4): 836-841.
13. Nadaf, N., Patil, R. and Zanzurne, C. (2012).Effect of addition of gulkand and rose petal powder on chemical composition and organoleptic properties of *shrikhand*. *Recent Research in Science and Technology.***4** (10): 52-55.
14. Narayanan, R. and Lingam, J. (2013).Sensory analysis of banana blended *shrikhand. African Journal of Agricultural Research.***8** (44): 5518-5521.
15. Pariskar, J. R., Patil, R. A., Padghan, P.V. and Londhe, G. K. (2015). Studies on chemical composition of *kheer* prepared from soy milk blended with buffalo milk.*Asian J. Dairy & Food Res*. **34**(3): 198-201.
16. Rehman, S.U., Nawaz, H., Ahmad, M. M., Hussain, S., Murtaza, A. and Sashid. S. H. (2007). Physico-chemical and sensory ink soy-cow milk blend.*Pakistan Journal of Nutrition.* **6**(3): 283-285.
17. Sathe, G. and Manda, S. (2016). Fermented products of India and its implication: A review *Asian J. Dairy & Food Res*. **35**(1):1-9.
18. Singh, D. (2014).Development of soy fortified *shrikhand* and its nutritional impact on the performance of rats. Ph.d thesis submitted to Banaras Hindu University. Varanasi, India.
19. Yadav, D. N. and Chauhan, G. S. (2005). Quality characteristics of beverage prepared from milk-soy extract blends. *Soybean res*.**3**: 46 -51.

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