



# THE EFFECTS OF CHEMICAL AGENTS/ANTIBIOTICS ON BACTERIA

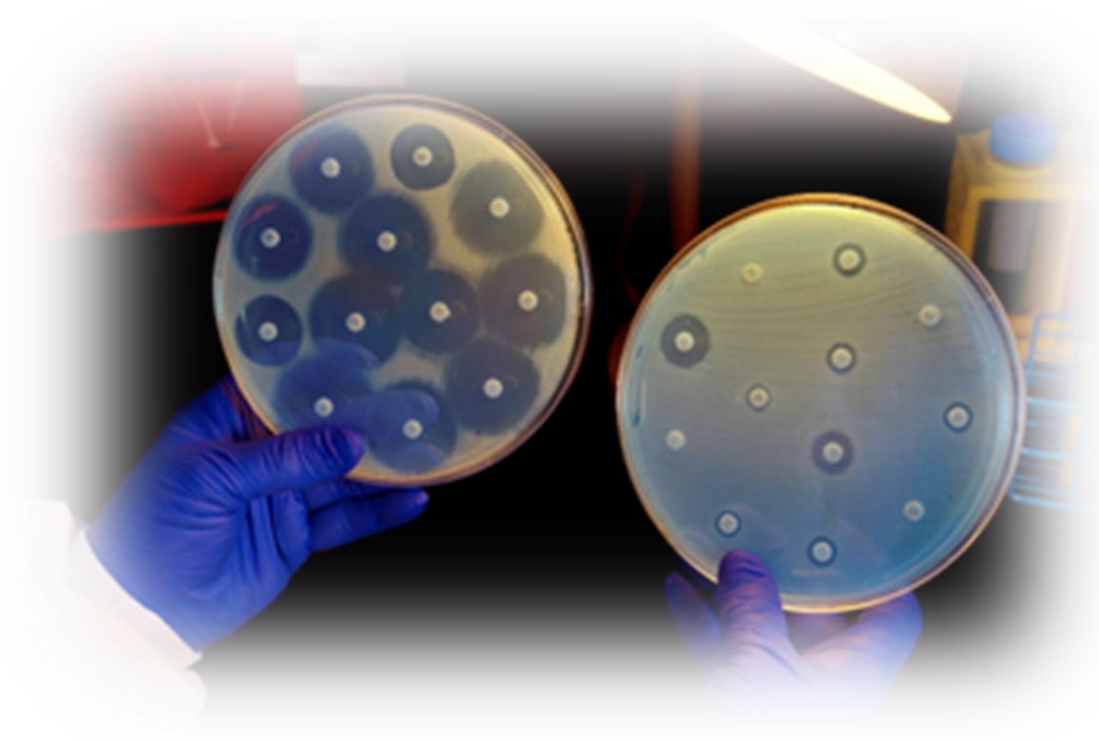
“ 240 MIC ”

نورة الكبيسي

Nalkubaisi@ksu.edu.sa

2021

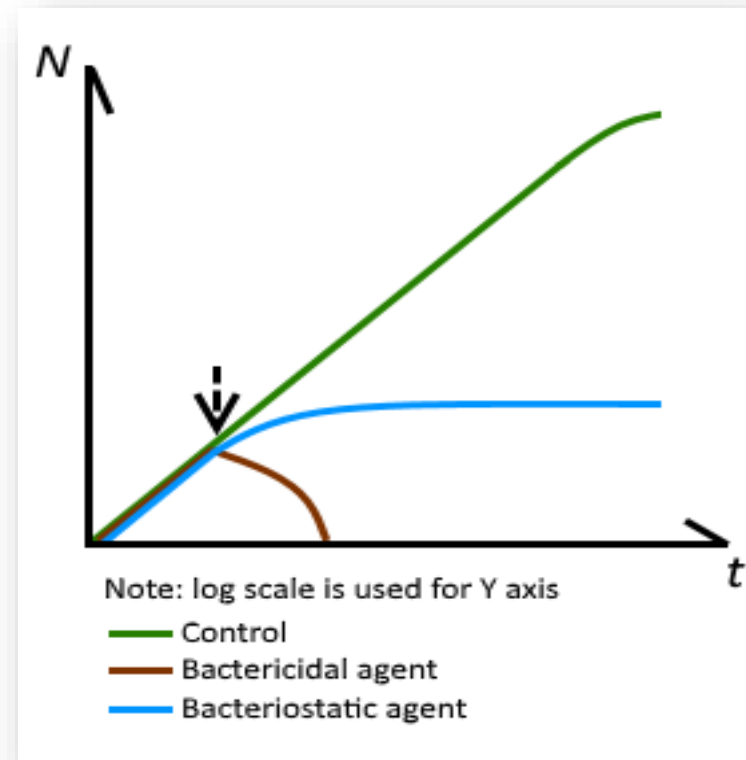
Microbial control using **antibiotics** and **disinfectants** (chemicals)  
has become an important aspect of microbiology.



## CHEMICALS

**Many factors influence the effectiveness of chemical disinfectants and antiseptics.**

The **microbicidal** (to kill) or **microbiostatic** (to inhibit) efficiency of a chemical is often determined with respect to its ability to deter microbial growth.



# ANTISEPTICS

The preparations of chemicals that are meant to be applied to skin or other living tissues to decrease the number of microbes are called antiseptics.

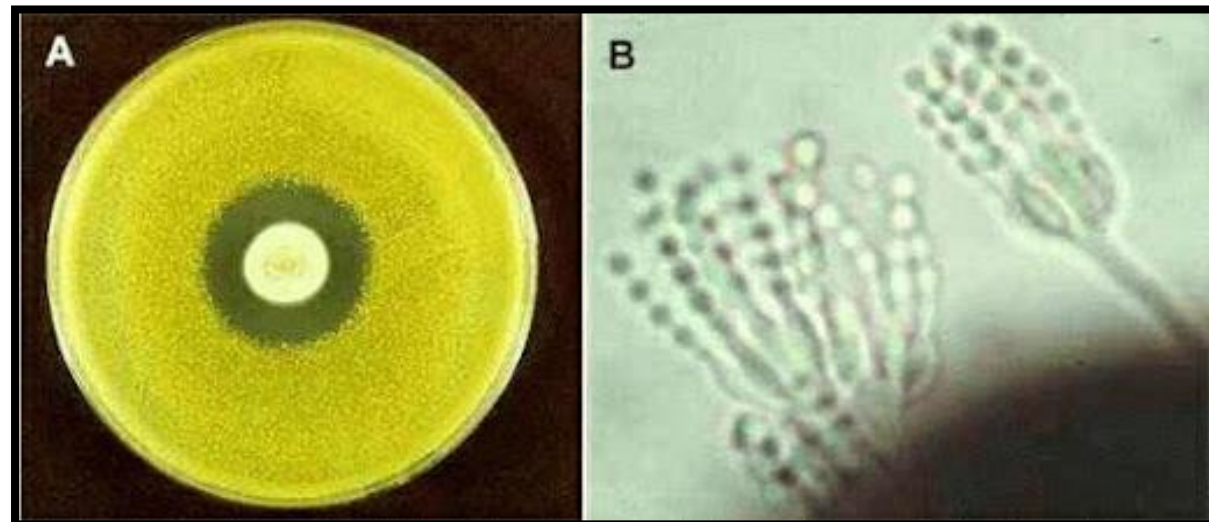
- ✓ **Ethanol** and **isopropanol** are used to reduce the number of microbes on skin.
- ✓ **Iodine** compounds (**Betadine**) are good antiseptics.
- ✓ **Surfactants** (soap or detergents) help in physically removing microorganisms.



## ANTIBIOTICS

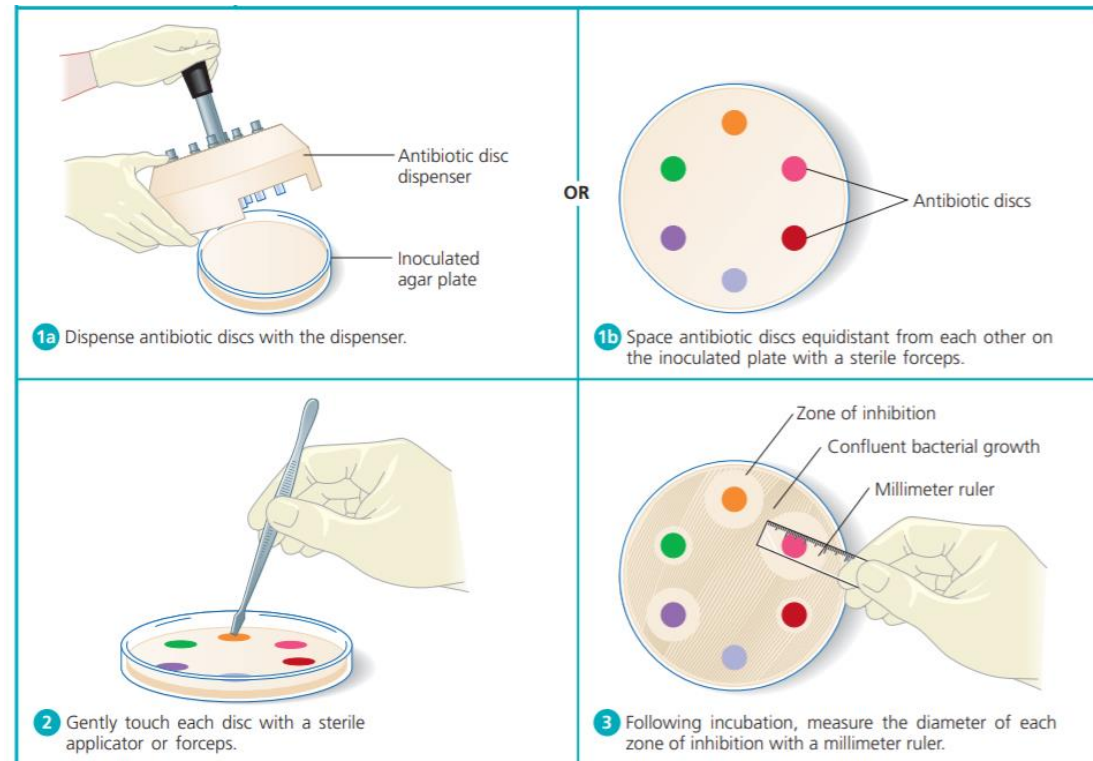
**a Standard method used by physician to treat bacterial disease.**

- ✓ The **first antibiotic** was found by *Alexander flaming*.
- ✓ It was **penicillin** that produced by *Penicillium sp.*
- ✓ Since the discovery of penicillin, many other useful antibiotics have been developed.
- ✓ When a disease-causing bacterium is isolated from patient, suitable antibiotics must be determined by the physician for administer treatment.

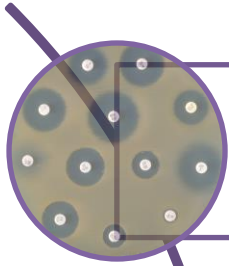


One method that is used to determine antibiotic susceptibility is the sensitivity disk method of **Kirby- Bauer** (named after W. Kirby and A. W. Bauer in 1966).

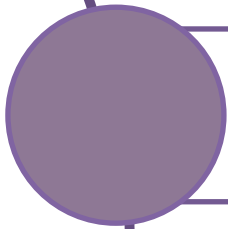
- ✓ The Kirby-Bauer method is not restricted to antibiotics.
- ✓ It may also be used to measure the **sensitivity** of any microorganism to a variety of antimicrobial agents such as sulfonamides and synthetic chemotherapeutics.



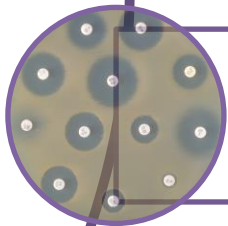
# Evaluation of antiseptics by filter paper disk method



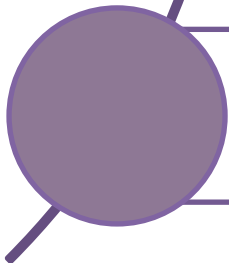
This exercise deals with the evaluation of antimicrobial activity of three antiseptics (tincture of iodine, ethanol (75%), Listerine), against bacteria.



A sterile filter paper disk is impregnated with an antiseptic and placed on a fresh heavily inoculated agar plate of a test organism.



Following incubation the agar plate is looked for a **zone of inhibition**.



The presence of a **clear zone of inhibition surrounding the disk** is **indicative of inhibitory activity against the organism**

**The End**

