

## Studies on quality evaluation of market paneer

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### ABSTRACT

An attempt was made to evaluate the physical, chemical and microbial quality of paneer marketed in Agra city and a comparison was made with a control sample. The quality of paneer was assessed in terms of physical, chemical and microbial attributes. Paneer was also prepared in laboratory as control one to make a comparative interpretation of the result. The samples collected from the various locations were rated from very much to dislike slightly, while the control samples were liked extremely. The acidity was lowest in control samples, ranged from 0.30% to 0.45% with a mean value of 0.38%, while it was recorded highest in paneer procured from Bijalighar and Bhagwan Talkies, ranges from 0.54 to 0.70% and 0.40 to 0.72% with the mean values of 0.64% and 0.59%, respectively. The yeast and mould count per gram of paneer samples obtained from Shahganj, Sadar, Bijalighar and Bhagwan Talkies markets and control was recorded as 13.00, 96.75, 102.50, 154.50 and 58.75 counts per gram, respectively. The average number of coliform per gram of paneer samples collected from Shahganj, Sadar, Bijalighar, Bhagwan Talkies markets and control were analyzed to the tune of 94.25, 119.25, 104.50, 80.50 and 40.75 counts per gram, respectively. The total viable count of Shahganj, Sadar, Bijalighar and Bhagwan Talkies markets and control ranged from 985.00 to 223.42, 992.50 to 272.69, 1170.00 to 234.81, 1042.50 to 255 and 87.50 to 11.90, respectively.

**Key words :** Paneer, Quality analysis, Yeast and mould count, Chemical analysis.

### INTRODUCTION

Paneer is an important acid coagulated indigenous milk product and is used as base material for preparation of culinary. It is prepared by the combined action of acid and heat treatment. Paneer is similar to unripened cheese because both products contain same milk solids mainly fat and casein. Good quality paneer is characterized by its acidic flavour with slight sweet taste, firm and compact body and texture.

Paneer contains entire milk casein, some part of denatured whey proteins, all fat, colloidal salts and lactose. In preparation the moisture is retained in the product. About 90% of fat and protein, 50% of ash and 10% of lactose milk are retained into paneer citric acid. It should not contain more than 70% moisture and milk fat content should not less than 50% of dry matter but in skimmed milk paneer, milk fat content should not exceed 13% of dry matter.

Indian Standard Institution (1983) have laid down that paneer is prepared by acid coagulation and heating treatment of buffalo or cow milk with subsequent drainage of whey. It should have less than 60% moisture, more than 50% fat on dry basis matter, less than 0.05% titrable acidity (as lactic acid), less than 50,000 bacteria, less than 90 coliform and less than 250 yeast and mould per gram.

An attempt was made to evaluate the physical, chemical and microbial quality of paneer marketed in Agra city and a comparison was made with a control sample.

### MATERIALS AND METHODS

Paneer samples were collected from different places of Agra city, viz. markets of Shahganj, Sadar, Bijalighar and Bhagwan Talkies. Samples of the paneer prepared in the laboratory was transferred to a paste mortar was grinded continuously with the help of a mortar to prepare a

homogeneous mixture. When the clots of paneer make up completely, the samples were analyzed for the chemical profiles and microbial counts.

#### Analysis of samples:

The paneer samples were analyzed for Physical, chemical and microbial analysis. Recorded parameters for chemical analysis were acidity, moisture content, fat content, protein content, lactose content and ash content and for total viable count, calceiform count as recommended by Ranganna (2001).

#### Preparation of samples:

The control sample was prepared using standard method as recommended by De (2001) and used for comparison with the market samples. For the preparation of paneer in the laboratory one-liter buffalo milk was used for each lot of paneer.

### RESULTS AND DISCUSSIONS

#### Physical quality:

To evaluate the sensory attributes viz. colour, texture, taste and flavour the paneer samples were examined by sensory panel. The samples collected for the various locations were rated from very much to dislike slightly, while the control samples were liked extremely.

#### Chemical quality:

The acidity was lowest in control samples. It ranged from 0.30% to 0.45% with a mean value of 0.38%, while it was recorded highest for paneer procured from Bijalighar and Bhagwan Talkies, ranged from 0.54 to 0.70% and 0.40 to 0.72% with the mean values of 0.64% and 0.59%, respectively. The slightly higher acidity in market sample could be because of the use of acetic acid coagulant or old

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whey.

#### Moisture content:

The paneer samples obtained from Bhagwan Talkies had highest moisture content and it ranges from 54.64 to 59.25% with a mean value of 58.93%, while it was lowest in control sample that ranged from 49.23 to 51.20% with a mean value of 50.79%.

#### Fat content:

The fat content was highest in control paneer samples. Samples obtained from Bijalighar possess low fat content (18 to 23%).

Bhagwan Talkies contained ash ranging from 1.0 to 1.4% with a mean value of 1.18%. The lowest ash content of market samples could be due to use of adulterated milk for the manufacture of paneer.

#### Total Viable Count (TVC):

The highest total viable count was observed in market paneer obtained from Bijalighar. The figures ranged from 860 to 1420 thousands/g with a mean value of 1170 thousands per g while, it was lowest in control sample of paneer. The range figures were 758 to 100 (thousands per g) with a mean value of 87.50 (thousands per g). The TVC of paneer collected from various markets was higher than

Table 1: Chemical analysis of paneer samples

S. No.	Treatment	Acidity (%)	Fat content (%)	Protein content (%)	Lactose content (%)	Ash content (%)	Moisture content (%)
1.	Shahganj	0.52-0.68	22-25	13.7-15.62	1.04-1.40	1.00-1.15	54.90-57.18
2.	Sadar	0.45-0.55	20-24	14.58-16.00	1.03-1.35	1.00-1.14	54.04-56.10
3.	Bijalighar	0.54-0.70	18-23	13.80-15.43	1.18-1.35	1.00-1.14	54.48-58.00
4.	Bhagawan Talkies	0.40-0.72	21-25	11.85-16.26	1.06-1.45	1.00-1.14	54.64-59.25
5.	Control	0.30-0.45	23-27	17.45-19.23	1.00-1.50	1.60-2.00	49.23-51.20

#### Protein content:

The highest protein content was in control sample. The values ranged from 17.45 to 19.23% with a mean value of 18.36%, while it was lowest in paneer obtained from Bhagwan Talkies and Shahganj market i.e. ranged from 11.85 to 16.26%, 13.70 to 15.62% and with the mean value of 15.01 and 14.77 % respectively. The low protein content in market samples could be due to use of poor quality milk.

#### Lactose content:

The lactose content was observed highest in control samples with a mean value of 1.25% while it was lowest in paneer obtained from market of Sadar with a mean value of 1.15%.

#### Ash content:

The ash content was highest in control samples and it ranged from 1.60 to 2.0% with a mean value of 1.73 %. Samples obtained from Sadar market, Bijalighar and

that observed in control samples could be due to use of open process for the manufacture of paneer.

#### Coliform count:

The coliform count was highest in paneer samples obtained from market of Sadar, it ranged from 94 to 150 with a mean value of 119.25 per g, while it was lowest in control paneer samples. The range was from 30 to 50 with a mean value of 40.75 per g. The higher coliform count in market samples could be due to contamination of product during manufacture and sale.

#### Yeast and mould count:

The yeast and mould count were highest in paneer obtained from market of Bhagwan Talkies. It ranged from 127 to 175 with a mean value of 154.50 per g, while it was lowest in control paneer samples and its range was 50 to 65 with a mean values of 58.75 per g. The higher yeast and mould count was of market samples followed by control

Table 2 : Microbial analysis of paneer samples

S. No.	Treatment	Total Viable Count (thousand/g)	Coliform (per g)	Yeast & Mould (per g)
1.	Shahganj	705-1250	90-105	95-170
2.	Sadar	680-1340	94-150	90-115
3.	Bijalighar	860-1420	86-125	85-123
4.	Bhagawan Talkies	790-1330	65-98	127-175
5.	Control	75-100	30-50	50-65

samples. Higher yeast and mould count of market samples indicated unsanitary conditions during preparation and sale of the product.

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