



Detection of Adulterants in Milk Samples of Bhiwandi

*Nandita Singh, Hafsa Khan, Naba Khan, Ayesha D, Tuba A., Ayesha M, Umama M.

Department of Zoology, G. M. Momin Women's College, Bhiwandi, India

*Corresponding Author: nandita_syn@yahoo.com

Abstract:

The study was done to investigate adulteration of market samples of fresh milk in Bhiwandi town of Thane district. 25 samples were collected from the city at random selective points. Qualitative analyses were done to detect the most common adulterants-starch, sucrose, water, urea and formalin. The results shows that out of 25 samples, all the samples were adulterated with water and 12% of the samples were adulterated with sucrose. All the samples were free of starch, urea and formalin. The study show that the milk procured from the local vendors was free from most of the adulterants tested and was fit for consumption.

Keywords: Milk adulteration, local vendors, Qualitative analysis

1.0 Introduction:

Milk a highly nutritive food is consumed by people of all age groups and is one of the most adulterated food commodity (Kandapal *et al.*, 2012; Kajal *et al.*, 2012). Adulteration of milk has become a common issue, which has become dangerous. This may be toxic and could affect the health and deprive essential nutrients required for proper growth and development of a person (Ali *et al.*, 2011; Hossain, and Dev, 2013; Singuluri *et al.*, 2014). In developing country like India, there are several reports of milk adulteration from various parts of the country (Choudhary, 1997, Rasheed *et al.*, 2018).

Adulteration is done by adding water, a common dilutant along with other chemicals to maintain the consistency of the milk, specific gravity and also to increase its shelf life (Varley, 1969; Tipu *et al.*, 2007; Rasheed *et al.* 2018). The common adulterants added are urea, starch, sucrose. Water is added to increase the quantity of milk, which in turn decreases the nutritive value of milk. Starch is added to mask the decreased Solid-non-fat -SNF (Ahmed, 2009). Sucrose is added to improve the taste (Faraz *et al.*, 2013). While urea is added as to maintain the whiteness of milk, increase the consistency of milk

and for leveling the contents of solid-non-fat (Walker *et al.*, 2004; El-Loly *et al.*, 2013). Preservatives like formalin are added to maintain the freshness of milk.

Bhiwandi a town in Thane district of Maharashtra has a large number of floating population due to number of warehouses and powers looms. Most of the people get the milk from local vendors, which have not been processed. This study was done to assess the quality of milk supplied by the local vendors in various parts of Bhiwandi.

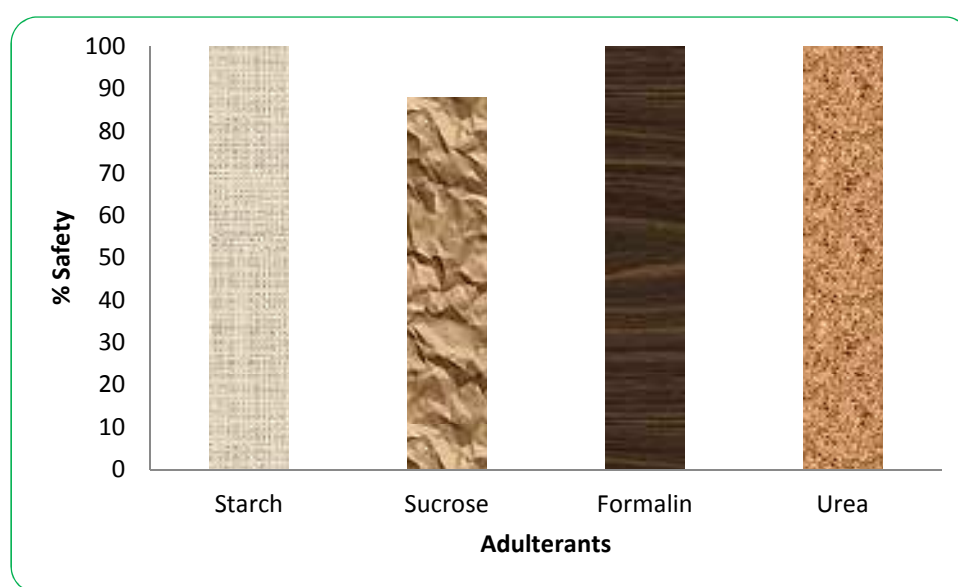
2.0 Materials and Methods:

25 unprocessed milk samples were collected from the local vendors of Bhiwandi. All the samples were collected in sterilized containers and were stored at 4°C till analysis. The samples were tested for pH, and other quantitative tests. A standard milk adulteration kit from HIMEDIA laboratories, Mumbai, India was used for the analysis of samples. The milk samples were tested for the following adulterants formalin, urea, sucrose, starch, water.

3.0 Result and Discussion:

All the milk samples collected from the local vendors of Bhiwandi were found to be slightly alkaline with pH 7.8. Water is added to increase the quantity and it not only reduces its nutritional value, but contaminated water can also cause additional health problems (Barham, *et al.*, 2014). Water was found as a main adulterant in all the market milk samples (100%). The percentage of water was between 5-8%. Urea can lead to vomiting, nausea and gastritis (Hemanth *et al.*, 2000) but all the samples tested were found to be free of urea (figure 1). Formalin a toxic chemical which causes severe liver damage and

tissue damage was tested negative in all the milk samples. Sucrose was found in 12% of the samples (Figure 1). Presence of sucrose may indicate that it was used to enhance sweetness of the diluted milk and to improve the taste (Faraz *et al.*, 2013; Lateef *et al.*, 2009). Starch a common adulterant is added as a solid milk paste to increase the consistency of milk and can cause stomach diseases like diarrhea. Addition of starch in milk has been reported in number of cases (Barham, *et al.*, 2014; Rasheed *et al.* 2018). In the present study all the milk samples were found to be free of starch (Figure 1).



.Figure 1: Percentage safety of milk samples from adulterants.

4.0 Conclusion:

Although all the 25 milk samples collected from the local vendors were diluted with water to some extent, the present study shows these samples were free of the major adulterants formalin, urea, and starch and was fit for consumption.

5.0 Acknowledgement:

The authors wish to thank Principal of G.M.Momin Women's College, for his support in this research. The work was funded by Star College Scheme, Department of Biotechnology (DBT), India

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