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## Sensory Evaluation of the Functional Kalakand fortified with Ash Gourd Pulp.

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### ABSTRACT

Kalakand is gaining more popularity in modern societies of the developing countries. The present investigation was made with an attempt to develop Kalakand by addition of an Ash gourd at different level of concentration using buffalo milk. The basic aim of study was to find out the sensory parameter of Kalakand prepared by addition of Ash gourd. 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. According to the analysis, treatment  $T_1$  with 15% Ash gourd pulp was found to be the best among the three. Thus, as per acceptability of the product judged by organoleptic evaluation and therapeutic value, the treatment can be rated as  $T_1 > T_0 > T_2 > T_3$ . The data regarding cost of Kalakand fortified with Ash gourd pulp was found as cheapest in  $T_3$ , which was Rs. 117.38 per Kg.

**Keywords:** Ash gourd, Buffalo milk, Kalakand.

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## INTRODUCTION

Milk and milk products have been recognized as significant contributors of important nutrients to the human diet. Among the indigenous milk products, Kalakand occupies an important place and found to be attractive product amongst all the classes of consumers. Kalakand is partially desiccated milk product with caramelized flavour and granular texture prepared from acidified milk [1]. The granular mass is fused and held together in loosely compact body. The colour of Kalakand varies from off-white to light caramel colour. Being a whole milk concentrate, Kalakand is a good source of protein, mineral, energy giving fat and lactose. It is 4-6 times more nutritious in terms of per unit weight and calorific value.

Sensory qualities of Kalakand can be altered by addition of Ash gourd pulp. Ash gourd is loaded with nutrients. It is excellent source of vitamin B<sub>1</sub> (Thiamine), good source of vitamin C. It is also rich in many minerals like calcium. Ash gourd is used to treat summer fevers, obesity, because it is low in calories and it prevents conversion of sugar into fats. It also helps in boosting memory and other elements. In Ayurveda, the fruit is used to treat epilepsy, lung diseases, asthma, coughs, urine retention and internal hemorrhage. Considering the important aspects of Ash gourd, an effort was made in this study to use different levels of Ash gourd pulp for quality Kalakand. The technique of manufacturing Kalakand was as recommended by De [2].

## MATERIALS AND METHODS

Control Kalakand (T<sub>0</sub>) was made from buffalo milk without addition of Ash gourd pulp. For experimental Kalakand, buffalo milk was filtered and clarified at 35-40°C, and then it was cooled at 5°C, standardized to 6% fat and 9% SNF. Then the milk was boiled for 15 minutes and citric acid (1%) was added. It was then desiccated up to 30% moisture. Now Ash gourd pulp was added in T<sub>1</sub> (85:15), T<sub>2</sub> (75:25) and T<sub>3</sub>(65:35). Sugar was added @ 6% and further desiccated. Kalakand was set and allowed to cool at room temperature. The samples were analyzed for physiochemical, microbial and organoleptic qualities as per ICAR manual in Dairy Chemistry [3] and Indian standard [4]. The data collected on different aspects as per plan were tabulated and statistically analyzed as per Chandel [5],

T<sub>0</sub> = Kalakand without Ash gourd pulp

T<sub>1</sub> = Khoa + Ash gourd pulp (85:15)

T<sub>2</sub> = Khoa + Ash gourd pulp (75:25)

T<sub>3</sub> = Khoa + Ash gourd pulp (65:35)

## RESULT AND DISCUSSION

### Organoleptic attributes and Overall acceptability of control and Kalakand Fortified with Ash gourd:

Table 1 shows organoleptic attributes of control and Kalakand blended with ash gourd.

#### Flavour and Taste

The highest mean value for flavour and taste in Kalakand fortified with Ash gourd was T<sub>1</sub>(8.16), followed by T<sub>0</sub>(8), T<sub>2</sub>(7.44) and T<sub>3</sub>(6.75). There were significant differences found among the treatments which may be attributed to the addition of ash gourd. F Value was 15.02, indicating significant effect of treatment on flavour and taste.

#### Body and texture

The highest mean value for body and texture in Kalakand was found in T<sub>1</sub> (8.08), followed by T<sub>0</sub>(7.92), T<sub>2</sub>(7.64) and T<sub>3</sub>(7.38). There were significant differences found among the treatments which may be attributed to the addition of ash gourd. F Value was 3.49, indicating significant effect of treatment on body and texture.

#### Colour and Appearance

The highest mean for colour and appearance was found in T<sub>1</sub> (8.24), followed by T<sub>0</sub>(8.10), T<sub>2</sub>(7.64) and T<sub>3</sub>(7.48). There was significant difference found among the treatments. There were significant differences

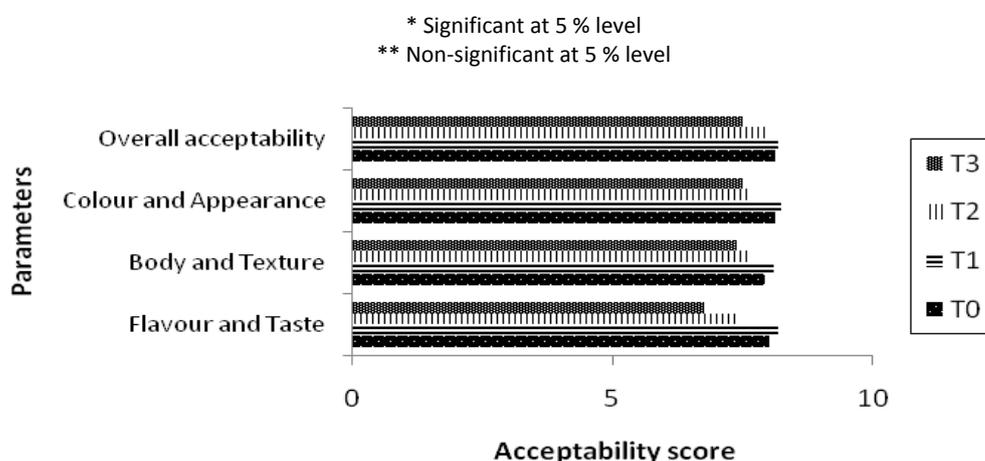
found among the treatments which may be attributed to the addition of ash gourd. F Value was 15.02, indicating significant effect of treatment on colour and appearance.

**Overall acceptability**

The highest mean value for overall acceptability in experimental Klakand was found in T<sub>1</sub>(8.16), followed by T<sub>0</sub>(8.11), T<sub>2</sub>(7.90) and T<sub>3</sub>(7.50). There was significant difference observed among the treatments which may be attributed to the addition of ash gourd. F Value was 2.39, indicating significant effect of treatment on overall acceptability.

**Table 1: Organoleptic attributes and Overall acceptability of control and Kalakand Fortified with Ash gourd.**

Parameters	Control and Kalakand Fortified with Ash gourd.				F-Value	C.D.
	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>		
Flavour and Taste	8.0	8.16	7.44	6.75	15.02*	0.51
Body and Texture	7.92	8.08	7.64	7.38	3.49*	0.45
Colour and Appearance	8.10	8.24	7.64	7.48	15.02*	0.34
Overall acceptability	8.11	8.16	7.90	7.50	2.39*	0.64



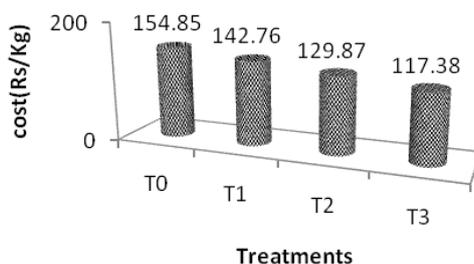
**Figure 1: Organoleptic attributes of control and Kalakand Fortified with Ash gourd.**

**Cost Analysis**

The data regarding cost of Kalakand fortified with ash gourd pulp was found as cheapest in T<sub>3</sub>(117.38 Rs/Kg), followed by T<sub>2</sub>(129.87Rs/Kg), T<sub>1</sub>(142.76Rs/Kg) and T<sub>0</sub>(154.85Rs/Kg).

**Table 2: Cost Analysis of control and Kalakand Fortified with Ash gourd.**

Parameters	Control and Kalakand fortified with Ash gourd.			
	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
Cost(Rs/Kg)	154.85	142.76	129.87	117.38



**Figure 2: Cost Analysis of control and Kalakand Fortified with Ash gourd.**



### **CONCLUSION**

The results obtained from the statistical analysis revealed that the Ash gourd can be satisfactorily used for Kalakand making. As per experimental Kalakand, T<sub>1</sub> with 15% Ash gourd pulp was found to be best among the three treatments.

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