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## **Examination of milk**

Milk is a white liquid produced by the mammary glands of mammals.

### **Milk Processing**

Most milk undergoes processing before you buy it at the store. The three primary steps include: pasteurization, homogenization and fortification.

Pasteurization heats the milk to destroy harmful microorganisms and prolong shelf life. Normal pasteurization keeps milk safer while maintaining its valuable nutrients.

Ultra-high temperature (UHT) milk is pasteurized at a much higher temperature to make it sterile. UHT milk is then packed into special containers that keep it safe without requiring refrigeration.

After pasteurization, milk undergoes homogenization to prevent separation of the milk fat from the fluid milk. Homogenization creates a smooth, uniform texture.

### **Examination of milk**

Finally, milk is fortified to increase its nutritional value or to replace nutrients lost during processing. Vitamin D to facilitate the absorption of calcium. Vitamin A is frequently added to reduced-fat, low-fat and fat-free milks. Vitamin A promotes normal vision, particularly helping the eyes to adjust to low-light settings.

There is a direct relation between a milk-supply and the health of the people of a community. Milk may contain disease germs when it is drawn from a diseased cow. Disease germs may be introduced into it by unhealthy workmen or from unclean containers; and the ordinary changes which milk undergoes may render it unwholesome. The supervision of milk-supplies is one of the important duties of a health officer.

### **Fresh milk is:**

White (Calcium casinate)

Opaque Fluid

Faintly Sweetish (Lactose)

Cow's Milk (Yellow, Lactochrome)

Salty Milk (End or Start of Lactation)

**Composition.**—Milk contains all the elements of a complete food in about the following proportions: Protein 3.6%, Fat 3.8%, Sugar 4.7%, Ash 0.7%, Water 87.2%.

**Adulteration.**—A lowering of the percentage of fats and solids in milk is caused principally by the removal of cream or the addition of water. These processes constitute two forms of falsification.

**Specific Gravity.**—Milk that has been skimmed or watered may usually be detected by means of its specific gravity. The specific gravity of milk that is above the minimum standard of composition is between 1.030 and 1.034. Removing the cream increases the specific gravity, since fat is lighter than whole milk. Adding water lowers the specific gravity, since it reduces the percentage of solids which are dissolved in the liquid part of milk. If the specific gravity of a sample of milk is below 1.030 or above 1.034, the milk may be considered to be adulterated. It is possible to remove the cream and to add a sufficient quantity of water to preserve a normal specific gravity, but a sample of such milk would be so thin and blue as to be suspicious.

### **Test for Fat**

The test for fat is nearly always made by the Babcock method, in which the casein is destroyed by sulphuric acid and the fat is liberated and collected as clear oil. The apparatus required are a graduated pipet, a centrifuge, and a special flask with a neck holding 2 c.c.

The method is as follows: Mix 17.5 c.c. of milk with 17.5 c.c. of sulphuric acid in the flask, and centrifuge the mixture four minutes. Add boiling water until the contents begin to rise into the neck and centrifuge two minutes. Add more boiling water until the contents rise nearly to the top of the graduated part of the neck, and centrifuge one minute. The melted fat will then have collected as clear yellow oil, and its quantity may be read by means of the graduations on the flask. The weight of 2 c.c. of butterfat is 10 per cent. of the weight of the 17.5 c.c. of milk that was used. If the

fat is measured by 0.4 of the graduations on the neck of the flask, its quantity is 0.4 of 10 per cent., or 4 per cent. of milk.

The price of milk at dairies and creameries is usually governed by its percentage of fat as determined by the Babcock method.

**Bacterial Examination**—a bacterial examination of milk is usually made to determine the number of bacteria, regardless of their kind. The examination consists either in making cultures from the milk and counting the colonies which develop; or in making a smear of the undiluted milk and counting the individual bacteria.

### **Kinds of Bacteria in Milk**

The bacteria that are usually found in milk may be divided into four groups:

- those producing lactic acid
- those of fermentation and decay
- those of human diseases
- those that are inert

### **Literature:**

1. <https://ru.scribd.com/doc/20325229/Physical-Examination-of-Milk>
2. <http://www.healthguidance.org/entry/8969/1/Milk.html>
3. <http://www.healthyeating.org/milk-dairy/dairy-facts/types-of-milk.aspx>
4. <https://ru.scribd.com/document/251731555/Milk-Products>