

SNS COLLEGE OF ALLIED HEALTH SCIENCE
Affiliated to The Tamil Nadu Dr M.G.R Medical University, Chennai



DEPARTMENT OF CARDIAC TECHNOLOGY

COURSE NAME: MICROBIOLOGY

UNIT : 1

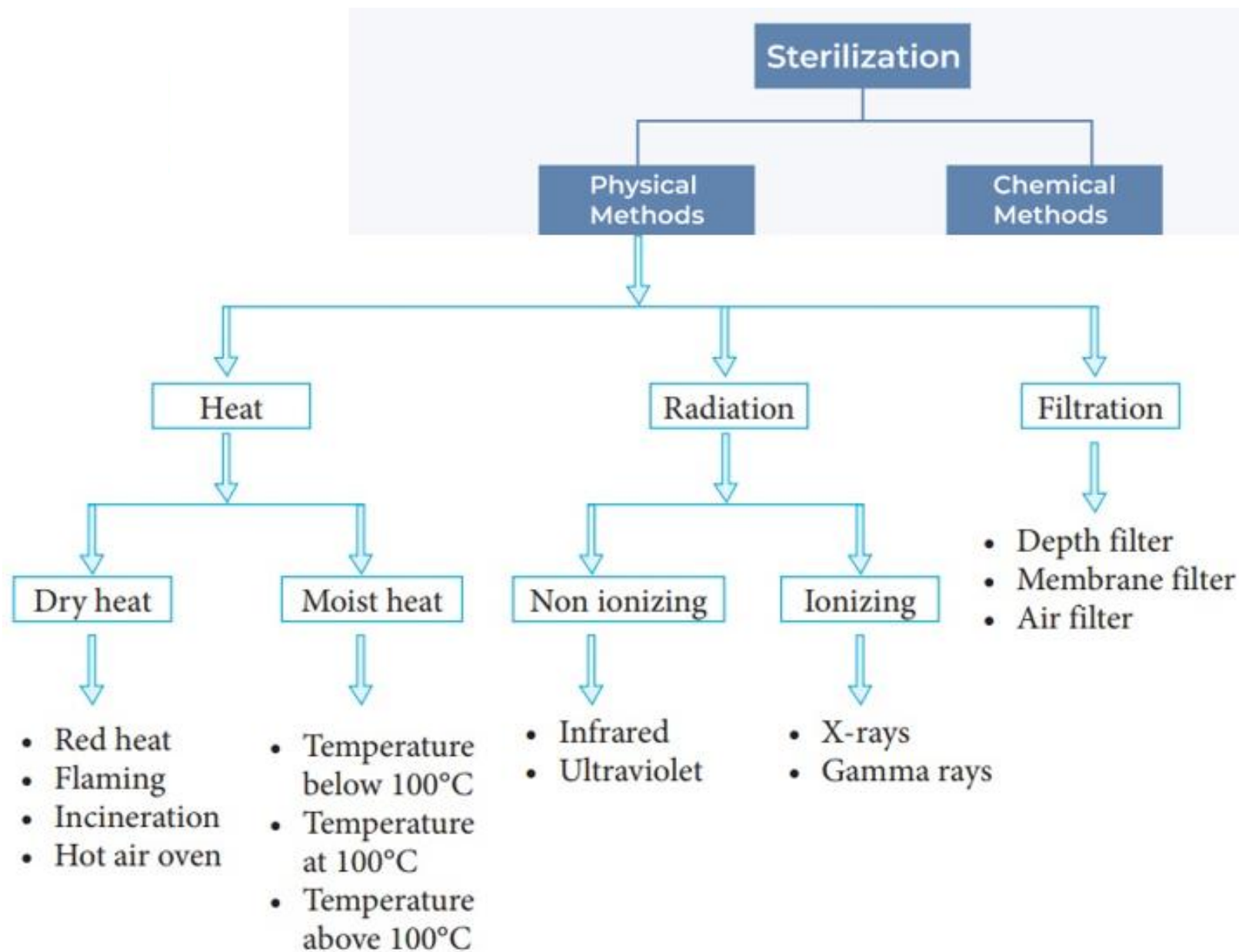
TOPIC : STERILIZATION – PHYSICAL METHOD – DRY HEAT

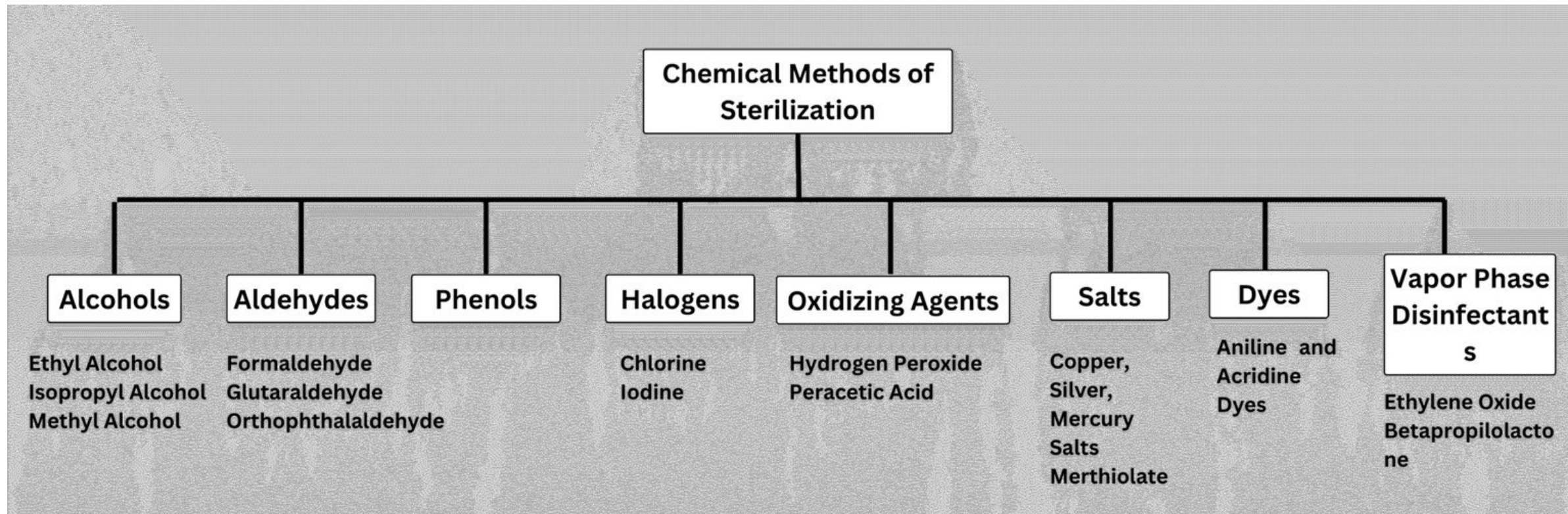
FACULTY NAME: MITHRA V

STERILIZATION (DEFINE)

- Process of **destroying/eliminating** all forms of microbial life, including bacteria, viruses, fungi, and spores.
- **Purpose:**
- Ensures safety in medical, healthcare laboratory and industrial settings.
- **Importance:**
- Prevents infections (disease transmission) and contamination.



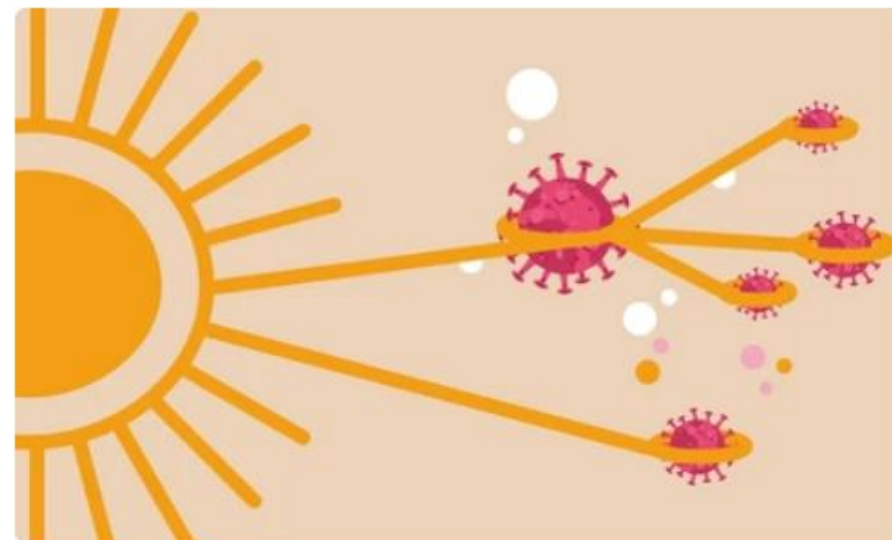




PHYSICAL METHODS

• SUNLIGHT

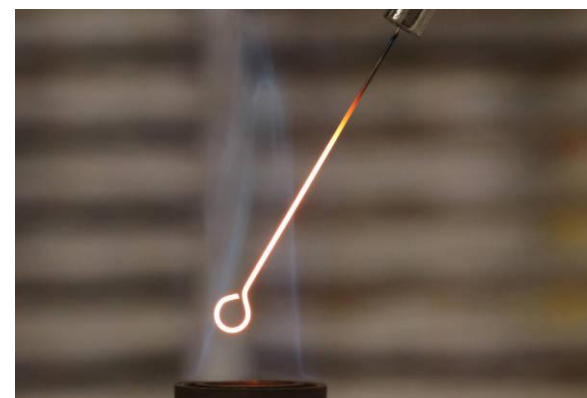
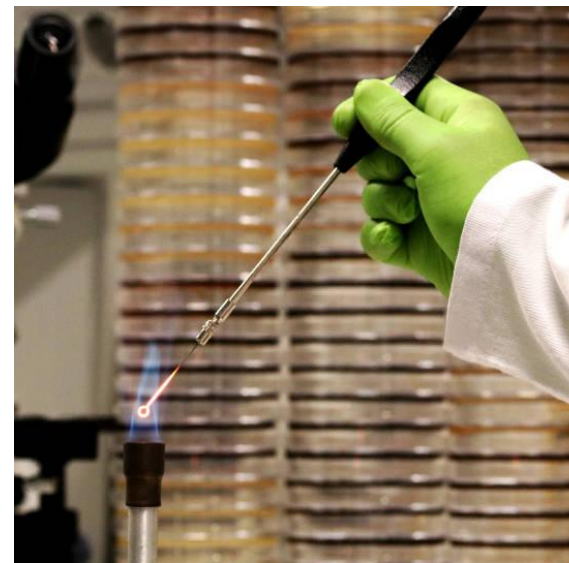
- Microbicidal activity is due to **ultraviolet** rays.
- More effective with the combination of ultraviolet rays and heat.
- Provides a **natural method of disinfection** for water bodies by killing bacteria suspended in water



DRY HEAT

I. RED HEAT

- Sterilizes articles like inoculation loops, wires, forceps tips, or needles being held in the flame of a Bunsen burner until they become **visibly red hot**.
- Simple and effective method to inhibit microbial contamination.
- Ensures **complete destruction** of microorganisms



II. FLAMING

- Method of passing the article over a Bunsen flame, but **not heating it to redness**.
- Eg: Scalpels, mouth of test tubes, flasks, glass slides and cover slips over a Bunsen flame a few times **without heating to redness**.



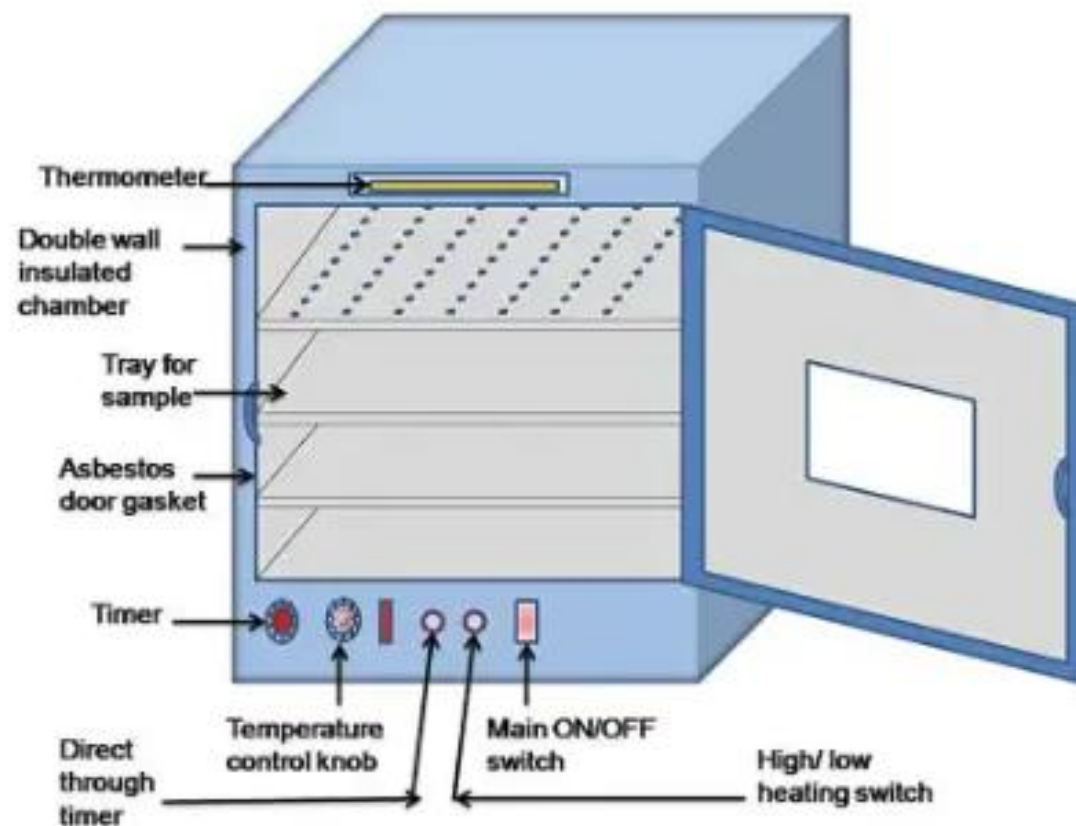
III. INCINERATION

- Destroying contaminated material by **burning in an incinerator.**
- Suitable only for articles that must be disposed of, resulting in their loss.
- Examples include soiled dressings, animal carcasses, pathological material, and beddings.

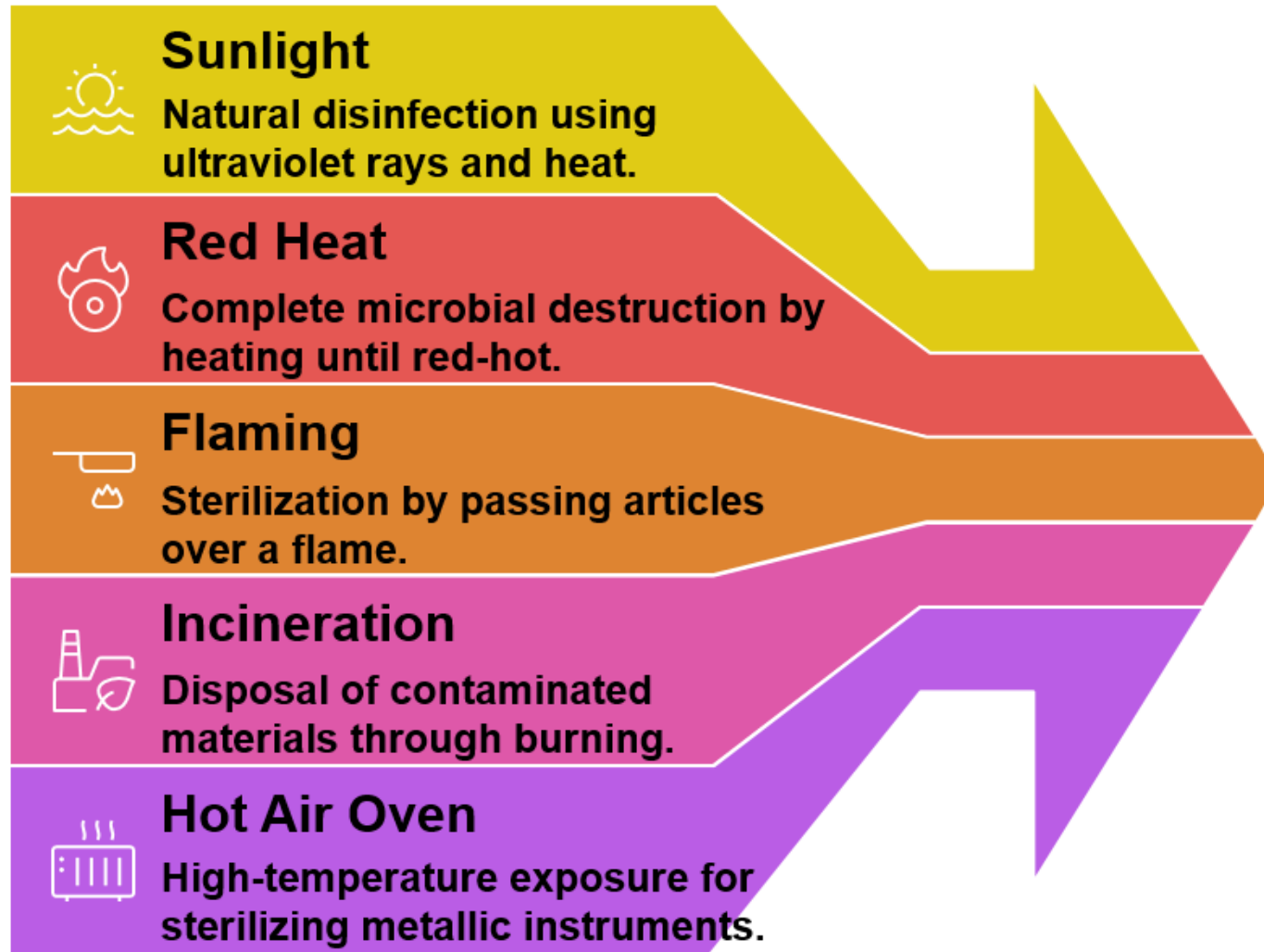


IV. HOT AIR OVEN

- Articles are exposed to high temperature in an **electrically heated oven**.
- Fan ensures even heat distribution.
- Articles sterilized include metallic instruments, glasswares, oils, grease, petroleum jelly and some pharmaceutical products.
- **Different temperature-time relationships** exist for holding time, such as 60 minutes at 160°C, 40 minutes at 170°C, and 20 minutes at 180°C.
- The oven should **not be opened** until the temperature falls **below 60°C** to prevent glassware breakage.



SUMMARY



Effective Sterilization

- Eliminates all microbial life (bacteria, viruses, fungi, spores).
- Ensure safety and prevent infections in medical, laboratory, and industrial settings.

REFERENCES

- Study.com – Dry Heat Sterilization: Definition, Process & Validation
<https://study.com/academy/lesson/dry-heat-sterilization-definition-process-validation.html>
- Despatch – Dry Heat Metal Instruments: A Guide to Effective Sterilization Techniques
<https://www.despatch.com/blog/dry-heat-metal-instruments-a-guide-to-effective-sterilization-techniques/>
- SlideShare – Sterilization by dry heat (applied microbiology)
<https://www.slideshare.net/slideshow/sterilization-by-dry-heatapplied-microbiology/249892184>

THANK YOU