



STUDIES ON SENSORY AND CHEMICAL ANALYSIS OF CARROT *KHEER*

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ABSTRACT :

The present study was carried out on "Studies on preparation of carrot "kheer". The carrot kheer was prepared from buffalo milk with constant level of sugar 6 per cent weight of milk and different level of carrot shreds (2.5, 5, 7.5 percent by weight of milk). On average pH of Carrot Kheer as 6.11, 6.29, 6.30 and 6.35 for different treatment T_0 , T_1 , T_2 , and T_3 respectively. It was observed that overall acceptability score of carrot kheer i.e T_0 , T_1 , T_2 & T_3 was 8.52, 8.71, 8.52 and 8.49 respectively. The treatment T_1 scores highest score (8.71) amongst all the treatments, where as T_3 showed lowest overall acceptability score (8.49) in all treatment combination followed by T_0 , T_2 & T_3 .

KEYWORDS : Carrot, Kheer, Chemical Properties, Sensory Properties.

INTRODUCTION

Milk is an almost an ideal food. It has high nutritive value. It supplies body -building proteins, bone forming minerals and health- giving vitamins and furnishes energy-giving lactose and milk fat. Besides supplying certain essential fatty acids, it contains the above nutrients in an easily digestible and assimilable form. All these properties make milk an important food. (De, 2009).

Kheer is very delicious cereal based indigenous milk product. It is popular throughout the country and enjoyed by all sections of the society, because of its good taste, highnutritional values and relatively low cost. It is prepared by partially dehydration of whole milk in a karahi over a direct fire together with sugar and rice or occasionally semolina, coconut, pistachio, cashew nut, almonds, saffron and cardamom (Patel and Singh 2002).

Carrots (*Daucus carota*) is the important crop as they Sweet and succulent carrot are notably rich in anti-oxidants, vitamins and dietary fiber; however, they provide only 41 calories per 100g, negligible amount of fat and no cholesterol. They are exceptionally rich source of carotenes and vitamin-A. 100 g fresh carrot contain 8285 mcg of beta-carotene and 16706 IU of vitamin A. easy to grow in a garden with deep, loose soil; and as you may have guessed from the name, they are packed with beta carotene. A 1/2 cup serving gives you four times the Recommended Daily Allowance of vitamin A in the form of beta carotene. Growing and harvesting carrots is a great way to take advantage of their nutritional benefits. Carrot Farming plays major role in Indian economy as it is major vegetable crop in India.(NHB 2016)

Hence, taking into consideration the medicinal and nutritional value of Carrot, it as therefore decided to undertake the research project on “**Studies on preparation of Carrot Kheer**” With the following objectives:

- 1) To standardize the process of preparation of *Carrot Kheer*.
- 2) To study the chemical properties of *Carrot Kheer*.
- 3) To study acceptability of finished product by using 9 point hedonic scale.

MATERIALS AND METHODS

The present investigation on “Studies on preparation of Carrot Kheer” was carried out at the Department of Dairy Science, Mahatma Basweshwar Mahavidyalaya, Latur, Affiliated to Swami Ramanand Teerth Marathwada University, Nanded. The materials used and methods employed for conducting the experiment were as under:

- **Materials:**

Buffalo milk, carrot, sugar, rice, ghee and cardamom was obtained from local market of Latur.

- **Digital pH meter:**

A digital pH Meter is a *scientific instrument* that measures the hydrogen-ion concentration (or *pH*) in a solution, indicating its *acidity* or *alkalinity*

- **Method:**

Treatment combinations : For the preparation of Carrot 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 Ghee fried Carrot shreds

T₂= 95.0 Parts of buffalo milk + 5.0 parts of Ghee fried Carrot shreds

T₃= 92.5 Parts of buffalo milk + 7.5 parts of Ghee fried Carrot shreds

- **Preparation of Carrot shreds:**

Selection of root vegetable(carrot)

↓
Grading & Washing

↓

Slicing

↓

Cut with Knife

↓

Carrot Shreds (fried in 1tbs. Ghee)

Fig. 1 : Flow-diagram for manufacture of Carrot shreds

- **Preparation of Carrot Kheer:**

While preparing Carrot Kheer, the buffalo milk standardized to 4 per cent fat was taken in an iron karahi and heated on gentle fire. At the time of boiling, milk was stirred with the help of stainless steel laddle in a circular manner. At this stage in the treatment T₀ 2.5 parts of boiled rice and sugar 6 per cent weight of buffalo milk and cardamom powder 1 per cent were added in the milk. Then gentle

boiling of milk till the evaporation of 40 per cent of buffalo milk. In another treatment combinations T_1 , T_2 , T_3 add Ghee fried Carrot shreds replace with rice as per treatment combinations [i.e. T_1 , T_2 , T_3]

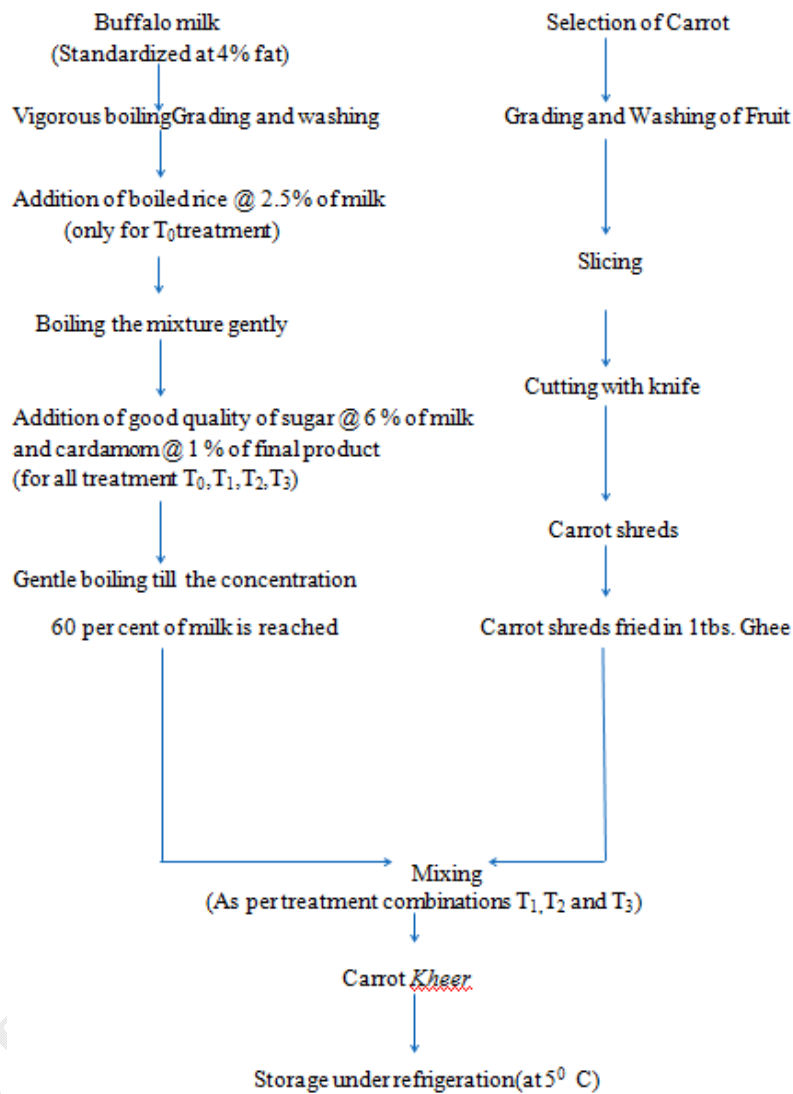


Fig. 2: Flow-diagram for manufacture of Carrot Kheer & Control Kheer

Chemical properties of Carrot Kheer:

Chemical quality:

▪ Determination of pH:

The pH of Carrot Kheer was measured by using digital pH meter at a temperature of 25°C. Firstly the electrode of pH meter was standardized by using standard buffer solution pH 4, 7 and pH 9. Before checking pH of carrot kheer the electrode was standardized by using standard buffer solution at 7pH. The electrode of pH meter was directly dipped into the Kheer and on the screen of pH meter, the pH of Kheer was observed, which was recorded.

▪ Sensory evaluation of Carrot Kheer :

Sensory evaluation of Carrot 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.

RESULT AND DISCUSSION

The study was undertaken to prepare “Studies on preparation of Carrot Kheer” at different blending level. The product was subjected to evaluated its chemical analysis (pH), Overall acceptability.

The result obtained in investigation are discussed under following heading

▪ pH

pH of finished product was measured by using digital pH meter at room temperature after standardizing the instrument. The result obtained in respect of pH are presented in table 1.

Table 1. pH of carrot Kheer

TREATMENT	pH
T ₀	6.11
T ₁	6.29
T ₂	6.30
T ₃	6.35

The above table indicates that the pH of Carrot Kheer as 6.11, 6.29, 6.30 and 6.35 for different treatment T₀, T₁, T₂, and T₃ respectively. The significant difference were observed in all the treatment combination.

▪ **Sensory evaluation of finished product:**

The overall acceptability of the Carrot Kheer was measured in terms of sensory attributes such as Flavour, body and texture and colour and appearance using 9 point hedonic scale by 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.

▪ **Overall Acceptability:**

The mean overall acceptability score of the treatment T₀, T₁, T₂ & T₃ was 8.52, 8.71, 8.52 and 8.49 respectively. The maximum score was observed for treatment T₁ followed by T₀, T₂ & T₃. All treatment was found to be significant.

The treatment T₁ scores highest score (8.71) amongst all the treatments, where as T₃ showed lowest overall acceptability score (8.49) in all treatment combination followed by T₀, T₂ & T₃. The result obtained in respect of mean overall acceptability of carrot kheer score are presented in Table 2.

Table 2. Overall Acceptability Score of carrot Kheer

Treatment	Flavor	Body and Texture	Colour and Appearance	Overall acceptability
T ₀	8.57	8.42	8.57	8.52
T ₁	8.64	8.71	8.78	8.71
T ₂	8.57	8.57	8.42	8.52
T ₃	8.57	8.21	8.71	8.49

Above table shows that the mean overall acceptability of carrot kheer.

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