

## RAPID METHODS FOR DETECTION OF ADULTRANTS IN MILK




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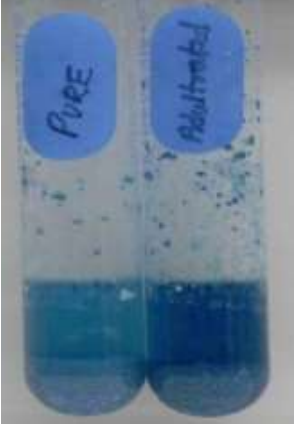

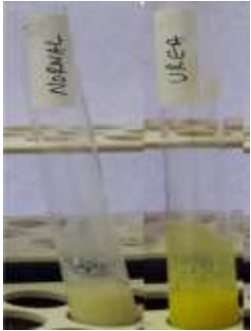

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Adulteration of food products continues to represent a major concern for consumers. Among the various food products, milk might be the most widely adulterated food item. Very common adulterants that are used in milk are urea, skim milk, washing powder, water, salt, sugar, starch etc. These adulterants are easily available in market and these have hazardous health effects like cancer, ulcer etc. So in this article eight different rapid adulteration detection methods have been given in brief-

### Some Test methods in Tabulated Form

1.	<b>DETECTION OF HYDROGEN PEROXIDE</b> Procedure: 1. Add to about 5 ml of milk in a test tube, an equal volume of raw milk, followed by five drops of 2 % of para-phenylenediamine. 2. A blue colour is developed in the presence of hydrogen peroxide.	
2.	<b>DETECTION OF CANE SUGAR</b> Procedure: 1. To about 5 ml of milk in a test tube, add 1 ml of concentrated HCl and 0.1 g of resorcinol and mix. 2. Place the tube in boiling water bath for 5 min. 3. In the presence of cane sugar, red colour indicates presence of sugar in milk.	
3.	<b>DETECTION OF CEREAL FLOUR/STARCH</b> Procedure: 1. Dissolve 2.5 g potassium iodide in 100 ml water, add to it 1 g pure iodine crystal, shake well to give a clear solution. 2. Take about 3 ml of well-mixed milk sample in a test tube. 3. Heat the milk to just boiling by holding the tube over flame, and thereafter cool to room time. 4. Add 1-2 drops of 1% iodine solution. 5. Formation of blue-violet colour indicates presence of starch cereal flours.	

4.	<p><b>DETECTION OF GLUCOSE</b> Procedure</p> <ol style="list-style-type: none"> <li>1. Take 1 ml of milk sample in a test tube. Add 1 ml of modified Barfoed's reagent.</li> <li>2. Heat the mixture for exact 3 min in a boiling water bath and then rapidly cool under tap water.</li> <li>3. Add one ml of phosphomolybdic acid reagent to the turbid solution and observe the colour.</li> <li>4. Immediate formation of deep blue colour indicates the presence of added glucose. In case of pure milk only faint bluish colour is formed due to the dilution of Barfoed's reagent</li> </ol>	
5.	<p><b>DETECTION OF NEUTRALIZERS</b> <b>Procedure:</b></p> <ol style="list-style-type: none"> <li>1. Take in test tube about 5 ml milk and mix with 5ml ethanol followed by 2-3 drops of rosolic acid solution.</li> <li>2. Formation of <b>rose red</b> colouration indicates the presence of alkali as neutralizer. Pure milk produces <b>brownish or yellowish</b> colour only.</li> </ol>	
6.	<p><b>DETECTION OF UREA</b> Procedure:</p> <ol style="list-style-type: none"> <li>1. 1.6% DMAB reagent: Dissolve 1.6 g DMAB in 100 ml ethyl alcohol and add 10 ml conc. HCl.</li> <li>2. Take 1 ml of milk in a test tube.</li> <li>3. Add 1 ml of 1.6% (w/v) DMAB reagent and mix well.</li> <li>4. Appearance of yellow color indicates the presence of urea . The pure milk sample (milk sample containing no added urea) showed a slight yellow colour due to the presence of natural urea in milk.</li> </ol>	
7.	<p><b>DETECTION OF POND WATER</b> Procedure:</p> <ol style="list-style-type: none"> <li>1. Prepare 2% solution of diphenylamine in Sulfuric acid.</li> <li>2. Take 2 ml of milk in a test tube.</li> <li>3. Rinse the tube with the milk and drain the milk from the test tube.</li> <li>4. Add two-three drops of the reagent along the side of the test tube.</li> <li>5. Deep blue colour will be formed in presence of nitrate.</li> </ol>	

8. DETECTION OF COMMON SALT

Procedure:

- 1-Take 5 ml of silver nitrate solution (0.1 N)
- 2-Add two drops of a solution of 10% potassium chromate.
- 3- Add 1 ml of milk and mix well
4. Yellow colour indicates the presence of added salt.  
Otherwise, red colour will appear.

