**كلية الرشيد الجامعة**

**قسم تقنيات المختبرات الطبية**

**المرحلة الثانية**

**Microbiology practical**

**Lab 2**

**Sterilization and disinfection**

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**Methods of sterilizations**

1. **Physical methods (Heat sterilization, radiation, gases)**
2. **Chemical methods**
3. **Mechanical method**

**Physical methods of sterilization**

**A/ Heat sterilization**

1. **Dry heat sterilization:**
2. **Red heat** used to sterilize ***wire loop*** , ***point end of forceps***  
3. **Flaming** : used to sterilize ***tip of tubes*** , ***spreaders*** (which are flamed in ethanol)

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1. **Incineration:** used in pathological fuming materials.
2. **Hot air oven :( 160-180 Cº for 2-4 hr.)** used to sterilize ***glass petri* *dishes , flask***

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2) Moist heat sterilization

1. **Temperature below 100Cº,**

**• Pasteurization** (63Cº for 30 min), to sterilize milk.

1. **Temperature at 100Cº**

* **Boiling (**5\_10min) to sterilize **rubber tube**, **glass syringes**
* **Steaming (tyndalilzation )** steam 30 min for 3 days, used to sterilize **gelation media**, **sugar media**.

**C) Temperature above 100Cº (autoclave)**

-The condition in this instrument (121Cº, 15 min, 15poun/inch2), used for sterilization of:

* surgical tools and clothes
* culture media and to sterilize inoculated media
* swab
* Distil water ,solution sealed in containers

**B) Radiation sterilization** like X-rays Gamma rays.

Used in:

1. Sterilize cabinet
2. Sterile operation rooms. 

**C) Gases sterilization**

* Formaldehyde (Room)
* Ethylene oxide ( disposable syringes and petri dish)

**Mechanical method: by filtration**

The material is effect by heat (Heat sensitive solution)

EX :( serum protein, sugar, vaccine, antibiotics, toxins) are sterilized by filtration.

**Chemical methods of sterilization**

1. **Antiseptics** : it is chemical substance that kills micro-organisms living tissue

**EX**: **70% alcohol**, **10% Dettol** to sterilize hand.

1. **Disinfectant** : it is a chemical substances used to sterilize non-living tissue objects

**EX**: **phenol, 5% formalin** to sterilize refrigerator, bench, floor.

**The disinfectant may be describe either as:**

**Bactericidal**: any chemicals substance which kills the bacteria and their spores.

**Bacteriostatic**: any chemical substance which inhibits the growth and multiplication of bacteria but do not necessarily kill them.