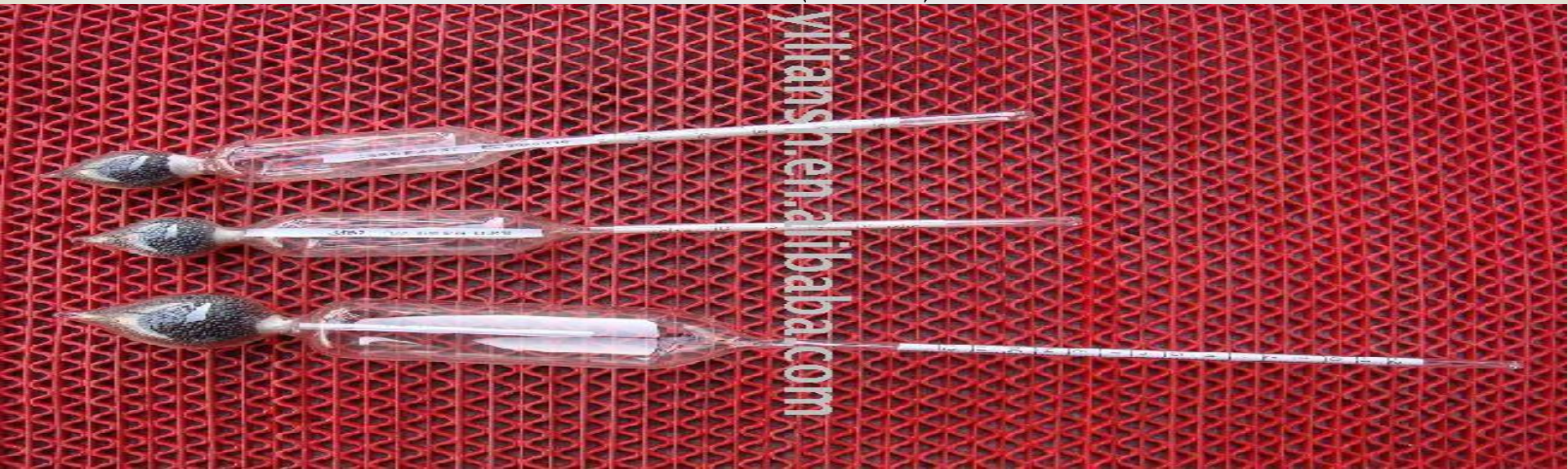


Determination the spesific gravity of milk



By
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Specific gravity of milk means its density of milk compared with water. It is the ratio of the weight of equal volumes of milk and distilled water at the same temperature. . It is the ratio of the weight of equal volumes of milk and distilled water at the same temperature. The specific gravity of milk varies according to the proportion of fat, SNF (solid- not fat) and water. The specific gravity of the whole cow's milk ranges from (1.028 to 1.034) gm/ml, with an average of (1.032) gm/ml which means that milk is (1.032) times heavier than waters.



Aim:

To determine the basic nature of milk.

To identify the adulteration of milk

Significance of the test

1- Partial skimming increases the specific gravity of milk.

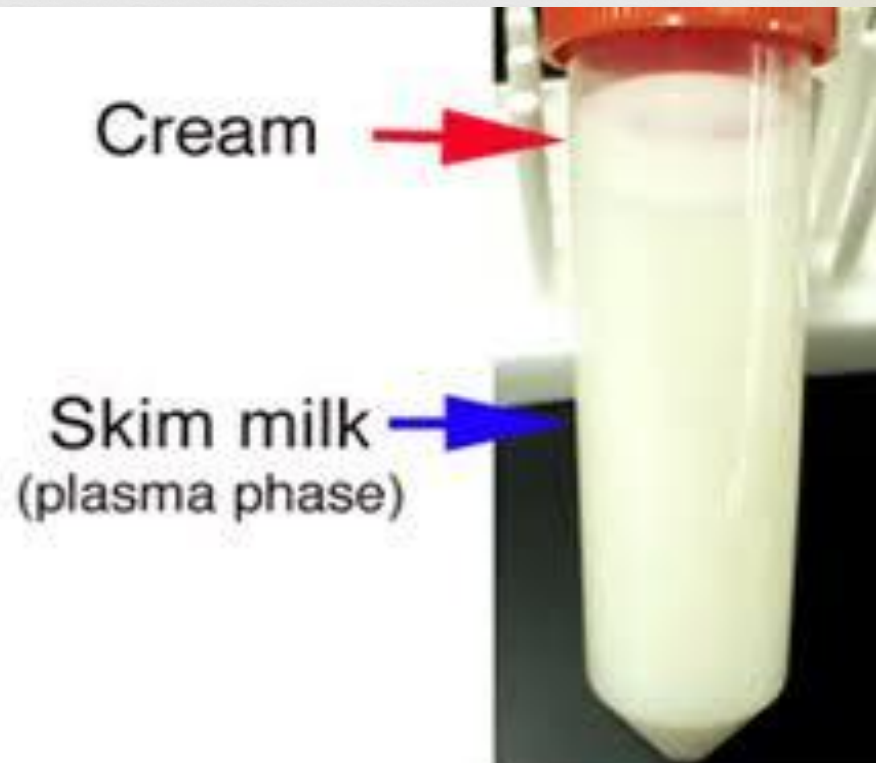
2- Adulteration of milk with water lowers the specific gravity.



Pure



Adulterated



**** Lactometer** is a special hydrometer designed for use with milk graduated in the range of (1.024 to 1.037). Lactometers are used for rapid determination of specific gravity. The method is based on law of floatation which states that when a solid is immersed in a liquid. It is subject to upward thrust equal to the weight of the liquid displaced by the body and acting in upward direction



Material and method

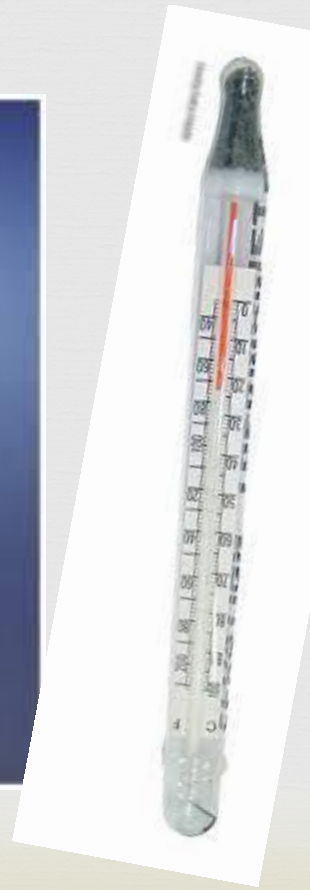
Whole milk, skim milk, partially adulterated



Equipment required

Lactometer Beakers

Jar/cylinder Dairy floating thermometer



Procedure

1-Adjust the temperature of milk sample at 15.5 °C.

. 2-Mix the milk thoroughly

3-Fill the clean and dry glass jar with milk by add milk to brim of the jar

.to avoid the incorporation of air

4-Lower the lactometer gently in the milk making sure that the lactometer floats freely .
.without touching the sides of the jar

. 5-Read the lactometer reading at the top of the meniscus within one minute .

6- .Record the temperature of milk .

.Calculation

Specific gravity of milk can be calculated by the following formula

Corrected lactometer reading


$$\text{Specific gravity} = \frac{\text{Corrected lactometer reading}}{1000} + 1$$

Note: If the milk temperature is not exactly $(15.5)^\circ\text{C}$, correct the lactometer reading by adding (0.2) lactometer degree for degree Celsius above $(15.5)^\circ\text{C}$, also subtract (0.2) lactometer degree for degree Celsius below $(15.5)^\circ\text{C}$.

Example: Calculate the specific gravity of milk sample if you know the lactometer reading is (31) and milk temperature is $(14.5)^\circ\text{C}$?

Solution:

$31 + 0.5 = 31.5$ (adding surface tension deference) $15.5 - 14.5 = 1^\circ\text{C}$ $1^* 0.2 = 0.2$ (subtract from lactometer reading) $31.5 - 0.2 = 31.3$ (corrected lactometer reading) Specific gravity = corrected lactometer reading/ $1000 + 1 = 31.3 / 1000 + 1 = 1.0313$ gm/ml.



Thank You