

Sensory evaluation of ice creams prepared with different inclusion levels of Jackfruit pulp

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■ **ABSTRACT** : Ice-cream, a highly popular frozen dairy product is liked by persons of all age group. Fruit-flavoured ice creams rank third among flavours, representing about 8 per cent of the total amount of ice cream made, and can be consumed more or less throughout the year. The excellent nutritional profile and multifunctional properties of Jackfruit can be utilized in the preparation of ice cream, rich in nutrients and having unique distinct flavour and colour. Keeping in front the consumers demand for ice-cream with natural ingredients and nutritional importance, this study was designed primarily to examine the acceptable organoleptic characteristics of ice-cream incorporating jackfruit. The present study was undertaken with different combinations (15%, 20% and 25%) of jackfruit pulp in ice cream preparation. Different samples of jackfruit ice-cream treatments and control were analyzed for organoleptic characteristics like flavour and taste, body texture, colour and appearance, melting quality and overall acceptability. Sensory evaluation was carried out using 9-point hedonic scale Amerine *et al.* (1965). The data obtained on various parameters were statistically analysed. In terms of body and texture 15% (T₂) jackfruit was highly acceptable followed by the sample containing 20% (T₃) of jackfruit pulp. The colour and appearance scores increase with increase in the jackfruit pulp in the blend. The flavor scores increases first with increase in the jackfruit pulp in the blend but tended to decrease later with increase in jackfruit pulp in the blend. The highest melting quality was noted in sample containing 15% (T₂) and 20% (T₃) of jackfruit pulp in the blend. The overall acceptability scores of ice cream tended to decrease with increase in the jackfruit pulp in blend. A progressive deterioration was observed in all sensory parameters with ice cream samples prepared with 25% (T₄) of jackfruit pulp. The results of this study may be useful for ice cream manufacturers and the information may be used to produce ice cream with increased consumer liking.

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Ice cream is a highly popular frozen dairy product and liked by persons of all age group. Consumers demand for value added ice creams incorporating

different types of fruits and nuts is increasing tremendously. Fruit- flavoured ice creams rank third among flavours, representing about 8 per cent of the

total amount of ice cream made, and can be consumed more or less throughout the year (Steinitz, 1978). Fruits like strawberry, mango, guava, and pineapple were flavoring the ice cream market of which strawberry is the most popular one. Now-a-days, there is a rising interest towards consuming health beneficial food products. There is an upward trend in awareness about nutritional and health benefits of jackfruit, the largest tree-borne fruit in the world. The fruit is a rich source of vitamins, minerals, and packed with nutrients, including fibre and several bioactive components. This excellent nutritional profile and multifunctional properties of jackfruit can be utilized in the preparation of ice cream, rich in nutrients and having unique distinct flavour and colour.

Objective:

Keeping in front the consumers demand for ice-cream with natural ingredients and nutritional importance, this study was designed primarily to examine the acceptable organoleptic characteristics of ice-cream incorporating jackfruit.

■ RESEARCH METHODS

The experimental study was carried out in ICAR-Krishi Vigyan Kendra, Wayanad, Kerala. Ice cream is a frozen dairy product made by suitable blending and processing of cream and other milk products, together with sugar and flavour, with or without stabilizer or colour, and with the incorporation of air during the freezing process (Sukumar, 1980) UHT milk (Long life milk), cream (Amul Brand) and other ingredients were purchased from local market. Jack fruit when added in the form of paste enhanced creamy appearance, unique taste and flavour of the ice cream. Similar results were reported by Murtaza *et al.* (2004) The present study was undertaken with different combinations (15%, 20% and 25%) of jackfruit pulp in ice cream preparation.

Processing of jackfruit pulp:

The ripe fruits were cleaned thoroughly before processing under running water. After cutting the fruit, bulbs and seeds were separated. The bulbs were cut into small pieces and steam blanched for five minutes. Once the blanched bulbs come to room temperature, the bulbs were pulped. The smooth pulp obtained was used for the preparation of jackfruit ice cream.

Table A : Formulation of control and jackfruit incorporated ice-cream at different ratios with milk and cream

Treatments	T ₀ (Control)	T ₁	T ₂	T ₃
Milk	150ml	150ml	150ml	150ml
Fresh cream	300ml	300ml	300ml	300ml
Sugar	100g	100g	100g	100g
Jackfruit pulp	0	82.50 g	110.00 g	137.50 g

Weighed dry ice cream ingredients were mixed with the liquid material by constant mechanical stirring. The ice cream mix was mixed thoroughly using hand blender. The ice cream mix is then poured into ice cream maker machine (Kitchenif brand) and run for thirty minutes for the whipping of air into the mix. The ready ice cream was filled in 100 ml disposable cups and kept in the freezer for 24 h.

The different samples of jackfruit ice-cream treatments and control were analyzed for organoleptic characteristics like flavor and taste, body texture, colour and appearance, melting quality and overall acceptability. A series of acceptability trials were carried out using a simple triangle test at the laboratory level and selected a panel of fifteen judges between the age group of 18–35 years as suggested by Jellinek (1985). Sensory evaluation was carried out by the judges using a 9 point hedonic scale Where 9= like extremely, 8= like very much, 7= like moderately, 6= like slightly, 5= neither like or dislike, 4= dislike slightly, 3= dislike moderately, 2= dislike very much and 1 = dislike extremely.

Each sample was evaluated in approximately thirty minutes. Each panelist was given three scoops of ice cream per Styrofoam bowl. Samples were served at -15 C. All samples were coded with three- digit random numbers and all orders of serving were completely randomized. Each panelist individually assigned a score for each attribute perceived in the sample. Data obtained from sensory analysis were subjected in terms of average scores for different attributes and analyzed statistically by one-way analysis of variance (ANOVA) and analysis was carried out by using Microsoft Excel.

■ RESEARCH FINDINGS AND DISCUSSION

Sensory evaluation is the expression of an individual like or dislikes for a product as a result of biological variation in man and what people perceive as appropriate sensory properties. It is a unique source of product information not easily obtained by other means (Iwe,

2003).

All the prepared yogurts were organoleptically evaluated by the panel of selected judges. The mean score obtained for the organoleptic qualities of each treatment were statistically analyzed using Kendall's coefficient of concordance and the mean scores were worked out.

Color and appearance of ice cream:

The colour - attractive, uniform, pleasing and typical of the flavour present in ice cream.

The major attraction of jackfruit lies in its pulp colour and taste. The treatment with higher pulp content also contain higher quantities of carotenoids (Shymalamma *et al.*, 2013). The colour and appearance scores increase with increase in the jackfruit pulp in the blend.

Flavour and taste:

Flavour and Taste: Typical of the fruit present in ice cream, leaving only a very pleasant after taste.

The flavour scores increases first with increase in the jackfruit pulp in the blend but tended to decrease later with increase in jackfruit pulp in the blend. Statistical test revealed that the treatment differed significantly at 5 per cent level of significance.

Body and texture:

Body – Firm and melts down to a creamy consistency.

Texture - Smooth, velvety and carries the appearance of creaminess throughout

It was observed that the jackfruit ice-cream prepared with 15 per cent T_1 (8.6) jackfruit was highly acceptable in terms of body and texture as compared to the other experimental treatment combinations. Statistical test revealed that the treatment differed significantly at 5 per cent level of significance

Melting quality:

Melting quality- Ice cream has retained its form while melting and melts to form a smooth, uniform and homogenous creamy liquid.

The highest melting quality was noted in sample containing 15 per cent (T_1) and 20 per cent (T_2) of jackfruit pulp in the blend. Statistical test revealed that the treatment differed significantly at 5 per cent level of significance.

Overall acceptability:

Overall acceptability - Pleasantly sweet, having a creamy consistency.

The highest score for overall acceptability was found in T_2 followed by T_1 and it tended to decrease with increase in the jackfruit pulp in blend. The results of the study conducted by Andhare *et al.* (2004) also reported a similar result. This may be because as the amount of jack pulp increases, it provides body and consistency to the final products which in turn increased its acceptability. Statistical test revealed that the treatment differed significantly at 5 per cent level of significance. This is in conformity with the studies of David (2016).



Fig. 1 : Overall acceptability

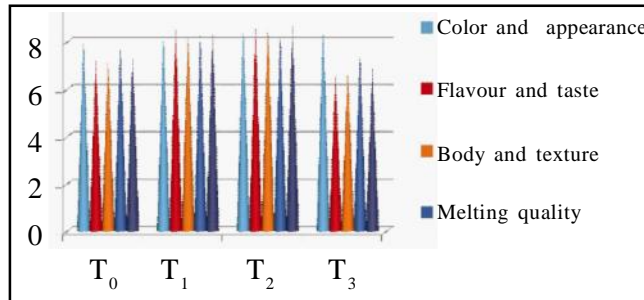


Fig. 2 : Sensory evaluation of ice cream

Conclusion:

From the present investigation, it may be concluded after studying the statistical results of different parameters indicated above that 20 per cent jack fruit pulp can be satisfactorily added for quality ice cream making. Several fruit-based ice creams are becoming an inevitable part of our market. There is immense scope for popularizing the fruit based ice creams. With the current upward trend in nutritional and health awareness, the consumer demand is for high nutritive valuable product in the market with acceptable sensory characteristics. The results of this study may be useful

for ice cream manufacturers and the information may be used to produce ice cream with increased consumer liking. Fresh fruit is typically considered the best source of flavor and therefore fresh fruit ice creams have a special sales appeal.

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