

## Quality of Plane Ice-cream marketed in Agra City

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### Abstract

*An investigation was carried out during the year 2017-18 in the department of A.H. & Dairying, R.B.S. College, Bichpuri, Agra to assess the quality of Plane Ice-cream collected from various sources as quality walls, naturela, Kunal and Jalsa in Agra city and compared with BIS specifications. It was found that all plane ice-cream samples collected from different sources did not meet the BIS specifications in chemical attributes of quality. However, the samples from quality walls was superior in all respect of quality to other samples and meet with BIS specifications; However, the samples from Jalsa was inferior in all respects of quality to other samples.*

Key words: Ash, Fat, Ice-cream, Markets, Sucrose and total solids

### Introduction

Ice-cream is a colloidal emulsion made with water, ice, milk fat, milk protein, sugar and air. It is a sweetened frozen food typically eaten as a snack or dessert. It may be made from dairy milk or cream and is flavored with a sweetener, either sugar or an alternative and a spice, such as cocoa or vanilla or with fruit such as strawberries or peaches. Coloring are sometimes added in addition to stabilizers. The mixture is cooled below the freezing point of water and stirred to incorporate air spaces and to prevent detectable ice crystals from forming. The result is a smooth, semi-solid foam that is solid at very low temperature (below 2°C or 35°F). It become more malleable as its temperature increases. Ice-cream is the frozen product obtained from cow or buffalo milk or a combination there of or from cream and/or other milk product. With or without the addition of cane sugar, dextrose, liquid glucose and dried liquid glucose, eggs, fruits, fruit juices, preferred fruits, nuts, chocolate, edible flavors and permitted food colours, it may contain permitted stabilizers and emulsifiers which is not exceeding 0.5% by weight. The mixture shall be suitably heated before freezing the product shall contain not less than 10 percent milk fat, 3.5 percent protein and 36.0 percent total solids except that when any of the aforesaid preparation contains fruits or nuts or both, the content of milk fat shall not be less than 8.0 percent by weight (Kumar et al. 2016). The composition of Ice-cream varies depending on the market requirement and processing conditions. Although the quality of final product depends

largely on processing and freezing parameters, the ingredients also play an important role. Ice cream as an industry in India and considered as luxury food item which is not made in very large quantity.

Ice-cream is a nutritious food must contain protein, fat, sugar, minerals such as calcium, phosphorus and other salt and vitamins, necessary for normal growth only few exceptions. These nutrients are found in sufficient quantity in milk and also in ice-cream. The chemical quality of ice-cream in India is deplorably poor, therefore the study of fundamentals facts about all enormous losses from economic, health and nutrition aspects is very essential. In the light of above facts, the present study entitled “Quality of plane ice-cream marketed in Agra city” was conducted to record the quality of ice-cream sold by standard manufactured quality walls, naturela, Kunal and Jalsa of different market of Agra city was carried out in the dept. of A.H. & Dairying, R.B.S. College, Bichpuri, Agra during session 2017-18.

### Methods and Materials

The sample of ice-cream without color were collected from standard and ordinary plants of 4 different shops i.e. Quality walls(A), Naturela(B), Kunal(C) and Jalsa(D) of Agra City. The sample of 100 gm size cups were collected. The cups were randomly selected and carried to the laboratory. The sample was stored in the freezing chamber of the refrigerator till taken up for analysis. The sensory quality of ice-cream was examined by a panel of judges drawn from the dept. of A.H. & Dairying using 100-

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Table 1: Chemical composition of Plane Ice-Cream Marketed in Agra City

S.No.	Dairy/Brand	Acidity%	Fat%	Protein%	Sucrose%	Ash%	T.S. %
1.	Quality walls(A)	0.28±0.002	9.80±0.31	3.41±0.16	21.20±1.11	2.11±0.01	36.52±1.82
2.	Naturela (B)	0.24±0.001	9.40±0.52	3.23±0.14	22.30±1.18	2.32±0.01	37.25±1.67
3.	Kunal (C)	0.26±0.001	9.00±0.66	3.10±0.12	22.80±1.23	2.45±0.01	37.35±1.51
4.	Jalsa (D)	0.27±0.001	8.40±0.48	3.00±0.11	20.30±0.96	2.20±0.01	33.90±1.43
5.	BIS	0.25	10.00	3.50	15.00	—	36.00
Overall average:		0.26±0.001	9.15±0.47	3.18±0.14	21.65±1.14	2.27±0.01	36.26±1.58
Test of significance		1.12 <sup>NS</sup>	4.91 <sup>++</sup>	2.31 <sup>+</sup>	5.16 <sup>++</sup>	2.09 <sup>+</sup>	1.36 <sup>NS</sup>

Note: NS = Non-significant      + = Significant  $\leq 0.05$       ++ = Significant  $\leq 0.01$

point score card. The chemical analysis of samples was done in terms of Acidity, Fat, Protein, Sucrose, Ash and Total solids by the methods cited by IS:1165(1967), IS:4079(1967) and A.O.A.C (1970). Investigation was replicated forth times and the data thus obtained were subjected to statistical analysis and tested at 5% and 1% level of significance.

### Results and Discussion

It is clear from the Table 1 that the acidity content of ice-cream samples collected from A, B, C & D were 0.28±0.002, 0.24±0.001, 0.26±0.001 and 0.27±0.001 percent, respectively. The sample of ice-cream from various factories meet the BIS standards in their acidity content. The statistical analysis revealed that the difference in acidity content among the market samples was insignificant. However, the samples of ice-cream collected from various sources had higher acidity as compared to Kumar et.al (2016). The fat content of ice cream sample collected from A, B, C & D were 9.80±0.31, 9.40±0.52, 9.00±0.66 and 8.40±0.48%, respectively; and meets lower than BIS requirements. The difference in fat content of Ice-cream from different sources was significant at  $pd^{*}0.01$ . The results of recent study on fat content of ice-cream samples collected from different sources were quite higher with that of above authors. The protein content in Ice-cream samples collected from A, B, C and D were 3.41±0.16, 3.23±0.14, 3.10±0.12 and 3.00±0.11 percent, respectively. The protein content of Ice-cream collected from different source differ significantly ( $pd^{*}0.05$ ). The protein content in recent investigation were lower than above authors and BIS specifications.

The sucrose content of Ice-Cream samples collected from A, B, C and D were 21.20±1.11, 22.30±1.18, 22.80±1.23 and 20.30±0.96 percent, respectively. The samples collected from different markets were also differ significantly

( $pd^{*}0.01$ ). All the samples did not meet BIS requirement. All above markets samples of Ice-cream contain much higher percentage of sucrose than BIS requirements. It is due to get more profit and increase amount of product because sucrose has low cost than other ingredients. The ash content of Ice-cream collected from above markets (A, B, C & D) were 2.11±0.01, 2.32±0.01, 2.45±0.01 and 2.20±0.01 percent respectively. The overall market samples were differing significantly ( $pd^{*}0.05$ ) each other. The greater ash content in the ice-cream could be due to adding foreign materials and sucrose during manufacturing of the product. The total solids content of Ice-cream collected from A, B, C and D were 36.52±1.82, 37.25±1.67, 37.35±1.51 and 33.90±1.43 percent, respectively. However, the difference in total solid content was insignificant and which were near of BIS requirements. The results of present study revealed that all the brands of Ice-cream did not meet BIS requirements for chemical quality. However, the sample of A was good as compared to B, C and D. The good quality ice-cream can be produced by maintaining hygienic conditions during production, packaging, storage and transportation and sale of the product.

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