

# Antibiotic

**Antibiotic:** It's a compound produced by living organism which inhibit or kills other organism.

It can be:

**Bactericidal:** antibiotic that kills the bacteria.

**Bacteriostatic:** antibiotic that inhibits the growth of bacteria.

## Types of antibiotics:

**1- broad-spectrum:** If it is effective against both gram +ve and gram -ve organisms.

**2- narrow-spectrum:** If it is effective against gram +ve only or gram -ve organisms only.

## Antibiotics mechanisms of action against bacteria:

1. Inhibition of DNA synthesis.
2. Inhibition of protein synthesis
3. Inhibition of cell wall synthesis
4. Inhibition of cell membrane function

## Antibiotic susceptibility test:

We have to test the susceptibility of bacteria to several antibiotics to check if the bacteria is sensitive or resistant to the used antibiotic.

## Methods of Antibiotic susceptibility test:

### **1) Kirby-Bauer method:**

We use:

- ❖ Muller Hinton agar (MH)
- ❖ Test bacteria (from the patient)
- ❖ Antibiotics discs

Result:

- If the bacteria are sensitive to the antibiotic we will see inhibition zone.
- If the bacteria are resistance to the antibiotic we will **NOT** see the inhibition zone.

## **2) Stoke's method:**

We use:

- ❖ Muller Hinton agar (MH)
- ❖ Test bacteria (from the patient) and  
Control bacteria (from the reference lab)
- ❖ Antibiotics discs

Result:

- If the inhibition zone of the test organism is **bigger** or **equal** to the inhibition zone of the control organism that means that the bacteria is sensitive to the antibiotic.
- If the inhibition zone of the test organism is **smaller** to the inhibition zone of the control organism that means that the bacteria is resistance to the antibiotic.

## **MIC (minimum inhibitory concentration):**

- ž This test to know the minimum concentration of antibiotic that can inhibit or kill the bacteria growth.
- ž **MIC of the test** is the last tube that shows **No** growth.