Kirby-Bauer Antibiotic Sensitivity Test

Review disk diffusion tests.

Agar plates were covered with bacteria using swabs.

Paper disks saturated with three different antibiotics (P = penicillin, S = streptomycin, Te = tetracycline) were applied to the surface of agar plates.

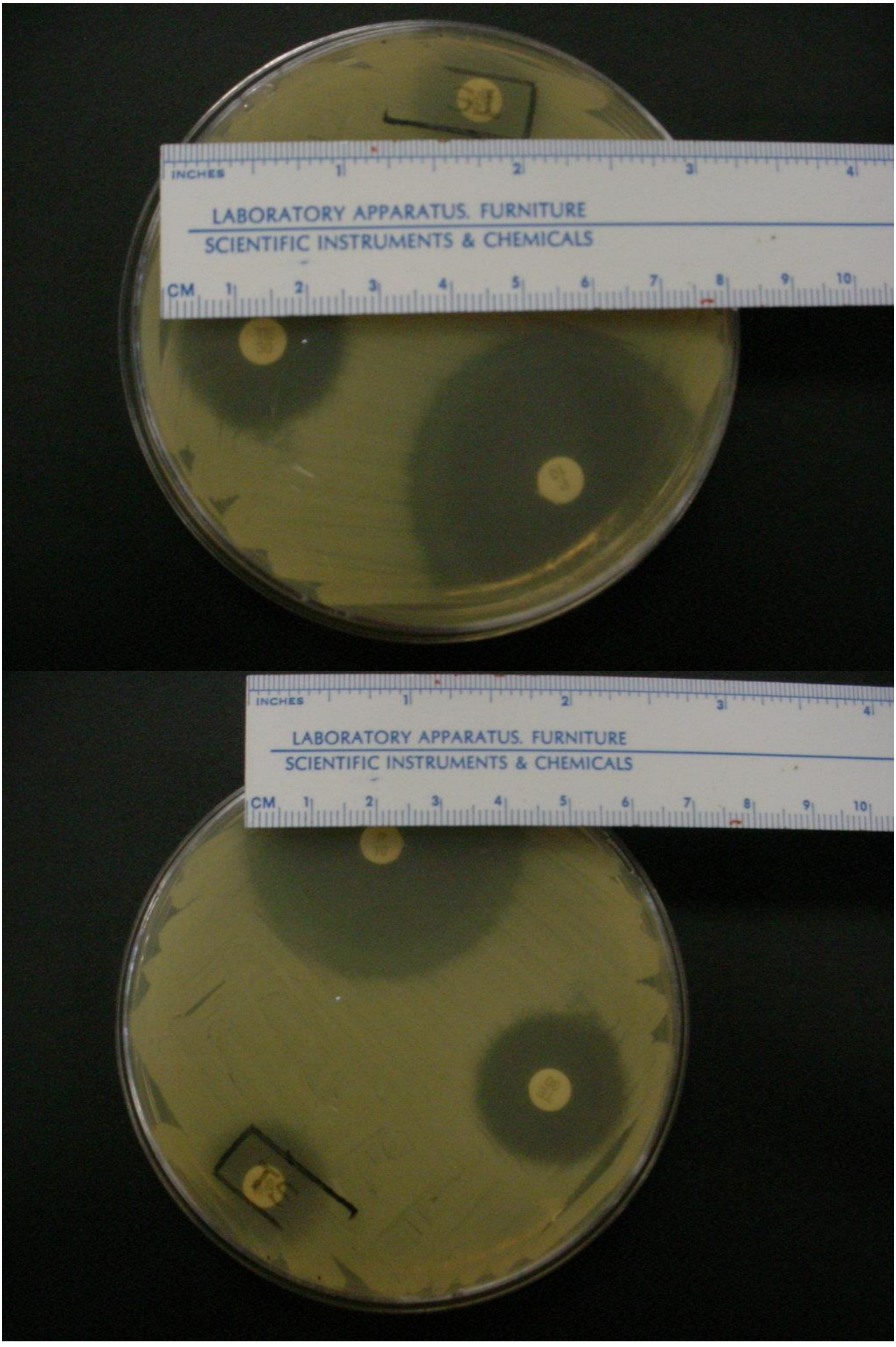
In this case, the three factors affecting diffusion of chemicals thru agar (neutralization, dilution, and diffusion) do not apply. The disk diffusion test has been standardized for each antibiotic.

After incubation, the zones of inhibition are measured and those values are compared to standard values to determine susceptibility or resistance.

The reason why the zones of inhibition have to be measured is because how well an antibiotic works on an agar plate does not necessarily represent how well the antibiotic will work in the body. Your body tries to break it down (liver detoxifies) and excrete it in urine and feces. An agar plate cannot detoxify or excrete. Even though, there may be a significant zone of inhibition, it may not be large enough for the antibiotic to be considered effective in the body.

Antibiotic (and disc identifier)	**Disk potency**	**Inhibition zone diameter to nearest mm**		
		Resistant	Intermediate	Susceptible
Chloramphenicol (C)	30 µg	12 or less	13 to 17	18 or more
Penicillin G (P)	10 units			
For staphylococci		28 or less	-	29 or more
For most other bacteria		11 or less	12 to 21	22 or more
Streptomycin (S)	10 µg	11 or less	12 to 14	15 or more
Tetracycline (TE)	30 µg	14 or less	15 to 18	19 or more

In the two images below, you can see that the zone of inhibition for Te (tetracycline) is ~25 mm. Looking at the chart above, you see that 19 mm or more indicates that the organism is susceptible to tetracycline. The zone of inhibition for P (penicillin) is ~43 mm. Looking at the chart above, you see that 29 mm or more indicates that the organism is susceptible to penicillin. If the zone of inhibition is very small or non-existent, the organism would be considered resistant to the antibiotic.


INCHES
LABORATORY APPARATUS. FURNITURE
SCIENTIFIC INSTRUMENTS & CHEMICALS
CM
INCHES
LABORATORY APPARATUS. FURNITURE
SCIENTIFIC INSTRUMENTS & CHEMICALS
CM