

Insert issued along with CGSI Milk adulteration test kit. For any clarifications,
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DETECT COMMON ADULTERANTS IN MILK (USING CGSI – TEST KIT)

Although many known methods for detection of adulteration in milk, exists, the methods compiled below are not only simple and rapid but also very sensitive to detect milk adulteration. These tests can be carried out easily by consumers for identifying the most common adulterants in milk, using simple laboratory apparatus, common chemicals and the milk adulteration test reagent kit developed. Use clean or washed test tubes and droppers to carry out the individual tests.

I. DETECTION OF NEUTRALIZERS IN MILK:

Prohibited neutralizers like hydrated lime, sodium hydroxide, sodium carbonate or sodium bicarbonate are added to milk to prevent spoilage.

Soda Test: Take 2 ml of milk in a test tube and add 2 ml **R2** (*Alcohol*) followed by 1 drops of **R5** (*1% Rosolic Acid alcoholic solution*). If the colour of milk changes to pinkish red, it is inferred that the milk is adulterated with sodium carbonate / sodium bicarbonate and so unfit for human consumption. Please note that this test will be effective only if excess neutralizers are present in milk. In case the added neutralizers are nullified by the naturally developed acidity in milk, then this test will be negative.

II. DETECTION OF CANE SUGAR IN MILK:

Generally cane sugar is mixed in milk to increase the percentage solids content of milk i.e., to increase the lactometer reading of milk, that was already diluted with water.

Take 5 ml of milk in a test tube. Add 2 ml of **R1** (*Hydrochloric Acid*) along with 0.05 g of **R4** (*Resorcinol*). Shake the test tube well and place it in a boiling water bath for 5 min. Appearance of red colour indicates the presence of added cane sugar.

III. DETECTION OF STARCH: Addition of starch increases the SNF content of milk. Wheat flour, arrowroot, rice flour, etc., can also be added for increasing the SNF content.

Take 3 ml milk in a test tube and boil it thoroughly.

Cool the milk to room temperature. Add 2 to 3 drops of **R6** (*1% Iodine solution*). Change of colour to blue indicates that the milk is adulterated with starch.

IV. DETECTION OF GLUCOSE: Poor quality glucose is sometimes added to milk to increase the lactometer reading.

Take 2 ml of milk in a test tube. Add 2 ml **R7** (*Barford reagent*) and mix it thoroughly. Keep the test tube in a boiling water bath for 3 min and then cool it for 2 min by immersing it in tap water without disturbance. Add 1 ml of **R3** (*1% Phosphomolybdic Acid Solution*) and shake. If blue colour is visible, then glucose is present in the milk sample.

V. DETECTION OF SALT: Addition of salt in milk is mainly resorted to with the aim of increasing the corrected lactometer reading.

2 ml of **R8** (*1% Silver Nitrate Solution*) is taken in a test tube. Add 1 to 2 drops of **R9** (*1% Potassium Dichromate solution*). Add 1 ml of milk in the above test tube and mix thoroughly. If the contents of the test tube turn yellow in colour, then milk contains salt. If it turns to chocolate or reddish brown in colour, the milk sample is free from salt.

VI. DETECTION OF DETERGENTS IN MILK: Take 5 ml of milk in a test tube and add 1-2 drops of **R10** (*Bromocresol Purple indicator solution*). Shake well and mix. Appearance of violet colour indicates the presence of detergent in milk. Unadulterated milk samples will show a very faint violet colouration.

VII. DETECTION OF WATER IN MILK: Lactometer reading at a specific temperature detects adulteration of milk with water. Lactometer is available in the market for around rupees twenty.

Take raw milk in a long stemmed wide mouth bottle or a measuring cylinder. Place the lactometer in it taking care to see that the lactometer does not touch the sides of the bottle or the measuring cylinder. Note down the reading at the surface of milk sample taken.

THIS TEST KIT DESIGNED TO CARRY OUT THE MILK ADULTERATION TESTS, CONTAINS CHEMICAL REAGENT BOTTLES LABELLED FROM R1 TO R10. HYDROCHLORIC ACID R1 IS A MINERAL ACID AND R4 IS RESORCINOL A PHENOL. PLEASE HANDLE THEM WITH CARE. R8, SILVER NITRATE SOLUTION CAN BLACKEN YOUR SKIN. BLACKENED SPOT WILL HOWEVER DISSAPPEAR AFTER SOME DAYS. TAKE REGULAR NORMAL PRECAUTIONS REQUIRED WHILE HANDLING CHEMICALS. IN CASE THEY SPILL ON YOUR BODY, IMMEDIATELY WASH IT OFF THOROUGHLY UNDER RUNNING WATER. THEN USE REGULAR SOAP TO WASH OUT ANY RESIDUAL REMNANTS.

In case you find adulterants in Milk, re-test & confirm. Preserve the milk sample in fridge & contact CGSI or FDA
NOTE: SHELF LIFE OF THE CHEMICALS IS ABOUT TWELVE MONTHS. KEEP THE KIT AWAY FROM SMALL CHILDREN.