Food Technology practical

Lab2

Fermented Milk products (yogurt)

Milk products prepared by lactic acid fermentation (e.g yogurt) or a combination of this and yeast fermentation (e.g Kefir) are called fermented or cultured milks.

Yogurt: is the best Known of all fermented milK products, and the most popular world wide. The consistence,flavour and aroma vary from the district to another.

- In some areas, yogurt is produced in the form of highly viscous liquid, or in another type, so, yogurt is typically classified as follows:
- **Set type:** incubated and cooled in the package.

(set yogurt) 1. Cup filler 2. Incubation room 3. Rapid cooling Room.

- **Stirred type:** incubated in tanks and cooled before packing.

1. Incubation tank 2. Cooler 3. Cup filler

- **Drinking type:** similar to stirred type, but the Coagulum is broken down to a lipid before being packed.
- **Frozen type:** Incubated in tanks and frozen like ice cream.
- **Concentrated:** Incubated in tanks,concentrated and cooled before being packed. This type is sometimes called Greek yogurt or strained yogurt, sometimes labneh or labaneh.

Flavored Yogurts: Sometimes yogurt is also favoured with Fruits, vanilla, honey, coffee essences, etc. Colouring and Sugar in the form of sucrose, glucose or aspartame (a sugar free diet sweetener) are often added together, with the flavoring.
When necessary stabilizers may also be added to modify the consistency.

Milk for yogurt production must:

1. Have a low bacteria count.
2. Not contain enzymes and chemical substances which may slow down the development of the yoghurt culture.
3. Not contain antibiotics and bacteriophage.

General Manufacturing Procedure

The following flow chart and discussion provide a general outline of the steps required for making yogurt.

General yogurt Processing Steps Adjust Milk:

1- Adjust Milk Composition & Blend Ingredients
2- Pasteurize Milk
3- Homogenize
4- Cool Milk
5- Inoculate with Starter Cultures
6- Hold
7- Cool
8- Add Flavors & Fruit
9- Package

1/ **Adjust Milk Composition & Blend Ingredients:** Milk composition may be adjusted to achieve the desired fat and solids content. Often dry milk is added to increase the amount of whey protein to provide a desirable texture. Ingredients such as stabilizers are added at this time.

2/**PasteurizeMilk:** The milk mixture is pasteurized at 185° F (85 ° C) for 30 minutes or at 203 ° F (95 ° C) for 10 minutes. A high heat treatment is used to denature the whey (serum) proteins. This allows the proteins to form a more stable gel, which prevents separation of the water during storage. The high heat treatment also further reduces the number of spoilage organisms in the milk to provide a better environment for the starter cultures to grow. Yogurt is pasteurized before the starter cultures are added to ensure that the cultures remain active in the yoghurt after fermentation to act as probiotics; if the yoghurt is pasteurized after fermentation the cultures will be inactivated.

3/ **Homogenize:** The blend is homogenized (2000 to 2500 psi) to mix all ingredients thoroughly and improve yoghurt consistency.

4/ **Cool Milk:** The milk is cooled to 108 ° F (42 ° C) to bring the yogurt to the ideal growth temperature for the starter culture.

5/**Inoculate with Starter Cultures:** the starter cultures are mixed into the cooled milk.

6/**Hold:** The milk is held at 108 ° F (42 ° C) until a pH 4.5 is reached. This allows the fermentation to progress to form a soft gel and the characteristic flavor of yogurt. This process can take several hours.

7/**Cool:** The yogurt is cooled to 7 ° C to stop the fermentation process.

8/ **Add Fruit & Flavors:** Fruit and flavors are added at different steps depending on the type of yogurt. For set style yogurt the fruit is added in the bottom of the cup and then the inoculated yogurt is poured on top and the yogurt is fermented in the cup. For Swiss style yoghurt the fruit is blended with the fermented, cooled yogurt prior to packaging.

9/ **Package:** The yogurt is pumped from the fermentation vat and packaged as desired.