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Effect of Different Levels of Sweet Potato Paste on Acceptability of Kheer

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Research Paper - Microbiology

ABSTRACT

Kheer has been known to mankind since times immemorial. Kheer is very delicious cereal based indigenous milk product. It is popular throughout the country. In the present study sweet potato kheer was prepared from buffalo milk blended with sugar, sweet potato paste as well as rice and cardamom. Sweet potato kheer was prepared from different levels of sweet potato paste viz. 2.5, 5.0 and 7.5 per cent on the basis of buffalo milk. Control kheer was prepared using 2.5 per cent rice in buffalo milk. The flavour, colour and appearance and body and texture as well as overall acceptability were superior in treatment T0 whereas inferior in T3. While the T0 and T1 were non-significant. In case of colour and appearance all treatments were significant with each other. In case of body and texture score there is highest liking was towards kheer prepared by 2.5 parts of rice. The overall score of acceptability was treatment T0 had comparatively highest mean score than the T1, T2 and T3. And in concern about T1, T2 and T3 the T1 is superior in overall acceptability over T2 and T3.



INTRODUCTION

Kheer is sweetened dish of rice cooked in milk. Kheer has been known to mankind since times immemorial. It was used as sweet dish at all the ceremonial occasions and festivals and is relished by all age groups and thought to be a very nutritious food. It is closely resembles "rice pudding" a popular deserts in the United States and in North and Central Europe (Patel and Singh 2002). The studies were directed towards the formulation of an ideal product mix, optimization of processing conditions for in container manufacture and sterilization of kheer and determination of its shelf life at the different temperatures of storage (Dharmapal, 2000).

Advancely kheer is starch based dairy desserts are basically formulated with milk, thickeners, sucrose, flavourants and colourants. The rheological and sensory properties of Kheer are strongly influenced by the characteristics of particular constituents, like fat content of milk, type and amount of starch, etc. Starch imparts body and mouth feel in the kheer (Meiko, 1997).

MATERIALS AND METHODS

Materials: The whole, fresh, clean buffalo milk, sweet potato, sugar, a good quality and clean rice, cardamom and stainless steel karahi.

Methods:

Treatment combinations

For the preparation of sweet potato kheer, the following treatment combinations were taken for study.

T0= 97.5 Parts of buffalo milk + 2.5 parts of rice (control sample)

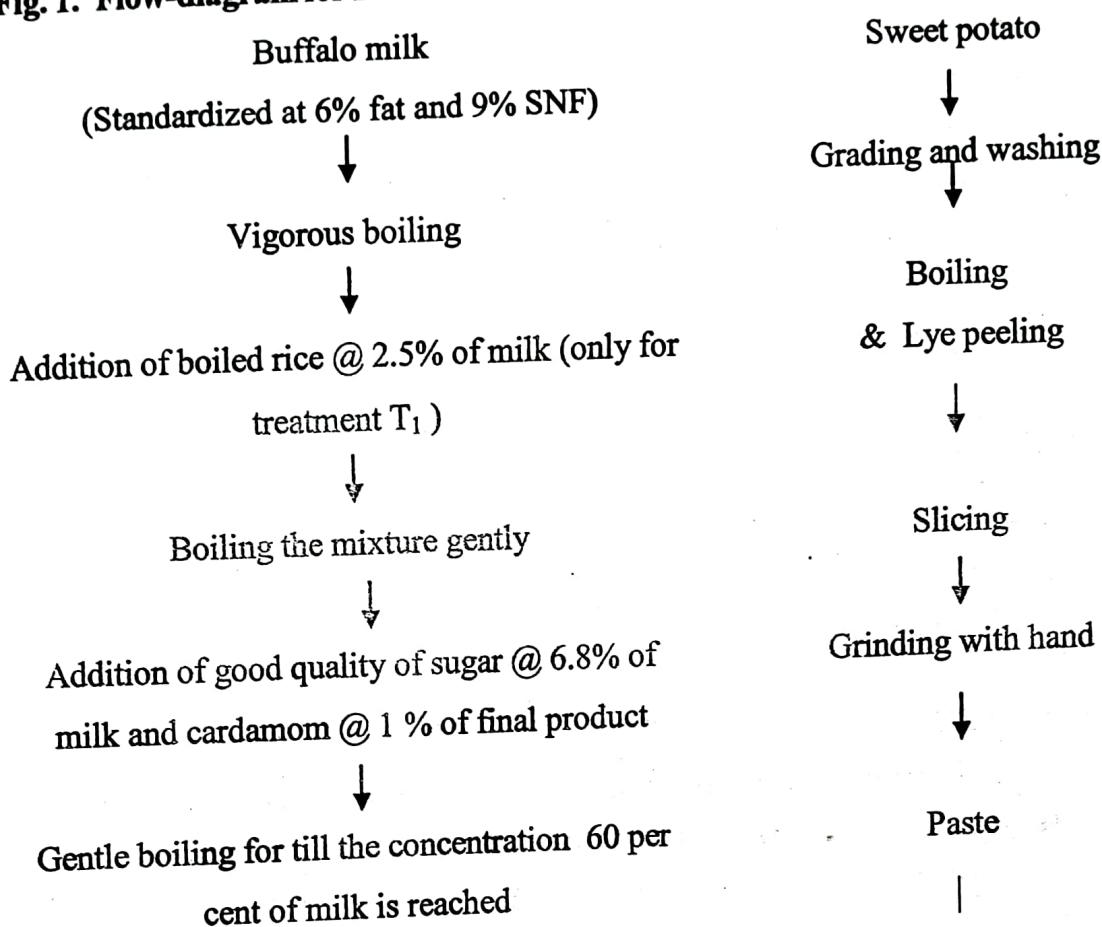
T1= 97.5 Parts of buffalo milk + 2.5 parts of sweet potato paste

T2= 95.0 Parts of buffalo milk + 5.0 parts of sweet potato paste

T3= 92.5 Parts of buffalo milk + 7.5 parts of sweet potato paste



Fig. 1. Flow-diagram for manufacture of sweet potato kheer



Sensory evaluation of sweet potato kheer

Sensory evaluation of sweet potato kheer was carried out by a panel of judges so as to grade the product and to know the acceptability. It was judged for, flavour, colour and appearance, body and texture and overall acceptability.

The scoring was done using 9-point Hedonic scale developed by Quarter Master Food and Container Institute, USA (Gupta 1976) the numerical, values were given from 1 to 9 as shown below.

Quality grade distribution	Score
Like extremely	9
Like very much	8
Like moderately	7



Like slightly	6
Neither like nor dislike	5
Dislike slightly	4
Dislike moderately	3
Dislike very much	2
Dislike extremely	1

The score of various treatments in respect of flavour, colour and appearance and body and texture were pooled and mean score for overall acceptability was worked out.

Statistical Analysis

The results obtained during the course of investigation were subjected to statistical analysis by using completely randomized block design as described by Panse and Sukhatme (1967).

RESULTS AND DISCUSSION

Sensory evaluation of sweet potato kheer

The acceptability of the sweet potato kheer was measured in terms of sensory attributes such as flavour, colour and appearance and body and texture using 9 point hedonic scale by a panel of five expert judges. The data so obtained were analyzed by using Completely Randomized Block Design (CRBD). The overall acceptability of the product was also worked out.

Table 1- Flavour score for sweet potato kheer

Replication Treatment	R ₁	R ₂	R ₃	R ₄	Mean
T ₀	8.5	8.5	9.0	8.5	8.62
T ₁	8.0	8.5	9.0	8.5	8.50
T ₂	7.5	7.0	8.0	7.5	7.50
T ₃	7.0	6.5	7.0	6.5	6.75
S.E. \pm 0.176 C.D. at 5% 0.532					



Table 1 showed that, the overall score of sweet potato kheer in treatment T₀, T₁, T₂ and T₃ were 8.62, 8.50, 7.50 and 6.75 respectively. The treatment T₀ was significantly superior over the treatments T₂ and T₃. The treatments T₀ and T₁ were non-significant. It may be concluded that, blending of 2.5 per cent sweet potato paste in buffalo milk was preferred by the judges than the control sample as far as flavour character are concerned.

Narwade et al. (2003) prepared kheer from safflower milk blended with buffalo milk with different level of sugar and reported the flavour score as 8.50 to 5.0. Barela (2011) reported the flavour score for kheer prepared from cow milk blended with coconut milk and gave that increases coconut milk blending in cow milk decreases the flavour score. Gautam et al. (2013) made channa kheer with milk fat and three artificial sweeteners such as Aspartame, Asulfame- k and Sucralose with a level of 0.015 and 0.05 per cent recorded the score for flavour was 7.79.

Table 2- Colour and appearance score for sweet potato kheer

Replication Treatment	R ₁	R ₂	R ₃	R ₄	Mean
T ₀	9.0	8.5	8.5	9.0	8.75
T ₁	8.0	8.5	8.0	8.5	8.25
T ₂	7.5	8.0	7.5	8.0	7.75
T ₃	7.0	7.5	7.5	7.0	7.25
S.E. \pm 0.147					C.D. at 5% 0.447

Table 2 showed the overall acceptability of sweet potato kheer the in terms of colour and appearance. It was observed that, the overall score of sweet potato kheer in treatment T₀, T₁, T₂ and T₃ were 8.75, 8.25, 7.75 and 7.25, respectively. All treatment significant with each other. It may be concluded that, blending of 2.5 per cent sweet potato paste in buffalo milk was preferred by the judges than the control sample as far as colour and apperance character are concerned.

The results recorded in the present investigation for colour and appearance were comparable with the findings of Kadam (1998) studied the formation of kheer ready mix



using rice, whole milk powder, sugar and saffron and reported that increased saffron contained in kheer ready mix decreases the colour and appearance score. Narwade et al. (2003) prepared kheer from safflower milk blended with buffalo milk with different level of sugar and reported the colour and appearance score as 8.83 to 5.33. Gautam et al. (2013) made channa kheer with milk fat and three artificial sweeteners such as Aspartame, Asulfame- k and Sucralose with a level of 0.015 and 0.05 per cent recorded the score for colour and appearance score was 7.04.

Body and texture score for sweet potato kheer

The average sensory score for body and texture in treatment T₀, T₁, T₂ and T₃ were 8.50, 8.25, 7.50 and 6.88, respectively. It was noticed that the treatment T₁ was significantly superior over treatments T₂ and T₃. The treatments T₀ and T₁ were non-significant. The above observation clearly indicates that, the highest liking was towards the T₀. As far as body and texture concerned, treatment T₁, T₂ and T₃ were also acceptable for panel of judges.

Table 3 - Body and texture score for sweet potato kheer

Replication Treatment	R ₁	R ₂	R ₃	R ₄	Mean
T ₀	9.0	8.0	8.5	8.5	8.50
T ₁	8.0	8.5	8.0	8.5	8.25
T ₂	8.0	7.5	7.0	7.5	7.50
T ₃	7.0	6.5	7.0	7.0	6.88
S.E. \pm 0.174 C.D. at 5% 0.532					

Narwade et al. (2003) prepared kheer from safflower milk blended with buffalo milk with different level of sugar and reported the body and texture score as 8.70 to 5.20. Barela (2011) reported the body and texture score for kheer prepared from cow milk blended with coconut milk and gave that increases coconut milk blending in cow milk decreases the body and texture score. Gautam et al. (2013) made channa kheer with milk fat and three artificial sweeteners such as Aspartame, Asulfame- k and Sucralose with a level of 0.015 and 0.05 per cent recorded the score for body and texture was



7.79.

Table 4 - Overall score for sweet potato kheer

Treatments	Flavour	Colour and appearance	Body and Texture	Overall acceptability
T ₀	8.62	8.75	8.50	8.62
T ₁	8.50	8.25	8.25	8.33
T ₂	7.50	7.75	7.50	7.58
T ₃	6.75	7.25	6.88	6.96
S.E. \pm 0.094				C.D. at 5% 0.237

Table 4 shows that the mean overall score of acceptability of sweet potato kheer for treatments T₀, T₁, T₂ and T₃ was 8.62, 8.33, 7.58 and 6.96 respectively. It was observed that treatment T₀ was significantly superior over all treatment. T₃ which had the lowest mean score than control kheer. The treatment T₀ had comparatively highest mean overall score than the T₁, T₂ and T₃. The lowest overall acceptability score i.e. 6.96 was found in treatment T₃ which was due to increase level of sweet potato paste which decreased flavour, colour and appearance and body and texture, hence overall acceptability score was less as compared to T₀ treatment.

Narwade et al. (2003) prepared kheer from safflower milk blended with buffalo milk with different level of sugar and reported the overall acceptability score as 8.55 to 5.44. Qureshi et al. (2007) developed and standardized carrot kheer with addition of 20, 30 and 40 per cent carrot and 8 per cent sugar and reported that overall acceptability of carrot kheer as 7.5.

Graphical Representation of Overall acceptability of sweet potato Kheer

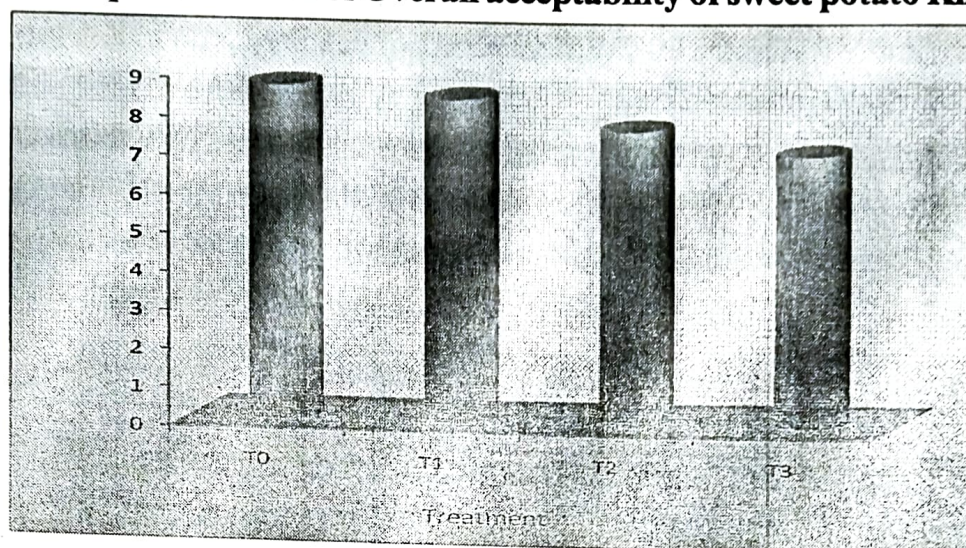


Fig 2 - Overall acceptability of sweet potato Kheer

CONCLUSIONS

1. Control kheer scored highest score for all sensory attributes as compared to kheer blended with 2.5 per cent, 5 per cent and 7.5 per cent sweet potato paste.
2. In general sensory score of control sample and kheer with 2.5 per cent sweet potato paste was comparable and recommended for people.

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