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Sensory Evaluation of Sapodilla (Chickoo) Ice-Cream

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ABSTRACT

Chickoo ice-cream was prepared from 15 per cent sapodilla pulp, 15 per cent sugar and 10 per cent fat with 0 (T0), 0.2 (T1), 0.3 (T2) and 0.4 (T3) per cent of ascorbic acid and studied for its sensory evaluation. The sensory score for overall acceptability of ice-cream of treatments T0, T1, T2 and T3 were 7.72, 7.94, 8.23 and 7.21, respectively. It was observed that 0.3 per cent (T2) level of ascorbic acid was most acceptable and rated between like very much to like extremely for all sensory attributes. Highly perishable chickoo pulp was well utilized in ice-cream.

Key words: *Ice-cream, Sensory evaluation, Ascorbic acid, Buffalo milk, Chickoo pulp.*

INTRODUCTION

Ice cream is a sweetened frozen dairy product preferred as snacks or dessert made of milk and milk products, that is often added with fruits (raw and/or dried form), along with other essential ingredients like flavours, colours etc. In the last decade, the perceptions of consumers have changed from ice creams as a mere enjoyment snacks/dessert to functional food with health benefits. Several communities across the world and research institutes have shown keen interest and demand for fortified ice creams with additional fruit pulp. Attempts have been made to make ice cream as functional food by incorporation of some fruit pulp, having several additional advantages, such as improving consumer's health and nutritional value of product along with improvement in ice cream properties. The annual growth rate of ice-cream is 10 - 15 per cent. The per capita consumption of ice-cream at present in India is 100 ml /annum[7]. The recent trend has been developed to produce low cost ice-creams by incorporating fruits pulps. In India use of fruits in preparation of ice-cream is accepted by regulations.

Sapodilla, (*Manilkara zapota L.*), which belongs to the family Sapotaceae, is an underutilized tropical fruit commonly known as "sapota" in India and "chiku" in Malaysia.

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Immature fruits are hard, gummy and rich in tannin (astringent), while the ripe fruits are soft and, juicy, with a sweet taste which makes them a wonderful dessert fruit. Most sapodilla fruits in Malaysia are normally consumed fresh. The fruits and crushed seeds of sapodilla are used in preventing the oedema due to diuretic property. They also prevent formation of kidney and bladder stones[5]. Hence present investigation was planned to manufacture chickoo ice cream with desired levels of ascorbic acid to increase shelf life of the product.

MATERIAL AND METHODS

The present study was undertaken in the laboratory of the Department of Dairy Technology, College of Dairy Technology, Warud (Pusad). Buffalo milk was obtained from local market. Skim milk and cream were used for standardization of milk. Ingredients like spray dried Amul skim milk powder of ISI grade, sugar, sodium alginate and ascorbic acid were purchased from local market. Fruits of Chickoo were obtained from same plants of local farmer in order to keep uniformity in quality. Chickoo pulp, sodium alginate as stabilizer @ 0.15 per cent and L-ascorbic acid (vitamin - C) as preservative were used in ice-cream manufacture. The preliminary trails were conducted for optimizing levels of chickoo pulp and ascorbic acid.

Treatments :

T0 - No ascorbic acid + 15 % sugar + 15 % pulp + 10 % Fat.

T1 - 0.2 % ascorbic acid + 15 % sugar + 15 % pulp + 10 % Fat.

T2 - 0.3 % ascorbic acid + 15 % sugar + 15 % pulp + 10 % Fat.

T3 - 0.4 % ascorbic acid + 15 % sugar + 15 % pulp + 10 % Fat.

Preparation of Chickoo ice-cream:

All ice-cream samples were prepared as per the method described by De and Ray[2]. with slight modification.

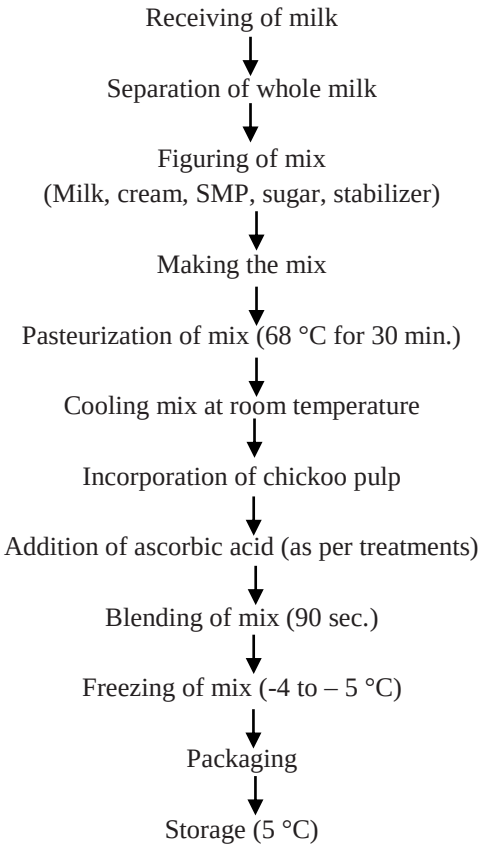

Fig. 1: Preparation of Chickoo Ice cream

Sensory evaluation of ice-cream:

The ice-cream was then filled up in cups and immediately kept at -5 °C temperature and then served to a panel of judges for the organoleptic evaluation. The product was evaluated for its sensory quality by a panel of five judges using 9 point Hedonic scale as described by Gupta[4].

Statistical analysis of data:

The experiment was laid out in completely randomized design (CRD) and experimental data was analyzed using the method of Panse and Sukhatme[6]. In all six replications were taken.

RESULTS AND DISCUSSION

Sensory attributes of the chickoo ice-cream prepared from different treatment combinations (T0, T1, T2 and T3) are shown in Table 1.

Flavour:

It is revealed that average flavour score was highest in T2 (8.21) for chickoo ice-cream with 0.3 per cent ascorbic acid followed by T1 (7.58) ranged in between like a very much to like extremely, T0 (7.18) and T3 (7.27) rated equally in between like moderately to like very much.

Body and texture:

It was observed from result that, the chickoo ice-cream prepared with various ascorbic acid combination exhibited wide differences with regards to body and texture ranged from 7.13 (T3) to 8.27 (T2). T2 scored highest at 8.27 followed by T1 (7.67) and both were rated in between like very much to like extremely, T0 (7.31) valued in like moderately and T3 (7.13) scored lowest.

Colour and appearance:

It is observed that highest colour and appearance score was 8.38 for chickoo ice-cream with no ascorbic acid (T0) whereas, 7.90, 7.77 and 7.15 scores for T1, T2 and T3 respectively. It is further revealed that there was slightly decrease in score of colour and appearance with increased levels of ascorbic acid of chickoo ice-cream form 0.2 to 0.4 per cent.

Taste:

The average score for the taste differed much by the different level of ascorbic acid of chickoo ice-cream samples as the score varied from 8.42 (T2) to 8.11 (T0). The best taste was observed in case of T2 ice-cream samples valued at 8.42, followed by T3 (8.32) and T1 (8.27) rated in between like very much to like extremely and T0 (8.11) rated in between like slightly to like moderately.

Overall acceptability of ice-cream:

The mean score for overall acceptability for treatment T0, T1, T2 and T3 was 7.72, 7.94, 8.23 and 7.21, respectively. It was observed that much variations were found in overall acceptability score and ranged 7.21 (T3) to 8.23 (T2). T2 received top score (8.23) for overall acceptability followed by T1 (7.94) rated in between like very much to like extremely and T0 (7.72) and T3 (7.21) rated like moderately. The findings are in agreement with the results of Gaikwad[3] and Bajwa *et al*.[1],

Table 1: Sensory evaluation for chickoo ice-cream

Treatments	Flavour	Body & Texture	Colour & Appearance	Taste	Overall Acceptability
T0	**7.18**	**7.31**	**8.38**	**8.11**	**7.72**
T1	**7.58**	**7.67**	**7.90**	**8.27**	**7.94**
T2	**8.21**	**8.27**	**7.77**	**8.42**	**8.23**
T3	**7.27**	**7.13**	**7.15**	**8.32**	**7.21**

CONCLUSION

Present study concludes that the 15 per cent incorporation of chickoo pulps was found to be acceptable in the ice-cream with ascorbic acid of 0.3 per cent level is most acceptable. However all the treatments had mean over all

acceptability score more than 6.5 indicates that all the chickoo ice-cream samples without and with ascorbic acid are acceptable.

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