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Study on sensory paramenters and cost of production of kulfi prepared by using different levels of betel-vine leaves extract

MA Waikar, AV Gharatkar, SS Ramod, PV Jadhav and VS Dandekar

Abstract
Kulfi *is* produced by concentrating whole milk to about two folds followed by addition of sugar and freezing it in aluminium or plastic moulds, usually of conical shape. In present study betel vine kulfi was prepared using different levels of betel vine leaves extract *viz*., 10, 15, 20 per cent levels and represented as T_1, T_2, T_3 respectively and T_0 is control without addition of betel vine leaves extract. Among these levels, 15 per cent level of addition was found to be acceptable by sensory panel (9 point hedonic scale)) and was used for the production of betel vine kulfi. The prepared betel vine kulfi was subjected to sensory analysis and cost of production with control and kulfi prepared using different levels of betel vine leaves extract. It is concluded that kulfi incorporated with 15 per cent betel vine leaves extract is best in overall acceptability.

Keywords: Betel vine leaves extract, betel vine kulfi

Introduction
Milk has been recognized as complete food by nutritionist all over the world. It has all the ingredients and nutrients necessary for growth and maintenance of healthy body. Milk promote strong bones, the calcium in milk helps to protects teeth against gum disease and keeps jaw bone strong and healthy. Milk is low in carbohydrates and therefore does not raise blood glucose level. Kulfi is 500 years old popular frozen dessert of Indian origin and it occupies a privilege position among the traditional Indian dairy products. Kulfi has been defined as frozen milk product prepared from cow or buffalo milk or a combination thereof or from cream and/or other milk products, with or without adding sugar, fruits, chocolates, edible flavours and permitted food colour.

Betel vine is a shed loving plant and originated from Malaysia. Betel vine (*Piper betle L)* is known by its many names across the country and abroad. In Indian subcontinent it is known as pan in Hindi, Tambula in Sanskrit, Vidyach pan in Marathi, Nagarbel in Gujrati and pan in Bangala. In foreign languages it is known as Tanbol in Arabic and Burg-e-Tanbol in Persian. India is the largest producer of betel vine followed by Bangladesh. Important betel vine varieties cultivated in India are karpura, chennar, tellaku, bangla, kalli patti, awani patti, etc. Betel vine has been under cultivation in India for centuries.

Betel leaves are used as stimulants, as an antiseptic and a breath freshener. It is also good for the respiratory system and is used in treatment of bronchitis, cough and cold. Essential oils from betel leaves contain phenol called chavicol which have powerful antiseptic properties. Essential oil contained in leaves possess antibacterial, antiprotozoan and antifungal properties.

Material and Methods
For preparation of kulfi incorporated with betel vine leaves extract, buffalo milk was received from Dairy farm, College of Agriculture, Dapoli, whereas as betel vine leaves were purchased from Horticulture farm, College of Agriculture, Dapoli. Amul fresh cream and sugar were purchased from the local market. The betel vine kulfi was prepared as per the procedure given by Sukumar De with minor modification.

The fresh buffalo milk from dairy farm was pre-heated at 35-40 ^{0}C for 5 minutes. Milk was filtered through two fold muslin cloth and then concentrated to 50% of original volume. Sugar was added @ 12 % of volume of unsweetened condensed milk and cream added @ 14 % of volume of unsweetened condensed milk. Betel vine extract was added as per treatment i.e, @ 0, 10, 15 and 20 % of *kulfi* mix. Ageing of mix was done at 6-7 °C for 2-3 hours.

The mix was transferd to kulfi cones and hardened at -18 to -20°C for overnight.

Flow chart for betel vine kulfi preparation

Receiving of milk
↓
Pre-heating
(35 to 40°C/5 minutes)
↓
Filtration
(Two fold muslin cloth)
↓
Consentration
(50% of oringinal volume)
↓
Adition of sugar
(12 % of volume of unsweetened condensed milk)
↓
Addition of cream
(14 % of volume of unsweetened condensed milk)
↓
Addition of betel vine leaves extract as per treatment
↓
Ageing of mix (6-7°C for 2-3 hours)
↓
Transfering of mix to kulfi cones and freezing (0-5°C)
↓
Hardening
(-18 to -20°C overnight)
↓
Betel vine kulfi

The total solids and protein content of milk and betel vine kulfi were determined as per IS: 1479 (part-II), 1961 [6]. The fat content of milk and betel vine kulfi was determined by using standard Gerber method as per IS: 1224 (part-I), 1977 [7]. The acidity of milk and betel vine kulfi was estimated according to IS: 1479, (part–I), 1960 [5]. The ash content of milk and betel vine kulfi was determined as per the procedure given in A.O.A.C. (1975) [1]. The lactose content of milk and betel vine kulfi was estimated by Lane Eyon method prescribed in ISI Handbook (1981). The data were statistically analyzed according to Snedecor and Cochran (1994) [12] using randomized block design.

Sensory analysis of betel vine kulfi

Sensory evaluation of any dairy product is the best method of judging the acceptability of the product by the consumers. The assessment was done by studying the characteristics like, Colour and appearance, Body and Texture, Flavour and Overall acceptability of the product by the panel of 15-20 judges by using "Nine Point Hedonic Scale" score card. Each sample was bearing a code number so as to avoid its identity and have impartial results.

Colour and appearance

Acceptance of milk and milk products largely depends on its colour and appearance hence, colour and appearance is an important sensory attribute of milk and milk products.

The score for colour and appearance were 7.4, 7.5, 8.2 and 7.1 for 0, 10, 15, 20 of betel vine kulfi, respectively. The highest score for colour and appearance is recorded by treatment T_2 (8.2) i.e kulfi incorporated with 15 per cent of betel vine leaves extract and lowest score was recorded by treatment T_3 (7.1) i.e. kulfi incorporated with 20 per cent of betel vine leaves extract.

Flavour

The score for flavour were 7.5, 7.8, 8.2 and 7.3 for 0, 10, 15, 20 of betel vine kulfi, respectively. The highest score (8.2) is recorded by treatment T_2 i.e kulfi incorporated with 15 per cent of betel vine leaves extract and lowest score was recorded by treatment T_3 (7.1) i.e. kulfi incorporated with 20 per cent of betel vine leaves extract.

Body and texture

The score for body and texture were 7.45, 7.63, 8.03 and 6.71 for 0, 10, 15, 20 of betel vine kulfi, respectively. The highest score (8.03) is recorded by treatment T_2 i.e kulfi incorporated with 15 per cent of betel vine leaves extract and lowest score was recorded by treatment T_3 (6.71) i.e. kulfi incorporated with 20 per cent of betel vine leaves extract.

Overall acceptability

The score for overall acceptability were 7.3, 7.5, 8.2 and 7.0 for 0, 10, 15, 20 of betel vine kulfi, respectively. The highest score (8.2) is recorded by treatment T_2 i.e kulfi incorporated with 15 per cent of betel vine leaves extract and lowest score was recorded by treatment T_3 (7.0) i.e. kulfi incorporated with 20 per cent of betel vine leaves extract.

Cost of production of betel vine kulfi

While calculating the cost of production of kulfi, the cost of ingredients only was considered. The expenditure is given in the Table 1. From this table it is concluded that the cost of kulfi prepared by using different levels of betel vine leaves exctract was different from treatment to treatment.

Table 1: Production cost of betel vine kulfi (based on cost of ingredients only) (Rs.)

	Milk		Condensed milk		Cream		Sugar		Betel vine leaves extract		Total cost	Amount of Kulfi	Cost per Kg. of kulfi
Tr.	Q. (g.)	C. (Rs)	Q. (g.)	C. (Rs)	Q. (g.)	C. (Rs)	Q. (g.)	C. (Rs)	Q. (g.)	C. (Rs)	C. (Rs.)	Q. (g.)	C. (Rs.)
T_0	1000	52	500	75	70	16.8	60	2.1	00	00	93.9	630	149.04
T_1	1000	52	500	75	70	16.8	60	2.1	50	17.5	111.4	680	162.82
T_2	1000	52	500	75	70	16.8	60	2.1	75	26.25	120.15	705	170.42
T_3	1000	52	500	75	70	16.8	60	2.1	100	35	128.9	730	176.57

Cost of Ingredients used

1) Milk at Rs. 52 per Kg. 2) Cream at Rs.60 per 250 gm.
3) Sugar at Rs. 35 per Kg. 4) Betel vine leaves at Rs. 35 per 100 gm.

The addition of betel vine leaves extract resulted in increase in cost of production of kulfi. The highest cost (Rs. 176.57 /Kg.) was recorded in case of kulfi prepared using 20 per cent of betel vine leaves extract (T_3). While the lowest cost (Rs.149.04 /Kg.) was recorded for control sample as there was no addition of betel vine leaves extract. The cost of production for T_1 i.e. *kufi* prepared by addition of 10 per cent

of betel vine leaves extract was Rs, 162.82/Kg. The cost of production for most acceptable level i.e T_2 was Rs, 170.42/Kg. It was concluded that the cost of production increases with increase in the level of betel vine leaves extract.

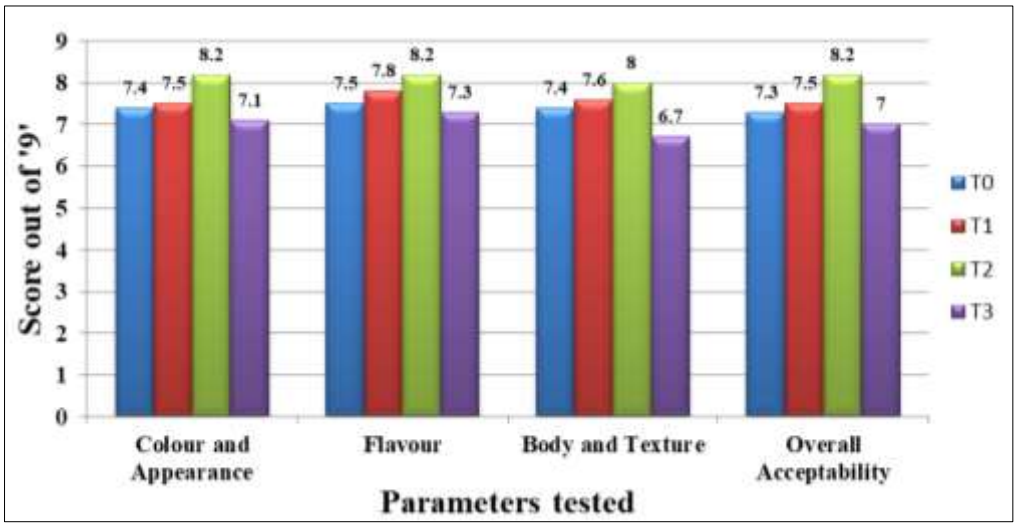

Fig 1: Sensory analysis of betel vine kulfi

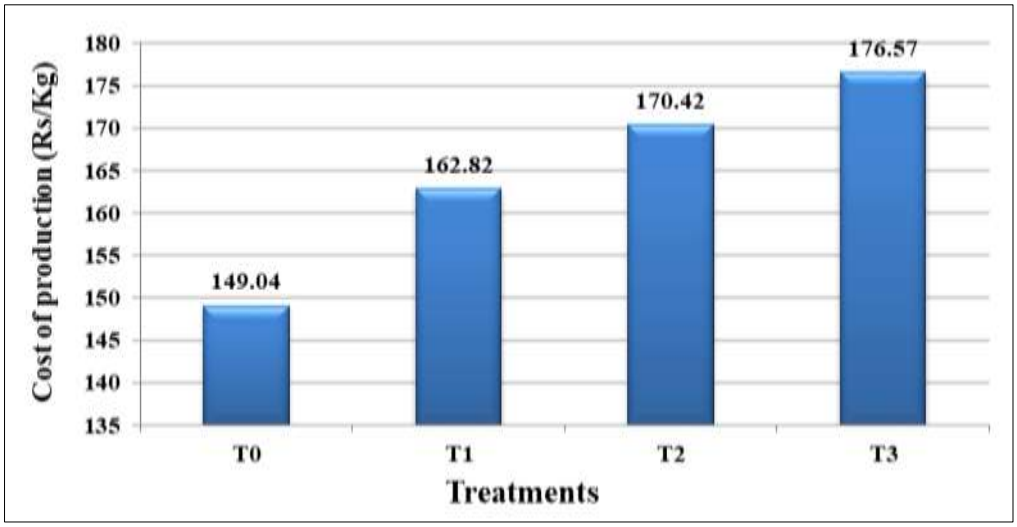

Fig 2: Cost of production of betel vine kulfi

Conclusion

From the results of the present investigation, it may be concluded that betel vine leaves extract can be successfully used for preparation of betel vine kulfi. The most acceptable quality of betel vine kulfi can be prepared using 15 per cent of betel vine leaves extract. As *Piper betle* has many medicinal importance it can used in preparation of kulfi and other dairy products.

References

1. AOAC. Official methods of analysis, 12th Edition, Association of Official Analytical Chemists, Washington, D.C., U.S.A, 1995.
2. De S. Outlines of Dairy Technology, Oxford' University Press, New Delhi, 2008.
3. Guha P. Betel leaf: The neglected green gold of India, Journal Hum Ecol. 2006;19:87-93.
4. IS: 1479 Part-I. Methods of test for dairy industry: Chemical analysis of milk. Indian Standard Institution, Manak Bhavan, New Delhi, India, 1960.
5. IS: 1224 Part-I. Determination of fat by Garber's method (Revised) Indian Standard Institution, Manak Bhavan, New Delhi, India, 1977.
6. Sripradha S. Betel leaf- The Green Gold. Journal of Pharm. Sci. & Res 2014;6(1):36-37.