

“Preparation of Healthy-Vegan flavored Soymilk blended with Peanut”

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Abstract – The vegan flavored Soymilk blended with peanuts has been formulated with 80:20 ratio of Soybean milk and Peanuts milk respectively with addition of flavors making it more delightful. The nutritional significance of Soy-peanut milk is great as it contains 7.70 g Protein, 18.8 g Carbohydrate 15.5 g Calcium, 3.5 g Fat, 10.5 g Sugar, 0.9 g Ash and 0.017 g Crude fiber and energy content of 138 Kcal per 100 g. Along with these essential vital nutrients, the soy-peanut milk contains some other micro nutrients like Potassium, Magnesium, Phosphorous and Iron in considerable amount. As the Soy-Peanut milk does not contain natural sugar lactose, it can be recommended for the person having lactose intolerance. The processing of Soy-Peanut milk makes it more digestible, palatable and suitable for all age groups.. Proper and ideal package along with refrigeration storage makes the Soy-Peanut milk fit and in sound condition for up to 10 days (Shelf life). As the Soy-peanut milk has tremendous nutritional significance, it can be an effective asset in eradicating the malnutrition by its supplementation to the small age groups, who does not prefer the normal milk for consumption.

Key Words: Nutritional Significance, Formulating, Lactose Intolerance, Malnutrition, Supplementation.

1. INTRODUCTION:

According to research conducted by IMAGES Group – the publisher of Progressive Grocer India – for The India Food Report 2016, the market for beverages in India is close to Rs. 1,95,000 Crore and is growing at 20–23 per cent. This growth rate will take the category at three-and-a-half times of its present size by 2020. Considering the huge market potential for beverages and the health awareness in population regarding the natural minimally processed foodstuffs including beverages, An attempt for formulating Soybean Milk With Peanuts has been done in the present study.

Milk is considered as “Complete Food” as it contains almost most of the vital nutrients essential for the normal growth of our body. Milk not only nourishes the body but also maintains the fluid balance. Although Milk has enormous nutritional significance, but some of population considers it as unfit for consumption as it obtained from Animal Source.

Besides the Animal source, Milk has some considerations for consumption for its Lactose content for those who have Lactose intolerance. So, considering the fact, an effort has been made to introduce an alternative for normal animal based milk with the Vegan Soymilk blended with Peanuts. It has all the essential and vital nutrients required for the inclusion in balanced diet and also has the advantage of exclusion of lactose making it suitable for the consumption by all age groups. The formulated soymilk blended with peanuts can be an excellent alternative for the normal milk.

1.1 Health Benefits:

- I. High nutritional content
- II. Recommended for lactose intolerant person
- III. High calorific value
- IV. Easily digestible and palatable

1.2 Justification:

Vegan Soymilk blended with Peanut helps to reduce malnutrition because it is rich in nutrients like protein, calcium, fiber, etc. It has been prepared from soybeans and peanuts which is protein rich meal in low cost for poor people. The milk is an alternative of cow or buffalo milk for lactose intolerant people. Raw soybeans and Peanut milk are not good in taste so, the flavored milk was improved consumer interest towards soy-peanut milk.

2. Materials and Methodology:

The principal raw materials require for the formulation of Soybean milk blended with peanut are Soybean and Peanuts. The other ingredients include Sugar and Flavor.

2.1 Processing Equipment:

Process equipment means equipment required when using physical or chemical methods for mechanical and/or thermal treatment or processing of a raw material or product. It

includes Digital Weighing Balance, Mixer grinder/ Processor, Refrigerator, Digital Thermometer.

The utensils required for the formulation of Soy-peanut milk are vessels, spoons, Plates and muslin cloth.

2.2 Analyzing Equipment:

For the formulation and preparation of Soybean milk blended with peanut milk, there is requirement of Soxhlet apparatus for fat estimation, Kjeldhal's apparatus for protein estimation, Muffle furnace for Ash estimation, Digital pH meter for measuring the pH of the sample, Laminar Air Flow for the determination of T.P.C. count, Incubator for the incubation of T.P.C. plates, Water bath for the estimation of Crude fiber.

Glass wares including Petri plates, glass bottles, burette, baker, volumetric flask, glass rod, pipette, silica crucible and measuring cylinder. These glass wares are used during analysis of product.

2.3 Product Manufacturing Process:

2.3.1 Preparation of Soy-Peanut Milk:

Soybean, peanut and sugar were procured having sound and uniform quality. All the raw material was properly measured by according to the ratio required in milk. The soybean, peanut are soaked in mild hot water for 12 hours, then after soaking remove the hull of soybean and peanut properly. Then grind the soybean and peanut separately by using grinder with using some quantity water, then filtration is done separate the milk by using muslin cloth. Then provide temperature to soya milk and peanut milk at 70°C. Then take soya milk and peanut milk according to ratio and then add powder sugar and stirred then add flavor (cardamom and chocolate). Then cooling of the milk and filling in plastic (P.E.T.) bottle and seal the bottle and stored in refrigerator.

2.3.2 Cleaning:

After taking raw material cleaning is done remove the unwanted particles, stone, dirt, immature beans, damaged beans etc.

2.3.3 Weighing:

Weigh cleaned soybeans and peanut for soaking in required quantity.

2.3.4 Soaking:

Soybean and peanut are soak in mild hot water for 12 to 16 hours. Because of soaking in mild hot water remove the all anti-nutritional factor from soybean and peanut.

2.3.5 Dehulling:

After soaking remove the hull of soybean and peanut by manually.

2.3.6 Grinding:

After de-hulling, grinding was done by using mixer grinder with addition of some quantity water.

2.3.7 Filtration:

By filtration separate the milk by using muslin cloth, filtration is done by manually.

2.3.8 Heating:

After filtration heating was done. Heat the milk at 70°C temperature measured by glass tube thermometer.

2.3.9 Addition of Soybean and Peanut milk:

After heating add soya and peanut milk according to ratio (80:20).

2.3.10 Addition of Sugar:

Then sugar was added according to ratio and continuous stir the milk.

2.3.11 Addition of Flavor:

Then flavor was added according to ratio and then continuous stirring.

2.3.12 Bottling:

Then milk was packaged in plastic bottle (P.E.T.) and sealing of the bottles was done.

2.3.13 Storage:

After bottling bottles were stored in refrigerator at 4°C temperature.

3. Proximate Analysis and Quality Control:

3.1 Proximate Analysis:

3.1 Estimation of Protein (By Micro-Kjeldhal Method):

		(sample - blank N of HCL Vol. of digest 0.014)
% N	=	-----
		Aliquot taken Wt. of sample

3.2 Estimation of Carbohydrate: (By Calculation Method)

Carbohydrate is evaluated by formula.

$$\% \text{ Carb.} = \frac{\text{(Weight in gram all protein + fat + ash + moisture) S in to 100 g of sample.}}{100}$$

3.3 Estimation of Energy: (By Calculation)

$$\text{Energy (Kcal)} = \text{Protein (g) x 4 + Fat(g) + Carbohydrate (g) x 4}$$

3.4 Determination of Fat (By Soxhlet Method)

$$\% \text{ Fat} = \frac{\text{Sample B-C}}{\text{Sample A}} \times 100$$

3.5 Determination of Ash (By Muffle Furnace)

$$\% \text{ Ash} = \frac{\text{(W3-W1)}}{\text{(W2-W1)}} \times 100$$

3.6 Determination of vitamin A (By

Colorimetric method)

The colorimetric method involves adding a chromogenic reagent to a volume of solubilized fortified food sample.

3.7 Estimation of Calcium:

$$\% \text{ calcium} = \frac{\text{B.R. X 0.02 X 20 X 1000}}{\text{Volume of Sample}}$$

3.8 Determination of Moisture:

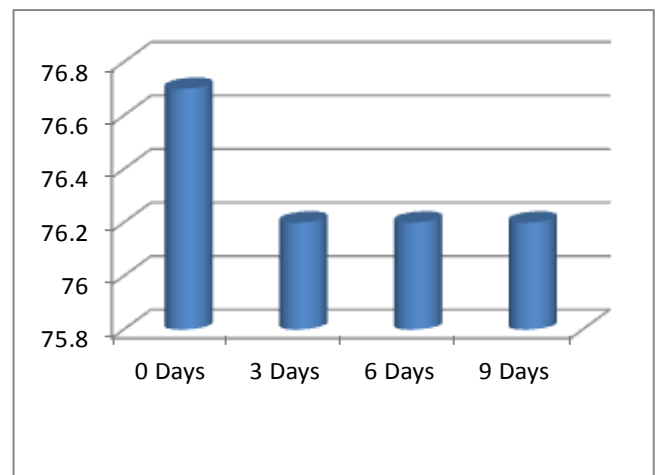
$$\% \text{ Moisture Content} = \frac{\text{Initial Wt. - Final Wt.}}{\text{Wt. of Sample}} \times 100$$

3.9 Determination of Crude Fiber:

$$\% \text{ Crude Fiber} = \frac{\text{Loss in wt. in ignition [(W2-W1)-(W3-W1)]}}{\text{Wt. of Sample}} \times 100$$

3.10 Determination of pH:

pH was determined by using digital pH meter.



3.11 Determination of Total Plate Count (T.P.C.)

To poured plates are prepared using a specified culture media and a specified quantity of the test sample. The number of microorganisms per mm of per g of sample is calculated from the number of colonies obtain on selected place.

3.2 Quality Control:

Quality of the food may be define as the composite of those characteristics that differentiate the individual unit of the product and have significance in determination the degree of acceptability of that unit by the buyer.

3.2.1 Raw material quality control:

Before buying raw material in bulk, food manufacture generally buying sample to make sure it fulfills the factory's specifications. Raw materials examined for different parameters and it carries with nature and type of ingredients.

3.2.2 Process Control:

All treatments given during processing are standardized, ingredients used in correct amounts, accurate methods of preparation and mixing are employed, and checks are made on the containers used to make sure that they are sound. Satisfactory hygienic conditions are also maintained during processing.

3.2.3 Inspection of finished product:

It is carried out to determine to what extent the desired quality specifications have been achieved. Some tests are performed to check certain properties which are related to palatability and acceptability of product.

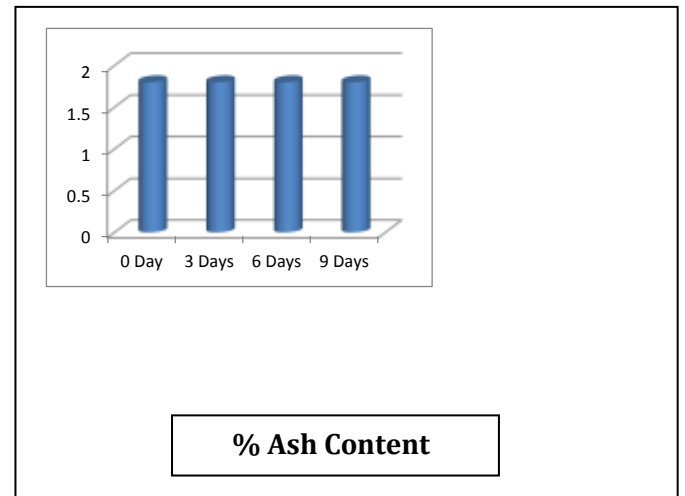
4. Results and Discussion:

4.1 Effect of storage on Moisture content of Soy-Peanut Milk:

Parameter	Storage Period (Days)			
	0 Day	3 Days	6 Days	9 Days
Moisture Content	76.6 %	76.2 %	76.2 %	76.2 %

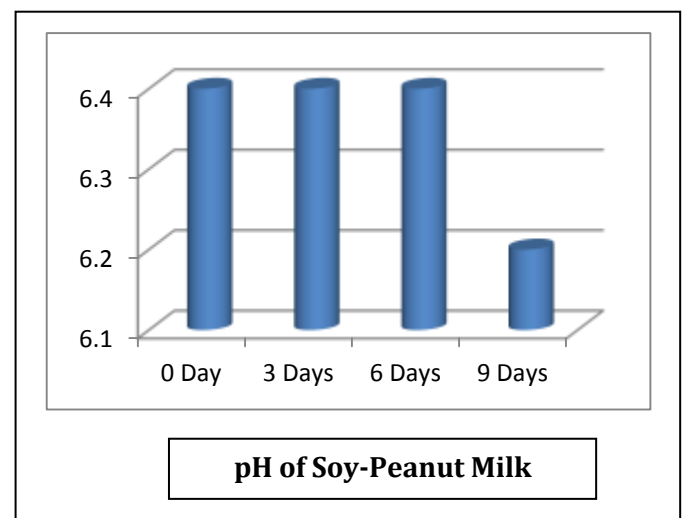
4.2 Effect of storage on Ash content of Soy Peanut Milk:

Parameter	Storage Period (Days)			
	0 Day	3 Days	6 Days	9 Days
Ash Content	1.8 %	1.8 %	1.8 %	1.8 %



4.3 Effect of storage on pH Values of Soy-Peanut

Parameter	Storage Period (Days)			
	0 Day	3 Days	6 Days	9 Days
Ash Content	6.4	6.4	6.4	6.2



4.4 Packaging and Labeling:

Packaging can be defined as a socio-scientific discipline which operates in society to ensure delivery of goods to the ultimate consumer of these goods in the best condition intended for their use. The most common material used in packaging are; Plastics, Paper/Board, Metals, Glass, Wood. Commercially available cardboard box is made from cellulose or wood fiber.

We have selected the P.E.T. (Poly Ethylene Terephthalate) bottles for the packaging of Soy-Peanut Milk.

Objectives of Packaging:

They provide physical protection, Barrier protection, Information transmission, Convenience.

4.4.1 Labeling:

Labeling is most important to attract consumers. It plays important role in marketing of product. It should be attractive, colorful, having lots of graphics, picture with label. Labeling contains the following information:

Logo, Brand Name, Product Name, Nutritional information, List of ingredients, Net weight (when packaged), Max. Retail price (MRP), Manufactured by, Date of Mfg., Expiry Date.

5. Conclusion:

The present research comprises of the formulation of "vegan flavored Soymilk blended with peanuts". The final ratio of Soybean milk and peanut milk is 80:20 respectively. The addition of flavors makes it more delightful by enhancing the appearance. The nutritional significance of Soy-peanut milk is great as it contains 7.70 g Protein, 18.8 g Carbohydrate 15.5 g Calcium, 3.5 g Fat, 10.5 g Sugar, 0.9 g Ash, 0.017 g Crude fiber and energy content of 138 Kcal per 100 g. Along with these essential vital nutrients, the soy-peanut milk contains some other micro nutrients like Potassium, Magnesium, Phosphorous and Iron in considerable amount. It can be recommended for the person having lactose intolerance. The processing of Soy-Peanut milk makes it more digestible, palatable and suitable for all age groups. The Soy-Peanut Milk has Shelf life of up to 10 days. At the end of this research work, we have concluded that Soy-peanut milk has tremendous nutritional significance and it can be an effective asset in eradicating the malnutrition by its supplementation to the small age groups. The Soy-Peanut milk can prove beneficial for the masses as well as classes.

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