# Detection of Fat, Starch and Sucrose in Khoa

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*Abstract:* **Milk is a pale liquid produced by the mammary glands of mammals. It is the primary source of nutrition for young mammals before they are able to digest other types of food. Early-lactation milk contains colostrums, which carries the mother's antibodies to its young and can reduce the risk of many diseases. Milk contains many other nutrients and the carbohydrate lactose. An emulsion is a suspension of droplets of one liquid into another liquid. Milk is an emulsion of fat in water. Butter is an emulsion of water in fat. The solute is known as the dispersed phase and the solvent is known as the continuous phase. Other examples of emulsions include margarine, mayonnaise, cream, and salad dressing. A colloidal solution is when matter exists in a state of division in between a true solution, which is sugar in water, and a suspension, which is chalk in water. The characteristics of a colloid are small particle size, electrical charge, and affinity of the particles for water molecules. In milk, the whey proteins are in colloidal solution. This paper detects various types of adulteration present in khoa.**

*Keywords:* **Types of adulterants and adulterations etc.**

## I. INTRODUCTION

Milk is very valuable food, readily digested and absorbed. It consists of nutrients, which are needed for proper growth and maintenance of body. Milk and milk products form a significant part of the diet and a substantial amount of our food expenditures goes on milk and other dairy products. In Pakistan, milk is transported from the point of production to consumers and processing plants by middlemen called "Gawalas". They don't maintain proper hygienic conditions during this transport, which leads to increase the total viable bacterial count. They also adulterate milk to increase their profit margin by several chemicals like urea, starch, flour, cane sugar, vegetable oils, detergents etc. Various preservatives like formalin and some antibiotics are also added in milk to increase its shelf life. This addition decreases the nutritive value of milk. These adulterants, preservatives and drugs in milk cause very serious health related problems.

*What Is Adulteration?*

Food is the basic necessity of life. One works hard and earns to satisfy our hunger and relax (enjoy) later. But at the end of the day, many of us are not sure of what we eat. We may be eating a dangerous dye, sawdust, soap stone, industrial starch, and aluminum foil and so on! Contaminated foods and drinks are common sources of infection. Often, we invite diseases rather than good health.

Food adulteration is an act of intentionally debasing the quality of food offered for sale either by the admixture or substitution of inferior substances or by the removal of some valuable ingredient

Food Adulteration takes into account not only the intentional addition or substitution or abstraction of substances which adversely affect nature, substances and quality of foods, but also their incidental contamination during the period of growth.

## II. MATERIALS AND METHODS

*(1) Determination of Fat Content in Khoa:*

*Method 1. If Sample Shows Presence of Sugar:*

Accurately weigh 2-3 g of the sample in a glass beaker. Add 5 ml of warm water and break the lumps with the help of a glass rod. Transfer the contents carefully to a Mojonnier flask or other extraction flask. Wash the beaker and glass rod with warm water. Add 1.25 ml of ammonia solution and proceed as per method given in (Rose-Gottlieb method).

*Method 2. If Sample Shows Absence Of Sugar:*

Accurately weigh 2-3 g of sample in a small beaker. Add a few drops of water and rub to a smooth paste by using a glass rod. Add 9 ml of water the first few drops being used to wash the tip of the glass rod. Add 10 ml of concentrated hydrochloric acid and heat on a Bunsen burner. (see Section 5.3. - Determination of Fat in Channa). Cool to room temperature. Add 10 ml of ethyl alcohol first to the beaker and later transfer the contents to the Mojonnier fat extraction flask or the Rohrig tube Transfer to the Mojonnier fat extraction flask. Proceed as in determination of milk fat by acid digestion.Determination of Milk Fat by Acid Digestion Method (Werner Schmidt Method).

*(2) Determination of Starch in Khoa:*

In this method, a definite quantity of sample is dispersed in hot water and diluted sample is treated with iodine solution. The appearance of blue colour confirms presence of starch in khoa.

Reagent A. Iodine solution: Dissolve 1 g of iodine and 5 g of potassium iodide in a sufficient quantity of water and make volume up to 100 ml.

*Procedure:*

A. Preparation of sample: Take 11.0 g of grated khoa sample in a beaker. Add 20 ml of hot water (80-90°C) and with the help of glass rod, make a paste. Transfer the sample quantitatively to 50 ml volumetric flask and make the volume to 50 ml. Shake well before use.

B. Take about 5 ml of prepared sample of khoa in a test tube. Add 0.5 ml of concentrated HCl followed by addition of 0.005 g of resorcinol. Mix the content and place the test tube in boiling water-bath for 5 min. Appearance of deep red colour indicates presence of sucrose in sample whereas control samples will remain light pink. Studies on the validity of existing methods and their modification for the detection of adulterates in khoa.

*Detection of Sucrose in Khoa:*

In this method, a definite quantity of sample is dispersed in hot water and diluted sample is treated with resorcinol solution. The appearance of red colour confirms presence of sugar in khoa.

Reagent A. Resorcinol flakes: Should be white in colour.

B. Concentrated HCl.

*Procedure:*

A. Preparation of sample: Take 11.0 g of grated khoa sample in a beaker. Add 20 ml of hot water (80-90°C) and with the help of glass rod, make a paste. Transfer the sample quantitatively to 50 ml volumetric flask and make the volume to 50 ml. Shake well before use.

B. Take about 5 ml of prepared sample of khoa in a test tube. Add 0.2 ml of iodine solution to the test tube and mix well. Development of blue colour indicates presence of starch and control sample remains yellow. The limit of detection of method is 0.05%.. Studies on the validity of existing methods and their modification for the detection of adulterates in khoa.

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