

## **Effect of Different Levels of Ash Gourd Pulp for Manufacturing Kalakand**

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**Abstract:** An acceptable kalakand was prepared using channa from standardized cow milk added with 10 parts of ash gourd pulp into 90 part channa and sugar was mixed @ 30 % by weight of channa before heating. The moisture range between 17.04 to 28.75, fat-24.80 to 21.12, protein-14.04 to 16.65, ash-2.10 to 1.87 and carbohydrate-38.40 to 31.61 per cent, respectively. On an average the ash gourd kalakand was found to be the overall acceptability score for T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub> was 8.0, 8.25, 8.37 and 8.12, respectively. The cost of production of final product as 356, 343, 331 and 318 Rs / Kg for T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub>, respectively

**Keyword:** Pedha, Buffalo milk, Khoa, Red pumpkin, Chemical and Sensory parameters

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### **I. Introduction**

India is emerging as a highest milk production producing country in the world with an annual growth rate of 4.53 %. The current milk production of India is 139.10 MMT (NDDB Statistics, 2013). Out of the total milk production in India 46 % of milk is consumed as whole and 54 % is utilized for conversion into different dairy products. It is estimated that about 7 % of total milk in India is converted into heat and acid coagulated milk product among which kalakand is one of the product.

Ash gourd is excellent source of B1, B3, vitamin C and rich in calcium. It contains higher amount of potassium for maintains a healthy blood pressure. In ayurveda ash gourd is also used as brain food to treat mental illness and nervous disorder such as epilepsy, paranoia and insanity. Ash gourd is alkaline in nature and hence has cooling and neutralizing effect on stomach acids and used for treating digestive ailments like hyper acidity and ulcer. It is also useful in treating respiratory disorder like asthma and urinary diseases like kidney stone.

The market demand for instant food and dairy products all over the world. The consumer seeing new taste with nutritional value with minimum cost. Hence taking into consideration in market demand were made to prepare the kalakand blended with ash gourd pulp.

### **II. Materials And Methods**

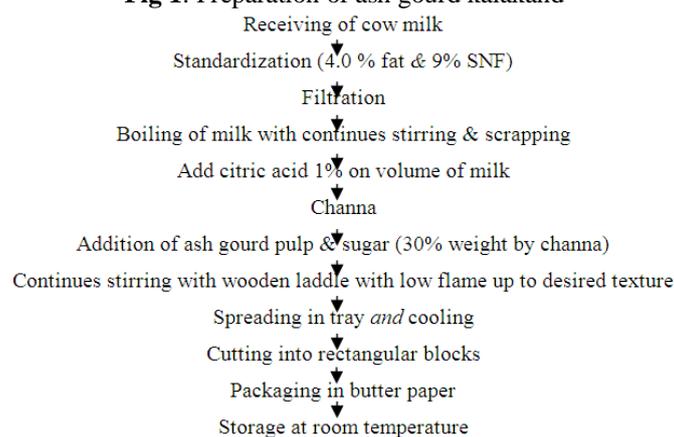
#### **2.1 Preparation of ash gourd pulp**

Ash gourd fruit purchased from local market were washed with clean water. The skin was removed. Fruit was cut in pieces/ slices with the help of knife, remove the seed, inert fibbers like thread and finally converted into homogenous pulp by using Delux pulp machine.

#### **2.2 Preparation of kalakand**

The procedure given by Kumar *et al* (1997) was followed. Cow milk was filtered through muslin cloth and standardized to 4 per cent fat. Milk was converted into channa. The calculated amount of ash gourd pulp and sugar @ 30 per cent of channa were added. Finally the mixture was heated on a low fire with stirring till the desired texture was obtained. Finally spread in trays.

**Fig 1:** Preparation of ash gourd kalakand



### 2.3 Treatment details

T<sub>1</sub>- 0 parts of ash gourd pulp + 100 parts of Channa by weight

T<sub>2</sub>- 5 parts of ash gourd pulp + 95 parts of Channa by weight

T<sub>3</sub>- 10 parts of ash gourd pulp + 90 parts of Channa by weight

T<sub>4</sub>- 15 parts of ash gourd pulp + 85 parts of Channa by weight

The different levels were tried and compare with control (T<sub>1</sub>)

### 2.4 Chemical analysis

Moisture content of pedha was determined by standard procedure described in Anonymous (1959). Fat content of kalakand by method described in ISI : 1224 (Part II) 1977. Protein by microkjeldhal method as described in ISI (1981) , Ash by ISI: (1981) and carbohydrate by formula method.

### 2.5 Sensory evaluation

Sensory analysis carried out by panel of Judges in respect of color and appearance, Flavour body & texture. Sweetness and overall acceptability by 9 hedonic scale developed by Quarter master Food and Container Institute USA (Gupta 1976)

### 2.5 Statistical method

The data were analyzed statistically by using the completely randomized block design as per method described by Panse and Sukhatme (1967). The significance was evaluated on the basis of critical difference.

## III. Results And Discussion

### 3.1 Chemical composition

The chemical quality of finished product is presented in Table 1. The moisture content in the finished product of different treatment combinations were in the range of 17.04 to 28.75 per cent. The increasing moisture content was noted in the finished product, due to addition of varied proportion of ash gourd pulp in channa. The fat content of ash gourd kalakand in all combination was different. Which decreased from 24.80 (T<sub>1</sub>) to 21.12 (T<sub>3</sub>). This might be due to decreasing levels of channa. The results obtained in the finished products were similar to those reported by Jadhav (2008). Similarly protein, carbohydrate and ash content in the finished product decreased.

### 3.2 Sensory evaluation

The sensory scores given for various samples are presented in Table 2. Kalakand samples in which 10 per cent ash gourd pulp was blended with channa scored the highest score (8.37). It was observed that increasing proportion of ash gourd pulp in the blended in the channa constant score of colour and appearance of upto (T<sub>3</sub>) and higher in (T<sub>4</sub>) . The score in respect of body and texture ranged between 8.0 to 8.5 for T<sub>1</sub> and T<sub>3</sub> treatment combinations. The treatment T<sub>3</sub> was significantly superior over the rest of treatments. In case of flavour, the score recorded was highest in T<sub>2</sub>. In case of sweetness the mean score ranged from 8.0 to 9.0. It was lowest in T<sub>1</sub> and highest in T<sub>3</sub>.

### 3.3 Cost of production

The cost of finished product (Table 3) was Rs.356 for control pedha whereas, for other treatment it increased in proportion to ash gourd pulp added. The cost of kalakand with 10 per cent red pumpkin was Rs. 25.00 per kg over control kalakand.

**Table 1.** Chemical composition of ash gourd kalakand (per cent)

Treatments	Moisture	Fat	Protein	Carbohydrate	Ash
T <sub>1</sub>	17.40	24.80	17.40	38.30	2.01
T <sub>2</sub>	21.18	23.58	17.15	36.00	2.09
T <sub>3</sub>	24.97	22.35	16.90	33.83	1.95
T <sub>4</sub>	28.75	21.12	16.65	31.61	1.87
SE ±	0.025	0.056	0.014	0.019	0.018
CD at 5%	0.072	0.152	0.036	0.059	0.052

**Table 2.** Overall acceptability score of ash gourd kalakand

Treatments	Colour & appearance	Flavour	Body & texture	Sweetness	Overall acceptability
T <sub>1</sub>	8.0	8.0	8.0	8.0	8.0
T <sub>2</sub>	8.0	8.5	8.0	8.5	8.25
T <sub>3</sub>	8.0	8.0	8.5	9.0	8.37
T <sub>4</sub>	8.5	8.0	8.0	8.0	8.12
SE ±	0.146	0.116	0.118	0.131	0.141
CD at 5%	0.451	0.354	0.364	0.406	0.436

**Table 3.** Cost of production of ash gourd kalakand (Rs / kg)

Sr. No	Particulars	Cost (Rs/ kg)	T <sub>1</sub>		T <sub>2</sub>		T <sub>3</sub>		T <sub>4</sub>	
			Qty / kg	Amt / kg						
1	Channa	296.00	1000	296.00	950	281.00	900	266.00	850	251.00
2	Ash gourd pulp	52.00	-	-	50	2.60	100	5.20	150	7.80
3	Sugar	33.00	300	10.00	300	10.00	300	10.00	300	10.00
4	Labour charges			25.0		25.0		25.0		25.0
5	Fuel charges			10.00		10.00		10.00		10.00
6	Miscellaneous charges			15.00		15.00		15.00		15.00
7	Total coat			356.00		343.00		331.00		318.00

#### IV. Conclusion

It may be concluded that the superior and nutritional quality ash gourd kalakand can be prepared by addition of 10 parts of ash gourd pulp and 90 parts of channa by weight basis with addition of 30 per cent sugar.

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