

Comparative Study of Buffalo Milk and Cow Milk Samples Containing Urea and Cellulose

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Abstract: Milk has been a good source of various nutrients including different chemicals. In this paper quality of milk and comparative study of buffalo milk and cow milk was done. Buffalo milk gave higher result as compared to Cow milk. All these results compared to its World Health Organization recommended value. Urea and cellulose were absent in all sample.

Keywords: Preparation of solutions, End point, Different types of reagents, Titration, Nutrition, Fats, Milk products and different types of Cow and Buffalo milk samples etc.

I. INTRODUCTION

Milk is nature's most complete food, and dairy products are considered to be the most nutritious foods of all. The traditional view of the role of milk has been greatly expanded in recent years beyond the horizon of nutritional subsistence of infants: it is now recognized to be more than a source of nutrients for the healthy growth of children and nourishment of adult humans. Alongside its major proteins (casein and whey), milk contains biologically active compounds, which have important physiological and biochemical functions and significant impacts upon human metabolism, nutrition and health. Many of these compounds have been proven to have beneficial effects on human nutrition and health.

Milk is important part of human life. Milk is generally viewed as nutritious food with lots of vitamins, minerals and fats, proteins etc thus used for drinking. There are different sources of milk samples available. Milk is processed into a variety of dairy products such as cream, butter, yogurt, kefir, ice cream, and cheese. Modern industrial processes use milk to produce casein, whey protein, lactose, condensed milk, powdered milk, and many other food-additives and industrial products. In this paper various milk samples were analyzed and found that buffalo milk results were high quality than cow milk. Comparative study between the different types of milk is not available much, so present study was carried out to compare the buffalo and cow milk samples containing urea and cellulose in the milk and to check the quality of milk.

II. MATERIALS AND METHODS

For this Buffalo and Cow milk samples were used (each type four samples). All these samples were collected from Anandnagar, Dhyari, Hadapsar, Katraj around Pune in Maharashtra. The samples were kept refrigerated at 4°C and transported to the laboratory within 24 hours, prior to refrigeration. All the milk samples were stored at -20°C until analysis.

A. Determination of Urea in the Milk:

Preparation of Standard Curve:

Pipette 5 ml aliquots of working standard solutions into 20 x150 mm (25 ml) test tubes and add 5 ml DMAB solution to each. Prepare reagent blank of 5 ml buffer and 5 ml p-Dimethyl amino benzaldehyde (DMAB) solution. Shake tubes thoroughly and let stand for 10 minutes. Read A in 1 cm cell at 420 nm with reagent blank at zero A. Plot A against concentration urea Plot should be straight line.

Estimation of Urea in the Milk:

10 ml of milk sample is mixed with 10 ml of Trichloroacetic acid (TCA) to precipitate the proteins and filtered using Whatman 42 filter paper. 5 ml of filtrate is then treated with 5 ml of DMAB reagent to develop the colour. Blank is prepared by taking 5 ml of diluting reagent and treating with 5 ml of DMAB reagent. The optical density of the yellow colour is measured at 420 nm. From standard curve the amount of urea in milk is calculated.

B. Determination of Cellulose in the Milk:

Procedure:

Take about 10 g of milk in a 100 ml beaker. Add 50 ml of hot water and stir thoroughly for about 2 minute. Pour the mixture on a nylon cloth and wash the residue with 50 ml of hot water twice. Scrape the residue with a spatula and place it in a spotting plate. Stain a part of residue with Iodine Zinc Chloride reagent and another part with iodine solution.

Development of blue colour in Iodine Zinc Chloride reagent and absence of blue colour in Iodine Solution confirms

presence of cellulose. The method is also applicable to milk products like curd, rabri and evaporated milk.

III. OBSERVATION TABLE

Sample Description	B ₁	B ₂	B ₃	B ₄	C ₁	C ₂	C ₃	C ₄
Urea %	AB	AB	AB	AB	AB	AB	AB	AB
Cellulose %	AB	AB	AB	AB	AB	AB	AB	AB

NOTE:

- 1) Buffalo milk samples-B₁, B₂, B₃, B₄ and Cow milk samples-C₁, C₂, C₃, and C₄.
- 2) Chemical Analysis was done per 100 gm.
- 3) Urea and cellulose were absent in all samples.

III. RESULTS AND DISCUSSION

Hypotheses:

- Eating food containing sugarcane fiber compared to cellulose or minimal fiber will improve glucose, tolerance and insulin sensitivity.
- Sugarcane fiber consumption may aid in weight loss and prevent weight gain.
- Sugarcane fiber consumption will enhance gut hormones related to satiety.

Kit for Detection of Adulterants in Milk

NDDB is in the quest to combat adulteration in milk. NDDB has undertaken measures to ensure that quality of milk is maintained at the dairy and household levels. NDDB has developed and commercialized ready-to-use kit for detection of commonly used adulterants in milk. Simple and rapid test procedures used in the kit can detect the presence of **Urea, Ammonia fertilizers, Nitrate fertilizers/Pond water, Starch and Cereal flours, Sucrose, Glucose, Salt, Neutralizers and Hydrogen peroxide** by comparing the colors developed after addition of test reagents to milk. The kit can be used by unskilled persons with little or no training at all.

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