

Preparation of Shrikhand by using banana pulp

■ A.P. CHAUDHARI*, SNEHAL PATINGE AND K.P. DHAKE

Department of Agricultural Process Engineering, Dr. Ulhas Patil College of Agricultural Engineering and Technology, JALGAON (M.S.) INDIA (Email : apchaudhari1@rediffmail.com)

*Author for Correspondence

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SUMMARY :

Shrikhand is a popular fermented dish consumed by Indians during festivals and wedding occasions. Shrikhand is available in many varieties in the market with different flavors and aromas. Shrikhand is marketed with different brands and it is expected that quality of Shrikhand may vary. The present study was done on incorporation of ripened banana in Shrikhand. Banana Shrikhand sample was prepared in the laboratory. Different properties of banana Shrikhand were compared with that of branded Shrikhand. Then banana Shrikhand was subjected to various tests such as, chemical, nutritional, microbial and sensory. Banana Shrikhand is very good in taste and has better aroma than that of the standard brand of Shrikhand. Chemical, nutritional and microbial analyses are nearly equal to the standard brand. The result of sensory evaluation shows that banana Shrikhand is more acceptable because F-actual is greater than F-critical.

KEY WORDS : Banana Shrikhand, Physico-chemical, Sensory evaluation, Statistical analysis

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Shrikhand is an inseparable dish in a regular diet of Indians. The total milk production of India is 127.9 million tonnes, out of which 46.00 per cent is consumed as liquid milk and 54.00 per cent is converted into products. Shrikhand is one of the important fermented milk products. The name Shrikhand is derived from the Sanskrit word “Shikharani” meaning a curd prepared with added sugar, flavoring agents (Saffron), fruits and nuts. Devshete *et al.* (2012) determined the sensory quality of probiotic Shrikhand using yoghurt culture. Shrikhand from buffalo milk using dahi culture (T_0) and yoghurt culture (T_1) was prepared and studied for its acceptability. It was observed that Shrikhand prepared using yoghurt

culture was comparable or equally good to Shrikhand prepared using dahi culture.

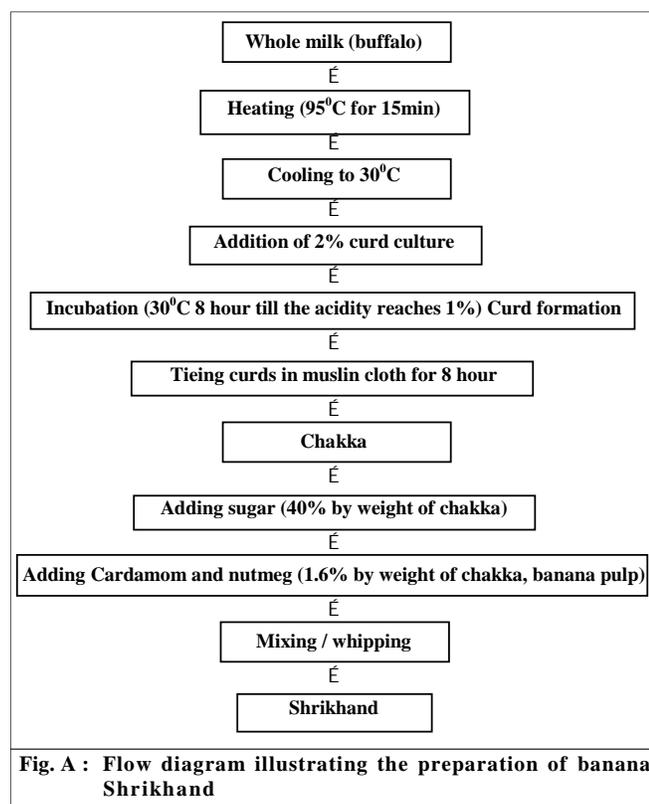
Banana fruits are wholesome and fairly well balanced source of nutrient containing various mineral salts, vitamins and high amount of carbohydrates with a little oil and protein (Simmonds, 1966; Ketiku, 1973 and Ahenkora *et al.*, 1997). Jain and Tapre (2014) initiated the study to optimize the enzymatic clarification process of banana pulp of maturity stage 6 using response surface methodology. Banana pulp was treated with pectinase enzyme (Pectinex Ultra SP-L) at various concentrations (0.05-0.15%), incubation temperature (30-50°C) and time (60-180 min) of treatment. The effect of these enzymatic

conditions on per cent juice yield, viscosity of banana pulp and clarity of banana juice were studied.

EXPERIMENTAL METHODS

Preparation of Shrikhand :

The banana Shrikhand was prepared by the method as given in process flow chart (Fig. A).



Analysis of Shrikhand :

Sample of Shrikhand was analyzed for various physical and chemical parameters using standard methods of analysis.

Sensory evaluation :

Sensory evaluation of Shrikhand carried out by using following procedure.

Specimen evaluation card :

Heading rating test

Name:

Date:

Product : Shrikhand

Test these samples and check how much you like or

dislike each one. Use the appropriate scale to show your attitude by checking at the point that best describes your feeling about the sample. Please give a reason for this attitude. Remember you are the only one who can tell what you like. An honest expression of your personal feeling will help us (Table A).

Sr. No.	Name of test	Sample 1	Sample 2
1.	Appearance		
2.	Colour		
3.	Texture		
4.	Aroma		
5.	Taste		
6.	Overall acceptance		

Please evaluate sample as per the hedonic scale given in Table B.

Hedonic scale	
Like extremely	9
Like very much	8
Like moderately	7
Like slightly	6
Neither like nor dislike	5
Dislike slightly	4
Dislike moderately	3
Dislike very much	2
Dislike extremely	1

Source: Ranganna (2004)

EXPERIMENTAL FINDINGS AND ANALYSIS

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Physical and chemical characteristic :

Banana Shrikhand sample was prepared in the laboratory. Branded Shrikhand was procured from market and both the samples were stored in refrigerator at -4°C before the chemical analysis. Analytical sample size was drawn every time before the analysis and different properties of banana Shrikhand were compared with that of branded Shrikhand. The physical and chemical characteristic of branded Shrikhand and banana Shrikhand are listed in the Table 1.

The result indicates that the moisture content of Banana Shrikhand is 30.5 per cent (wb) whereas that of Standard brand Shrikhand is 42 per cent (wb). The lower moisture content in the Shrikhand may be attributed to maximum removal of whey while preparing the chakka. It is reported that Shrikhand with lower value of moisture has a better shelf-life and palatability (Mehata, 2013). Similarly, the percentage of total solid is 69.5 per cent for banana Shrikhand and 58 per cent for standard Shrikhand. The more TSS in Banana Shrikhand is due to the added TSS of banana pulp. The Shrikhand of any brand should not have total ash more than 1 per cent. The total ash value of the banana Shrikhand is 0.82 which accounts for total inorganic matter in the Shrikhand sample.

The samples were tested for their pH value and titratable acidity. It was found that banana Shrikhand has acidic pH, 4.0. The standard Shrikhand has pH of 6.0. Standard brand Shrikhand has a higher titratable acidity 1.40 per cent and Banana Shrikhand has Titratable acidity 1.25 per cent. The lower pH and titratable acidity retard

the growth of certain bacteria and may increase the shelf life of Shrikhand.

Fat content in Shrikhand :

Shrikhand is a delicious dish, which also has nutritional value. The fat content in banana Shrikhand was determined to ascertain quality of Banana Shrikhand. The results of experimental findings are summarized in the Table 2.

It can be seen that the total fat content of the Shrikhand is 7.0 per cent. The reported BIS value for the total fat is 5.0 per cent. The values have greater degree of variance amongst the brands. This difference is attributed to the quality of milk used for the preparation of chakka and subsequently, Shrikhand. Banana Shrikhand was found to contain highest amount of total fat, which may be due to the use of high fat whole milk, while standard value is 5 per cent of fat. The nutritive value of such Shrikhand and acceptability of the product increases with the fat content.

Table 1 : Physico-chemical parameters of banana Shrikhand

Brands/ Parameters	Variety	Colour	% Moisture (wb)	% Total solids	% Ash	pH	Titratable acidity
Banana Shrikhand	Banana	White	30.5	69.5	0.82	4.0	1.25
Standard	-	-	42.00	58.00	0.90	6.0	1.40

Table 2 : Fat content in Shrikhand/100g

Brands/Parameters	Fat (%)
Banana Shrikhand	7.0
Standard	5.0

Table 3 : Microbiological investigations on different brands of Shrikhand

Brands/ Parameters	SPC (c.f.u./g)	YMC (c.f.u./g)	Coli form count (c.f.u./g)
Banana Shrikhand	Uncountable	4500	900
Standard	<100	50	10

Table 4 : Average sensory evaluation

Rep No.	Samples	Parameters					Over all acceptance
		Appearance	Colour	Texture	Aroma	Taste	
Rep No. 1	S ₁	8	7.6	7.7	7.7	8.3	7.2
	S ₂	8	7.6	8.1	8.1	8.4	7.3
Rep No. 2	S ₁	7	7.8	7.9	7.8	8.3	7.8
	S ₂	8	7.8	7.9	8.1	8.2	7.9
Rep No. 3	S ₁	7	7.7	8	7.9	7.9	7.2
	S ₂	7	7.8	7.8	7.7	8.1	7.3
Mean		7.75	7.71	7.90	7.88	8.21	7.46
STDVE		0.45	0.58	0.42	0.57	0.58	0.54

Table 5 : Statistical analysis of sensory data

Source of variation	SS	Df	ANOVA			
			MS	F	P-value	F crit
Rows	0.67	5	0.15	1.86	0.14	2.60
Columns	2.31	5	0.45	6.41	0.001	2.60
Error	1.79	25	0.08			
Total	4.75	35				

Microbiological investigation :

Shrikhand possesses antibacterial properties against pathogenic as well as spoilage organisms. The safe use of Shrikhand samples can be recommended on the basis of their micro-organism content. The samples were tested for the presence of SPC, YMC and Coliform microorganisms. The experimental findings are tabulated in the Table 3.

The quality of Shrikhand is dependent on all the above nutritional parameters and is closely related to the microbial findings. Banana Shrikhand has showed high Growth of the microbial count. This may be due to the sugar used as it can be the chief source of contamination in the product.

Sensory evaluation :

Banana Shrikhand was analyzed using 9 point scale (hedonic scale) for various attributes and results are summarized in Table 4.

From Table 5 it was found that F actual is greater than F critical for treated sample. Hence it is significant for provided data to analysis. It means that the provided values are dependent on each other.

Conclusion :

- The Banana Shrikhand is good product with respect to its nutritional value and microbial analysis.
- Banana Shrikhand is very good in taste and has better aroma than that of the standard brand of Shrikhand.
- The result of sensory evaluation shows that banana Shrikhand is more acceptable because F-actual is greater than F-critical.

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