

Effect of SNF levels of milk on the quality of shrikhand

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Abstract

The effect of SNF levels of milk on the quality of Shrikhand was investigated to suggest the best level of SNF for shrikhand making. The yield and sensory score of shrikhand increased with increase in the SNF content of milk. The total solids, protein, lactose and ash contents of shrikhand were found increased with the increase in the SNF content of milk but fat content reduced and the acidity of the product remained unchanged. At 13.0 % SNF level of milk, the product fulfilled all PFA specifications. Since, 13.0 and 15.0% SNF levels were statistically similar with respect to sensory quality, hence, 13.0% SNF level of milk has been recommended for shrikhand making at the commercial scale.

Key words: Shrikhand, chakka SNF, PFA, overall acceptability, sweet cream butter milk

Introduction

Shrikhand is a fermented indigenous milk product. It is obtained by the removal of whey from curd and mixed with sugar, colour and flavor. It is an important milk product from economic and dietary point of view. PFA specifications of shrikhand are as: Total solids min 58.0%, milk fat (on dry basis) min. 8.5%, milk protein (on dry basis) min. 9.0 %, titratable acidity (as lactic acid) max. 1.4 %, sucrose (on dry basis) max. 72.5 %, total ash (on dry basis) max. 0.9 percent. India has produced 110 million tonnes by 2011-2012. A large quantity of milk produced in country, amounting 54 percent is being converted into various milk products. About 7% of the milk produced is utilized for the fermented milk product (Bhardwaj 2013).

The physico-chemical quality of each and every milk product is affected greatly by the SNF level of milk used. Simultaneously, it is also one the most important factors which accomplish the legal requirement of the product. Hence, the present study was carried out in the department of A.H. & Dairying, R.B.S. College, Bichpuri, Agra with a view to assess the effect of SNF levels of milk on the quality of shrikhand and to suggest the best level of SNF for shrikhand making.

Materials and Methods

Buffalo milk standardized at 4.5% fat and 9.0, 11.0, 13.0 and 15.0% SNF levels were used for the purpose. The product was prepared following the procedure cited by Aneja et al. (2002). Sugar (60%) was added on chakka basis by weight. The sensory quality of shrikhand samples was examined by a panel of judges drawn from the department of A.H. & Dairying using 100 point score card as suggested by

Pal and Gupta (1985).

The chemical analysis of samples was done in terms of total solids, fat, protein, lactose, ash and titratable acidity by the methods cited by Srivastava (2010) and described in Hand Book of Food Analysis, Part XI, Dairy Products, BIS, New Delhi . The yield of shrikhand samples was also reported. Investigation was replicated thrice. The data thus obtained were subjected to statistical analysis and tested at 5% level of significance.

Results and Discussion

The SNF level of milk significantly affected the yield and overall acceptability of shrikhand. They were increased with the increase in the SNF content of milk used. The average yield at 9.0 % SNF level was found to be 49.73% which increased to 54.59% at 15.0% SNF level but the increment percent in yield was reduced as SNF content in milk was increased. The mean overall acceptability score was observed as 93.49 with the samples made from milk of 15.0% SNF level which reduced to 88.02 at 9.0% SNF level. The acceptability of this product was also quite satisfactory at the lowest SNF level. SNF at 13.0 and 15.0% levels were statistically similar with respect to overall acceptability of shrikhand. Karthikeyan et al. (1999) also reported that the shrikhand samples prepared from 15.0 per cent TS in Sweet Cream Butter Milk (SCBM) was organoleptically equivalent or significantly superior to that of control and other SCBM shrikhand samples.

The SNF levels of milk had also a significant effect on the total solids, protein, lactose and ash contents of shrikhand. The values for these quality parameters of product increased with increase in the SNF levels of milk. The corresponding average values

Table:1 Effect of SNF levels of milk on yield, sensory score and chemical quality of shrikhand

| S.No. | SNF Levels (%) | | Yield Percent Avg. | Sensory Score | | Total Solids Percent | | Fat Percent | | Protein Percent | | Lactose Percent | | Ash Percent | | Acidity (as % LA) | | | | | | | |
|---------------------|----------------|-------|-----------------------|---------------|-------|----------------------|--------|-------------|--------|-----------------|---------|-----------------|------|-------------|-------|-------------------|------|------|------|------|------|------|------|
| | Min. | Max. | | Max. | Avg. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Avg. | | | | | |
| 1. | 9.0 | 49.01 | 50.50 | 49.73 | 86.68 | 89.32 | 88.02 | 55.45 | 57.13 | 56.29 | 8.10 | 8.40 | 8.23 | 6.79 | 6.71 | 2.62 | 2.70 | 0.29 | 0.31 | 0.31 | 1.16 | 1.20 | 1.18 |
| 2. | 11.0 | 51.37 | 52.93 | 52.17 | 92.42 | 91.10 | 91.07 | 56.59 | 58.31 | 57.46 | 7.70 | 8.00 | 7.83 | 7.91 | 7.81 | 3.04 | 3.14 | 0.34 | 0.36 | 0.36 | 1.19 | 1.23 | 1.21 |
| 3. | 13.0 | 52.65 | 54.25 | 53.49 | 93.35 | 92.03 | 93.40 | 58.07 | 59.83 | 58.94 | 7.50 | 7.80 | 7.63 | 8.84 | 8.95 | 3.51 | 3.61 | 0.39 | 0.41 | 0.40 | 1.24 | 1.28 | 1.26 |
| 4. | 15.0 | 53.81 | 55.45 | 54.59 | 92.10 | 94.90 | 93.49 | 59.59 | 61.41 | 60.51 | 7.40 | 7.60 | 7.50 | 10.03 | 10.16 | 3.98 | 4.10 | 0.45 | 0.47 | 0.46 | 1.27 | 1.31 | 1.30 |
| Calculated Value | | | 17.48* | 10.50* | 2.58 | 13.02* | 15.33* | 622.00* | 85.60* | 8.33* | 1.33 NS | | | | | | | | | | | | |
| CD Value at 5% 1.64 | | | | | | | | | | | | | | | | | | | | | | | |

for total solids, protein, lactose and ash were 56.29% and 60.51 %; 6.71% and 10.16% ; 2.67% and 4.05% and 0.31% and 0.46% at 9.0% and 15.0% SNF level, respectively. The shrikhand samples prepared only from milk with 13.0% and 15.0% SNF satisfied the legal standards in above aspects.

So far as the effect on fat content of shrikhand is concerned, it was significantly reduced with the increase in SNF content of milk. The fat content in the product was 8.23% and 7.50 % at 9.0% and 15.0% SNF level, respectively. All samples of Shrikhand conformed to the legal requirement in this regard. The acidity of Shrikhand was not significantly affected by the SNF levels of milk. It varied from 1.18% to 1.30% at various SNF levels. All samples of shrikhand were found to be within the PFA limit, so far as the acidity in product was concerned.

However, Kumar et al. (2013) found lower concentration of milk solids except ash and higher retention of moisture in shrikhand samples prepared from milk of 9.0% SNF. These differences might be due to some deviation in the method of manufacturing of this product.

On the basis of results, the conclusion was drawn that 9.0% and 11.0% SNF levels of milk produced shrikhand of acceptable quality from organoleptic point of view but failed to satisfy the legal requirement of total solids in product. At 13.0% and 15.0% SNF levels of milk, the product fulfilled all PFA specifications. Since, 13.0% and 15.0% SNF levels were statistically similar with respect to sensory quality of product, therefore, 13.0% SNF level of milk is being recommended for shrikhand making at the commercial scale.

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