**International Journal of Food Science and Nutrition**
**ISSN: 2455-4898**
**Impact Factor: RJIF 5.14**
**www.foodsciencejournal.com**
**Volume 3; Issue 6; November 2018; Page No. 25-27**

# Sensory acceptability of value added buffalo milk paneer with different levels of garlic paste

**Abhishek Singh[1], Puneet Arora[2], Kaushal Kishor[3], Vishal Singh[4]**

[1, 4] Research Scholar, Warner College of Dairy Technology, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad, Uttar Pradesh, India

[2] Assistant Professor, Warner College of Dairy Technology, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad, Uttar Pradesh, India

[3] Assistant Professor, G.S. Degree College, Allahabad State University, Uttar Pradesh, India

**Abstract**
Present study was to evaluate the impact of garlic paste addition on the sensory quality of buffalo milk paneer, for the purpose of value added paneer was prepared with different levels of buffalo milk and garlic paste as taste enhancer. Sensory quality was evaluated on parameters of colour and appearance, body and texture, taste and flavour and overall acceptability by using 9 point hedonic scale. There were five treatments which were replicated five times. In varying proportion of buffalo milk (98, 96, 94, 92) and garlic paste (2, 4, 6, 8) were incorporated to assess the sensory acceptability of the best treatment $T_2$ (paneer prepared from buffalo milk 96% and 4% garlic paste) was found to be best i.e. 8.13 colour and appearance, 8.11 body and texture, 8.21 flavour and taste, 8.06 overall acceptability was found better for $T_2$.

**Keywords:** paneer, buffalo milk, garlic paste, sensory qualities

## Introduction

At present, India is the world's largest milk producer now reaching a level of about 112 million tones with an annual growth rate of 4.5%. Out of the total production 46 per cent milk is consumed is liquid form; 54 per cent is utilized for manufacturing of different milk products and 3 per cent is utilized for Channa and Paneer production (NSO, 2009).

Paneer is an important heat and acid coagulated milk product which is used as a base material for the preparation of a large number of culinary dishes. Paneer provides an easy means of conserving and preserving valuable milk solids. It contains casein, part of denatured whey proteins, almost all fat. It has firm, close spongy body and smooth texture (Kanawjia *et al* 1996) [6].

According to Prevention of Food Adulteration Rules (PFA 2010), Paneer means the product obtained from cow or buffalo milk or a combination thereof by precipitation with sour milk, lactic acid or citric acid. It shall not contain more than 70% moisture and the milk fat content shall not be less than 50% of the dry matter. Milk solids may also be used in preparation of the product. Bureau of Indian Standards (BIS 1983) also specifies a minimum of 50% fat on dry matter basis but a maximum of 60% moisture in paneer. In order to achieve these requirements, buffalo milk having 5–6% fat is deemed to be most suitable (Bhattacharya 1971, Sachdeva, Singh 1988 and Desai 2007) [11, 4]. Described the desirable sensory attributes for paneer. It must have a characteristic blend of the flavour of heated milk and acid, i.e. pleasant, mildly acidic and sweet (nutty). Its body and texture must be sufficiently firm to hold its shape during cutting/slicing, yet it must be tender enough not to resist crushing during mastication, i.e. the texture must be compact and smooth; Its color and appearance must be uniform, pleasing white, with a greenish tinge in the case of buffalo milk paneer and light yellow in the case of cow milk paneer.

The name garlic may have originated from the Celtic word 'all' meaning pungent. Preparations of garlic are available as tablets, capsules, syrup, tinctures and oil. In ointment form, garlic has been used externally for treatment of ring worm; boiled with vinegar and sugar for treatment of asthma; made into an infusion for treatment of epilepsy; pounded with honey for use against rheumatism; and mixed with milk for use as a vermifuge. Garlic is commonly used in Europe and Asia for medicinal benefits in healing wounds, etc. (Bolton 1982 and Srivastava 1995) [1, 15]. In Germany, sale of garlic preparations competes with sales of leading drugs (Lawson 1993) [8].

## Materials and Methods

The experimental work was carried out in the research laboratory of department of Dairy, Technology, Warner college of Dairy Technology, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad. Buffalo milk and garlic paste were obtained from the local market of Allahabad city. paneer was prepared by buffalo milk and different levels of garlic paste. Numbers of treatment were 5 which were replicated 4times. The product was evaluated organoleptic ally by a panel of judges with the help of nine point hedonic scale. (Sri Lakshmi 2006).

## Results and Discussions

Sensory analysis: It was found that the highest score was observed in treatment $T_2$ in which value added paneer was

Prepared by buffalo milk (96%) with garlic paste (4%), which helped in improve the paneer flavor and peculiar taste.

**Colour and appearance**

From the above presented data on Colour and Appearance percent of paneer by using Buffalo Milk and Garlic paste and control milk beverage, highest mean Colour and Appearance percent was recorded in $T_2$ (8.13) followed by $T_1$ (7.92), $T_0$ (7.88), and $T_3$(7.72)$T_4$ (7.13).

**Colour and Appearance percent in control and experimental paneer by using Buffalo Milk and Garlic paste**

**Table 1**

| Replication | | Treatments | | | | |
|---|---|---|---|---|---|---|
| | | $T_0$ | $T_1$ | $T_2$ | $T_3$ | $T_4$ |
| $R_1$ | | 8.17 | 7.80 | 8.1 | 7.6 | 7.10 |
| $R_2$ | | 8.0 | 7.63 | 7.88 | 7.7 | 7.03 |
| $R_3$ | | 7.87 | 8.17 | 8.33 | 7.83 | 7.10 |
| $R_4$ | | 7.35 | 8.00 | 8.20 | 7.90 | 7.20 |
| $R_5$ | | 8.0 | 8.00 | 8.14 | 7.58 | 7.20 |
| Mean | | 7.88 | 7.92 | 8.13 | 7.72 | 7.13 |
| Range | Minimum | 7.35 | 7.63 | 7.88 | 7.58 | 7.03 |
| | Maximum | 8.17 | 8.17 | 8.33 | 7.90 | 7.20 |
| F- test | | S | | | | |
| C.D. at 5% level | | 0.27 | | | | |
| S. Ed. (±) | | 0.13 | | | | |

**Body and texture**

The data regarding body and texture percent in control and experimental paneer by using Buffalo Milk and Garlic paste sample of different treatments are presented in table

**Table 2**

| Replication | | Treatments | | | | |
|---|---|---|---|---|---|---|
| | | $T_0$ | $T_1$ | $T_2$ | $T_3$ | $T_4$ |
| $R_1$ | | 8.0 | 7.8 | 7.8 | 7.1 | 7.1 |
| $R_2$ | | 7.8 | 7.6 | 8.2 | 7.67 | 7.33 |
| $R_3$ | | 7.67 | 7.8 | 8.0 | 7.83 | 7.67 |
| $R_4$ | | 7.86 | 8.0 | 8.1 | 8.0 | 7.60 |
| $R_5$ | | 7.60 | 8.0 | 8.43 | 7.71 | 7.43 |
| Mean | | 7.79 | 7.84 | 8.11 | 7.66 | 7.43 |
| Range | Minimum | 7.60 | 7.6 | 7.8 | 7.1 | 7.1 |
| | Maximum | 8.0 | 8.0 | 8.43 | 8.0 | 7.67 |
| F- test | | S | | | | |
| C.D. at 5% level | | 0.29 | | | | |
| S. Ed. (±) | | 0.14 | | | | |

From the above presented data on body and texture percent of paneer by using Buffalo Milk and Garlic paste and control milk beverage, highest mean body and texture percent was recorded in $T_2$ (8.11) followed by $T_1$ (7.84), $T_0$ (7.79), and $T_3$(7.66) $T_4$ (7.43).

**Flavour and test**

The data regarding flavour and test percent in control and experimental paneer by using Buffalo Milk and Garlic paste sample of different treatments are presented in table.

**Table 3**

| Replication | | Treatments | | | | |
|---|---|---|---|---|---|---|
| | | $T_0$ | $T_1$ | $T_2$ | $T_3$ | $T_4$ |
| $R_1$ | | 8.05 | 7.4 | 7.6 | 7.1 | 7.3 |
| $R_2$ | | 7.3 | 8.0 | 8.5 | 7.65 | 7.0 |
| $R_3$ | | 7.83 | 8.17 | 8.33 | 8.0 | 7.5 |
| $R_4$ | | 7.4 | 8.2 | 8.2 | 7.60 | 7.0 |
| $R_5$ | | 7.57 | 8.14 | 8.42 | 7.57 | 7.0 |
| Mean | | 7.63 | 7.98 | 8.21 | 7.58 | 7.16 |
| Range | Minimum | 7.3 | 7.4 | 7.6 | 7.1 | 7.0 |
| | Maximum | 8.05 | 8.2 | 8.5 | 8.0 | 7.5 |
| F- test | | S | | | | |
| C.D. at 5% level | | 0.39 | | | | |
| S. Ed. (±) | | 0.19 | | | | |

From the above presented data on flavour and test percent of paneer by using Buffalo Milk and Garlic paste and control milk beverage, highest mean flavour and test percent was recorded in $T_2$ (8.21) followed by $T_1$ (7.98), $T_0$ (7.63), and $T_3$(7.58)$T_4$ (7.16).

**Overall Acceptability**

The data regarding Overall Acceptability percent in control and experimental paneer by using Buffalo Milk and Garlic paste sample of different treatments are presented in table

**Table 4**

| Replication | | Treatments | | | | |
|---|---|---|---|---|---|---|
| | | $T_0$ | $T_1$ | $T_2$ | $T_3$ | $T_4$ |
| $R_1$ | | 7.87 | 7.90 | 8.00 | 7.60 | 7.70 |
| $R_2$ | | 7.81 | 7.77 | 7.90 | 7.07 | 7.12 |
| $R_3$ | | 7.8 | 7.89 | 8.11 | 7.90 | 7.61 |
| $R_4$ | | 7.50 | 8.00 | 8.08 | 7.80 | 7.33 |
| $R_5$ | | 7.67 | 7.95 | 8.20 | 7.91 | 7.33 |
| | Mean | 7.73 | 7.93 | 8.06 | 7.66 | 7.42 |
| Range | Minimum | 7.5 | 7.77 | 7.9 | 7.07 | 7.12 |
| | Maximum | 7.87 | 8.00 | 8.20 | 7.91 | 7.7 |
| F- test | | S | | | | |
| C.D. at 5% level | | 0.25 | | | | |
| S. Ed. (±) | | 0.12 | | | | |

From the above presented data on Overall Acceptability percent of paneer by using Buffalo Milk and Garlic paste and control milk beverage, highest mean Overall Acceptability percent was recorded in $T_2$ (8.06) followed by $T_1$ (7.93), $T_0$ (7.73), and $T_3$(7.66) $T_4$ (7.42).

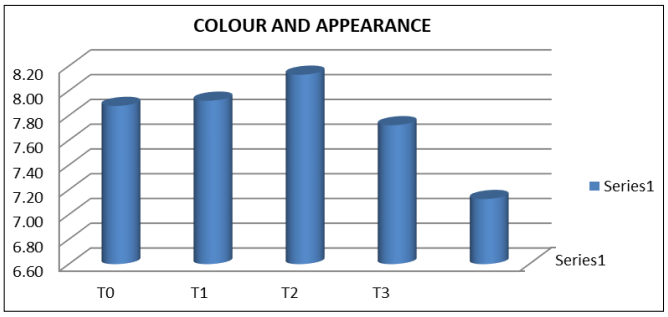


**Fig 1:** Average percentage of Colour and Appearance for paneer by using buffalo milk and Garlic paste

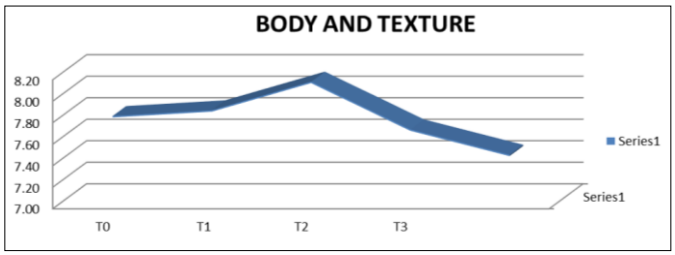


**Fig 2:** Average percentage of Body and Texture for paneer by using buffalo milk and Garlic paste

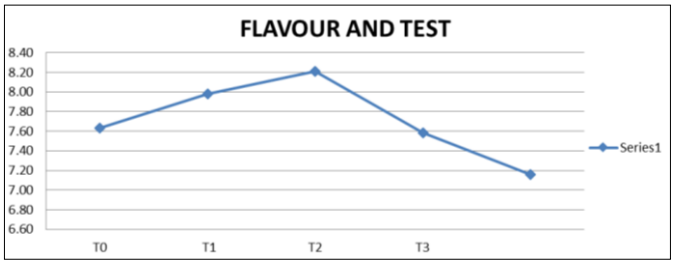


**Fig 3:** Average percentage of Flavour and Test for paneer by using buffalo milk and Garlic paste

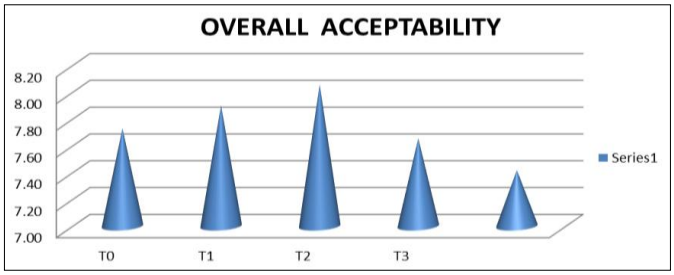


**Fig 4:** Average percentage of Overall Acceptability for paneer by using buffalo milk and Garlic paste

## Conclusion

Overall results of the study indicates that the paste of garlic be added satisfactory into the preparation of buffalo milk paneer. Paneer is an important in indigenous nutritious and wholesome dairy product. It is rich source of protein, fat, minerals and vitamins. The data obtained on various parameters were statically analyzed and found that T2 (4% garlic) buffalo milk paneer was best in organoleptic characteristics.

## References


1. Bolton S, Null G, Troetel WM. The medical uses of garlic- fact and fiction. Are Pharmacological. 1982; 22:40- 3.
2. Buriana JP, Sacramentoa LVS, Carlosb IZ. Fungal infection control by garlic extracts (*Allium sativum L.*) and modulation of peritoneal macrophages activity in murine model of sporot richosis Brazil Journal of Biotechnology. 2017; 77(4):848-855848 848.
3. Chandan RC. Manufacture of paneer. In: Gupta S, Gupta S (eds) Dairy India 6th edition. Dairy India Yearbook, A Dairy India publication, New Dehli, 2007, 411-412.
4. Desai HK, Gupta SK, Pate AA, Patel GR. Studies on texture of paneer. Japan Journal Dairy Food Sciences. 1991; 40(1):A15-A21.
5. Fahad AM, Alzowahi Taleb AA, -Suhbani AA, Kadam TA. The inhibitory effects of garlic extract and its fractions against some *Enterobacteriaceaesp* isolated from sprouted Mung bean International Journal of Current Microbiology and Applied Sciences. 2013; 2 2319:7706 104-115.
6. Kanawjia SK, Singh S. Sensory and textural changes in paneer during storage. Buffalo Journal. 1996; 12(3):329-334.
7. Karadbhajne SV, Bhoyarkar P. Studies on Effect of Different Coagulant on Paneer Texture Prepared from Buffalo Milk International Journal of PharmTech Research. 2010; 2(3):1916-1923.
8. Lawson LD. Bioactiveorganosulfur compound of garlic and garlic products: role in reducing blood lipids. Human medicinal agents from plants. Washington: American Chemical Society, 1993, 306-30.
9. Patil GR, Gupta SK. Some Aspects of sensory evaluation of paneer. Indian Dairyman. 1986; 38(3):135-140.
10. Rao NM, Rao JT. Paneer from buffalo milk. Indian Journal of Dairy Sciences. 1984; 37(1):50-53.
11. Sachdeva Singh, Singh S. Incorporation of hydrocolloids to improve the yield solids recovery and quality of paneer. Indian Journal of Dairy Sciences. 1988a; 41(2):189-193.
12. Sachdeva S. Production, packing and preparation of paneer. PhD. Thesis, Kurukshetra University, kurukshetra, Haryana, 1983.
13. Singh S, Kanawjia SK. Development of manufacturing technique for paneer from cow milk. Indian Journal of Dairy Sciences. 1988; 41(3):322-325.
14. Singh S, kanawjia SK, Sachdeva S. Current status and scope for future development in the industrial production of paneer. Indian Dairyman. 1984; 26(10):581-585.
15. Srivastava KC, Bordia A, Verma SK. Garlic (*Allium sativum*) for disease prevention. South Africa Journal of Sciences. 1995; 91:68-77.