# Food Technology practical

## Lab3

## Cheese Production

Introductions ETYMOLOGY word "cheese" - Latin "casues" meaning to ferment / become sour.

**Type of cheese:**
Gorgonzola
Requefort
Cheddar
Gouda Grana
Gloucester
Stilton
Camembert

**Cheese:** ultimately a milk product, widely used all over the world as food product, purely product of microbial fermentation. Flavor and aroma changes depending upon the MOs being used., Before long, people learned that curds can be aged for over weeks and months and then pressed together to form large cakes of cheese., the art of cheese making have traveled from Asia to the Europe and then spread all over the world.

Ex: brie, Swiss cheese, camembert cheese, Roquefort, Grana, Gloucester, Gouda, Gorgonzola

**Cheese manufacture:**
The manufacture of cheese involves the following:

• **Pasteurization:** 72-73 Ĉ° for 15-20 seconds. Kills nearly all M.Os that cause disease. *Clostridium tyrobutyricum* can survive and produce butyric acid and $H_2$s gas by fermenting lactic acid.

**Note:** chemical Inhibitors can be used such as $H_20_2$ can survive and NaNO3.

- **Bactofugation:** process in which separate the bacteria and spores that present in milk. Ex, *Bacillus cereus* is reduced. 60-63 C° is applied.

**Microfiltration:** A membrane filter with a pore size of approximately 0.2 micron can filter bacteria from reducing efficiency; microfiltration allows production of hard and semi - hard cheese without need for any chemicals to inhibit growth of Clostridia spores.

**Additives in cheesemilk:**
- essential: starter culture and the rennet
- certain conditions: calcium chloride and saltpeter
- Inhibitor of clostridia: lysozyme

■ **Acid coagulation:**
- Any soft cheeses are produced without use of rennet, by coagulating milk with acid, such as citric acid or vinegar, or the lactic acid produced by soured milk.
- Cream cheese, paneer and rubing are traditionally mad this way.

■ **Coagulation of casein:**
- pH is lowered, rennet is added.

* **Syneresis:** or shrinking of the coagulum, it causes loss of whey and is accelerated by cutting, stirring, cooking, salting, amount of acid and cheese making.

***Salting:** it affects the texture and flavor of the final cheese by controlling microbial growth and enzyme activity.

***Curd Monipulation:**
Heat treatments: alters the composition and texture. like cheddar and Mozzarella.

* **Stretching the curd:** the curd was immersed in hot (About 8C°), water and fluid mass of cheese was pulled into strands to align the protein fibers and then poured into container to cool. ' such as pasta filata and a also mozzarella.

* **Washing:** helps remove more lactose which changes the pH of the cheese.

* **Molding:** some cheeses are pressed in molds. Such as Roquefort cheese.

* **Maturation:** or ripening is the breakdown of Protein, lipids and carbohydrates (acids and sugars) which releases flavor compounds and modifies cheese texture.

* **Packaging:** in large blocks, porous boxes, ect.

**<u>Make the cheese in home.</u>**

Milk (1 liter fall fat)

↓

Bring the milk to a simmer just below a boil over medium - high heat.

↓

Stir constantly to keep milk from scorching

↓

When it comes to a simmer reduce the heat medium
Add 1 cup of white vinegar few at a time (limon or lime juice)

↓

Stir after each addition

The milk will separate into curds of whey

Remove from heat, let sit for 15 min. to complete the separation process.

Line a colander with a double layer of cheese cloth.

This recipe can be scaled up or down

Presses remove excess whey

Let rest for 1 hour or until the cheese has reached your preferred texture

↓

The longer you wait, the firmer it will get

↓

After 1 hour.

↓

Hard cheese So, Yummy, fresh and chewy this cheese won't last long

↓

You can add salt, olive oil or any seasonings you like.

↓

You can crumble it, cube it and marinate it in olive oil

↓

Ricotta cheese, it the curds strain for about 15 minutes
(Don't forget to sprinkle the curds with salt).

Cream cheese: add salt and mix until smooth as cream.