Lactose Fermentation

by *Streptococcus Thermophilus* & *Lactobacillius Bulgaricus*

The starter cultures in yogurt are: 1) Streptococcus thermophilus and 2) Lactobacillus bulgaricus.

The function of the starter cultures:

Is to ferment lactose (milk sugar) by lactase enzyme to produce lactic acid. The increase in lactic acid → decreases pH (4-4.5) and causes the milk proteins are clot to form yogurt. The environment temperature of the starter cultures to grow 40-45°C.

Other bacterial cultures, such as *Lactobacillus acidophilus* and *Bifido bacteria* may be added to yogurt as probiotic cultures.

Probiotics: are live bacteria and yeasts that are good for digestive system. We usually think of these as germs that cause diseases. But your body is full of bacteria, both good and bad. Probiotics are often called "good" or "helpful" bacteria because they help keep your gut healthy. You can find probiotics in supplements and some foods, like yogurt.

General Yogurt Processing Steps: -

-Pasteurize Milk at 85 C° for 30 min.
-Cool Milk.
-Inoculate with Starter Cultures & incubate for 4-6 hrs at 42-45C°.
-Cool.
-Add Flavors & Fruit.
-Package.

Procedure Of Estimation Lactic Acid Product:

1. Filtrate yoghurt in gauze to separate the whey.
2. Taken 2ml of whey + 4 ml of distilled water + 12 drop of reagent in the beaker or flask.
3. Titrate the sample with the base (NaOH) until reaching to balance point (The onset of appearance the color pink).
4. Read the volume of the base that used.
5. Use the following Arithmetical formula to get the percentage of titrable acidity for lactic acid.

$$\text{Lactic acid\%} = \frac{\text{Volume of NaOH} * \text{Normality of NaOH} * \text{Molecular weight equivalent of L.A}}{\text{Sample Weight} * \text{Total titratable volume}} \times 100$$

knowing that:

Normality of NaOH = 0.1

Molecular weight equivalent of L.A (Lactic Acid)=0.09008

Sample Weight=2

Total titratable volume = 2+4=6

$$\text{Lactic acid \%} = \frac{? * 0.1 * 0.09008}{2 * 6}$$