

Dr. Suman Chauhan

Botany Deptt.

N.A.S. College (P.G.)

B.Sc (First Year)

Technique in sterilization

To study individual microbe we have to isolate its culture to get one particular required strain. The process of obtaining a pure culture by separating one kind of bacterium is known as isolation of organism. As microbes exist everywhere. We need great precaution for this we need to sterilize every instrument medium.

Sterilization

It is complete destruction of other living organisms from objects being sterilized. This is done mainly by following methods.

- 1. Heat** High temperature for particular time period usually kill all organism. The methods used are

- a) Dry heat Sterilization**

The instruments such as needled force p, scissor scalpet etc can be directly heated to sterilize them. The mouths of test tubes culture tubes and flask can be directly passed over flame then plugged with cotton to make them free of contamination. This process is called flaming glassware can be wrapped in aluminum foil and put in oven up to 160⁰C temperature for 4 hours so that these become free of microbes. This type of sterilization is done only a few hours before doing inoculation.

- b) Wet heat sterilization**

Glass ware, liquids media, solid media are sterilized by this method because dry heat may harm some of material and equipment.

Some of the methods used in wet heating are

- a) Boiling** Boiling for some hours sterilizes the articles and equipment

To some extent bacteria may be resistant to boiling and may not be destroyed.

b) Tyndallisation

This is a course of three periods of boiling at 100⁰C for 30 minutes with daily intervals. This method is useful for media containing gelatin, milk, sugar etc which can not tolerate high temperature.

c) Wet heating in autoclave

Here for 30 minutes at a pressure the instruments equipments are steamed at 120⁰C. The steam enter through cotton plug and kill microbes. Cotton plug act as a filter. The steam first hydrate the cells and then coagulation the protein. The wet heating under pressure is accomplished in an autoclave.

2. Filtration:-These are sterilized by filler. Mainly filter of clay, plaster of paris and porcelain are used. Filter composed a cellulose acetate polycarbonate filter depend upon size of pore bacteria and virus aer not allowed to pass.

3. Radiation

Radiation such as X-rays, gamma rays and ultra rays are used as sterilization source for controlling microorganism. Effectiveness of radiation depend upon degree of susceptibility of micro organism presence of oxygen and water.