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Quality Assessment of Khoa Marketed in Nanded City

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Abstract: Forty market Koha samples collected from the retail sweet shops in a randomized manner dividing the city in to five zones were analyzed. Most of the market Koha samples reflected relatively lower chemical attributes except moisture and ash which were comparatively higher in market samples than control. Though majority of market Koha samples were of acceptable physico-chemical quality & were well thinning the legal standards. However, the microbiological quality of market Khoa samples was posing a grim picture when expressed in terms of TVC, coliform and yeast and mould counts.

Keywords: Koha, organoleptic, Coliform counts.

INTRODUCTION

Large sections of traditional confectionery manufacturing units are engaged in the country towards production of either Khoa or Khoa based sweets. A significant proportion of milk products sold in Nanded and its surrounding areas are made from Khoa base. The demand of market Khoa which is being produced mostly from a combination of cow and buffalo milk, enhanced markedly during festive seasons. Numbers of studies were carried out on the quality of market Khoa in various part of the country¹⁻⁵. But hitherto hardly any comprehensive investigation has been carried out to reveal the quality of Khoa marketed in and around Nanded city. In view of above facts the present investigation was envisaged to ascertain the quality of Khoa marketed in Nanded city.

MATERIAL AND METHODS

Forty market Khoa samples were collected from the retail sweet shops of Nanded city purposively divided into five zones in a randomized manner in order to facilitate representative sampling. A lot of about 100 g of Khoa sample from each retail shop was collected into clean, labeled, dried wide mouthed stopper sampling bottles and immediately brought to laboratory for necessary examination. Simultaneously a number (10) of control samples were also prepared under laboratory conditions⁶ using buffalo milk (6.40% fat and 9.34% S.N.F.) The Khoa samples both market as well as control were subjected for various physico-chemical and microbiological assessing. For physical attributes Khoa samples were examined for color, body and texture and flavors. Various chemical parameters viz. moisture⁷, total protein, fat and ash⁸ were estimated in Khoa samples. Tiratable acidity in Khoa samples was determined by the method for cheese as prescribed in AOAC⁹. Microbiological quality of Khoa sample consist the estimation of total viable count¹⁰, coliform count¹¹ and yeast and mould count¹² using suitable dilution factor, media vis-à-vis incubation temperature.

RESULTS AND DISCUSSION

The majority of Khoa samples examined in this study were by and large possessing satisfactory texture and organoleptic attributes (**Table 1**). It is noteworthy that sensory profiles of any product are of great significance from consumer's acceptability point of view, since they drawn towards such products that have nice and attractive appearance. And as such it has been observed that retailers engaged in Khoa marketing in the city are quite cautious and any how maintain its physical quality in view just to attract the consumers.

Results with regard to chemical profiles of Khoa marketed in Nanded city (**Table 2**) reveal that the moisture content of the market Khoa samples varied from 20.90 to 28.64%. The average moisture content of market Khoa samples also depict a slightly edge over the control figure (25.69 vs 24.73%). Nevertheless wide variations have been reported by other workers with regard to moisture content of Khoa^{1,4,5}. A wide variations were recorded in respect of fat content amongst the market Khoa samples (19.65 to 26.38%). According to PFA¹³ (1983) Khoa should contain 20% (min) fat in the finished product. Of the 40 market samples

examined only 34 (78.57%) were found to respond the PFA limitations. Earlier workers had reported a wide variation of 23.7 to 37.1% fat content in market Khoa samples^{1, 2, 5, 14}. Such a wide variation in fat content is obviously due to the difference in the fat level of milk used for the preparation of Khoa and also the degree of desiccation obtained in each case.

Table-1: Sensory Profile of Khoa samples

Quality attributes	Specifications
Color	Pale yellow (39.29), white (44.64), and Creamy/Gray (16.07)
Appearance	Dry surface (87.50), moist surface (12.50)
Body and Texture	Hard and granular (3.57), Hard and smooth (44.64), soft and smooth (39.29), soft and granular (12.50)
Flavor	Normal (83.93), flat (8.93), rancid (7.14)

Figures in parenthesis indicate the percentage of Khoa samples examined

Table-2: Chemical quality of Khoa marketed in Nanded city

Characteristics	Market Khoa			Control
	Min	Max	Av \pm SE	Av \pm SE
Moisture (%)	20.90	28.64	25.69 \pm 2.05	24.73 \pm 0.85
Fat (%)	19.65	26.30	24.13 \pm 3.19	25.00 \pm 1.03
Protein (%)	17.03	23.44	21.85 \pm 2.01	23.73 \pm 0.79
Ash (%)	3.17	4.03	3.79 \pm 0.91	2.57 \pm 0.13
Titration acidity (%)	0.24	0.87	0.61 \pm 0.24	0.21 \pm 0.03

The average protein level of market Khoa samples was slightly lower as compared to that of figure for control samples (21.85 vs 23.73%) but are similar to the figures already reported by earlier workers^{24, 5}. The ash content of Khoa samples varied from 3.17 to 4.03 with an average figure of 3.79% which is explicitly higher than that of control samples (2.57%). This fact could be attributed that most of the retailers keep the product in open which might gather dust particle. These findings are in accordance with those of Kumar and Srinivasan¹⁴ and Ghatak and Bandyopadhyay⁵ who noted higher ash content in market Khoa samples. The values for the percentage of titratable acidity in market Khoa samples during present study are in general agreement with the figures earlier reported by Narain and Singh⁴ and Kumar and Srinivasan¹⁴.

Table- 3: Microbiological quality of Khoa samples marketed in Nanded city

Attributes	Market Khoa			Control
	Min	Max	Av \pm SE	Av \pm SE
Total viable count ($\times 10^3$ /g) %	4.4	66.0	50.42 \pm 8.44	5.39 \pm 1.07
Yeast and mould count ($\times 10^3$ /g)	3.1	5.3	3.87 \pm 0.73	2.7 \pm 0.87
Coliform count ($\times 10^3$ /g)	0.7	14.1	3.20 \pm 1.89	Nil

Microbiological quality of market Khoa samples further revealed that majority of Khoa samples were possessed relatively higher and alarming figures with respect to TVC, Yeast and mould and Coliform counts. The standard plate counts of market Khoa were quite higher than the laboratory samples (Table 3). The viable counts of bacteria in present study were lower than that of reported by Sharma *et al.*¹⁵. Yeast and mould count observed in market Khoa during present investigation are fairly lower than the values recorded by earlier workers^{16, 17}.

A great variation was noticed in coliform counts of market Khoa. The presence of coliform organism in Khoa is an obvious indication of post production contamination which might be due to prevailing unhygienic conditions in manufacturing coupled with faulty storage measures adopted by the retailers. However, higher coliform counts have been reported by Sharma and Lavania¹⁷ in market Khoa samples. Hence it seems that the Khoa handling is comparatively better in areas nearby Nanded city.

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