“Effect of Addition of Strawberry Pulp on Sensory Attributes of Kulfi”

Abstract: The study was conducted on the topic “Effect of Addition of Strawberry Pulp on Sensory Attributes of Kulfi” The different levels of Strawberry Pulp 10, 15, 20 and 25 per cent were tried in buffalo milk Kulfi. The product obtained was subjected for organoleptic evaluation by panel of judges. It was observed that the flavour score for treatment T0, T1, T2, T3 and T4 was 8.16, 8.25, 8.48, 8.18 and 7.90 respectively. Colour and Appearance was 8.51, 8.44, 8.57, 8.23 and 7.69, respectively. Body and texture was 8.24, 8.42, 8.58, 8.22 and 7.90, respectively. Overall acceptability score was 8.30, 8.37, 8.53 and 8.18 and 7.82 respectively for T0, T1, T2, T3 and T4. It was clear that the level of 15 Strawberry Pulp have highest overall acceptability.

Keywords: Sensory Analysis, Kulfi, Strawberry Pulp and Completely Randomized Block Design.

Introduction: *Kulfi* is traditional frozen dessert in South Asia, sometimes referred to as “Indian ice cream”. It is popular in India, Myanmar, Pakistan and Bangladesh, as well as the Middle East. It can be found in Indian restaurants around the world. Kulfi is an indigenous frozen dairy product popular in india and which resembles ice-cream. Kulfi is originating in the Indian subcontinent during the mughal era in the 16th Century. It is often described as traditional Indian ice-cream. It is famous in Bangladesh, Myanmar, Nepal, Srilanka. The present investigation on “Utilization of strawberry pulp in preparation of *kulfi*” was undertaken during 2021-2022 at the Department of Animal Husbandry and Dairy Science, College Of Agriculture, Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra. Sensory evaluation of the product was carried out by the panel of experts for the parameters, color and appearance, body and texture, flavor, and overall acceptability by using 9 points hedonic scale. Result revealed that the blended with 15 per cent strawberry pulp scored highest score for all sensory attributed as *Kulfi* compared to control as well as *kufli* blended with 10 per cent, 20 per cent and 25 per cent strawberry pulp. Hence considering the benefits of supplementation of strawberry pulp in the diet; concerning its nutritional, medicinal value, and technological properties. It is decided to study the effect of the addition of strawberry pulp on the sensory attributes of *Kulfi.*

Materials and Methods

Treatment combinations

For preparation of *kulfi*, strawberry pulp is tried in different levels and compare with control /the treatment combinations used were as detailed below.

To: 100 parts concentrated buffalo milk (control)

T1: 90 parts of concentrated buffalo milk + 10 parts of strawberry pulp

T2: 85 parts of concentrated buffalo milk + 15 parts of strawberry pulp

T3: 80 parts of concentrated buffalo milk + 20 parts of strawberry pulp

T4: 75 parts of concentrated buffalo milk + 25 parts of strawberry pulp

Experimental Methodology

Prior to preparation of strawberry pulp first removal of leaves then strawberry fruit will be washed with clean water. The slices will be cut with the help of knife and finally it was converted in homogenous mass by putting into mixer.

Selection of strawberry fruits
↓
Removal of leaves
↓
Washing
↓
Grinding
↓
Strawberry pulp
↓
Storage at refrigeration temperature

Fig. 1. Preparation of strawberry pulp

Kulfi was prepared by using the method described by Kale A.B, (2011) with slight modifications

Flow chart showing preparation of *kulfi*

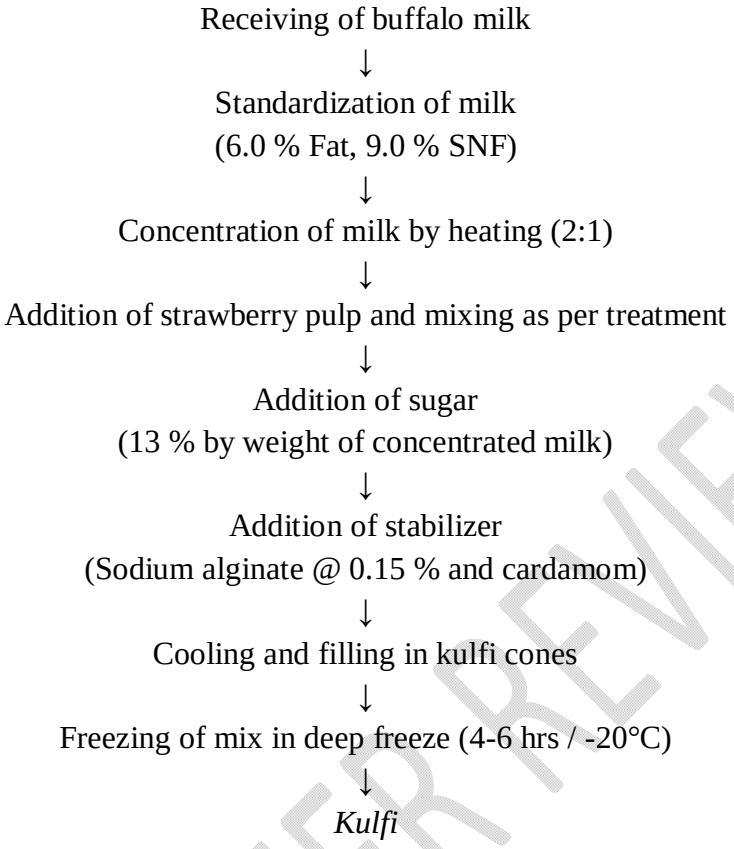

Fig.2 Preparation of *kulfi*

Results and Discussion

Sensory evaluation of *kulfi* blended with strawberry pulp. The experimental *kulfi* samples were served to a panel of semi trained judges for sensory evaluation such as flavour, colour and appearance, body and texture and overall acceptability using "9 point hedonic scale". The numerical score given by judges for individual attribute was computed to obtain mean and these means were subjected to statistical analysis. The data was analyzed statistically by using Completely Randomized Design (CRD) as per Panse and Sukhatme (1985). Results obtained are shown in table 1

Flavour

It may be apparent from table 1. The flavour score for various treatments ranged between 7.90 to 8.48. The score for treatment T2 (8.48) was maximum followed by T1 (8.25), T3 (8.18), T0 (8.16) and T4 (7.90). The acceptable maximum score was for treatment T2 (8.48) which have 15 parts of strawberry pulp. The lowest score was recorded in treatment T4 (7.90) which contain

25 parts of strawberry pulp having maximum acidity contain. This showed that as the level of strawberry pulp increases, the flavour score of *kulfi* also increases to treatment T2 (15 parts ofstrawberry pulp), but in treatment T3 (20 parts of strawberry pulp) and T4 (25 parts of strawberry pulp) the flavour score decreases. The result obtained from research work are analogous with Shelke (2007) reported that as the proportion of mango pulp level increased, the flavor scored

Colour and appearance

The colour and appearance score of *kulfi* influenced by various levels of strawberry pulp has been depicted in table 1. The data presented in table 1 indicated that, the colour and appearance score of control *kulfi* (T0) and *kulfi* prepared by using different levels of *kulfi* pulp *viz.*, 10, 15, 20, 25 (T1,T2,T3 and T4) ranged between 7.69 to 8.57. The colour and appearance score for treatment T2 was highest (8.57), followed by T0 (8.51) T1 (8.44) there after it was decreased from treatment T3 (8.23) and T4 (7.69). Among the different levels of strawberry pulp, the highest score for colour and appearance uses kulfi prepared by using 15 parts of strawberry pulp with faint reel colour appeared attractive whereas kulfi obtained from 25 parts of strawberry pulp gave darker red colour which was like moderately to like very much (7.69). The significant differences were observed between treatments T0, 1, T2, T3 and T4.

Body and Texture

It may be apparent from table 1. The body and texture score for various treatments ranged between 7.90 to 8.58. The score for treatment T2 (8.58) was maximum followed by T1 (8.42), T0 (8.26), T3 (8.22) and T4 (7.90) respectively. The acceptable highest score was for treatment T2 (8.58) which have 15 parts of strawberry pulp. The lowest score was for treatment T4 (7.90) which has 25 parts of strawberry pulp and formed more granular texture in *kulfi* by increasing acidity. The results show that the treatment T3 (15 parts of strawberry pulp) indicate that the alter significant body and texture, whereas increasing level of strawberry pulp which affect body and texture of *kulfi* they form sticky body and big granular texture. This may due to the increase in moisture content and acidity in *kulfi* with addition of strawberry pulp.

Overall acceptability

Overall acceptability of *kulfi* under different treatment combination of strawberry pulp *kulfi* was determined. The average Overall acceptability score for control *kulfi* (T0) and *kulfi* prepared from different level of strawberry pulp *viz.* 10, 15, 20 and 25 per cent (T1, T2, T3 and

T4) are depicted in Table 1. It may be apparent from table the Overall acceptability score for various treatments ranged between 7.82 to 8.53. The score for treatment T2 (8.53) was maximum followed by T1 (8.37), T0 (8.30), T3 (8.18) and T4 (7.82). The acceptable maximum score was for treatment T2 (8.53) which have 15 parts of strawberry pulp. The lowest score was recorded in treatment T4 (7.82) which contain 25 parts of strawberry pulp. Since the score of all the samples were above 5.5, it was defined that strawberry pulp which prepared under all treatments were acceptable. Total sensory score of strawberry pulp *kulfi* differed significantly due to the different levels of strawberry pulp added. Among all the samples, T2 sample has greasier with grainy texture, good flavour with no deleterious effect on colour and appearance. It was having significant natural flavour of strawberry pulp and smooth to granular texture. Therefore, it was liked by all judges among all the treatments including control sample.

Table 1: Effect of various levels of Strawberry pulp on organoleptic evaluation of *Kulfi*.

Treatment	Flavour	Colour and Appearance	Body and texture	Overall Acceptability
T0	8.16^{b}	8.15^{a}	8.24^{b}	8.30^{c}
T1	8.25^{b}	8.44^{ab}	8.42^{ab}	8.37^{b}
T2	8.48^{a}	8.57^{a}	8.58^{a}	8.53^{a}
T3	8.18^{b}	8.23^{b}	8.22^{ab}	8.18^{d}
T4	7.90^{c}	7.69^{c}	7.90^{c}	7.82^{e}
S.E. +	0.03831	0.07552	0.03397	0.01675
C.D. at 5%	0.1154	0.2276	0.1023	0.05051

Conclusion

Addition of strawberry pulp in *kulfi* mix increased significantly moisture content significantly in finished product compare to control. Per cent fat, protein, total solids and ash content decreased significantly in treated product as compared to control. Overall mean, acidity, pH were increased non significantly and significantly respectively. Whereas pH decreased with significant effect.

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