

Antibiotic sensitivity tests

(Diffusion Test, KIRBY-BAUER METHOD)

Antibiotic sensitivity test: is a laboratory method for determining the susceptibility of organisms to therapy with antibiotics, Antibiotic susceptibility testing is usually carried out to determine which antibiotic will be most successful in treating a bacterial infection.

Principle of test:

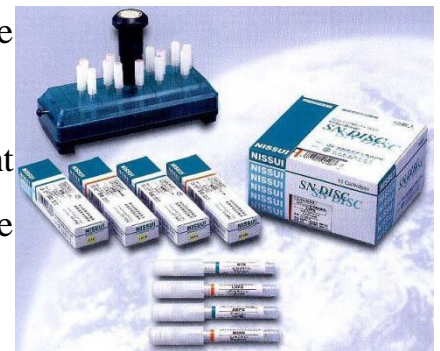
* The culture used for antibiotic sensitivity testing called the Muller Hinton Agar.

* Small filter paper disks containing a defined amount antibiotics are placed onto a plate upon which bacteria are growing.

*The antibiotic diffuses from the disk into the agar.

* If the bacteria are sensitive to the antibiotic, a clear ring, or zone of inhibition, is seen around the disk indicating poor growth.

* Using special comparators that interpret the diameter of the zones of inhibition, consequently the organism can be described as resistant, intermediate, or sensitive.

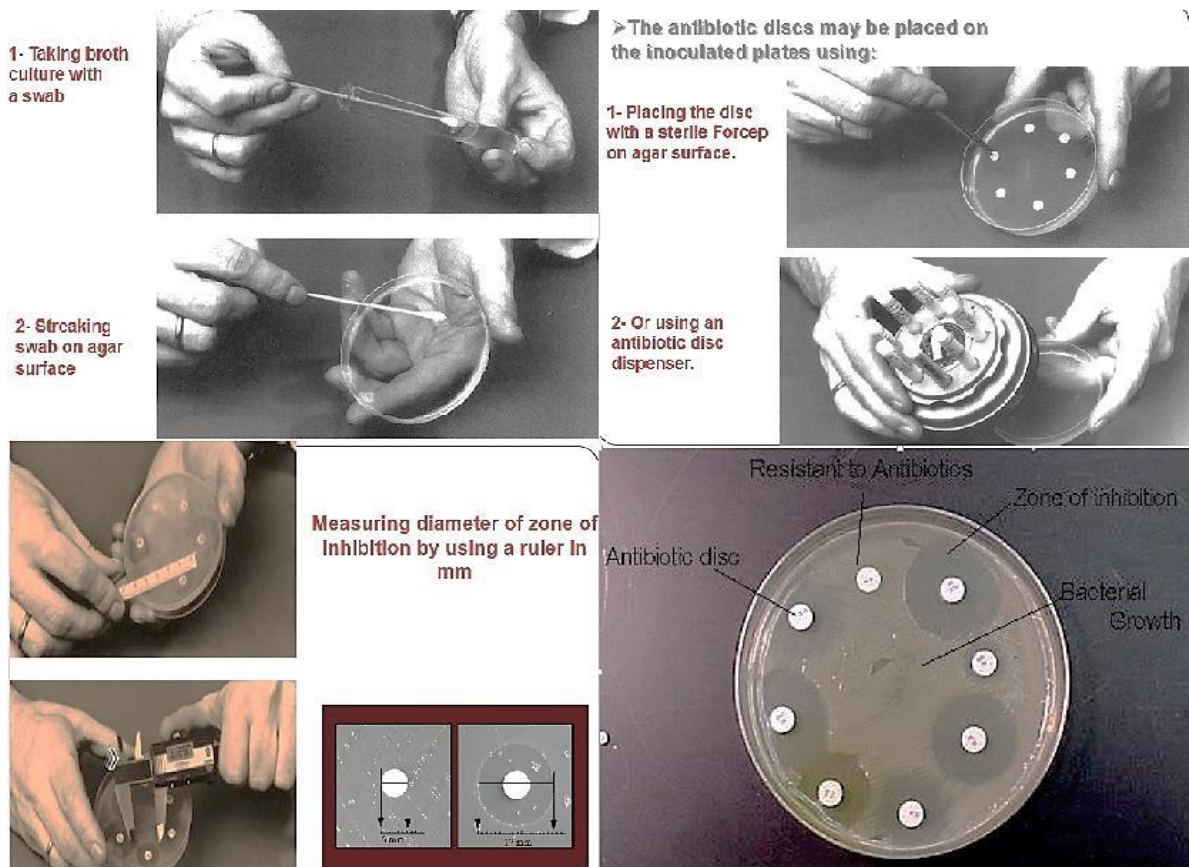


Procedure:

1- Mostly Muller Hinton agar is used in this antibiotic susceptibility test.

2- Take 24-48 hours old broth (Liquid) culture of bacteria to be tested and then do the suspension of inoculum bacteria and compared with McFarland standard.

- 3- Place a sterile cotton swab in the bacterial suspension and remove the excess fluid by pressing and rotating the cotton against the inside of the tube above the fluid level.
- 4- The swab is streaked in three directions over the surface of the Mueller-Hinton agar to obtain uniform growth. A final sweep was made around the rim of the agar.
- 5- Allow the plates to dry for five minutes.
- 6- Using sterile forceps or a suitable disc dispenser, place paper disks impregnated with a fixed concentration of an antibiotic, on the surface agar plates at equal distance.
- 7- Incubate the plates at 37oC for 24 hours.
- 8- Following overnight incubation, measure the diameter of the zone of inhibition in millimeter (mm) around each disk.



What do the results mean?

Results are usually described in one of the following ways:

Susceptible: The tested medicine stopped the growth or killed the bacteria or fungus causing your infection. The medicine may be a good choice for treatment.

Intermediate: The medicine may work at a higher dose.

Resistant: The medicine did not stop the growth or kill the bacteria or fungus causing the infection. It would not be a good choice for treatment.

The diameter of the zone depends on a number of factors including

- 1- the quantity of antibiotic within the disk
- 2- the degree of susceptibility of the bacteria to the antibiotic
- 3- The physicochemical properties of the antibiotic
- 4- The depth (in mm) of the agar plate
- 5- The concentration of bacteria in the inoculum (semiconfluent growth is required).