

RESEARCH ARTICLE

Analysis of adulteration of milk from various dairies in the different area of Amravati

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Manuscript Details	ABSTRACT
<p>Received : 18.09.2014 Revised : 18.11.2014 Revised Received : 02.12.2014 Accepted: 25.12.2014 Published : 21.01.2015</p> <p>ISSN: 2322-0015</p> <p>Editor: Dr. Arvind Chavhan</p>	<p>The present study is aimed to analyze the milk adulteration sold at different dairies regions of Amravati. Seven random raw milk samples were collected from dairy owners at different regions of Amravati. Out of seven milk samples analyzed for adulteration, adulterants found were glucose, skim milk powder, salt and urea. The adulterants decrease the nutritive value of milk and may also cause serious human health related problems.</p> <p>Keywords: raw milk samples, milk quality, adulteration, mastitis.</p>
<p>Cite this article as: Hande Ashwini. Analysis of adulteration of milk from various dairies in the different area of Amravati. <i>Int. Res. J. of Sci. & Engg.</i>, 2015; 3 (1):12-14.</p> <p>Copyright: © Author(s), This is an open access article under the terms of the Creative Commons Attribution Non-Commercial No Derivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.</p>	<p>INTRODUCTION</p> <p>Milk is the best and cheapest source of nutrition and an article of daily diet, easily accepted and used by all the age group in rural as well as in urban areas. It provide appreciable amount of fats and protein and also provide body building vitamin along with furnishing energy giving lactose and many other nutrient, therefore an ideal food for pregnant female and infants milk can provide a wide range of readily available nutrients to maintain health and normal growth of body milk has no pronounced taste what is slightly sweet to most person. Freshly drawn milk has characteristic, but not very pronounced, odour which is quite volatile and which practically disappears when the milk is exposed to the air (Eckels <i>et al</i>, 1951)</p> <p>A national survey in India has revealed that almost 70% of the milk sold and consumed in India is adulterated by contaminants such as detergent and skim milk powder, but impure water is the highest contaminant. According to National Survey on Milk Adulteration conducted by FSSAI (India) in 2011, water is the most common adulterant followed by detergent in milk. A survey by FSSAI in 2012, 68% milk samples was found to be adulterated in which 31 % were from rural areas. Of these 16.7 % were packet or branded milk and rest were loose milk samples from dairies. In the urban areas, 68.9 % milk was found to be adulterated with water, detergent, urea and skim milk powder. In Uttarakhand, 88% milk was found to be adulterated. Despite the laws governing the quality</p>

and sale of milk existing in India for decades, the adulteration of milk has not been checked completely.

The aim of this study is to analyze the fresh milk samples for composition and adulteration. So that to aware the people of that area about its nutrition and ill effects on their health.

MATERIAL AND METHODS:

Collection of the samples:

Raw milk samples were collected from dairy owners from seven different regions of Amravati city. The samples were collected from nearby areas in the morning to be transported easily without any delay. The samples were collected in 100ml screw capped sterilized bottles (borosil). All the possible precautions were taken to avoid external contamination at the time of collection of sample and during processing. The samples collected from dairies of various localities like Gadgenagar, Rathinagar, Shegaon Naka(Mathura Dudh Dairy), Kathora Naka, Pravin Nagar, Rammohan Nagar and Mahendra colony were designated as Sample 1, Sample 2, Sample 3, Sample 4, Sample 5, Sample 6, and Sample 7 respectively for the ease of working / convenience.

Analysis of milk samples:

The milk samples were collected and analyzed for the presence of adulterations and quality from the month of February 2014 to April 2014. The raw milk samples were analyzed for physical appearance, quality and presence of adulterants. The adulteration tests were done using by chemical method. The tests included were for starch, sugar, urea, salt, glucose, and maltose (Borkova and Snaselova, 2005).

Test for Starch: 3ml of milk sample was taken, boiled for 2 minutes and allowed to cool. Then 2-3 drops of 1% iodine solution were added. The dark blue colour indicted the presence of starch in milk while any other

colour like golden indicates the negative test for starch in the milk sample.

Test for Sugar: 15 ml of milk sample was taken in test tube, then 0.1 gm rescornional powder was added, then added 2 ml concentrated HCl. Then test tube was put on a boiling water bath for 5 minutes. Red or pink colour indicated the presence of sugar.

Test for Urea: 5 ml of milk sample taken in a test tube, then 20 mg soyabean powder was added then added 2-3 drops of 0.5% bromothymol blue. After 10 minutes it was observed, blue or green colour indicated presence of urea.

Test for Salt: 5ml of 0.134% silver nitrate (AgNO₃) was taken in a test tube and then add 2-3 drops of 10% Potassium chromate mixture; it turns reddish in colour then add 1ml sample of milk, if yellow colour observed that indicated presence of salt in the milk sample.

Test for Glucose: 5ml of milk sample was taken in a test tube. To it 5ml Borfoeid liquid was added and kept in water bath for 3-5 minutes. If blue coloured cuprus oxide observed then the milk sample contained glucose in it.

Test for Maltose: 25 ml of milk sample was taken and boiled, then added 5% lactic acid and allowed the mixture to cool and filtrated. 5ml of filtrated liquid was taken; to it 2-3 drops of 1% Iodine solution were added. If mixture turned brown in colour then maltose was present in the milk sample.

RESULTS AND DISCUSSION

Survey was taken to need the quality, adulteration in the milk of Amravati city seven samples were taken from nearly area of institute the result were obtained on the test of adulteration carried out for the adulterant like starch, urea, sugar, salt, maltose, glucose. On the basis of result obtained from the milk sample small traces of adulterants were found in some milk sample.

Table 1: Adulteration in milk samples

Milk Sample Number	Area in which dairy located	Adulteration					
		Starch	Sugar	Urea	Salt	Glucose	Maltose
1	Gadge Nagar	---	---	---	---	---	+
2	Rathi Nagar	---	+	---	---	---	---
3	Shegaon Naka (Mathura)	---	---	---	---	---	---
4	Kathora Naka	---	---	---	---	+	---
5	Pravin Nagar	---	---	---	---	+	++

The milk sample of the dairies of Gadge Nagar, Rathi Nagar, Shegaon Naka, and Kathora Naka matched the quality standard of standard milk quality. The milk of Mathura milk dairy of Shegaon Naka was of the best quality of starch was found in dairies of Rammohan Nagar and Mahendra colony while traces of starch were found in other dairies. Sugar was found in the dairies of Rathi Nagar and Rammohan Nagar and absent in rest of the area was altogether absent in all the milk sample of the dairies, salt were also found to be absent in the entire milk sample. Minute traces were found in the milk sample of Mahendra colony. Small amount of glucose were present in the milk sample of Kathora Naka and Pravin Nagar while absent in the remaining milk sample. Maltose in trace amount was found in the milk sample of Gadge Nagar, Pravin Nagar and Mahendra colony. Overall the entire milk sample matched the standard values of the milk quality or near to it. No major adulterant was found in the milk sample (Table 1). Similar results were recorded by Ayub *et al*, (2007) during working on composition and adulteration analysis of milk samples. Nirwal *et al*, (2013) carried out analysis of milk quality, adulteration and mastitis infection in milk samples collected from different regions of Dehradun. The study was aimed to analyze the milk quality, adulteration and mastitis infection in milk sold at different regions of Dehradun. Hundred random samples were collected from dairy owners from 30 different regions of Dehradun. A total number of 100 samples were analyzed for physical appearance, quality, adulterants and mastitis infection resulted that the adulteration decreased the nutritive value of milk and may also cause serious human health related problems.

CONCLUSION

We conclude that the milk supplied in the Amravati city is of good quality and appropriate for consumption. The milk samples studied the milk of Mathura Dudh Dairy; Shegaon Naka was of the best quality and did not contain any traces of adulterants studied in the work. The quality of this milk was appropriate according to the standards prescribed by Food Quality Authority (FQA) of India. The milk samples of other dairies were also of good quality but unlike the quality of milk of Mathura Dudh Dairy, Shegaon Naka. Milk of Mahendra colony was found to be of substandard quality and it should be avoided for the consumption. Overall conclusion is made that the milk of Amravati city in the nearby area of the Government Vidarbha Institute of Science and Humanities is of good quality and appropriate for consumption.

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