STUDY ON THE STANDARDIZATION AND DEVELPOMENT OF PANEER USING LEGUMES

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ABSTRACT

The present study is about the development of the paneer from legumes different ratio . In newer food product development plant-based milk alternative is an emerging method. It act as an alternate milk product for people with the lactose intolerance. Paneer was prepared from peanuts and soy by soaking the nuts for 8 h followed by removal of skin, grinding, extraction of milk and coagulation using citric acid (1% solution). The paneer was prepared with three different varying ratio they are 80:20, 65:35 and 50:50 of soy and peanut milk respectively. The obtained paneer samples were kept at refrigerated temperature for storage and evaluated for physio-chemical analysis and sensory attributes. Based on the sensory and proximate analysis the paneer sample prepared from the ratio of 80:20 had the best attributes compared to the other two samples

I. INTRODUCTION

A legume is a plant in the family Fabaceae, or the fruit or seed of such a plant. Regular consumption of legumes in a plant-based diet to reduces the prevalence or risk of developing metabolic syndrome (David.J 2014). There is evidence that a portion of pulses roughly one cup daily in a diet may help lower blood pressure and reduce LDL cholesterol levels, though there is a concern about the quality of the supporting data. Further studies have suggested that high legume consumption is associated with a lower risk of all-cause mortality.

The legumes used for the paneer development are soy and peanut. Scientific name of peanut is *Arachis hypogea* and it belongs to Legumes family. The peanut is also known as groundnut, goober, Pindar or monkey nut, and taxonomically classified as Arachis hypogeal (Chauhan et al.,2015). It is a legume crop grown mainly for its edible seeds. Peanut and its products are also well-known for their nutritional benefits because it is rich in protein, minerals, essential amino acids as well as essential fatty acids such as linoleic and oleic acids. The nutritional content of peanut is sodium 1%, protein 18%, fibre 6% and sugar 3%.

Scientific name of soy is *Glycine max and it belongs to* Fabaceae. Soy is high in copper, zinc and magnesium (Mahtre et al.,2008).It contains 177 calories, 5.36 g of carbohydrate, 12.19 g of fat. In food product development plant-based or non-dairy milk alternative is the fast-growing segment. People with lactose intolerance, calorie concern and prevalence of hypercholesterolemia have influenced them towards choosing cow milk alternatives such as plant milk-based paneer. Plant-based milk alternatives serve as an inexpensive alternate to poor economic group, where cow's milk supply

is insufficient. It can act as alternative source for cow milk as it is lactose free and it can be preferred for lactose intolerant people. It is rich in calcium content, polyphenols and dietary fiber compared to cow milk (Jain.P.et al.,2013). Being low in carbohydrates and high in protein, fat, and fiber, peanuts have a very low glycemic and make them suitable for people with diabetes. It can be preferred to people with anemia as it is an excellent source of natural iron. It is beneficial in dealing with conditions of anxiety, depression and insomnia.

II. MATERIALS AND METHODS

Peanuts and the soy were screened and only good quality and mould free seeds were selected for the study. Citric acid used for coagulation of peanut milk and soy milk.

A. Extraction of the peanut milk

Peanut milk was prepared by soaking it for 12 h followed by manual removal of skin and grinding with water in a grinder. The milk was extracted manually from the mixture by filtration using muslin cloth.

B. Extraction of the soy milk

The soy was soaked in water overnight for a period of 12 hrs. Then the soaked soy were processed further for grinding and extraction of milk.

C. Preparation of paneer

The obtained soymilk and peanut milk was mixed to different ratio. Then the milk was heated to 90 °C followed by addition of citric acid (1% solution) for coagulation. It was then stirred continuously, till the soluble solids and whey was separated visually. The coagulated material was pressed in a paneer press at a pressure of 50 psi for 10 min to get uniform quality paneer. Then they were kept at refrigerated temperature and were evaluated periodically for various physicochemical parameter

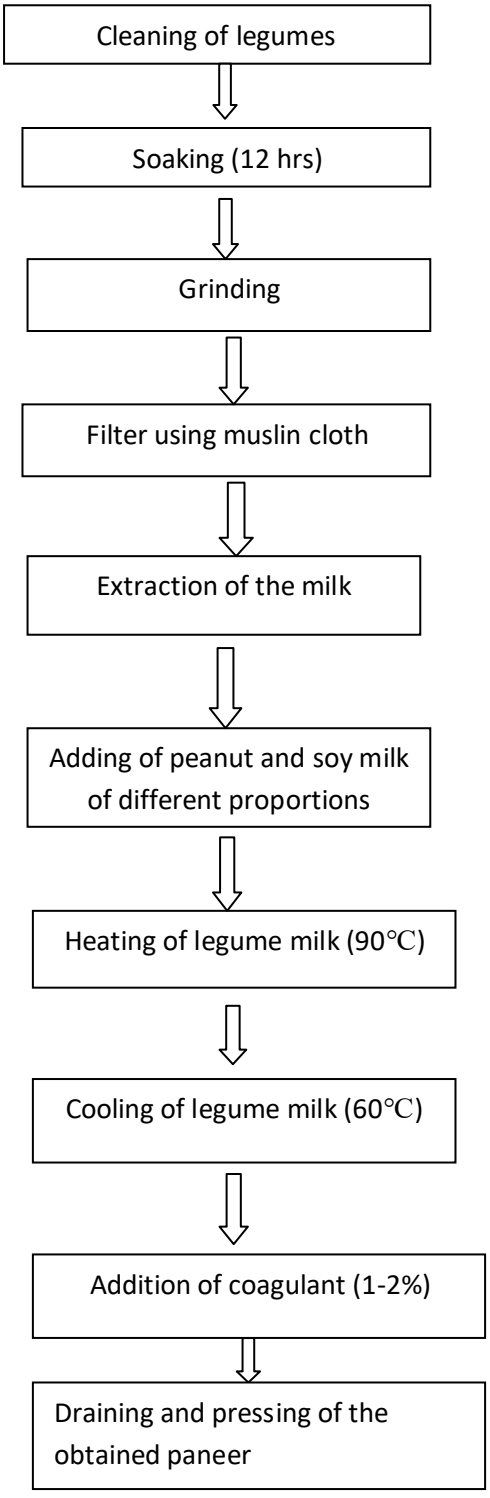

Fig.1 Legume based paneer processing

III. EXPERIMENTAL DESIGN

The legume based paneer was developed by using the peanut milk and soy milk in various ratios with the coagulant of 1%. The strength of coagulant has an effect on the body and texture of paneer.

Table 1 Different proportions of soy milk and peanut milk

SI.NO	Soy milk%	Peanut milk%	Coagulant
1	80	20	Citric acid
2	65	35	Citric acid
3	50	50	Citric acid

I. Yield

Yield is the basic parameter for any food product. The yield of paneer was calculated on the basis of initial amount of milk taken for the preparation of paneer to the paneer obtained

Yield % = Amount of paneer (g)/ Amount of legume milk (g) * 100

II. Proximate composition

Moisture, protein, ash and total carbohydrates were measured using the standard method.

A. Moisture content (AOAC 2000)

Moisture content of the paneer was calculated by taking 3g of the sample. It was weighed in a dish and was placed in a oven for a period of 3h at 105°C. The dried sample was then weighed and the moisture content was found using the standard formula. (AOAC 2000)

$$\text{Moisture (\%)} = (W1-W2)/W1 \times 100$$

B. Ash content (AOAC 2000)

The ash content of the paneer was calculated by the AOAC 2000. 5g of the sample was weighed and placed in the muffle furnace at 550°C overnight. Then the ash was weighed. The obtained data was applied in the standard formula.

$$\text{Ash (\%)} = \frac{\text{Weight of ash}}{\text{Weight of sample}} \times 100$$

C. Protein content

The protein content in the paneer was estimated by the biuret method. The protein content was found by using the BSA as the standard (Gornall et at.,1949). 1ml of the sample was taken in the test tube with 3 ml of the biuret reagent. Then the absorbance value of the sample was found in the spectrometer at 550 nm.

D. Carbohydrate

The carbohydrate of the paneer was estimated by the DNS method with glucose as the standard. The carbohydrate of the sample was estimated with the values obtained from the standard 3 ml of DNS reagent was added to 3 ml of glucose sample in a lightly capped test tube. The mixture was heated at 90º C for 5-15 minutes to develop the red-brown color. Then 1 ml of a 40% potassium sodium tartrate was added to the solution to stabilize the color and the absorbance was checked at 575 nm.

III. Texture analysis

The textural properties of the legume paneer prepared from different proportions of soymilk and groundnut milk were evaluated using Packtest Texture Analyser (Model: TA- 10Pro), Paneer samples of 10 mm thickness were compressed successfully using a 25 mm dia perplex cylindrical probe. The sample was compressed up to 30 per

cent of their original length. The speed of the probe was fixed at 0.5 mm/s during the pre-test, compression and relaxation of the samples. During testing samples were held manually against the base plate.

IV. Organoleptic test

The 5-point hedonic scale was used for evaluation of different quality attributes of soy-peanut paneer viz., color, flavor, taste, texture and overall acceptability.The organoleptic score of the paneer was based on the scores given by the panellist.The data was tabulated and evaluated statistically.