

# 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)

# TDT CURVE

**THERMAL  
DEATH  
TIME**

- This shows the relationship between temperature and number of micro organisms
- 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



**Gautam Singh , Hospitality Trainer , 07830294949**

# HTST PASTEURIZER



**Gautam Singh , Hospitality Trainer , 07830294949**

**YOUR CAREER**

**YOUR FUTURE**

**YOUR ABILITY**

**YOUR SUCCESS**

**YOUR DREAMS**

 **0 7830294949**

**Gautam Singh , Hospitality Trainer , 07830294949**