



Formulation and Standardization of Value Added Ice Cream with Tomato

KEYWORDS

Tomato ice cream, standardization, sensory evaluation

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ABSTRACT Ice cream is a convenient frozen dairy food relished by every group of people is made up of suitable blending and processing of cream and other milk products together with sugar and flavor, with or without stabilizers or colors and with the incorporation of air during the processing. Tomato is a wide spread vegetable fruit, which contains abundant nutritional factors and unique flavors that make food rich of nutrients and flavors. Various experimental trials were employed with different combinations of tomato juice to standardize the composition. Among the three trials composition, trial 3 (T3) contains 75ml tomato juice scored maximum in sensory evaluation. The study was planned to develop and standardize an ice- cream with tomato.

INTRODUCTION

Tomato is one of the most important vegetable crop cultivated for its fleshy fruits. Tomato considered as important commercial and dietary vegetable crop, as it is short duration seasonal crop yields high percent in production. Lycopene is one of the most important antioxidant present in tomatoes which is known to neutralize free radicals and reduce the risk of cancer (1). Tomatoes are also great source of Beta carotene which is precursor of vitamin – A, associated with the rheumatoid arthritis. Tomatoes are good source for dietary fiber, vitamins and minerals(2). Several RTE beverages with added tomato flavors were available in the market and also recorded good consumer acceptance. Present several researchers working on the dairy products enriched with different fruits(3). Ice cream is one of the dairy products which is palatable, nutritious and relatively inexpensive food. The composition of ice creams varies in different markets and different localities. The main purpose of developing tomato ice-cream is to reduce the bulk quantities of wastage of the tomatoes during the season(4). So that, the consumption of tomato will be increased. The tomato contributes significant nutrition in the diet. It contains 13-20g of vitamin –C and has 4 times greater the vitamin-A content of Orange Juice further it is good source of iron, manganese and copper (5). Being highly perishable, tomato has a limited shelf life and during the peak harvesting season in many there is a glut in the local markets and the prices fall unexpectedly low, thus causing a lot of loss to small growers and Revenue, loss of about Rs.50 Million per annum to the country(6).

MATERIALS AND METHODS

The standardization of ice-cream with tomato was carried out in the department of Home science S.V.U college of Sciences Tirupathi Chittoor, Andhrapradesh, India during the year 2009-2010. Tomatoes were purchased from local market, fruits of uniform colour and ripened fruits were selected. The selected fruits are washed with clean water to remove dirt and pesticide residues then made in to medium size pieces and blanched for 2-3min at temperature 60°C for 3 min later the pieces were grinded and juice was extracted by filtration(7).

S.No	Ingredients	Sample-1	Sample-2	Sample-3
1	Milk	125ml	125ml	125ml
2	Fresh cream	50g	50g	50g
3	Skimmed milk powder	32.5g	32.5g	32.5g

4	Sugar powder	75g	75g	75g
5	Tomato juice	125ml	100ml	75ml

Table No.1 Composition of various trials

Different compositions were worked out to standardize the tomato Ice-cream composition. In first trail 125ml of tomato juice was added and in trial-2 and trial-3 100ml & 75ml of tomato juice was added respectively. The developed samples were subjected to sensory evaluation using 5 point hedonic scale rating method.

Development and standardization of tomato ice cream

To the standard ice cream recipe, tomato puree was incorporated. The procedure of development of recipe was presented in fig no.1

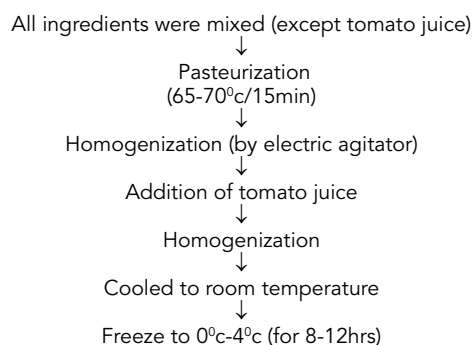


Figure No.1 flow chart for preparation of tomato ice cream

RESULTS

The various trails with different compositions were carried out for the standardization of the product. The variation between the trails was the incorporation of different proportions of tomato juice into standard ice- cream mix. The formulated product was subjected to the sensory evaluation and based on the sensory evaluation scores, the product was standardized. The sensory evaluation was carried out by trained panel members(8). The mean sensory score of all the samples for appearance, colour, texture, flavor, taste, and over all acceptability was presented in Table No.2. In the first trail, Ice-Cream was prepared by incorporation of tomato juice in higher amount (125ml of tomato juice). The sample was less accepted by the panel group because of the taste and color of tomato. In second trail the amount of tomato Juice was

decreased to 100ml, the product had pale color which was also not accepted well by the panel members. The trail-3 was well accepted by all the panel members in all sensory attributes which is prepared with 75ml of tomato juice and its overall acceptability was very good. The trail-3(T3) composition got the highest score, when compared with the other two trails composition.

S. No	Trials	Appearance	Colour	Texture	Flavour	Taste	Over all acceptability
1	Trial	4.5	4.9	4.2	3.8	3.9	4.1
2	Trial	4.5	4	4.2	3.9	4.1	4.1
3	Trial	4.7	4.4	4.2	4.5	4.5	4.8

Table No.2 Sensory scores for the various experimental trials

The Nutrient composition of the final standardized 100g of Tomato Ice-Cream was calculated and the values are presented in table No.3. The proximate Principles are the essential nutrients like Protein, carbohydrates, Fat, Fiber, Energy, calcium, Iron, Carotene, Thiamine respectively. Nutritive Values were calculated by using (9). It was found that the final product of the mix consists of milk, skimmed Milk powder, Fresh cream, powdered sugar, tomato juice as the major ingredients. The energy was 190.82 K.cal, 27.69 of carbohydrate and 5.6g of protein and 7.86g of fat for 100g of Tomato Ice-cream. The carotene and thiamine content of the Ice-Cream were 55.47 µg, 0.068mg respectively. The Calcium, Iron content in the final Product was 200.24 mg, and 0.5mg respectively.

S. No	Nutrients	Prox.value
1	Energy	190.82K.cal
2	Carbohydrates	27.69g
3	Protein	56g
4	Fat	7.86g
5	Carotene	55.47µg
6	Thiamine	0.068mg
7	Calcium	200.24mg
8	Iron	0.5mg
9	Fibre	0.13g

Table N.3 Nutritive values of standardized product

DISCUSSION

Tomato is rich in antioxidants. Most of the produce is spoiled and had limited technology to preserve tomatoes expect the regular preservation techniques like pickling, jams, sauce and the recent one canning. The present research on enriching Ice-Creams with natural source is very much limited and

scanty , keeping in view of this background, the current research was focused on the development of tomato ice cream with dual benefit of both preserving tomato and enriching the nutritive quality of ice-cream. The nutrient loss was minimum. Ice-cream was a frozen product with this, the children can enjoy the Ice-Cream taste along with the antioxidant rich properties of tomato(10). Various trials were worked out to develop tomato Ice-Cream. In the first trial, Ice-Cream was prepared by incorporating 125ml of tomato juice. This is not accepted by the panel members because the product was dominated by tomato taste and flavor. In second trial, the amount of Tomato juice was slightly decreased to 100ml and the product had pale color. In third trial, the amount of tomato juice was decreased than the second trial (75ml), this is well accepted by the panel members. The product was same like as normal Ice-Cream. Based on the sensory evaluation, the composition which scored the maximum for all the sensory attributes was standardized as standard composition. Tomato Ice-cream was well accepted by the panel members, it can also be accepted by other all age groups. Suneeta pinto et al. (2007) studied that low fat Ice-Cream was prepared using whey protein concentrate as a fat replacer. Addition of whey Protein concentrate in the low fat ice cream resulted in significant increasing protein content and did not show in significant change on PH and acidity(11). Development of Preservation on processing industry in India can help in generating employment, good returns to growers. Upgrade local nutrition and increases gross national production. The quality of the processed products can also be improved by upgrading some of the preservation practices. The preservation industry at present is able to utilize less than 5% of the fresh produce of total production of fruits and vegetables for conversion into products like canned fruits, juices, squashes, pulp, jams and jellies because of the lack of research data with respect to fruits and vegetables suited for the purpose of developing the innovative products(12). The incorporation of tomato in to ice-cream may reduce the seasonal loss of tomato and at the same time it will add nutritive value to the ice cream.

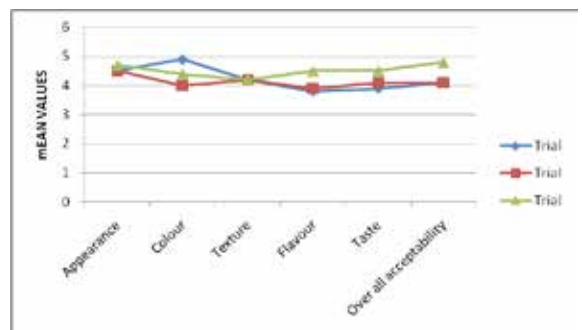


Figure no.1 sensory evaluation of various experimental trials

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