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Effect of Blending Soymilk with Toned Milk on Physiochemical Quality of Low Cost Paneer.

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ABSTRACT

Manufacturing of paneer using low fat milk with soy milk can open new avenues for the utilization of soymilk which can help in reducing raw material cost also. A study was undertaken by blending different levels of toned milk and soymilk i.e. $T_1(80:20)$, $T_2(70:30)$, $T_3(60:40)$ respectively. Blended milk was coagulated with 1% citric acid and calcium sulphate. After draining of whey the coagulum was set as paneer. The low cost paneer obtained from 70:30 (T_2) ratios found to be the best product among all treatments. Thus, as far as product acceptability judged by organoleptic evaluation, the treatments can be rated as $T_2 > T_0 > T_1 > T_3$

Keywords: Blending Toned milk, Soymilk, Soy paneer.

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INTRODUCTION

Paneer is an important indigenous nutritious and wholesome dairy product. However the cost of paneer has become a great hurdle in popularization of paneer. Milk fat is one of the major factor for high cost of paneer which is a possible dietary risk factor for coronary heart disease. Manufacturing of paneer using low fat milk with soy milk can open new avenues for the utilization of soymilk and can also help in reducing raw material cost. Soy paneer prepared from soymilk and toned milk is a rich source of high quality proteins and vitamins [1]. It also give relatively cheaper and nutritious product which can find popularity in the mass market. Soy milk is rich in isoflavones. Cow's milk does not contain iso flavones. Iso flavones in soymilk have many health benefits including reduction of cholesterol, easing of menopause symptoms, prevention of osteoporosis and reduction of risk for certain cancers (Prostate and breast cancer). Incidents of cancers are very low in countries with intake of soy product, including soy milk. Since paneer is mostly used for cooking, the relatively low level of fat will not reduce its palatability. In this study an effort has been made to prepare good quality paneer by blending toned milk with soymilk using the technique of manufacture as recommended by Babjeand Rathi [2].

MATERIALS AND METHODS

First of all, clean healthy soybeans seeds soaked in 1% sodium bicarbonate for 8-10 hours. After draining and washing, the seeds were cooked at 112°C for 4 minutes. Then it was ground with water (1:10 w/v). After filtration Soymilk was ready. Toned milk then blended with soymilk in T₁ (80:20), T₂(70:30) and T₃(60:40) ratio. The blended milk was heated at 85 °C for 5 minutes and cooled at 80 °C for 3 minutes. It was then coagulated with 1% CaSO₄ and citric acid. Coagulum was collected after draining of whey and sent for pressing at 2-5kg/cm² for 45 minutes. It was then removed from the pressure and dipped in chilled water (4 °C) for 30 minutes. Thus Soy paneer was ready. The samples were analyzed for physicochemical, microbial and organoleptic qualities as per the procedure laid down by ICAR manual in Dairy Chemistry and Microbiology [3, 4]. The data obtained on different aspects as per plan were tabulated and statistically analyzed as per Chandel [5].

T₀ = Paneer (Toned milk 100%)

T₁ = low cost paneer (Tonedmilk: Soymilk = 85:15)

T₂ = low cost paneer (Tonedmilk: Soymilk = 75:25)

T₃ = low cost paneer (Tonedmilk: Soymilk = 65:35)

RESULT AND DISCUSSION

Physiochemical Properties

Table 1 shows average of different physicochemical parameters of control and low cost paneer (blended with toned milk and soy milk).

Moisture percentage

The highest mean value for moisture percentage in low cost paneer was found in T₀ (64.45), followed by T₁ (59.57), T₂ (57.74) and T₃ (56.69). There were significant differences found among the treatments. F value was 1609.64, indicating significant effect of treatment on moisture percentage

Fat percentage

The highest mean value for fat percentage was found in T₀ (14.64), followed by T₁ (13.66), T₂ (12.62), and T₃ (11.62). There were significant differences found among the treatments. F value was 236.30, indicating significant effect of treatment on fat percentage.

Protein percentage

The highest mean value for protein percentage was found in T₃ (30.58), followed by T₂ (28.38), T₁ (26.17) and T₀ (20.25). There were significant differences found among all the treatments. F value was 137.17, indicating significant effect of treatment on protein percentage.

Total solids

The highest mean value for total solids was found in T₃ (43.41), followed by T₂(42.26), T₁(40.43) and T₀(35.55). The differences among the treatments were significant. Thus, it showed the soymilk blending has a great impact on the quality of blended paneer. F value was 1609.64, indicating significant effect of treatment on total solids.

Table 1: Average of different physicochemical parameters of control and low cost paneer (blended with toned milk and soy milk)

Parameters (%)	Control and low cost paneer (blended with toned milk and soy milk)				F value	C.D.
	T ₀	T ₁	T ₂	T ₃		
Moisture	64.45	59.57	57.74	56.69	1609.64*	0.2285
Fat	14.64	13.66	12.62	11.62	236.30*	3.49
Protein	20.25	26.17	28.38	30.58	137.17*	1.147
Total Solids	35.55	40.43	42.26	43.31	1609.64*	0.2285

* Significant at 5 % level
 ** Non-significant at 5 % level

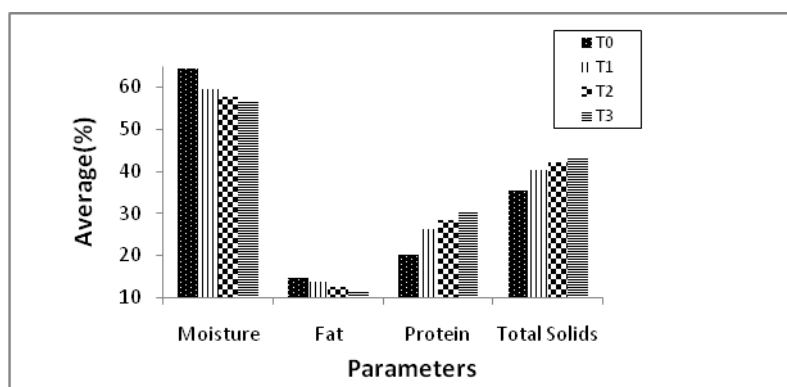


Figure 1: Average of different physicochemical parameters of control and low cost paneer (blended with toned milk and soy milk)

Table 2: Microbial parameters of control and low cost paneer (blended with toned milk and soy milk)

Parameters	Control and low cost paneer (blended with toned milk and soy milk)				F-Value	C.D.
	T ₀	T ₁	T ₂	T ₃		
Standard Plate count (10 ³)cfu/gm	45.2	36.4	35.2	36.4	12.97*	1.209
Yeast and mould count (10 ²)cfu/gm	13.2	14.8	10.4	14.0	10.59*	1.812
Coliform count (10 ¹)cfu/gm	Nil	Nil	Nil	Nil	Nil	Nil

* Significant at 5 % level
 ** Non-significant at 5 % level

Microbial parameters of control and low cost paneer (blended with toned milk and soy milk) Standard Plate count

Table 2 showed the highest mean value for Standard Plate count in low cost paneer was found in T₀ (45.2), followed by T₁ (36.4), T₃ (36.4) and T₂ (35.2). There were no significant differences found among the treatments. F value was 12.97, indicating significant effect of treatment on Standard Plate count.



Yeast and Mould count

The highest mean value for Yeast and Mould count was found in T₁ (14.8), followed by T₃(14.0), T₂(10.4) and T₀ (13.2). The treatments differed significantly. F value was 10.59, indicating significant effect of treatment on Yeast and mould count.

Coliform count

There were no coliform found in all the treatments, thus indicated proper hygiene was followed.

CONCLUSION

The results obtained from the statistical analysis revealed that the toned milk and soymilk can be satisfactorily blended to prepare paneer. T₂ (70:30) treatment was found to be the best among all the treatments.

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