University of Mosul
Lecture No.: 1
College of Veterinary Medicine
Date: February 9, 2025
Unit of Scientific Affairs
Website:

Lecture title: Antibacterial Drugs

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Definition: The antibacterial drugs are drugs that used either to inhibit bacterial multiplications which are called **bacteriostatic** or kills the bacteria which are called **bactericidal**.

Sources of antibacterial drugs

1. Natural origin: (e.g. from bacteria or fungi) which are called antibiotics like chloramphenicol.

2. Synthetic origin: like sulfonamides.

General mechanisms of action of antibacterial drugs

1. Inhibition of bacterial cell wall synthesis (e.g. penicillin and ampicillin).

2. Inhibition of bacterial cell membrane functions by binding to the plasma membrane and disrupts its structure and permeability (e.g. Polymyxin B).

3. Inhibition of bacterial protein synthesis by binding to ribosomal substances (e.g. streptomycin and tetracyclines).

4. Inhibition of bacterial nucleic acid synthesis by:

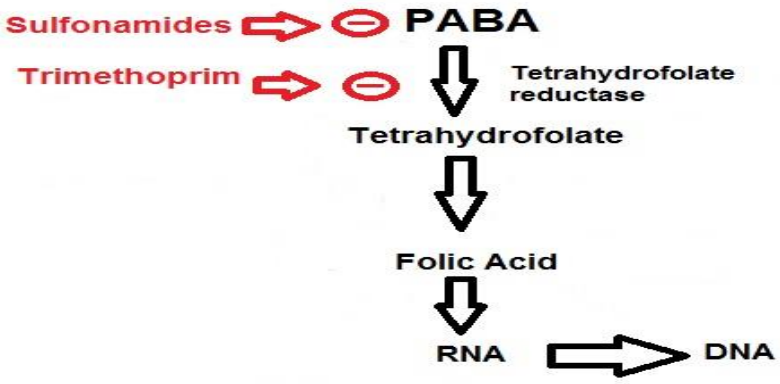
a. Inhibiting DNA gyrase and interfere with DNA replication and transcription (e.g. ciprofloxacin and enrofloxacin).

b. Inhibiting RNA synthesis (e.g. rifampin).

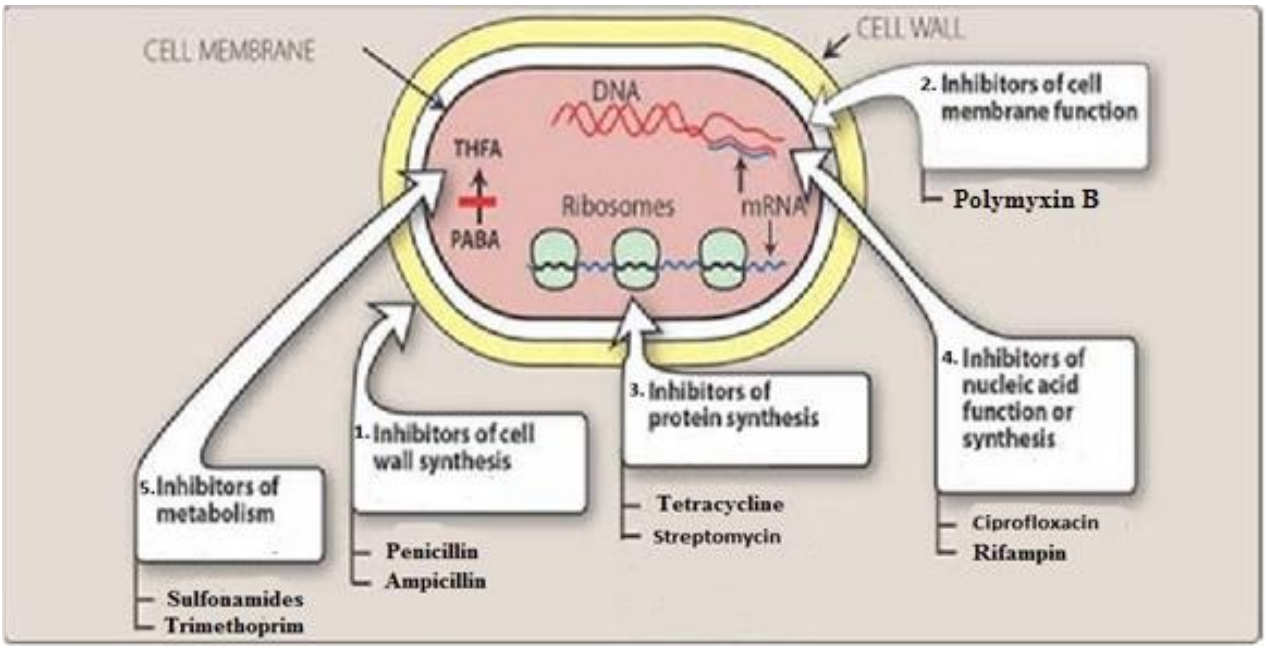
5. Interfere with bacterial metabolism by:

a. Competing with para-amino-benzoic acid (PABA) which is necessary for the synthesis of folic acid (e.g. sulfonamides).

b. Inhibition of the enzyme tetrahydrofolate reductase which is necessary for the synthesis tetrahydrofolate (e.g. trimethoprim).



Mechanism of action of Sulfonamides and Trimethoprim



General mechanisms of action of antibacterial drugs