



**STUDY OF ADULTERATION IN BUFFALO MILK SAMPLES
COLLECTED FROM DIFFERENT LOCALITIES OF
MALKAPUR TAHSIL**

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ABSTRACT

This study investigates the adulteration of fresh Buffalo milk provided by Vendors, in Malkapur Tahsil. The seven samples were collected from consumers. All samples were chemically examined & analyzed to find out adulterants. The analysis revealed that some samples were adulterated with mostly urea, detergents & salts while all samples were free from ammonium sulphate and starch. The adulterant decreases the nutritive value of milk and may also cause serious human health problems.

Key wards: Buffalo milk, Adulteration, Malkapur.

INTRODUCTION

Milk is reported as the most perfect food for adults¹. It contains all the constituents essential for the body in considerable amounts. Milk is required for promoting growth and maintenance of health². Milk contain sugar, fat, proteins minerals & vitamins It is also best source of calcium for both children and adults¹. With the rise in the income of people, the quality, the quantity and sophistication of the consumer goods has also increased³. Milk is transported from the point of production to the consumers through the vendors. Consumers always demands nutritionally enriched milk⁴. Milk vendors adulterate the milk to increase their profit margin as well as to increase the life of milk by adding several chemicals like urea, starch, ammonium sulphate, salt, formalin, cane sugar, detergents etc. This addition decreases the nutritive value of milk. This adulterated milk causes serious health problems¹. Hence it is necessary to analyze the milk samples. This study is performed on Buffalo milk samples provided by vendors at Malkapur Tahsil.

Naturally buffalo milk contains 83% water, 6.6% fat, 3.9% proteins, 5.2% lactose and 0.80% ash. The average pH of buffalo milk lies between 6.8-7.0 specific gravity varies 1.080-1.101 g/cm³. The starch adulterant is the combination of two polysaccharides amylase and amylopectin⁵. Any change in milk composition considered as adulteration especially its density or specific gravity⁶.

EXPERIMENTAL

Buffalo milk samples were procured from selected co-operative consumers at Malkapur Tahsil during Dec 2014 –Jan 2015. 200 mL milk sample was taken from each consumer for satisfying analysis in

laboratory. A total seven milk samples were collected from different area of Malkapur Tahsil. All the milk samples were collected in sterilized glass bottles with cap, labeled, kept in icebox & immediately brought to the laboratory.

The raw milk samples were analyzed for physical parameters viz color, pH and specific gravity. The color of milk samples directly visualized. The pH was determined by digital pH meter Model EQ-610 and the specific gravity observed by calculating volume & mass (Table 1). The chemical adulteration tests included were urea test, salt test, formalin test, detergent test, cane sugar test, starch test and ammonium sulphate test¹ (Table 2).

Table 1: Physical parameters determined & methods used

S. No.	Parameters	Methods
1	Color	Visual method
2	pH	pH Metry
3	Specific gravity	Volume-mass method

Table 2: Adulterants determined and methods used

S. No.	Adulterants	Method
1	Urea	Urea test
2	Starch	Starch test
3	Detergents	Detergents test
4	Salts	Salt test
5	Cane sugar	Cottons test
6	Ammonium sulphate	Ammonium sulphate test
7	Formalin	Formalin test

RESULTS AND DISCUSSION

The color of the milk samples was white to pale yellow. The pH of all samples ranged from 6.69 to 7.62, specific gravity ranged from 1.30 to 1.35 g/cm³ (Table 3). Out of seven samples, three samples were of very good quality, three samples were of fair quality and one sample was of poor quality.

Four samples were found to contain urea, four samples detergents, two samples salts, one sample cane sugar, one sample formalin & all samples were free from starch & ammonium sulphate (Table 4). The results for physical examination of Buffalo milk samples clearly showed that the milk sold at this area was put to the malpractices such as addition of adulterants, but consumers considered, as it has abnormal color, odour, general appearance may be due to dirt present in it.

The results obtained for various adulterants in Buffalo milk samples are given in Table 3 and 4.

Results represented in Table 3 and 4 reveal that the milk samples provided by Vendors from Malkapur Tahsil, are adulterated. The addition may be correlated with increase in the shelf life of milk. The pH value observed in some milk samples was higher than control milk samples.

Table 3: Results of physical parameters

Parameters sample	Color	pH	Specific gravity (g/cm ³)
S1	White	7.14	1.32
S2	White	7.18	1.33
S3	Yellowish white	7.35	1.33
S4	White	7.62	1.31
S5	White	7.29	1.35
S6	Yellowish white	6.69	1.33
S7	White	7.10	1.30

Table 4: Result of adulterants

Adulterants	Samples						
	S1	S2	S3	S4	S5	S6	S7
Urea	+	+	Nil	Nil	+	+	Nil
Starch	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Detergent	Nil	Nil	+	+	+	+	Nil
Salt	Nil	Nil	+	+	Nil	Nil	Nil
Can Sugar	Nil	Nil	+	Nil	Nil	Nil	Nil
Ammonium sulphate	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Formalin	Nil	Nil	Nil	Nil	Nil	Nil	+

+ - Adulterated samples

CONCLUSION

The obtained results in this investigation allow to conclude that Buffalo milk in selected area is adulterated with various chemical substances. Milk is ideal food for human health. Adulteration of milk reduces the quality of milk itself. Consumption of lower quality milk may leads to serious health problems. It is important to have a quality control system that regularly check and ensure that only good quality milk is sold. There should be banned on selling such affected milk. But such efforts are not fruitful unless consumers themselves are aware of their rights and responsibilities. This study will create awareness among consumers in rural area in Malkapur Tahsil.

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REFERENCES

1. S. G. Shukla, Textbook of Dairy Chemistry, Aman Publishing House Mudhu Market, Meerut (U.P.), 1-6, 116-119 (2003).

2. S. Nirwal, R. Pant and N. Rai, Analysis of Milk Quality, Adulteration and Mastitis in Milk Samples from Different Regions of Dehradun (India), *Int. J. Pharm. Tech. Res.*, **5(2)**, 359-364 (2013).
3. M. Kamthania, J. Saxena, K. Saxena and D. K. Sharma, Milk Adulteration: Methods of Detection & Remedial Measures, *Int. J. Engg. Tech. Res. (Special issue)*, 15-20 (2014).
4. M. B. Hossain and S. R. Dev, Physiochemical Characteristics of Various Raw Milk Samples in a Selected Dairy Plant of Bangladesh, *Int. J. Engg. Appl. Sci.*, **1(3)**, 91-96 (2013).
5. M. Kartheek, A. Anton Smith, A. Kottai Muthu and R. Manavalan, Determination of Adulteration in Food, Annamalai Nagar, Tamilnadu, India, *J. Chem. Pharm. Res.*, **3(2)**, 629-636 (2011).
6. Ali Ahmad Hassabo Adam, Milk Adulteration by Adding Water and Starch at Khartoum State, Pakistan *J. Nutrition*, **8(4)**, 430-440 (2009).