

**IMPORTANCE OF STERILIZATION IN MEDICAL LABORATORY
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A SEMINAR PRESENTED

**TO THE
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STUDENTS**

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SUMMARY

Sterilization refers to any process that eliminates (removes) or kills all forms of life, including transmissible agents (such as fungi, bacteria, viruses, spore forms etc). Present on a surface, contained in a fluid, in medication or in a compound such as biological culture media. Sterilization can be achieved by applying heat, chemicals, irradiation, high pressure, and filtration. The method of sterilization are physical method, chemical method and Mechanical method. Its importance of sterilization in medical laboratory includes: To prevent from transmission of diseases to medical laboratory staff. To prevent against contamination of reagents and samples by unwanted microbes. It helps control the spread of harmful microbe from medical facilities into the general society. It is the means of decontaminating surgical instruments to prevent the depth of post-operative complications. It is the means of ensuring sterile environment in production processes in the food and beverages industry. It is used to prevent spoilage agricultural product such as milk, cheese etc. It prevents against the possible contamination of wounds and subsequent progression of disease processes in hospital and homes. It is used to prevent the growth and proliferation of undesirable microbes in the laboratory. Sterilization helps destroy heat-stable microbes such as bacterial and fungal spores that contaminate the environment. Sterilization plays a major role in public health in the control, management, and preventing against the emergence, development, and progression of new diseases and existing ones.

IMPORTANCE OF STERILIZATION IN MEDICAL LABORATORY

DEFINITION

Sterilization refers to any process that eliminates; (removes) or kill all forms of life, including transmissible agents (such as fungi, bacteria, viruses, spore forms etc). Present on a surface, contained in a fluid, in medication or in a compound such as biological culture media.

Sterilization can be achieved by applying heat, chemicals, irradiation high pressure and filtration.

METHODS OF STERILIZATION

Physical method

Chemical method

Mechanical method

PHYSICAL METHOD

Physical method of sterilization is a very effective and useful method of sterilization. It completely kill all types of microorganism and there spores.

Dry heat

Flaming

Incineration

Tindalization

Steam under pressure

CHEMICAL METHOD

Chemical method of sterilization is the elimination of all viable microorganism and their spores using liquid or gaseous compounds. Chemicals are also used for sterilization. Chemicals used for sterilization include:

Ethylene oxide

Formaldehyde

Hydrogen peroxide

Glutaraldehyde

Ozone

Bleach

MECHANICAL METHOD

Sterile filtration: Fluids that would be damaged by heat (such as those containing proteins like large molecule drug products, but also wine and beer) irradiation for chemical sterilization, can be only sterilized by microfiltration using membrane filters. This method is commonly used for heat labile pharmaceuticals and protein solutions in medicinal drug processing. Usually, a filter with pore size $0.2\ \mu\text{m}$ (microfiltration) will effectively remove microorganisms. In the processing of biologics, viruses must be removed or inactivated. Nanofilters with a smaller pore size of $20 - 50\ \text{nm}$ (nanofiltration) are used. The smaller the pore size the lower the flow rate. To achieve higher total throughput or to avoid premature blockage, prefilters might be used to protect small pore membrane filters.

IMPORTANCE OF STERILIZATION

1. To prevent from mission of diseases to medical laboratory staff.
2. To prevent against contamination of reagents and samples by unwanted microbes.
3. It helps control the spread of harmful microbe from medical facilities into the general society.
4. It is the means of decontaminating surgical instruments to prevent the depth of post-operative complications.
5. It is the means of ensuring sterile environment in production processes in the food and beverages industry.
6. It is used to prevent spoilage agricultural product such as milk, cheese etc.
7. It prevents against the possible contamination of wounds and subsequent progression of disease processes in hospital and homes.

8. It is used to prevent the growth and proliferation of undesirable microbes in the laboratory.
9. Sterilization helps destroy heat-stable microbes such as bacterial and fungal spores that contaminate the environment.
10. Sterilization plays a major role in public health in the control, management, and preventing against the emergence, development, and progression of new diseases and existing ones.
11. Sterilization prevents the growth of the diseases. One of most important reasons why the disinfection of medical devices. So important is to prevent the building of microbes and various other diseases. When any medical food is used microbes comes onto device.

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