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Chemical composition of Kalakand enriched with papaya pulp (*Carica papaya*)

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Abstract
A study on "physicochemical analysis of kalakand enriched with papaya pulp (*Carica papaya*)" was carried out by using buffalo milk. The study was to develop kalakand enriched with papaya pulp in different concentration by using whole milk. and the study on find out the physicochemical parameters of kalakand prepared by addition of different levels of papaya pulp. kalakand prepared with 5 per cent papaya pulp was found best treatment on the basis of physicochemical analysis of kalakand. The most acceptable quality flavoured kalakand could prepared by using papaya pulp at the rate of 5 per cent of the buffalo skim milk and it contained total solids, fat, protein, ash, moisture content and titratable acidity as 61.4, 13.2, 10.9, 1.39, 40.1 and 0.62 per cent, respectively.

Keywords: kalakand, papaya pulp, sensory physicochemical analysis

Introduction
In recent years, there has been growing interest in the manufacture of value added products like kalakand and other khoa based products individually and/or fortified with fruits. Kalakand is one of the most popular indigenous products of the country. It is a partially desiccated milk product with caramelized flavour and granular texture prepared from acidified milk and found to be an attractive product amongst all the classes of consumers. Flavoured kalakand are kalakand to which some flavours have been added. Flavoured kalakand is one of the special product prepared which contains all the constituents of kalakand like proteins, carbohydrates and minerals. Besides, sugar, flavouring agents, colouring matter are also present in this beverage.

Treatment Details
Kalakand was prepared by using four different levels of papaya pulp, control treatment i.e. without papaya pulp. The treatment details Study were:

1. T_0 – 0% papaya pulp + 10% of sugar
2. T_1 – 2.5% papaya pulp + 10% of sugar
3. T_2 – 5% papaya pulp + 10% of sugar
4. T_3 – 7.5% papaya pulp + 10% of sugar
5. T_4 – 10% papaya pulp + 10% of sugar

Material and Method
Buffalo milk was obtained from the dairy farm, Nashik and standardized to 6% fat. Superior quality and completely matured papaya fruits and sugar were available from the local market Nashik. Papayas were cut in small pieces after washing with distilled water. Control and experimental *kalakand* were prepared by the method suggested by Aneja *et al*., 2002.

Flow diagram of Papaya *kalakand*

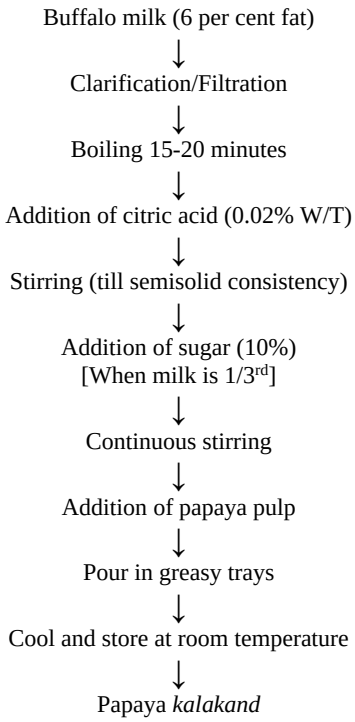

Fig 1: Process diagram for Standardization of papaya *kalakand*

T_0 Treatment was made from buffalo milk (100%) without addition of papaya´s whereas experimental samples of *kalakand* were prepared by using papayas @ 2.5%, 5%, 7.5% and 10% with same sugar level (10%). Milk was transferred into pan and boiled at 70-80ºc, continuous stirring by wooden

scoop in circular motion of the heating surface. Add 0.02% of citric acid for coagulation.

When the product reached semi solid condition the concentration of heating was reduced 10% sugar was added, and constantly stirring the product. After moisture lost add papaya pulp on the based on treatment. Finally completed the stirring process product transfer to greased tray for cooling and setting at room temperature. The product was evaluated sensory evaluation on the basis of 9 point hedonic scale. The data collected on different aspects were tabulated and analyzed statically by using ANOVA method.

Result and discussion

The present investigation was undertaken to evaluate the chemical and physicochemical analysis of kalakand enriched with different levels of papaya pulp.

Table 1: Physicochemical analysis of flavoured kalakand enriched with papaya pulp.

Treatment	Total solid	Fat	Protein	Ash	Titrable acidity
T_0	65.5	25.8	13.3	2.62	0.63
T_1	62.9	17.7	11.3	1.64	0.62
T_2	61.4	13.2	10.9	1.39	0.62
T_3	59.9	9.70	9.5	1.34	0.61
T_4	59.7	6.9	7.7	1.20	0.60
S.E	11.0	2.70	0.74	1.19	1.59

Conclusion

Total solids content of kalakand decreased with an increase in the level of papaya pulp. The maximum total solids content (65.5%) was noticed in kalakand without papaya pulp i.e. T_0, where as the lowest (59.7%) was recorded in kalakand with 5 per cent papaya pulp i.e. T_4.

The mean value of fat decreased significantly from T_0 to T_4. The highest fat content (7.14%) was observed in kalakand prepared without sapota pulp i.e. (T_0), whereas the highest fat content (25.8 %) in kalakand with 5 per cent papaya pulp T_4 (6.9%).

There was significant Increased in protein content of kalakand with Decrease in the level of papaya pulp. The highest protein content (13.3%) was observed in kalakand prepared without papaya pulp (T_0), whereas the lowest protein (7.7%) in kalakand with 5 per cent papaya pulps (T_4).

The variation in ash content of kalakand was non-significant. The highest ash content (2.62%) was observed in kalakand prepared without papaya pulp (T_0), whereas the lowest percentage (1.20%) in kalakand with 5 per cent papaya pulps (T_4).

The mean value of acidity negligibly decreased with increase in the level of papaya pulp. The highest acidity (0.63%) was observed in kalakand prepared without papaya pulp (T_0), whereas the lowest acidity (0.60 %) in case of kalakand with 5 per cent papaya pulp (T_4).

Reference

1. Shalini, Arora P, *et al.*, studies on development and quality assessment of papaya kalakand in the Pharma Innovation Journal 2015; 4(5):08-10.
2. Nagar A, *et al*., Attempt the study on Standardization of papaya (*Carica papaya* L.) enriched kalakand and estimation of its cost of production, 2017.
3. David J. Sensory Evaluation of the Functional Kalakand fortified with Ash Gourd Pulp. in J Res. Pharmaceutical, Bio. Chem. Sci.
4. Sawant VY, *et al*. formulation and evaluation of mango fruit kalakand in vasantrao Naik MPKV Marathwada Agriculture University.
5. Bhutkar SS, *et al*., studies on Effect of Different Levels of Ash Gourd Pulp for Manufacturing Kalakand under the Department of Animal Husbandry and Dairy Science, in Kai Rajaram Marathe College of Agriculture, phondaghat, Balasaheb Savant Konkan Krishi Vidyapeeth, Dapoli, 2017, 461-601.