

## **The quality of market milk sold under unorganised sector of Agra city**

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### **Abstract**

*An investigation was carried out during the year 2012 -13 in the dept. of AH & Dairying, R.B.S. College, Bichpuri, Agra to assess the quality of market milk samples collected from various sources as milk vendors, Halwais, individual producers / ghosies and unorganised dairies in Agra city and compared with buffalo milk as control sample. It was found that all milk samples collected from different sources in this city had significantly poor quality as compared with buffalo milk. The quality of milk samples obtained from individual producers / ghosies was found better than that of milk vendors, followed by unorganised dairies and halwaies, based on its sensory and chemical quality.*

Key Words: market milk, sensory quality, SNF (solids not fat), milk vendors, ghosies, PFA

### **Introduction**

Milk is the only food, which is considered nature's almost perfect food. It is considered best and ideal food as it possesses all nutrients viz., fats, proteins, carbohydrates, minerals and vitamins. They are not only of higher quality but are present in milk in such forms and proportions that their digestion and assimilation in the body is very efficient. Simultaneously, if included in our diet, it also enhances digestion and assimilation of constituents of other food products. So, it is kept at high esteem as a food product.

Indian farmers have undoubtedly done the greatest task of making India number one producer of milk in the world. Our country produced about 132.4 million tons milk during the year 2012–13 (A report by Department of AH & Dairying and Fisheries, Ministry of Agriculture, Government of India ). About half of the milk produced is consumed in the liquid form (Kumar et.al 2014). At present, milk is being processed under government, private and cooperative sectors. It is stated that not more than 20% of milk is being handled by this sector (Venkatasubramanian et.al. 2003). So, unorganised sector is handling about 75 % milk produced in this country.

Market milk refers to fluid milk that is sold to individuals usually for direct consumption. It excludes milk used for the manufacture of dairy products. The collection and distribution of milk has remained mostly in the hands of unscrupulous and uneducated middle man who are mainly responsible for the adulteration. In order to safeguard the health and interest of consumers, central and state governments implemented legal standards of milk. According to PFA rules, buffalo milk in UP should contain minimum 6.0% fat and 9.0%

SNF whereas cow milk 3.5% fat and 8.5% SNF.

Survey for the quality of market milk is a part and parcel of quality control programme of milk. In view of the above facts, the present investigation was conducted during the year 2012-13 in the Dept. of AH & Dairying of RBS College, Bichpuri, Agra to study variation in the quality of market milk collected from milk vendors, halwais, individual producers / ghosies and unorganised dairies, and compared with that of buffalo milk (control).

### **Materials and Methods:**

The milk samples were collected in well cleaned and sterilised glass bottles. The buffalo milk used as control was collected from a dairy farmer of nearby village of the college. This buffalo milk was produced under our guidelines following the principles of milk production. These samples were examined for sensory and chemical quality. The sensory evaluation of milk was done by a panel of judges drawn from the department of AH & Dairying, RBS College, Bichpuri, Agra following the usual precautions. The chemical quality in terms of acidity, fat, protein, lactose, ash and SNF was determined by the methods as described in Hand Book of Food Analysis, Part XI, Dairy Products, BIS, New Delhi. The specific gravity was ascertained by the procedure given in Practical Manual of NCERT.

### **Results and Discussion**

In the sensory quality of milk collected from various sources, the colour of milk samples differed from light yellow to white. The samples collected from all the sources except milk vendors showed white colour. Most of the samples from vendors also exhibited same colour but few ones were light yellow

Table 1: Quality of market milk sold under unorganised sector of Agra city

Source of Milk	Fat Percent		Protein Percent		Lactose Percent		Ash Percent		Acidity Percent		SNF Percent		Specific Gravity	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Milk Vender	3.90	6.10	2.90	3.70	4.00	4.50	0.65	0.78	0.15	0.19	7.55	8.98	1.024	1.028
Halwahi	3.30	4.90	3.12	3.50	4.03	4.40	0.63	0.73	0.14	0.18	7.78	8.64	1.020	1.026
Unorganised Dairies	3.70	5.50	3.00	3.60	4.00	4.30	0.65	0.75	0.15	0.20	7.65	8.65	1.020	1.028
Individual Producers/ Ghosies	4.50	5.50	3.10	3.50	4.18	4.40	0.65	0.76	0.13	0.16	7.93	8.66	1.027	1.030
Buffalo Milk (Control)	6.68	7.40	3.42	3.70	4.55	4.83	0.73	0.80	0.12	0.14	8.70	9.33	1.030	1.032
Calculated Value	14.40**	3.40*	3.05*	3.11*	NS	3.61*	3.43*							

\* Significant at 5.0% level:

\*\* Significant at 1.0% level

NS – Non Significant

in colour. The buffalo milk samples as control ones had white colour. The flavour of milk varied from off flavour to pleasant one. All the samples from various sources produced pleasant flavour except few samples from milk vendors and halwais which had slightly off flavour. All the control samples exhibited pleasant flavour. The viscosity of milk from various sources varied from light thin to viscous. Few samples from milk vendor and halwais were thin but all samples from unorganised dairies, individual producers / ghosies and control samples were viscous in quality (Table 1).

The fat content of milk samples collected from various sources ranged from 3.30 to 7.40 percent. The mean fat content was highest in the buffalo milk ( $7.10 \pm 0.08$  percent) and lowest in halwais milk ( $4.36 \pm 0.68$  percent) which differed significantly at  $p < 0.01$ . The protein content of milk samples varied from 2.90 to 3.70 percent. The mean protein content was the highest ( $3.57 \pm 0.11$  percent) in case of buffalo milk and the lowest ( $3.26 \pm 0.30$  percent) in the samples obtained from milk vendors.

The mean lactose content of milk was the highest in buffalo milk as ( $4.70 \pm 0.09$  percent) whereas the lowest ( $4.20 \pm 0.26$  percent) in milk samples collected from unorganised dairies. It ranged from 4.00 to 4.83 percent. The lactose content of milk samples from various sources differed significantly at  $p < 0.05$ . The ash content of milk varied from 0.63 to 0.80 percent. The mean ash content was lowest in halwais milk ( $0.69 \pm 0.04$  percent) and highest in buffalo milk samples ( $0.78 \pm 0.03$  percent) which differed significantly at  $p < 0.05$ .

The acidity of milk samples collected from various sources in Agra market ranged from 0.12 to 0.20 percent. The mean highest acidity ( $0.17 \pm 0.02$  percent) was observed in milk samples procured from unorganised dairies and lowest ( $0.13 \pm 0.01$  percent) in control samples. However, the difference in the acidity of milk from various sources was statistically insignificant. The SNF content of milk samples obtained from various sources differed significantly. It ranged from 7.55 to 9.33 percent. The highest average value ( $9.05 \pm 0.51$  percent) was observed in buffalo milk and the lowest ( $8.21 \pm 0.73$  percent) in halwais milk. The specific gravity of the milk samples obtained from various sources ranged from 1.020 to 1.032. The highest average specific gravity was found in buffalo milk ( $1.031 \pm 0.001$ ) and lowest in halwais milk ( $1.024 \pm 0.006$ ). The variation in specific gravity was significant ( $p < 0.05$ ).

The observations of Saharia and Saikia (2006), Javaid et.al.(2009), Menkudale et. al. (2011), Sharma (2012) also more or less supported the findings of

present investigation in one or more aspects.

It is inferred from the above results that the freshly drawn buffalo milk (control) was found superior to all those milk samples collected from various sources of Agra city, with respect to its quality. So far as the sources of milk supply are concerned, individual producers / ghosies sold the milk of best quality, followed by milk vendors, unorganised dairies and halwais, based on its sensory and chemical evaluation. So, the findings of the present investigation strongly suggest to purchase the market milk from the individual producers / ghosies in Agra city rather than other sources under the study.

### References

- Javaid, S.B.; Gandhi, J.A.; Khaskeli, M.; Bhutto, M.B.; Kumbher, S. and Panhwar, A.H.(2009). Physico and chemical quality of market milk sold at Tandojam, Pakistan. *Pakistan Vet. J.* 29(1):27-31.
- Kumar, Sunil; Rai, D.C.; Niranjana, K. and Bhat, Z.F.(2014). Paneer- An Indian soft cheese variant: a review: *J.Food Sci. Technol.* 51(5): 821-833.
- Menkudale, G.V., Wadekar, S.B. and Landge, S.N. (2011). Physico-chemical quality of raw milk marketed in Latur Town. *Mahmul Hi Tech. Research analysis.* 1(1): 37-41.
- Saharia and S. Saikia (2006). Composition of milk. *Indian J. of Dairy Sci.* 49(4): 225.
- Sharma, A.K. (2012). Quality of milk marketed in Agra city. M.Sc(Ag) Thesis submitted to Dr. B.R.A. University, Agra.
- Venkatasubramanian, V.; Singh, A.K. and Rao, S.V.H.(2003). Dairy development in India (An appraisal of challenges and achievements). Concept Publishing Company, New Delhi.