



Studies on physico-chemical quality of peanut paneer prepared from the admixture of peanut (*Arachis hypogaea* L.) milk and skimmed milk

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ABSTRACT : An investigation was carried out with an attempt to develop Peanut Paneer by partial addition of Peanut milk and skim milk. For control, (T_0) Peanut milk was standardized to 6 per cent fat and 9 per cent SNF and treatment (T_1) was standardized to a ratio of 50:50 (PM:SM), T_2 60:40 (PM:SM) and T_3 (70:30) (PM:SM). The Peanut Paneer samples of different treatments were analyzed for physico-chemical properties (moisture, protein, fat, carbohydrate and ash), its nutritional content and organoleptic characteristics (colour and appearance, body and texture, flavour and taste) by trained panelist using 9 point hedonic scale. Microbiological analysis was carried out to assess the shelf-life of the best treatments by SPC and coliform test. Analysis revealed that the product conform to the legal standard as per PFA. Thus, as far as product acceptability judged by organoleptic evaluation and therapeutic value, the treatment can be rated as $T_2 > T_1 > T_0 > T_3$.

KEY WORDS : Peanut milk, Skimmed milk, Peanut paneer

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INTRODUCTION

Peanut or groundnut (*Arachis hypogaea* L.) is a species in the legumes family. It is a major source of edible oil and protein and therefore considered to be highly valuable in human and animal nutrition (Talcot and Passeretti, 2005). Peanut is also a good source of antioxidant, such as p-conmaric acid, that may be contributing factors to potential health benefits of the consumers (Sunny-Roberts *et al.*, 2004). Peanut and Peanut milk products have nutritional benefits because of their extreme richness in protein, minerals and essential fatty acids such as linoleic and oleic acids, which are considered to be highly valuable in human nutrition (Bensmira and Jiang, 2012). It is extensively used in India

and other developing countries by the vegetarians and more recently by children allergic to cow milk proteins (Kouane *et al.*, 2005). Being free in cholesterol and lactose, Peanut milk is also a suitable food for lactose intolerant consumers, vegetarians and milk allergy patients. Peanut milk may be produced by soaking and grinding full fat raw peanuts with water to get a slurry, subject to filtration. Many ways of producing peanut milk have been done by various researchers (Benchat and Nail, 2006). The variation in peanut to water ratio used for peanut milk extraction affects the peanut milk composition. However, in all cases thin low cost milk has high protein content (Isanga and Zhang, 2009). Skim milk is also labeled as fat free milk. One cup of skim milk holds 90 calories, while whole milk over half of this fat is saturated. Skim milk is packed with nutrients and does not have the calorie and fat of whole milk. Skim milk has

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several benefits, such as building strong calcium enriched bones and maintaining healthy weight (Sangwan, 2008).

Paneer is popular indigenous variety of soft cheese (David, 2009). Paneer is highly popular traditional Indian Dairy product is obtained by acid and heat coagulation of milk. Good quality paneer is characterized by a white colour, sweetish mildly acidic and nutty flavour, spongy body and a close knit structure. Paneer is highly nutritious since it remains about 90 per cent fat and protein, 50 per cent minerals and 10 per cent lactose of the original milk. About 5 per cent of the total milk produced in India is converted to paneer (Mathur, 1995).

Keeping in mind the above properties of peanut milk an attempt has been made to explore the use of peanut milk for manufacturing paneer as per procedure laid down by (De, 1980).

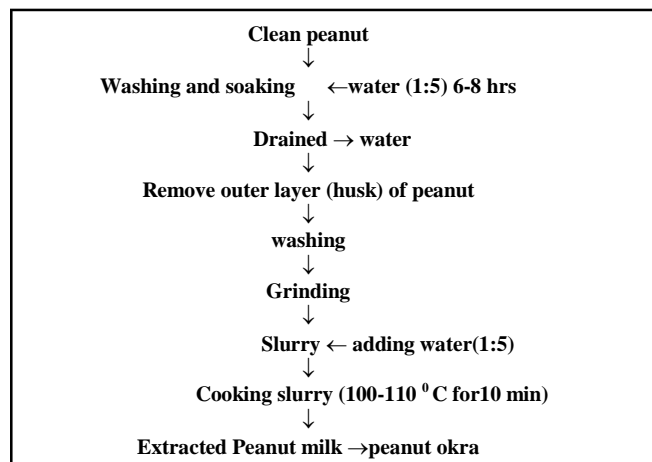


Fig. A : Flow chart for preparation of Peanut milk

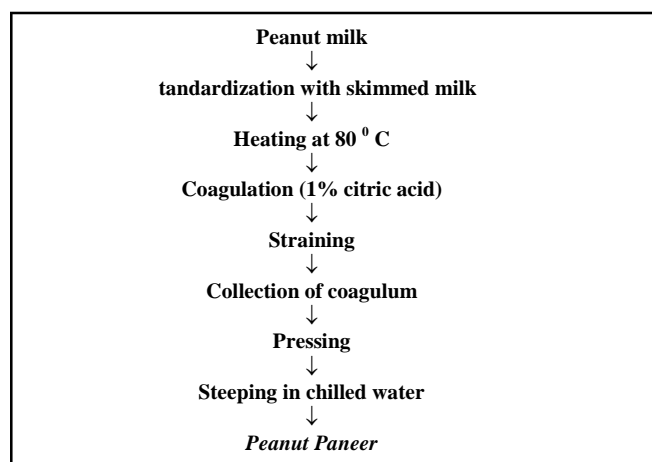


Fig. B : Flow chart for preparation of peanut paneer

MATERIAL AND METHODS

First of all, peanut milk is prepared by soaking the grains in water for 6-8 hours. Then the water is drained and the outer layer (husk) is removed. The seed was further washed and grinded. Obtained slurry was cooked at 100-110°C for 10 minutes. Then it is filtered and thus peanut milk is obtained. The control (T₀) Paneer was prepared from buffalo milk having 6 per cent fat and 9 per cent SNF as per the standard procedure. Experimental treatment (T₁) was prepared by admixture of Peanut milk and skim milk of (50:50 ratio), T₂ was 60:40 ratio and T₃ was 70:30 ratio. It was then heated at 80 °C and coagulated by 1 per cent citric acid. The coagulum was strained through muslin cloth and coagulum was collected and pressed for 30 minutes. It was then steeped in chilled water for 30 minutes. The samples were tested for physico-chemical parameters (Moisture, fat, protein, ash and carbohydrates) and microbial parameters (SPC, coliform) as per procedure given in (ICAR, 1972 a and b). The data collected on different aspects as per plan were tabulated and statistically analyzed as per (Chandel, 1991).

Table A : Details of different treatments using peanut milk for preparation of peanut paneer

Materials%	Different treatments for peanut paneer			
	T ₀	T ₁	T ₂	T ₃
Peanut milk	-	50	60	70
Skim milk	100	50	40	30

RESULTS AND DISCUSSION

Table 1 show different parameters studied.

Average of different physico-chemical parameters control and peanut paneer :

Table 1 showed average data obtained on different parameters.

Moisture percentage:

There were significant differences found in the average moisture percentage of different treatments. The highest moisture percentage was found in T₃ (61.83), followed by T₂ (61.78), T₁ (61.72) and T₀ (52.62). F value was 2634.74, indicating significant effect of treatment on moisture percentage.

Fat percentage:

The fat percentage of different treatments differed

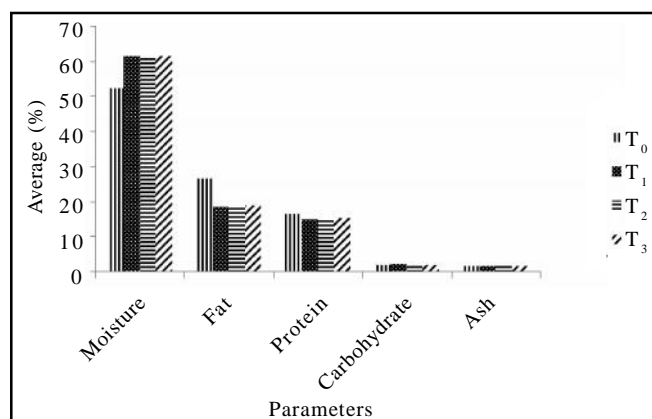
Table 1 : Physio-chemical parameters of control and peanut paneer

Parameters (%)	Control and peanut paneer				F value	C.D.
	T ₀	T ₁	T ₂	T ₃		
Moisture	52.62	61.72	61.78	61.83	2634.74*	0.27
Fat	26.73	18.80	18.83	18.88	29525.9*	0.07
Protein	16.74	15.19	15.23	15.34	103.84*	0.23
Carbohydrate	2.06	2.37	2.32	2.10	1.32**	-
Ash	1.85	1.85	1.84	1.85	0.26**	-

* indicates significance of value at P=0.05

Table 2 : Average of different microbial parameters of the control and peanut paneer

Parameters	Control and peanut paneer				F value	C.D.
	T ₀	T ₁	T ₂	T ₃		
Yeast and mold count (10 ³) cfu/g	7.0	8.4	7.6	7.2	2.56**	-
Coliform count (10 ¹) cfu/g	Nil	Nil	Nil	Nil	Nil	Nil

**Fig. 1 : Average of different physio-chemical parameters of control and peanut paneer**

significantly. The highest fat percentage was found in T₀ (26.73), followed by T₃ (18.88), T₂ (18.83) and T₁ (18.80). F value was 29525.9, indicating significant effect of treatment on fat percentage.

Protein percentage:

There were significant differences found in protein percentage. The highest protein was found in T₀ (16.74) followed by T₃ (15.34), T₂ (15.23) and T₁ (15.19). F value was 103.84, indicating no significant effect of treatment on protein percentage.

Ash percentage:

The ash percentage of different treatments did not differ significantly. The highest ash percentage was found in T₀ (1.85), followed by T₁ (1.85), T₃ (1.85) and T₂ (1.84). The treatments were non-significant. F value was 0.26,

indicating no significant effect of treatment on ash percentage.

Carbohydrate percentage:

There were no significant differences found in different treatments for carbohydrate percentage. The highest carbohydrate percentage was found in T₁ (2.37), followed by T₂ (2.32), T₃ (2.10) and T₀ (2.06). F value was 1.32, indicating no significant effect of treatment on carbohydrate percentage.

Average of different microbial parameters of the control and peanut paneer :

Table 2 showed the highest mean value for yeast and mold count in Peanut Paneer found in T₁ (8.4), followed by T₂ (7.6), T₃ (7.2) and T₀ (7.0). There were no significant differences found among the treatments. There were no coliform found in all the treatments, thus indicated proper hygiene was followed during the trials.

Conclusion :

From the present investigation, it can be concluded that an acceptable low cost paneer can be prepared by using Peanut milk and skim milk blend. The cost of production of Peanut paneer was comparatively lower than the control paneer. Therefore it will have a good market potential particularly for the vulnerable section of the society. The Peanut paneer prepared from the blending of skim milk, which is easily available and cheap will open new opportunity in marketing.

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