



Studies On the Formulation and Sensory Analysis of Soy Khoa Sweet fortified with dates, pumpkin seeds, watermelon seeds, flax seeds, and Sesame seeds

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ABSTRACT

Soy khoa sweet focuses on diabetes, cancer, and old age due to its remedial values and replacing traditional high-calorie milk-based sweets. Soybean sweets T3 sample were prepared from 42.87% Dates, 42.87% soybean khoa, 2.57 % pumpkin seeds, 4.28% watermelon seed, 4.28% Sesame, 2.85% Flaxseed and 0.28% cardamom. Sweet made from Dates and soy khoa was rated organoleptically similar to one prepared from Dates. Expansion of Soybean khoa sweet brought about a superior sensory quality amid capacity when contrasted with the control tests. The Sensory assessment was finished by utilizing a trained panellist consisting of 10 individuals. The panellists were asked to evaluate the sweet for different quality attributes: appearance, taste flavour, and overall acceptability following a 9-point hedonic scale. The results were analysed using multiple comparison tests.

Key Words: Dates, Soy khoa, sweet.

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INTRODUCTION

Soybean contains the most pivotal components like Protein, Antioxidants, Fibre, and omega-three fatty acids, which helps to control metabolized syndrome, obesity, heart disease, and diabetes. Soy things and soy constituents might be related to a lower peril of type 2 diabetes mellitus [1]. Controlled energy consumption joined with reasonably expanded protein may address a successful and pragmatic weight reduction technique. High-protein-low sugar diets have shown some accomplishment as weight reduction [2]. Nowadays, many by-products of soybean are available in the market like soymilk, soy sauce, tofu, soy chunks, and its oil. Soybean contains roughly 40% protein and 20% oil on a standard dry issue base, and in this way, it has been a critical wellspring of protein in nations of its high utilization. [3], it is considerably higher than other plant proteins; for example, the wheat protein is broadly perceived that PDCAAS of soy protein. [4] Given the conventional strategy, numerous sorts of sweets are made in these advanced days. Ingredients like khoa condensed milk, milk powder, coconut and even flour are utilized to gather milk for a considerable length of time. Different type of sweets: Rava sweet, Kalakand, Kajukatli /kaju sweet, Chocolate kajukatli, Almond katli or badam sweet. These sweets are mostly made of milk khoa. In this paper, replace the milk khoa with soybean khoa because the soybean contains high protein and is lactose-free. Soybean khoa, the base material for sweet, was prepared from soybean milk. Khoa is a dried evaporated soybean milk solid.

This product focuses on diabetic patients, cancer patients, and old age due to its therapeutic values and replacing traditional high-calorie milk-based sweets.

The soybean khoa sweet is made by cooking Soybean khoa with dates; cardamom is one of the magnificent natural items capable by nature to an individual having all around the balanced structure of all the principal constituents required for good prosperity and quality human life. It is rich in calcium, potassium and diverse mineral and contains vitamins, lipids, and some amino acids. [5], Soybean, pumpkin seeds, watermelon seeds, Flax Seed, sesame seed and, cardamom, Various beneficial impacts of Dates. Watermelon seeds and their flour can be incorporated to prepare different products and improve their nutritional composition [6]. Flaxseed is a rich wellspring of dietary strands and lignans. Uncontrolled diabetes might instigate confusion addressed by dyslipidemia, high oxidative pressure and kidney brokenness. In the current examination, the beneficial impact of two months of bread enhanced with defatted flaxseeds (DFB) and dietary routine was assessed in ordinary and type people with diabetes

[7].The sesame seed and its constituents are utilized in the treatment of illnesses. It contains various constituents. However, one of its constituents, sesamol, impacts different flagging pathways directing carcinogenesis, making it a significant and promising bioactive compound [8]. Dates cure fertility, reduce obesity, hypertension, and diabetes [9]. It prevents cancer also [10].The antimicrobial and cancer prevention agent properties of cardamom, separate among others, prompts an examination field to utilize them as additives in food [11]. cardamom was procured from the local market. The significant restorative properties of cardamom essential oil are its germicide, carminative, stomach diuretic, stimulant, stomachic, tonic and antispasmodic, antimicrobial furthermore, hostile to inflammatory exercises related, Pharmacological properties: Cardamom has antimicrobial action and the seeds inhibitory affect organisms. [12].

MATERIAL AND METHODS

Preparation of soy milk

Soy milk makers frequently work specifically with agriculturists, so they can produce great soybean(one producer gives the ranchers the seeds for the soybeans they require). For the most part, soybean makers look for huge soybeans called clear hylem.

Soaking: Soybean soak overnight and after night soybean swelled so, it looses outer layer covering.

De-hulling: Soaked soybean rubbed by hand(manually) and rinsed with water.

Negating unpalatable catalyst Next, soybeans must be cooked, keeping in mind the end goal to negate or check a particular catalyst that makes them unpalatable to people. This cooking happens in the Enzyme Invalidator, in which the de-hulled soybeans are cooked utilizing high weight, Water, and high temperature (making scalding live steam) to refute that compound.

Grinding: The soaked soybeans are put into the jar and grind. Some water is added to the soybean for uniform grinding.

Soaked soybean convert into a paste form adding water: Add water into soybean paste ratio is (1:8) and put into the gas for boiling. The boiling time is 25-40 min—continuous stirring to prevent sticking.

Filtration: After boiling, soybean milk can be filtered with a muslin cloth.

The hot soy milk can be cooled at room temperature. Soy milk is ready to become a soy khoa.

Preparation of soy khoa

Soy khoa is the central part of sweet was prepared from soybean milk. Khoa is a dried evaporated soybean milk solid. The milk is gradually stewed in a considerable Karahi till all its dampness vanishes and it lessens to solids. In Indian cooking, khoa forms a base of almost all sweets. Soy milk is put into the karahi and continuous stirring because milk can be settled in the bottom of the karahi. Continuously evaporation starts till the milk convert into a semi-solid form and evaporation take the time of 25-45min. During a semi-solid form of soy milk, it was adding cardamom and mixing it well. After 10 min soy khoa is ready.

Preparation of soy khoa sweet with dates

The date was buying from a local market.

Preparation of sweet: 42.87% soybean khoa put into the hot pan and adding 0.28% cardamom after a few minutes—continuous mixing to ignoring sticking to the bottom. After sometimes added 42.87% Dates in paste form, 2.57% pumpkin seed, 4.28 % watermelon seed, 4.28% Sesame seed and 2.85% Flax Seed. In the end, the sweet mixture was warmed up in a bit of fire. Let the sweets go on till it gets cooked well. Grease the tray and transfer the product to it. This product focuses on diabetic patients, cancer patients, and old age due to its therapeutic values and replacing traditional high-calorie milk-based sweets. As Soy khoa sweet will be prepared without sugar (which act as a natural preservative) and is prone to microbial spoilage due to milk, it will be necessary to use antimicrobial to increase its shelf life.

Sensory evaluation

Sensory evaluation was done using a taste panel consisting of 10 trained panelists members. The panellists were asked to evaluate the sweet for different quality attributes, namely appearance, taste flavour and overall acceptability, following a 9-point hedonic scale.

Hedonic Scale	Quality Score
Like extremely	9
Like very much	8
Like moderately	7
Like slightly	6
Neither like nor dislike	5
Dislike slightly	4
Dislike moderately	3
Dislike very much	2
Dislike extremely	1

RESULTS AND DISCUSSION

Dates sweet based on soy khoa. Soy khoa selected on the basis of sensory evaluation sweet making quality during storage at room ($25\pm 2^\circ\text{C}$) and refrigeration ($5\pm 1^\circ\text{C}$) temperature at an interval of 3 days up to 7 days.

Sensory Quality

The investigation of 3 samples one is with jaggery (T1) second with honey (T2) and third with dates with cardamom (T3) were evaluated on a 9-point hedonic scale for their sensory quality of all three. There were 10 trained panellists, they gave different scores to each sample so the best of these was T3 sample. Colour and taste got a low mean score in the T1 sample as compared to T3 sample and T2 sample also got low mean score because of texture and taste as compared to T3 sample. The trained 10 panellist's member gave different scores for which we calculated the mean value and then after getting the mean value, The result was that when I kept the refrigerator from the T3 samples, then the shelf life of T3 samples was good. Therefore, the colour of T3 samples got a mean value of 7.6 which is a higher score than the room temperature. Taste was also good in refrigerator temperature as compared to room temperature and their mean value were 7.6 & 7.3 respectively. Now comes to taste and flavour. The flavours and taste of sweets are better at refrigerator temperature than at room temperature.

One of the most crucial parameters in establishing a product's acceptability is sensory evaluation. The mean scores of sensory evaluations were presented in Table 1, 2 and 3 as indicated, and the varied treatments had a significant ($P\leq 0.05$) effect on the sensory scores of Soybeans sweet, i.e., colour, flavour, taste, texture, and overall acceptability. The sensory scores for overall acceptability obtained are given in table 1, 2 and 3. The addition of Dates with cardamom soybean khoa sweet resulted in a better sensory quality during storage as compared to room temperature. The sensory scores of soybeans sweet reduced during storage. The reduction in sensory scores was, however, higher in the case of soybean khoa sweet stored at room temperature as compared to those stored at refrigeration temperature. The sensory scores for colour, flavour, texture, and taste obtained are given in table 3.

And overall acceptability for T1 sample at room temperature is 6.6 and at refrigerator temperature is 7.6 just like that T2 sample overall acceptability at room temperature is 6.3 and at refrigerator temperature is 7.3. and last T3 sample overall acceptability at room temperature is 7.3 and at refrigerator temperature is 7.6. The mean score shows that T3 sample is the best as compared to both samples.

Table 1: Soy khoa sweet with jaggery and all seeds.

Treatment		
Colour	C.D(P<0.05)	
Room Temp.	6.3±0.5	≤ 9.1
Ref. Temp.	6.6±0.5	≤ 8.6
Taste		
Room Temp.	5.6±0.5	≤ 10.1
Ref. Temp.	6.3±0.5	≤ 9.1
Texture		
Room Temp.	7.3 ±0.5	≤ 7.8
Ref. Temp.	7.6 ± 0.5	≤ 7.5
Flavour		
Room Temp.	6.3 ±.05	≤ 9.1
Ref. Temp.	7.3 ±0.5	≤ 7.8
Overall Acceptability C.D(P<0.05)		
Room Temp.	6.6 ±0.5	≤ 8.6
Ref. Temp.	7.6 ±0.5	≤ 7.5

Table 2: Soykhoha sweet with honey and all seeds.

Treatment		
Colour	C.D(P<0.05)	
Room Temp.	6.6 ±0.5	≤ 8.6
Ref. Temp.	7.6 ±.5	≤7.5
Taste		
Room Temp.	6.3 ±0.5	≤ 9.1
Ref. Temp.	6.6 ±0.5	≤ 8.6
Texture		
Room Temp.	6.3 ±0.5	≤9.1
Ref. Temp.	6.3 ±0.5	≤9.1
Flavour		
Room Temp.	6.6± 0.5	≤8.6
Ref. Temp.	7.3 ±0.5	≤7.8
Overall Acceptability	C.D(P<0.05)	
Room Temp.	6.3 ±0.5	≤9.1
Ref. Temp.	7.3 ±0.5	≤7.8

Table 3: Soy khoa sweet with dates and all seeds.

Treatment		
Colour	C.D(P<0.05)	
Room Temp.	7.3± 0.5	≤7.8
Ref. Temp.	7.6 ±0.5	≤7.5
Taste		
Room Temp.	7.3± 0.5	≤7.8
Ref. Temp.	7.6 ±0.5	≤7.5
Texture		
Room Temp.	6.6± 0.5	≤8.6
Ref. Temp.	7.3 ±0.5	≤7.8
Flavour		
Room Temp.	7.3. ±0.5	≤7.8
Ref. Temp.	7.6 ±0.5	≤7.5
Overall Acceptability	C.D(P<0.05)	
Room Temp.	7.3± 0.5	≤7.8
Ref. Temp.	7.6 ±0.5	≤7.5

CONCLUSION

The goal of sensory evaluation and for the expert in the food business is to foster an asset that can give valuable and exact data at a sensible expense and in the briefest possible time. Achieve these objectives requires talented people who are equipped for applying their insight to tackle explicit issues. Sensory evaluation should exhibit the worth and uniqueness of the data it gets and separates it from other item data sources. Soy khoas weet preparation with soykhoha and dates were evaluated for Sensory Analysis during storage at room (25 ±2°C) and refrigeration (5±1°C) temperature at an interval of alternative day for one week. The results obtained are summarized as under overall acceptability is better in refrigeration temperature than the room temperature.

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REFERENCES

1. W.Li, W Ruan, Y. Peng, & D. Wang, (2018)Soy and the risk of type 2 diabetes mellitus: A systematic review and meta-analysis of observational studies; Diabetes Research and Clinical Practice, vol137, pp 190-199.
2. Findlay S. M., McKenzie J., Al-Dujaili, E., & Davidson, H. I. M., (2015)A 12-week dietary intervention of soya beans (edamame) results in reductions in weight, body mass index, abdominal-girth and depth in overweight and obese women; Appetite,vol 91,pp 437.
3. Umer, T.Jemal, & A. bilatu.,(2010)Physicochemical and Sensory Properties of Tofu Prepared from Eight Popular Soybean [Glycine max (L.) Merrill] Varieties in Ethiopia; Scientific African, PII: S2468-2276, 25740-9
4. K. Nishinari, Y. Fang, T. Nagano, S. Guo, &R. Wang., (2018) Soy as a food ingredient". Proteins in Food Processing; pp149-186.
5. Echegaray, N., Pateiro, M., Gullón, B., Amarowicz, R., Misihairabgwi, J. M., & Lorenzo, J. M. (2020)Phoenix dactylifera products in human health – A review; Trends in Food Science & Technology, vol105, pp 238-250.
6. Virginia P., Ruchi., AjitP.,(2014) Development of nutritious snacks by incorporation of amaranth seeds, watermelon seeds and their flour; Indian J Comm Health.26, pp. 93-94
7. Mohamed, D., Al-Okbi, S., El-Hariri, D., & Mousa., (2012)Potential Health Benefits of Bread Supplemented with

- Defatted Flaxseeds under Dietary Regimen in Normal and Type 2 Diabetic Subjects. Polish Journal of Food and Nutrition Sciences,62(2).
8. Pal, D. k., (2020)Nuts and Seeds in Health and Disease Prevention; Sesame Seed in Controlling Human Health and Nutrition.,183–210.
 9. B.M. Juma, D. AL-Bayan, A. Shakeel, S. F Hussein, G. Salah, & G. Al Mustafa (2011), “Glycemic indices of five varieties of dates in healthy and diabetic subjects; Nutrition Journal,10:59.
 10. Al Alawi, R., Alhamdani, M. S. S., Hoheisel, J. D., &Baqi, Y., (2020)Antifibrotic and tumor microenvironment modulating effect of date palm fruit (Phoenix dactylifera L.) extracts in pancreatic cancer; Biomedicine & Pharmacotherapy, vol 121, pp 109522.
 11. Singh, R., Kaushik, R., &Jaglan,V.(2018)Antibacterial and antioxidant activity of green cardamom and rosemary extract in food products: A brief review, The Pharma Innovation Journal;7(6): 568-573
 12. V. A. Parthasarathy and D. Prasath (2012). “Cardamom”, Indian Institute of Spices Research.

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