

Antibiotic:

An antibiotic is a type of antimicrobial substance active against bacteria. It is the most important type of antibacterial agent for fighting bacterial infections, and antibiotic medications are widely used in the treatment and prevention of such infections. They may either kill or inhibit the growth of bacteria.

There are various antibiotics available and they come in various different brand names. Antibiotics are usually grouped together based on how they work. Each type of antibiotic only works against certain types of bacteria or parasites. This is why different antibiotics are used to treat different types of infection. The main types of antibiotics include:

- Penicillins - for example, phenoxymethylpenicillin, flucloxacillin and amoxicillin.
- Cephalosporins - for example, cefaclor, cefadroxil and cefalexin.
- Tetracyclines - for example, tetracycline, doxycycline and lymecycline.
- Aminoglycosides - for example, gentamicin and tobramycin.
- Macrolides - for example, erythromycin, azithromycin and clarithromycin.
- Clindamycin.
- Sulfonamides and trimethoprim - for example, co-trimoxazole.
- Metronidazole and tinidazole.
- Quinolones - for example, ciprofloxacin, levofloxacin and norfloxacin.
- Nitrofurantoin - used for urinary infections.

As well as the above main types of antibiotics, there are a number of other antibiotics that specialist doctors or hospital doctors may prescribe for more uncommon infections such as tuberculosis (TB).

Antibiotic sensitivity test *

There is a large number of antimicrobial agents available for treating diseases caused by microorganisms. Such drugs are now an essential part of modern medical practice. The antimicrobial agents used in medical practice are aimed at eliminating the infecting microorganisms or at preventing the establishment of an infection.

Determination of bacterial resistance to antimicrobials is an important part of the management of infections in patients. The disk diffusion method of Kirby and Bauer has been standardized and is a viable alternative to broth dilution methods for laboratories without the resources to utilize the newer automated methods for broth microdilution testing.

Purpose The purpose of the Kirby-Bauer disk diffusion susceptibility test is to determine the sensitivity or resistance of pathogenic aerobic and facultative anaerobic bacteria to various antimicrobial compounds in order to assist a physician in selecting treatment options for his or her patients. The pathogenic organism is grown on Mueller-Hinton agar in the presence of various antimicrobial impregnated filter paper disks. The presence or absence of growth around the disks is an indirect measure of the ability of that compound to inhibit that organism.

Diffusion test (Kirby-Bauer disk diffusion method):-

Principle :-

It is to allow the drug to diffuse through a solid medium .

Procedure :-

- 1-incubation of pure bacterial growth in liquid medium .
- 2-spreading the bacteria with swabs on solid medium and allow to drying at 37C for 1/2 hour .
- 3-applied the antibiotic discs with sterilized forceps .
- 4-incubate at 37C for 24 hours .
- 5-note the zone of inhibition of growth around each antibiotic disc .

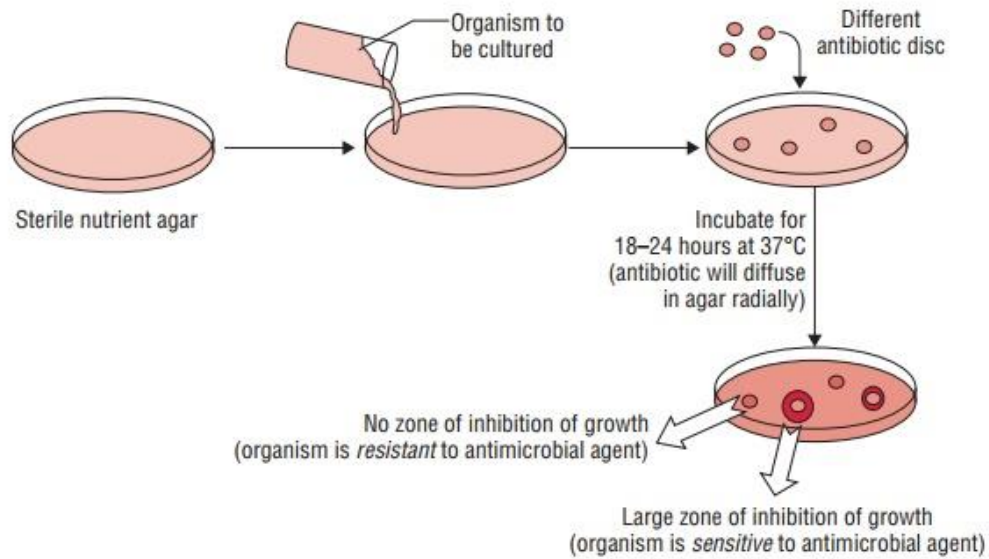


FIG. 9-3. Schematic diagram showing the performance of antibiotics sensitivity testing by disc diffusion method.

Result :-

The result are reported as sensitive or resistant .

Sensitive =S

Resist =R

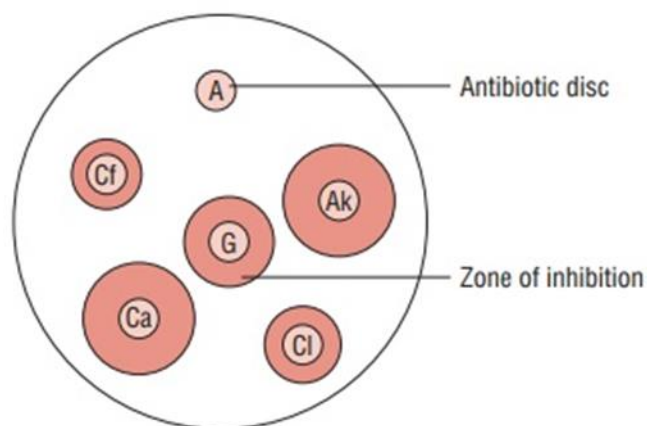
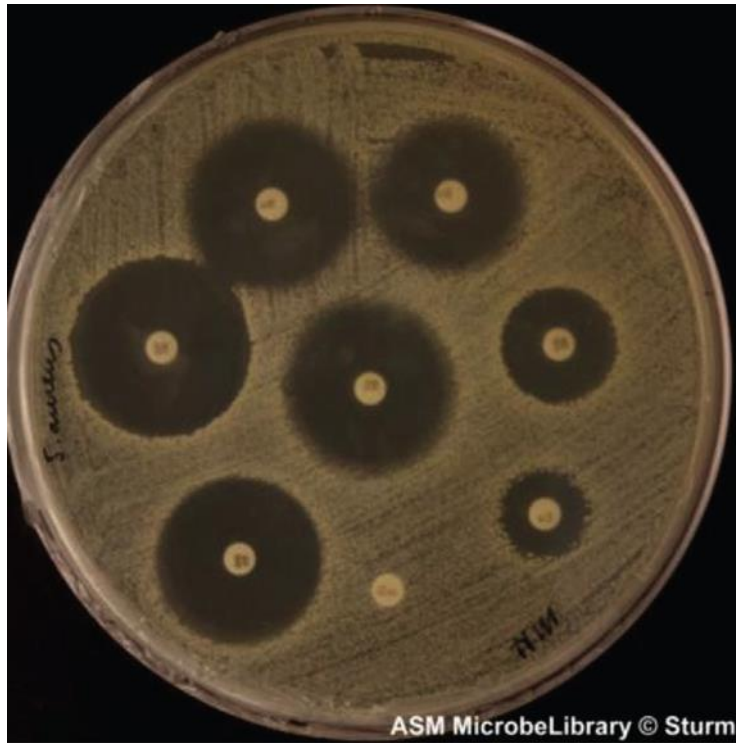


FIG. 9-4. Schematic diagram showing Kirby-Bauer disc diffusion method of antibiotic sensitivity.



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