



Development of khoa from cow milk and soya milk

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ABSTRACT :

The present study was undertaken for development of cow and soyamilk khoa. Khoa is made of either dried whole milk or milk thickened by heating in an open iron pan. Cows' milk is a high nutrients containing of varying amounts of carbohydrate, fat, and protein, water-soluble vitamins, minerals, trace elements, and salts. So main purpose of research is to make khoa which is having both the characteristics that are present in khoa of cow milk and soya milk. The present investigation conducted that, to develop the Khoa using various level of concentration of cow milk and soya milk content Viz. (T1) 90:10, (T2) 80:20, (T3) 70:30, (T4) 60:40 and (T5) 50:50 etc. (T1) 90 :10 sample select on the basis sensory evaluation (9 point hedonic scale) and Treatment T1 was more acceptable in all treatments in colour and appearance, flavour, body and texture and overall acceptability. The prepared khoa placed on container and polypropylene stored at room temperature and refrigeration condition to determine the physico-chemical and sensory quality attributes.

Key words-khoa, cow milk, soya Milk.

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INTRODUCTION:

Khoa has a uniform whitish colour with just a tinge of brown, a slightly oily or granular texture, and a rich nutty flavour which is associated with a mildly cooked and sweet taste due to the high concentration of lactose[1]. Khoa is prepared from cow milk which had high fat content but deficit in vitamins and minerals. Cows milk is a high nutrients containing of varying amounts of carbohydrate, fat, and protein water-soluble vitamins, minerals, trace elements, and salt. Milk plays an important role in the diet of most of the people in the world [2]. Soya milk that can be used as substitute for cow milk which is rich in minerals, vitamins and isoflavones and has no cholesterol, and lactose[3]. Soya milk contained high amounts of protein poly -unsaturated fatty acids, vitamins, minerals and phytochemicals it could be easily used as good source of nutrition food for malnourished people especially in developing countries[4]. Hence in the present investigation we had made an attempt to develop cow milk mixed with soya milk. Experiments were conducted to develop the khoa using various level of concentration of cow milk and soya milk content. The prepared khoa is placed on container and polypropylene at room temperature and refrigeration condition to determine the physico-chemical and sensory attributes. The biochemical analysis as the percentage of soya milk increases, fat content decreases, protein content increases, mineral content increases with the marginal difference. From the present study, it can be concluded that khoa prepared by cow milk and soya milk were more enriched product compared to control. So the main purpose of the research is to make khoa which is having both the characteristics that are present in cow milk and soya milk. Soya milk is made up entirely of vegetable protein, which results in less calcium loss through the kidneys, reduced LDL cholesterol, and less blood clotting, all of which reduce the risk of cancer and heart attacks. The FDA (food and drug administration of us) confirms that soya protein, as part of diet in saturated fat and cholesterol may significantly reduce the risk of coronary heart[3]. The investigation was undertaken with the objective listed below. To develop Formulations with varying proportions of cow milk and soya milk. To analyze Proximate composition of khoa. To carry out sensory evaluation of formulated Soya milk combine with khoa to assess the acceptability. To study different types of packaging materials like container and polypropylene .

MATERIALS AND METHODS

The experiment “Development of khoa from cow milk and soya milk” was carried out in laboratory, Department of Food Processing And Packaging, Yashwantrao Chavan Institute of Science Satara- 415001, Maharashtra (India).

Collection of raw materials

All the material required for the experiment were purchased from the local market of Satara cow milk, Soyabean and sugar.

Extraction of soya milk :

Soya beans that had been steeped for 10–12 hours were used to make soymilk. Soybeans that had been soaked, cleaned, and allowed to swell were fed into a machine called a “soy cow” that also includes a filtering unit, grinder, and burner. In the grinder-cumulator, soybean seeds were cooked with steam over a 5-minute stirring period. The deodorizer was then used to deodorise the soy slurry. The milk that has been produced this way is filtered using tiny mesh found inside a mechanical filter press. In this manner, the well-pressed okara remains in the filter bag while the soymilk exits through the press drain pipe.

Preparation of soya milk incorporated khoa:

Bring the soymilk to a boil first, then stir it while rotating the pan at a speed of roughly 100 rpm. This would promote consistent moisture evaporation. A suitable amount of sugar is added, and after a few minutes, the milk gradually thickens. At this point, the thicker mass exhibits spurting and a sudden shift in colorant, and the desiccation process is maintained while also vigorously churning the viscous product until it acquires a pasty consistency. Pay special attention at this point and put out the flames to get the temperature down to 80–88°C. When the finished product begins to adhere to one another, it is finished. After some time, take the soy khoa from the parchment paper, form a circle-shaped pan, and weigh the soykhoa.

Experimental Protocol:

Different proportions of soymilk incorporated in khoa:

In the current investigation, we made khoa-infused soya milk in various ratios. In order to properly standardise the product five different proportions of cow and soya milk like 90-10%, 80-20%, 70-30%, 60-40%, 50-50% of soya milk incorporated khoa with respect to mix following the above mentioned procedure. The details of formulations are shown in table

Composition of Product variation:

Table 1: Composition of Product Variation

Sample	Cow milk	Soy milk	Sugar
Control	1000 ml	Nil	120 gm
T1	900 ml	100 ml	120 gm
T2	800 ml	200 ml	120 gm
T3	700 ml	300 ml	120 gm
T4	600 ml	400 ml	120 gm
T5	500 ml	500 ml	120 gm

Sensory evaluation (9 Point Hedonic Scale)

The sensory quality of the control and experimental khoa was evaluated by a panel of judges on a 9 point hedonic scale. The sample of khoa was analyzed for sensory parameters like colour and appearance, flavour, body and texture and overall acceptability, whereas score of represented “dislike extremely” and score of a represented “like extremely”.

Table 2: Mean score of control and different treatments of khoa from cow and soya milk

	T0	T1	T2	T3	T4	T5
Colour	7.2	8.3	7.5	6.9	6.7	5.8
Texture	7.7	8.4	7.2	6.2	6.1	5.7
Flavour	7.3	8.2	7.1	6.6	5.8	5.2
Taste	7.4	8.1	7.2	6.5	6.3	5.1
Overall acceptability	7.4	8.7	7.6	6.6	6.4	5.6

RESULT AND DISCUSSION:

The analyzed data is presented in this Chapter in sensory attributes such as colour, Texture, Flavour, Taste, Overall acceptability of the cow and soy milk khoa. (T1) 90:10 sample select on the basis sensory evaluation (9 point hedonic scale). The mean score of the T1 sample colour (8.3), Texture (8.4), Flavour (8.2), Taste (8.1) and overall acceptability (8.7).

Moisture content :

The moisture content can be estimated by oven method (ISI0484.1983 specifications) Take the weight of petri dish. Weight about 10 gm of khoa into the petri dish and spread evenly for uniform drying. Put the petri dish in an oven at 100-105°C with the lid open for about 2 hours. Cool the petri dish in desiccators, with the lid closed for 15 min. Take the Weight of with sample.

Moisture content of T1 sample is 15.63 % .

Ash:

Ash is the inorganic residue remaining after the water and organic matter have been removed By heating in presence of oxidizing agents which provides a measure of the total amount of mineral within the food. Remove the moisture content in bulb. Put the sample in a muffle furnace (550-600°C). Water and volatile compounds are vaporized and organic compounds are burned. The minerals are converted in to oxides, phosphates, chlorides or silicates.

The ash content represent the mineral content In the sample T1 is 3.32 % . A because the soya milk contain most of the minerals the following because of the stability of the minerals to the heat when they are blended gives high percent of mineral content.

Fat estimation :

Weigh accurately 4-5 gms of prepared sample into a extraction tube wash slides of the tube With 2ml hot water and mix well. Add 2ml of conc. Ammonia and mix. Heat on a water bath For 20minutes at 60°C with occasional shaking. Add 10ml of alcohol and mix. Transfer Mixture to a separating funnel. In a beaker rinse 25ml of ether and 5ml of petroleum ether and Add to the funnel. Shake well after each reagent addition for 5 minutes, till a clear upper layer Is obtained .transfer ether layer into tared flask. Wash extraction tube with a 1:1 mix of Solvents and add to the flask. Reextract liquid in aspirating funnel twice 15ml of each solvent Each time and collect in a tared flask evaporate the solvents on hot plate at 60°C. dry the Residue of fat to constant rate in an oven at 100°C cool and weigh the flask and remove the fat In the flask with 15-20ml petroleum ether, dry and weigh the sample.

Fat content of sample T1 is 12.67 %.

Estimation of Protein :

Protein estimation of sample was carried out using kjeldhal method (AOAC,1990). The Kjeldhal method can conveniently be divided into three steps:1. Digestion, 2. Neutralization 3. Titration organic matter was oxidized and uniform greenish – blue digest was obtained. The digest was cooled volume was made up to 100 ml distilled water. An aliquot of 5 ml was taken for steam distillation in kelpus distillation unit with excess of 40% NaOH solution (10 ml). The liberated ammoniac was observed in 100 ml of 2% boric acid containing a few drops of mixed indicator. This was titrated against N/70 HCl. A simultaneous standard (Anhydrous ammonium sulphate) was done to estimate the amount of nitrogen taken up by N/70 HCl. From the nitrogen content of the sample, the protein 0.1g of sample was weighed into a kjeldhal flask 0.2g of the digestion mixture as added and digested in kelpus – kjeldhal digester with 20 ml of conc. H₂SO₄ until all the n content of different samples was calculated by multiplying by a factor of 6.2 % of nitrogen present in given sample

Protein content of sample T1 is 24.56 %

CONCLUSION:

Soya incorporated khoa was prepared for all age groups which is of high nutritious as rich in Protein as well as mineral content useful for muscle building and bone formation for growing Children and teenagers.

The protocol followed and results obtained are summarized below:

The product formulated with different ratios of cow and soy milk (90:10, 80:20, 70:30, 60:40, 50:50) respectively. Different formulations of khoa were prepared by rapid heating And analysed for proximate analysis and overall acceptability of product. Organoleptic Characteristic of soya milk incorporated khoa were evaluated. Keeping in view of its high Nutritious values and high protein content, khoa is prepared.

According to sensory evaluation sample T1 90:10 is good the acceptability to that of other samples in terms of colour, acceptability, flavor, and texture. The biochemical analysis of sample T1 is moisture content 15.63%, Fat content 12.67%, Ash content 3.32% and Protein content 24.56 % . Almost all social classes can afford the expense of production, which is primarily used for direct consumption.

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