EFFECT OF HEATING
AGENTS USED AS CONTROLLERS OF MICRO-ORGANISMS

- High temperature – Cooking, pasteurization, sterilization, dehydration, steaming, boiling etc
- Low temperature – freezing storage
- Desiccation – Removing the moisture
- Radiation – $\alpha$, $\beta$ & $\gamma$ radiations
- Filtration – Through sieving.
BASIC CHANGES THROUGH HEAT

- Destruction of microbes.
- Increased shelf life.
- Physical & chemical changes.
- Delayed release of toxins.
- For desired acceptability of food.
HIGH TEMPERATURE

- **MOIST HEAT**
  - Kills microorganisms & coagulate protein. Effective & rapid.

- **DRY HEAT**
  - Kills microorganisms & Oxidize chemical constituents.
THERMAL DEATH TIME

➢ Heat resistance against a particular range of temperature within definite time period.

➢ TDP- Thermal death point.

➢ (The temperature required to kill all the microbes present)
This shows the relationship between temperature and number of microorganisms.

As temperature increases, microbes decreases.
METHODS OF HEATING

➢ Steam under pressure
➢ Fractional sterilization
➢ Pasteurization
➢ Sterilization
➢ Cooking procedures – Boiling blanching, roasting, grilling etc
METHODS OF HEATING

- **Steam under pressure** – Temperature above 100°C. Steamer used - autoclave.

- **Fractional sterilization** – Tyndallization. Temperature upto 100°C. Steamer used – Steam arnoid. Three successive days treatment is opted.

- **Sterilization** – Complete destruction of microbes, higher temperature, nutrient loss.

- **Pasteurization** – Batch method & High temperature short time method
PASTEURIZATION

- Batch method (Holding method) 63°C & Upto 30 minutes
- High temperature - short time method – (HTST) 72°C & Holding it for 15 seconds
- Pasteurization mainly opted for milk & rarely used for other fluids.
- Pasteurized product is not the sterilized one.
BATCH PASTEURIZER
HTST PASTEURIZER

BCIT Food Processing Resource Centre

HTST Pasteurizer with Refrigerated Holding Tank

Gautam Singh, Hospitality Trainer, 07830294949
YOUR CAREER
YOUR FUTURE
YOUR ABILITY
YOUR SUCCESS
YOUR DREAMS

Gautam Singh, Hospitality Trainer, 07830294949