

Sterilization and disinfection

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Terminology

Sterilization:

- Process of **killing or removing all forms of microorganisms** (bacteria, viruses, fungi) **via spores** from an object or surface.
- After sterilization → absolutely no germs left.

Examples:

- **Autoclaving** (steam under pressure) → used in hospitals to sterilize surgical instruments.
- **Dry heat** → hot air oven sterilizes glassware.

Bacteriostasis:

Derived from two Greek words:

- **Bacterio** → "bacteria"
- **Stasis** → "a state of standing still / inhibition"

Bacteriostasis is a condition in which **bacterial growth** and reproduction are **inhibited** (stopped or slowed down) without necessarily killing the organisms.

Bacteriocide:

Derived from two parts:

- **Bacterio** → "bacteria"
- **Cide** (from Latin *caedere*) → "to kill"

Bacteriocide is any substance or agent that kills bacteria (not just inhibiting their growth, but destroying them).

Feature

Word origin

Bacteriostasis

Bacterio (bacteria) + *stasis* (to stand still)

Bacteriocide

Bacterio (bacteria) + *cide* (to kill)

Definition

Inhibition of bacterial growth and reproduction without killing them

Complete destruction or killing of bacteria

Effect on bacteria

Growth is **stopped/slowed** but bacteria remain alive

Bacteria are **killed/eradicated**

Reversibility

Reversible – bacteria can grow again if conditions improve

Irreversible – bacteria cannot recover

Examples

- Tetracycline (antibiotic) -
Refrigeration (slows growth)

- Penicillin (antibiotic)

Sepsis:

- **serious illness** that happens when the **body's response** to an infection goes **out of control**.
- instead of just fighting germs, the immune system causes **widespread inflammation** → damaging tissues and organs.
- Sepsis = infection + harmful body reaction

Inflammation:

- It's the body's **natural defense reaction** when **something is wrong** (like infection, injury, or irritation).
- Think of it as the body's **alarm system** telling your immune system:
“□ □ Something's wrong here, fix it!”
- Area becomes **red, warm, swollen, painful**.
- Extra **blood and immune cells** rush in to fight germs or heal injury.

Antigen:

“Anti-” (antibody) + “-gen” (producer/creator).

→ So antigen = antibody generator.

Antigen is any **substance** (usually a protein) that is **recognized as foreign body** by the immune system and **triggers** the body to make **antibodies** or activate immune cells.

Antibodies:

“Anti-” (against) + “body” (refers to “foreign body” or invader).

→ Meaning: **substance against foreign bodies.**

- **special proteins** made by the immune system (**B-lymphocytes**) that **recognize and neutralize antigens** (like bacteria, viruses, or toxins). They act like the body’s “**guided missiles**” against germs.

Examples:

- **IgG** → most common antibody, protects against infections.
- **IgA** → found in saliva, tears, breast milk .
- **IgE** → involved in **allergies** (e.g., reaction to pollen).
- **IgM** → first antibody made during infection.
- **IgD** → helps activate B cells.

ANY
QUESTIONS





Thank You

Feeling gratitude and not expressing it is like
wrapping a present and not giving it.