Antibiotics

- Antibiotic:

it is a compound produced by living organism which inhibit or kills other organism.

- It can be:

1. Bactericidal: Antibiotic that kills the bacteria.
2. Bacteriostatic: Antibiotic that inhibit the growth of bacteria.

Types of Antibiotic:

1. Broad-spectrum:

if the antibiotic is effective against both gram +ve and gram -ve bacteria.

2. Narrow-spectrum:

if the antibiotic is effective against gram +ve bacteria only or gram -ve bacteria only.

Mechanisms of action of antibiotic against the bacteria:

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

Antibiotic sensitivity test:

1) Kirby-bauer method:

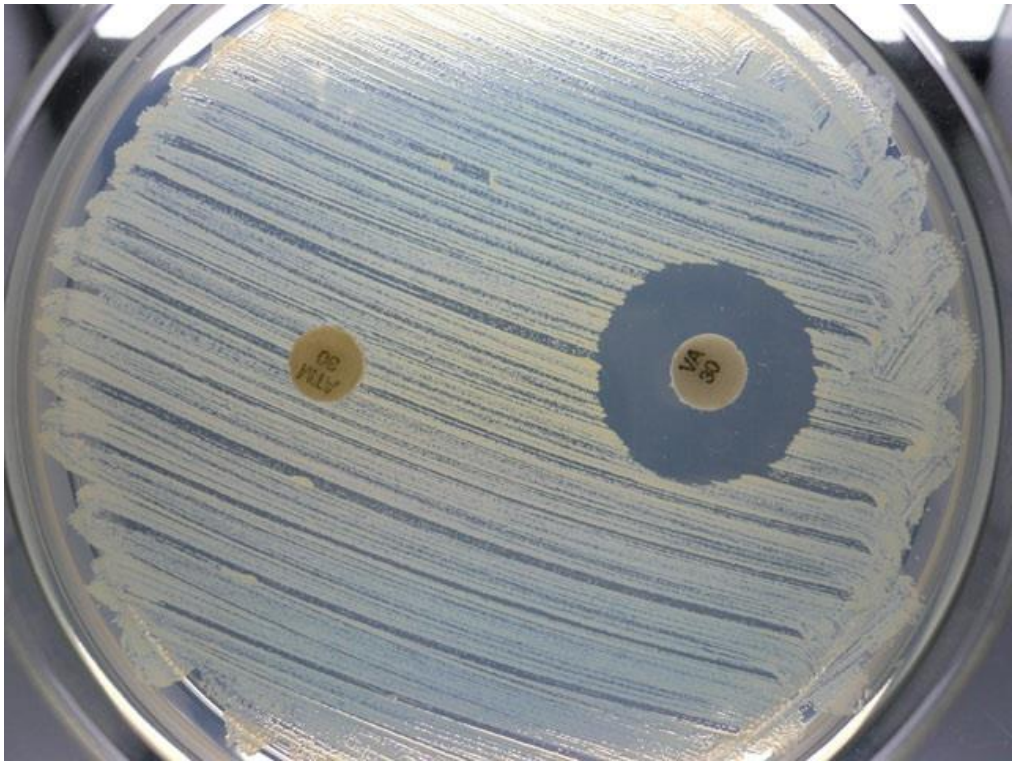
We use:

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

Result:

- If the bacteria is **sensitive** to the antibiotic we will see inhibition zone (clear area around the disc).
- If the bacteria is **resistance** to the antibiotic we will NOT see the inhibition zone.
- Measure diameter of the inhibition zone & see the table.

Kirby-bauer method:



2) Stoke's method:

We use:

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

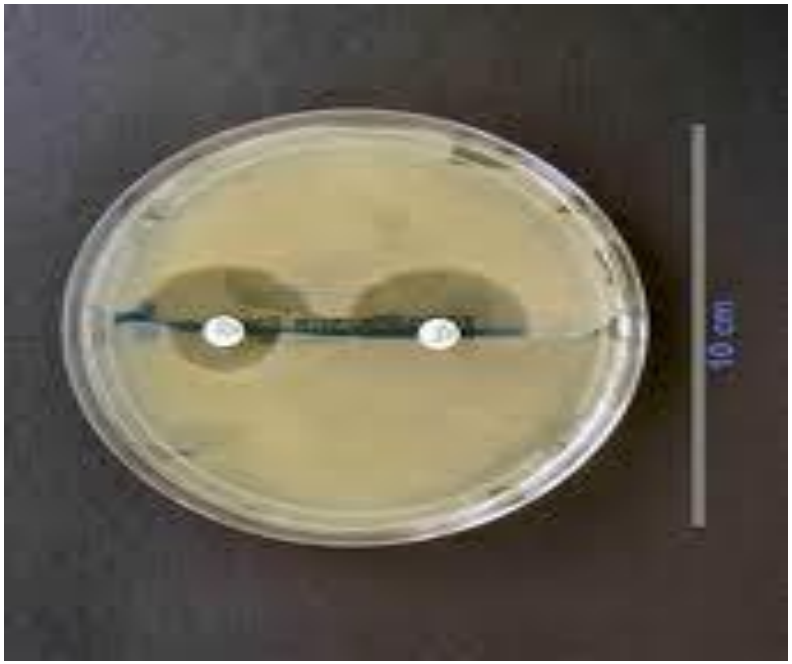
Control bacteria (from the reference lab)

- ❖ Antibiotics discs

Result:

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

Stoke's method



MIC
(minimum inhibitory concentration):

- This test to know the minimum concentration of antibiotic that can inhibit or kill the bacteria growth.

- That last tube that show no growth is the MIC of the test.

- See the previous lab for details.