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Sensory evaluation of wood apple pulp supplemented kulfi

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Abstract

The present investigation was made with an attempt to develop a wood apple pulp supplemented kulfi by partial addition of different levels of wood apple pulp and thereafter evaluate the effect of addition of wood apple pulp supplemented kulfi. The basic aim of study was to find out the sensory parameter of Kulfi prepared with addition of Wood Apple with different combination in order to assess the suitable level of addition with maximum acceptability. The data collected on different aspects were tabulated and analyzed statistically using the methods of analysis of variance and critical difference. Organoleptic characteristics (flavour and taste, body and texture, colour and appearance, overall acceptability) were analyzed using 9 point hedonic scale. For control, kulfi mix was standardized to 9% milk fat & 14% sugar to obtain 36% total solid & treatment (T₃) was standardized to 6.13% fat, 14% sugar and 15% wood apple pulp, (T₂) was standardized to 6.40% fat, 14% sugar and 10% wood apple pulp. (T₁) was standardized to 7.34% fat, 14% sugar and 5% wood apple pulp. On the basis of findings, it was concluded that T₃ was found to be highly acceptable among the other combinations by sensory evaluation. Thus, as per acceptability of the product judged by organoleptic evaluation the treatment can be rated as T₃>T₂>T₁>T₀. The cost of product of one kg of Kulfi of treatment T₀, T₁, T₂, T₃ was Rs. 69.84, 71.04, 72.24 and 73.44 respectively.

Keywords: Wood apple pulp, Standardized milk, organoleptic evaluation, Kulfi

Introduction

Kulfi is a frozen dairy product made by suitable blending and processing of SMP and other milk products, together with sugar and flavour, with or without stabilizer or colour. A typical compositional range for the components used in kulfi mix is milk fat 10-16%, milk solids not fat 9-12%, sucrose 9-12%, corn syrup solids 4-6%, stabilizers/ emulsifiers 0-0.5%, total solids 36-45%, and water 55-64%. Kulfi was prepared regularly for the grandest of all mughals to bring relief during the scorching summer. Kulfi also known as Malaikulfi /Malai-ka-burf is an indigenous frozen dairy product, which closely resembles ice cream in composition. Traditionally Kulfi is prepared by evaporating sweetened and flavoured milk by slow heating with almost continuous stirring to keep milk from sticking to the bottom of the vessel until its volume is reduced by a half thus concentrating the milk. It has a distinctive taste due to caramelization of lactose and sugar during the lengthy heating process. The western country part product ice cream is whipped with air or overrun, kulfi contains no air; it is solid dense frozen milk. It comes in various flavours, including cream, rose, mango, cardamom, saffron (kesar or saffron), and pistachio, the more traditional flavours, as well as newer variations like apple, orange, strawberry, peanut, and avocado. *Aegle marmelos* has been used as a herbal medicine for the management of diabetes mellitus in Ayurvedic, Unani and Siddha systems of medicine in India, Bangladesh and Sri Lanka. The unripe dried fruit is as tringic, heals stomach ache and is used to cure diarrhea and dysentery. Sweet drink prepared from the pulp of bael produce a soothing effect on the patients who have just recovered from bacillary dysentery. The present investigation manufacture of wood apple pulp supplemented kulfi has been prepared by different levels of Wood Apple pulp for production of kulfi on commercial scale and assess the sensory of developed Kulfi with calculate the cost of product.

Materials and Methods

Here, 1 Kg of standardized milk with 4.5% fat and 8.5% msnf was placed in a steel pan with a wooden plunger and heated by placing pan in a container containing water (double jacketed vat arrangement) over direct fire. The milk was condensed to (2:1) ratio. Calculated amount of liquid ingredients and dry ingredient like, sugar, stabilizer was added as per the requirement in treatments T₀, T₁, T₂, and T₃. Then mix was held at 68 °C for 30 minutes to fulfill the

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PFA requirement of pasteurization and cooled to 42 °C and Wood apple pulp in different variation. Then the mix was cooled to 5 °C. The mix will subsequently frozen in a batch freezer and subsequently transferred into Kulfi moulds and hardened at -20 °C overnight.

Details of Treatment Combination

| Concentrate milk : Wood Apple Pulp | | |
|------------------------------------|------------------|-----------------|
| Treatment | Concentrate milk | Wood Apple Pulp |
| T ₀ | 100 | 0 |
| T ₁ | 95 | 5 |
| T ₂ | 90 | 10 |
| T ₃ | 85 | 15 |

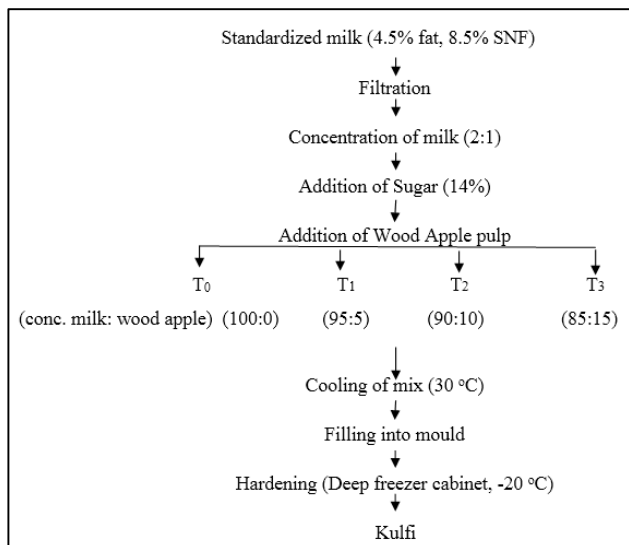


Fig 1: Flow diagram for manufacturing of Kulfi

Results and Discussion

Organoleptic attributes and Overall acceptability of control and Wood Apple Pulp supplemented Kulfi:

Table 2 shows organoleptic attributes of control and Wood Apple Pulp supplemented Kulfi.

Colour & Appearance

The highest mean of colour & appearance score recorded in the control and Wood Apple Pulp supplemented kulfi of T₃ (8.59) followed by T₁ (8.30), T₂ (8.32) & T₀ (8.21).

Body & Texture

The highest mean of body & texture score was recorded in the control and Wood Apple Pulp supplemented kulfi of T₃ (8.48) followed by T₀ (8.11), T₁ (8.20) and T₂ (8.18).

Flavour & Taste

The highest mean of Flavour & taste score was recorded in the control and Wood Apple Pulp supplemented kulfi of T₃ (8.53) followed by T₀ (8.19), T₁ (8.26) and T₂ (8.29).

Overall acceptability

The highest mean of the overall acceptability was recorded in the control and Wood Apple Pulp supplemented kulfi of T₃ (8.51) followed by T₀ (8.17), T₁ (8.25) and T₂ (8.13).

Table 2: Summary of the results of Organoleptic attributes and Overall acceptability of different Kulfi samples (Mean)*.

| Parameters | Types of Milk Beverage | | | |
|-----------------------|------------------------|----------------|----------------|----------------|
| | T ₀ | T ₁ | T ₂ | T ₃ |
| Colour & Appearance | 8.21 | 8.30 | 8.32 | 8.54 |
| Body & Texture | 8.11 | 8.20 | 8.18 | 8.48 |
| Flavour & Taste | 8.18 | 8.26 | 8.29 | 8.53 |
| Overall Acceptability | 8.17 | 8.25 | 8.13 | 8.51 |

*Average of five trials.

Mean value bearing different super scripts in a row differ significantly (P<0.05);

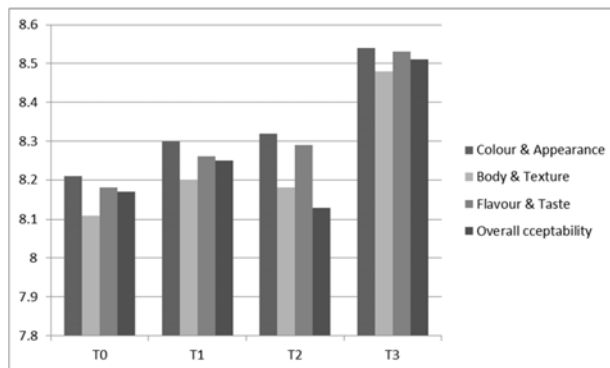


Fig 2: Organoleptic attributes of different Kulfi samples

Cost Analysis

The cost of product of one kg of Kulfi of treatment T₀, T₁, T₂, T₃ was Rs. 69.84, 71.04, 72.24 and 73.44 respectively.

Conclusion

It can be concluded that the Wood Apple pulp supplemented kulfi can be successfully prepared by using standardized milk, sugar and Wood Apple pulp. Kulfi made with Wood Apple Pulp of treatment T₃ were best in organoleptic characteristics and received highest score in organoleptic evaluation (colour & appearance, body & texture, flavour & taste, overall acceptability).

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