



SNS COLLEGE OF ALLIED HEALTH SCIENCES

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**DEPARTMENT : OPERATION THEATRE AND ANAESTHESIA
TECHNOLOGY**

COURSE NAME : PHARMACOLOGY

UNIT : ANTISEPTICS AND DISINFECTANTS

**TOPICS : MECHANISM OF ACTION, CLINICAL USE,
CONSIDERATIONS**



ANTISEPTICS



- Antiseptics are chemical agents that are applied to living tissues (skin, mucous membranes) to reduce the risk of infection, sepsis, or putrefaction.



IODINE - BASED ANTISEPTICS



Mechanism of Action:

- Iodine disrupts protein synthesis and denatures proteins, leading to microbial cell death.
- Povidone-iodine is a water-soluble complex of iodine, providing sustained release.



Clinical Use:

- Skin and mucous membrane disinfection before surgery.
- Treatment of wounds, burns, and infections.



CHLORHEXIDINE



Mechanism of Action:

Binds to and disrupts bacterial cell membranes, leading to leakage of cellular contents.

Clinical Use:

Surgical hand scrub, skin preparation before surgery, oral hygiene products.



ALCOHOL - BASED ANTISEPTICS



Mechanism of Action:

Ethanol and isopropyl alcohol denature proteins, disrupt cell membranes, and have rapid antimicrobial activity.

Clinical Use:

Hand sanitizers, pre-injection skin preparation, and surface disinfection.



HYDROGEN PEROXIDE



Mechanism of Action:

Releases oxygen, producing free radicals that damage microbial cell components.

Clinical Use:

Wound care, oral hygiene, and as a general antiseptic.



DISINFECTANTS



- Disinfectants are chemical agents used on inanimate objects or surfaces to destroy or inhibit the growth of microorganisms.



QUATERNARY AMMONIUM COMPOUNDS (QUATS)



Mechanism of Action:

Disrupt cell membranes and precipitate proteins.

Clinical Use:

Surface disinfection in hospitals, laboratories, and homes.



PHENOLS



Mechanism of Action:

Phenolic compounds disrupt cell membranes and denature proteins.

Clinical Use:

Used in hospitals for disinfecting surfaces, surgical instruments, and in some household cleaners.



ALCOHOLS



Mechanism of Action:

Denature proteins, disrupt cell membranes, and have a broad spectrum of activity.

Clinical Use:

Surface disinfection, medical equipment, and hand sanitizers.



PEROXYGENS (Hydrogen Peroxide, Peracetic Acid)



Mechanism of Action:

Release oxygen, generating free radicals that damage cell components.

Clinical Use:

Surface disinfection, sterilization of medical equipment.



HALOGENS (Chlorine and Iodine Compounds)



Mechanism of Action:

Chlorine and iodine disrupt cell structures and inhibit microbial enzymes.

Clinical Use:

Water treatment (chlorination), skin disinfection, and wound care.



CONSIDERATIONS IN PHARMACOLOGY



- Pharmacokinetics: Absorption, distribution, metabolism, and excretion depend on the specific antiseptic or disinfectant.
- Toxicity: Some agents may cause irritation or toxicity, and concentrations must be carefully regulated.
- Resistance: The development of microbial resistance is a consideration, especially with prolonged or inappropriate use.



ASSESSMENT



- What is Antiseptics ?
- What is Disinfectants ?