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SECTION:B

Assignment :General pharmacology

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Q1:Discuss mechanism of antibiotics according to different targets and classify them one by one.

The struggle of mankind against infectious diseases is well known. The discovery of antibiotics led to optimism that infections can be controlled and prevented. However, infections are still the leading cause of death in developing world. This is due to the emergence of new disease, reemergence of diseases once controlled and more specifically due to the appearance of antimicrobial resistance. It appears that the emergence of antimicrobial resistance is inevitable to almost every new drug, and it is recognized as a major problem in the treatment of microbial infections in both hospitals and community. This review intends to discuss the mechanism of action and resistance development in commonly used antimicrobials. For this purpose, we need to know the basic anatomy of bacterial cell, classification of antibiotics based on their mechanism of action, mechanisms of antibiotic resistance, and individual antibiotics with their common mechanism of resistance.

1. Their are some mechanisms of target antibiotic action against the bacterial cell .

1: Inhibition of Cell Wall Synthesis (most common mechanism)

Penicillins and cephalosporins are the major antibiotics that inhibit bacterial cell wall synthesis. ... Vancomycin, fosfomycin, and bacitracin also inhibit cell wall synthesis but are not nearly as important as the beta-lactam drugs.

2: Inhibition of Protein Synthesis (Translation) (second largest class)

Antibiotics can inhibit protein synthesis by targeting either the 30S subunit, examples of which include spectinomycin, tetracycline, and the aminoglycosides kanamycin and streptomycin, or to the 50S subunit, examples of which include clindamycin, chloramphenicol, linezolid, and the macrolides erythromycin,

2. 3: Alteration of Cell Membranes.

Alteration of Membrane Permeability. As a phospholipid bilayer, the lipid portion of the outer membrane is impermeable to charged molecules. However, channels called porins are present in the outer membrane that allow for passive transport, across the outer membrane, of many ions, sugars, and amino acids

3. 4: Inhibition of Nucleic Acid Synthesis.

Quinolones are a key group of antibiotics that interfere with DNA synthesis by inhibiting topoisomerase, most frequently topoisomerase II (DNA gyrase), an enzyme involved in DNA replication.

4.

5. 5:Antimetabolite Activity.

Antitumor antibiotics are a class of antimetabolite drugs that are cell cycle nonspecific. They act by binding with DNA molecules and preventing RNA (ribonucleic acid) synthesis, a key step in the creation of proteins, which are for c necessary ancer cell survival.