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):**

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