

Quality Apprehension of *Kalâm* Compared With *Pedha*

Sujata Ghorpade, Sandip Patil, *Sunil Adangale and Amardeep Lokhande

Department of Animal Science and Dairy Science

Mahatma Phule Krihisi Vidyapeeth, Rahuri (M.S.) 41372

*Author for Correspondence

ABSTRACT

Present investigation was undertaken to study the quality apprehension of *Kalâm* compared with *Pedha*. This study was conducted in four different treatments as To₁ -*Kalâm* (Market), T₁ -*Kalâm* (Laboratory made), To₂ -*Pedha* (Market), T₂-*Pedha* (Laboratory made). It is observed that, the laboratory *kalâm* and laboratory *pedha* was superior in quality. It contained more amount of fat, protein, lactose and less amount of sucrose as compared to market *Kalâm* and market *pedha*. As regards to moisture market *Kalâm* contained higher amount of moisture and market *pedha* contained less amount of moisture. There were significant difference in the chemical composition of market *kalâm* (To₁) and laboratory made *Kalâm* (T₁). The overall acceptability score of *kalâm* was 8.01. There were no significant differences in the overall acceptability score within the treatments.

Key Words: *Kalâm*, *Khoa*, Physico-chemical properties

INTRODUCTION

Traditional dairy products have played a significant role in the economic, social, religious and nutritional well being of our people. The market for Indian milk products is estimated to be of the order of Rs.250 billion. This fact underlines the significance of traditional dairy products in the national economy. In spite of such a great importance of traditional dairy products in our country these products are still produced manually in the small sector with variable quality depending on the skill of *Halwai* (Patil, 2002).

Indian indigenous products lack uniformity, in order to stand in the world market. There is need to improve the quality parameters of milk and milk products. As far as *pedha* is concerned it shows wide variation in the method of manufacture, chemical and microbiological quality, packaging and shelf-life. *Pedha* is one of the popular *Khoa* based indigenous milk product prepared from cow or buffalo milk. *Pedha* is indisputable product having economic importance especially in rural parts of India, as it provides good means of utilizing economically small quantity of surplus milk.

Kalâm a product similar to *pedha* is being prepared and sold in Gangakhed city in Parbhani district. It is most popular in Parbhani, Beed, Nanded district of Maharashtra state. *Kalâm* is light brown in colour having sweet taste similar to that of *pedha*. Considerable amount of free fat is observed on the surface. *Kalâm* is made in pat or block while *pedha* is available in the form of small balls. It is liked by the

consumers because of its characteristics taste and appealing colour.

MATERIALS AND METHODS

The whole fresh and clean buffalo milk was obtained from Dairy Unit, Department of Animal Husbandry and Dairy Science, Marathawada Agricultural University, Parbhani. An iron karahi having 31 cm diameter and 8.5 cm depth with a capacity to hold two liters of milk was used for the desiccation of milk. The wooden stirrer having flattened end with a relatively sharp edge and long handle was used for stirring milk. Cane sugar was used as sweetener and cardamom as flavouring agent for preparation of *kalâm/pedha* was purchased from local market. Analytical reagent grade chemicals were used for chemical analysis.

Pedha samples were procured from Parbhani local market. *Pedha* was also prepared in the laboratory by adopting the standard procedure for comparison. *Kalâm* required for its characterization was procured from its famous place Gangakhed city of Parbhani district. *Kalâm* was also prepared in the laboratory from buffalo milk for comparison.

Treatments details

- To₁ - *Kalâm* (Market)
- T₁ - *Kalâm* (Laboratory made)
- To₂ - *Pedha* (Market)
- T₂ - *Pedha* (Laboratory made)

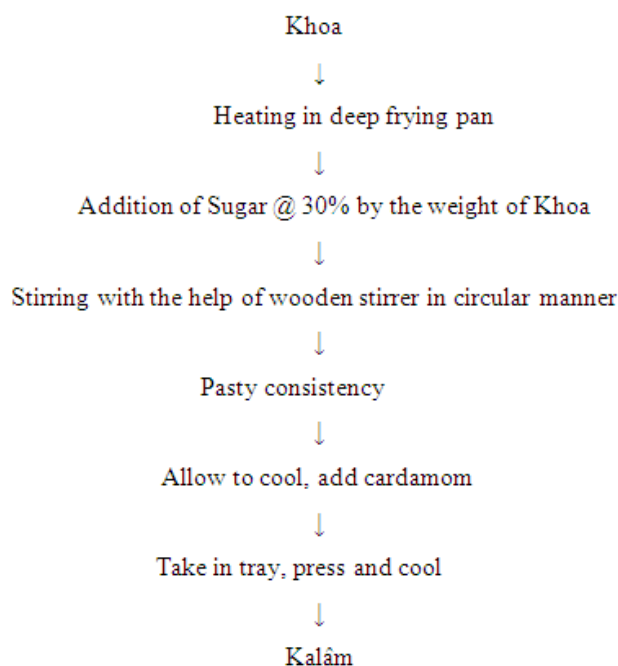
Research Article

Comparison was made in between laboratory kalâm/market kalâm and laboratory pedha/market pedha.

Preparation of Kalâm

Laboratory kalâm was prepared as per the procedure described by halwai of Gangakhed market.

Flow diagram for preparation of Kalâm:



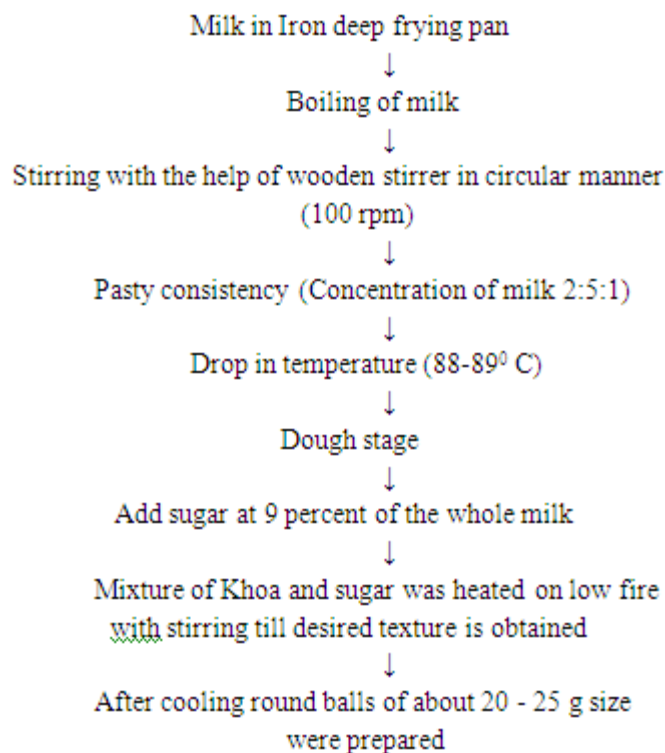
Measured quantity of Khoa was taken in a deep frying pan and allowed to heat on gentle fire. Afterwards sugar was added @ 30 per cent by the weight of Khoa. Khoa was stirred with the help of wooden stirrer in circular manner. Heating was continued till it reached a pasty consistency. At this stage deep frying pan was removed from fire and allowed cooling. The product was then transferred to tray. Then cardamom was added at 10 gm/kg as flavour agent to the product. Kalâm was made into pat or rectangular blocks.

Preparation of Pedha

Laboratory *Pedha* was prepared by adopting the standard procedure as described by (Patel, 1986) using buffalo milk. The procedure is described as under.

Measured amount of whole buffalo milk was taken in iron deep frying pan and heated on gentle fire. At the time of boiling, milk was stirred with the help of wooden stirrer in a circular manner @ 100 rpm.

Flow diagram for *Pedha* preparation:



Stirring was continued till pasty consistency was reached (concentration of milk 2:5:1). Then temperature was lowered up to 88-89°C. At this stage cane sugar was added at 9 % of whole milk. Then mixture of *Khoa* and sugar was heated on low fire with stirring till desired texture was obtained. The product was allowed to cool. After cooling round balls of about 20-25 g size each were prepared.

Moisture content of *Pedha* was determined by standard procedure as described by (Anonymous, 1959). Fat content of *Pedha* samples was determined by Gerber's method described by (Anonymous, 1977). Protein content of *Pedha* was determined by the Microkjeldahl method as described in (Anonymous, 1981). The lactose content of *pedha* was determined by the procedure described in (Anonymous, 1968). The sucrose content of *Pedha* was determined by volumetric (Lane-Eynon) method described in (Anonymous, 1964). Total ash content of *Pedha* sample was determined by method given by (Anonymous, 1981).

The *Kalâm* and *Pedha* were judged for sensory attributes such as colour and appearance, flavour, taste, body and texture and overall acceptability by a panel of judges using 9 point Hedonic Scale. The data were analyzed statically by using completely randomized Block Design (CRBD) as per Panse and Sukhatme (1985).

Research Article

RESULTS AND DISCUSSION

It was observed from Table 1 that, the market *Kalâm* (To₁), laboratory *Kalâm* (T₁) contained 17.49 and 15.67 per cent moisture, 20.80 and 22.90 per cent fat, 14.50 and 15.00 per cent protein, 13.16 and 14.20 per cent lactose, 31.32 and 29.90 per cent sucrose and 2.29 and 2.33 per cent ash, respectively. Whereas the market *Pedha* (To₂) and laboratory *Pedha* (T₂) contained on an average 14.18 and 14.67 per cent moisture, 14.00 and 22.15 per cent fat, 13.89 and 14.80 per cent protein, 12.52 and 13.90 lactose, 43.10 and 32.16 sucrose and 2.31 and 2.32 per cent ash, respectively. These observations indicated that the laboratory *Kalâm* and laboratory *Pedha* was superior in quality. It contained more amount of fat, protein, lactose and less amount of sucrose as compared to market *kalâm* and market *pedha*. Statistically there were significant difference in the chemical composition of market *kalâm* (To₁) and laboratory made *kalâm* (T₁). As regards to moisture, it was observed that market *kalâm* contained higher

amount of moisture and market *pedha* contained less amount of moisture. Patel (1996) and Ray *et al.* (2002) are in agreement with above findings. The mean sensory score for overall acceptability of *kalâm* and *pedha* are presented in Table 3, for treatments To₁, T₁, To₂ and T₂ was 8.01, 8.14, 8.00 and 8.21 respectively. The maximum score was observed for laboratory *kalâm* (T₁) which was 8.14 in case of *kalâm* and it was 8.21 for laboratory *kalâm* (T₂) in case of *pedha*. The acceptability score of laboratory *pedha* (T₂) was higher than all other treatments. There were no significant differences in the overall acceptability score within the treatments. These observations indicated that the *kalâm* and *pedha* of all the treatments was liked by the judges and was acceptability at all level of treatment. The results of the present study are in agreement with those reported by Miyani *et al.* (1982), they observed improvement in the acceptability of *pedha* with increased level of fat content in the milk used.

Table 1: Chemical composition of market *kalâm* (To₁), laboratory *Kalâm* (T₁), market *pedha* (To₂) and laboratory *pedha* (T₂)

Sr. No.	Chemical constituents	Market <i>kalâm</i> (To ₁)	Laboratory <i>kalâm</i> (T ₁)	Market <i>pedha</i> (To ₂)	Laboratory <i>pedha</i> (T ₂)
1.	Moisture (%)	17.49	15.67	14.18	14.67
2.	Fat (%)	20.80	22.90	14.00	22.15
3.	Protein (%)	14.50	15.00	13.89	14.80
4.	Lactose (%)	13.60	14.20	12.52	13.90
5.	Sucrose (%)	31.32	29.90	43.10	32.16
6.	Ash (%)	2.29	2.33	2.31	2.32

Table 2: Overall acceptability score of *kalâm* and *pedha* (out of 9.0)

Treatment	Colour and Appearance	Flavour	Taste	Body and Texture	Overall mean
To ₁	8.11	7.95	8.06	7.92	8.01
T ₁	8.38	8.08	8.19	7.89	8.14
To ₂	8.22	7.83	8.08	7.88	8.00
T ₂	8.36	8.05	8.31	8.11	8.21

SE ± 0.081

CD at 5 % 0.24

Table 3: Cost of production of Kalâm and Pedha (per kg)

S. No.	Particulars	Cost (Rs./kg)	Market Kalâm (To ₁)		Laboratory Kalâm (T ₁)		Market Pedha (To ₂)		Laboratory Pedha (T ₂)	
			Qty. (per kg)	Amt. (Rs)	Qty. (per kg)	Amt. (Rs)	Qty. (per kg)	Amt. (Rs.)	Qty. (per kg)	Amt. (Rs)
1.	Market kalâm (kg)	60.00	1.00	60.00	--	--	--	--	--	--
2.	Market pedha (kg)	80.00	--	--	--	--	1.00	80.00	--	--
3.	Milk (lit.)	14.00	--	--	3.077	43.07	--	--	2.941	41.17
4.	Sugar (kg)	16.00	--	--	0.300	4.8	--	--	0.360	5.04
5.	Cardamom (g)	800	--	--	10.00	4.00	--	--	5.00	2.00
6.	Miscellaneous	--	--	--	--	10.00	--	--	--	10.00
	Total cost per kg	--	60.00		61.87		80.00		58.21	

Cost of production of Kalâm and Pedha was given in Table 3. The major ingredients needed for preparations of laboratory kalâm and pedha are milk (Khoa), sugar and cardamom. Market kalâm (To₁) was purchased from Gangakhed market @ Rs.60.00 / kg. Market pedha (To₂) was purchased from Parbhani local market @ Rs.80.00 / kg. The cost of production laboratory kalâm (T₁) was Rs.61.87 / kg while that of laboratory pedha (T₂) was Rs. 58.21 / kg. From the cost structure studied it was observed that highest cost Rs.80.00 / kg was observed for market pedha (To₂). There were little differences in the cost of market kalâm (To₁), laboratory kalâm (T₁) and laboratory pedha (T₂). Lowest cost was observed for laboratory pedha (T₂).

REFERENCES

Anonymous (1959). Laboratory manual. Methods of analysis of milk and milk products. Milk Industry foundation, Washington.
Anonymous (1981). Handbook of Food Analysis Dairy products Part (XI) Bureau of Indian Standards, Manak Bhavan, New Delhi.
Anonymous (1977). Determination of fat by Gerbers method (Part II) Indian Standard Institution, Manak Bhavan, New Delhi.

Anonymous (1964). Specification for ice-cream, Indian Standard Institution, Manak Bhavan, New Delhi.
Anonymous (1968). Specification for khoa, Indian Standard Institution, Manak Bhavan, New Delhi.
Mayani RV Vyas SH. Upadhyay KG and Thakar PN (1982). Effect of different fat levels of cow and buffalo milk on the acceptability of shelf life of pedha. *Gujarat Agricultural University Research Journal* 8 (1) 45.
Panse VG and Sukhatme PV (1985). Statistical methods for Agricultural workers. I.C.A.R. publication 4th Edn.
Patel HA (1996). Comparative appraisal of quality of pedha manufactured and sold in selected cities of Gujarat state. M.Sc. (Agri.) Thesis submitted to Gujarat Agriculture University, Anand (Gujarat), India
Patel MM (1986). A study of Pedha manufacture. *Indian Dairyman* 38(2) 253-257.
Patil GR (2002). Present status of traditional Dairy products. *Indian Dairyman* 54(10) 35-43.
Ray PR Bandyopadhyay AK and Ghatak PK (2002). Comparative studies on quality of market available and laboratory made pedha. *Indian Journal of Dairy Science* 55 (2) 83-85.