# MICROBIOLOGICAL ASSAY

Principal and Methods of different microbiological assay :

- Method for standardization of antibiotics , vitamins and amino acids

- Assessment of a new antibiotics

# Microbiological Assay :

Also called as microbial assay

- A microbiological assay defined as quantitative or qualitative determination of chemical compounds (antibiotics , vitamins and amino acids) with the use of microorganism .

- It is necessary to assay antimicrobial

agent , for determination of potency of a drug in animals or man and monitoring antimicrobial chemotherapy .

## Microbiological Assay of Antibiotics (method for standardization of antibodies):

- It is based upon a comparison of the inhibition of growth of micro – organism by measured concentration of the antibiotics under examination

(test antibiotics) with the known concentration of a standard known antibiotics preparation .

★ Two general methods are usually employed ,

1) Cylinder – plate OR Cup – plate Method
2) Turbidimetric OR Tube assay Method

# Preparation For Microbiological Assay :

- Preparation of media and buffer solution .
- Selection of microorganism
- Preparation of test and standard solutions of antibiotics .

{ 3 layer – 1 , 3 (Agar medium) }

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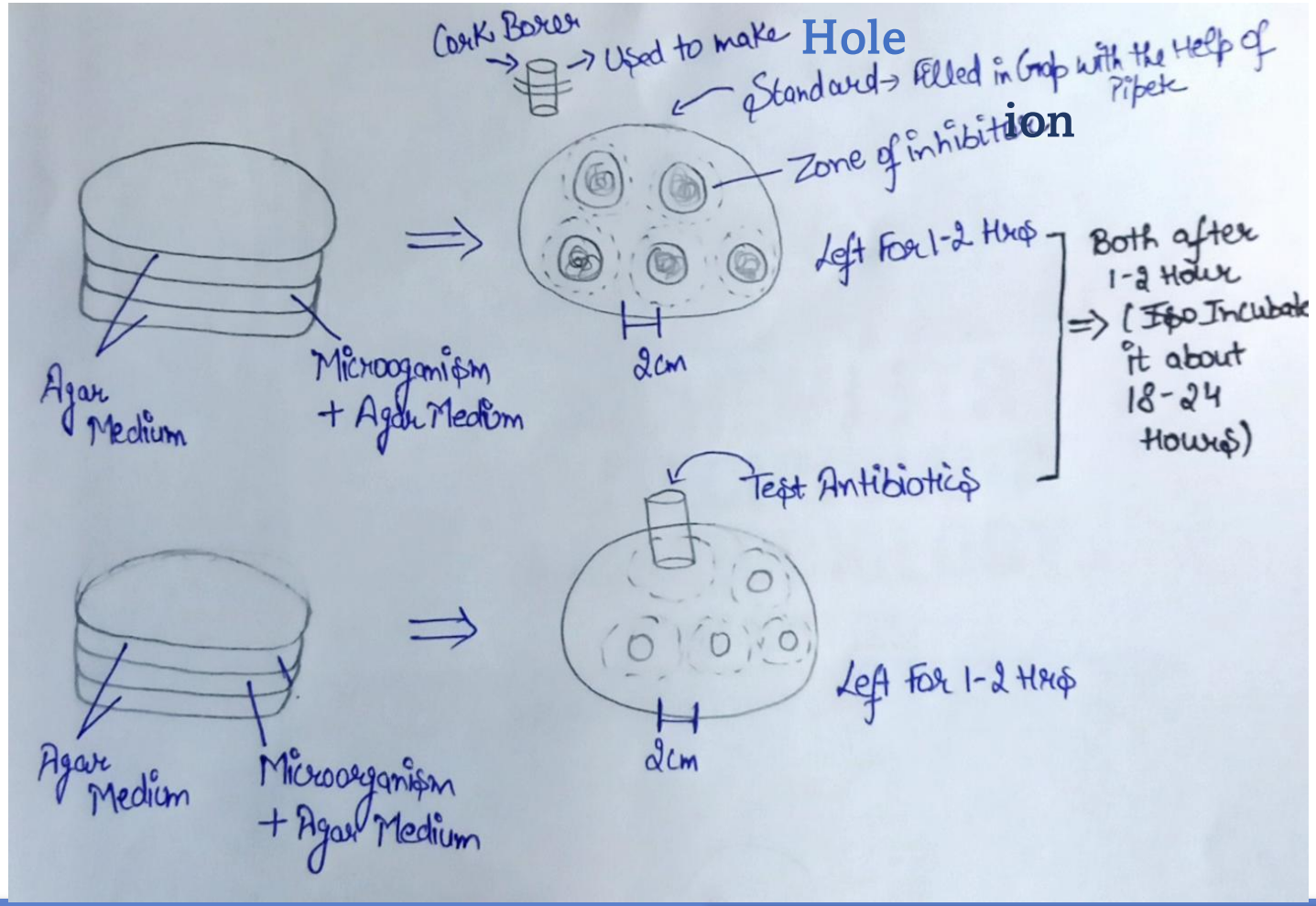
- Microorganism E.g. – Bacillus pumilus , Staphylococcus epidermis etc .

# 1) Cylinder – plate OR Cup – plate Method



## ★ Comparison :

### ➞ Instandard Solution :

We provide Favorable temperature , Favorable Agar solution

For growth of bacteria , but in standard solution Antibiotic inhibit growth of bacteria and this zone is called zone of inhibition

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## In Test Antibiotics :

If some zone diameter appear

E.g. – suppose 2 cm in standard and 2 cm comes in Test (kill microbes)

Then it's equal to standard and test antibiotic is okay and If not in equal range then

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Potency of test antibiotic is not good

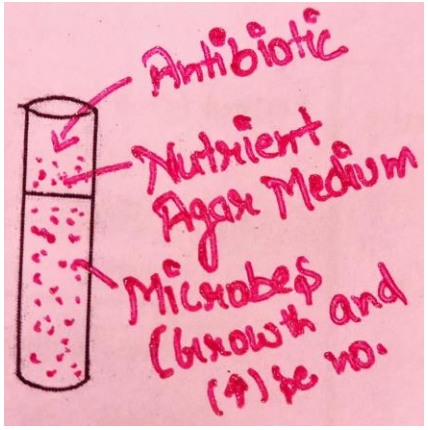
## Method 2 :

### Turbidimetric OR Tube assay Method :

→ This method depends upon the growth of microbial culture in a uniform solution of the antibiotics in a fluid medium that is favorable to its

rapid growth in the absence of the antibiotics .

→ It has a shorter incubation periods for the growth of test microorganism (4 to 5 hours) .




Test Tube

→ Because of agar Medium

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Antibiotic → Inhibit Growth

Agar Medium → Promote growth of microorganism

★ As a result (Turbidity appears)

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So this method is not recommended for cloudy or turbid preparation

## Turbidity

### More Turbidity

It means more presence of microorganism

### Less Turbidity

It means Less presence of microorganism

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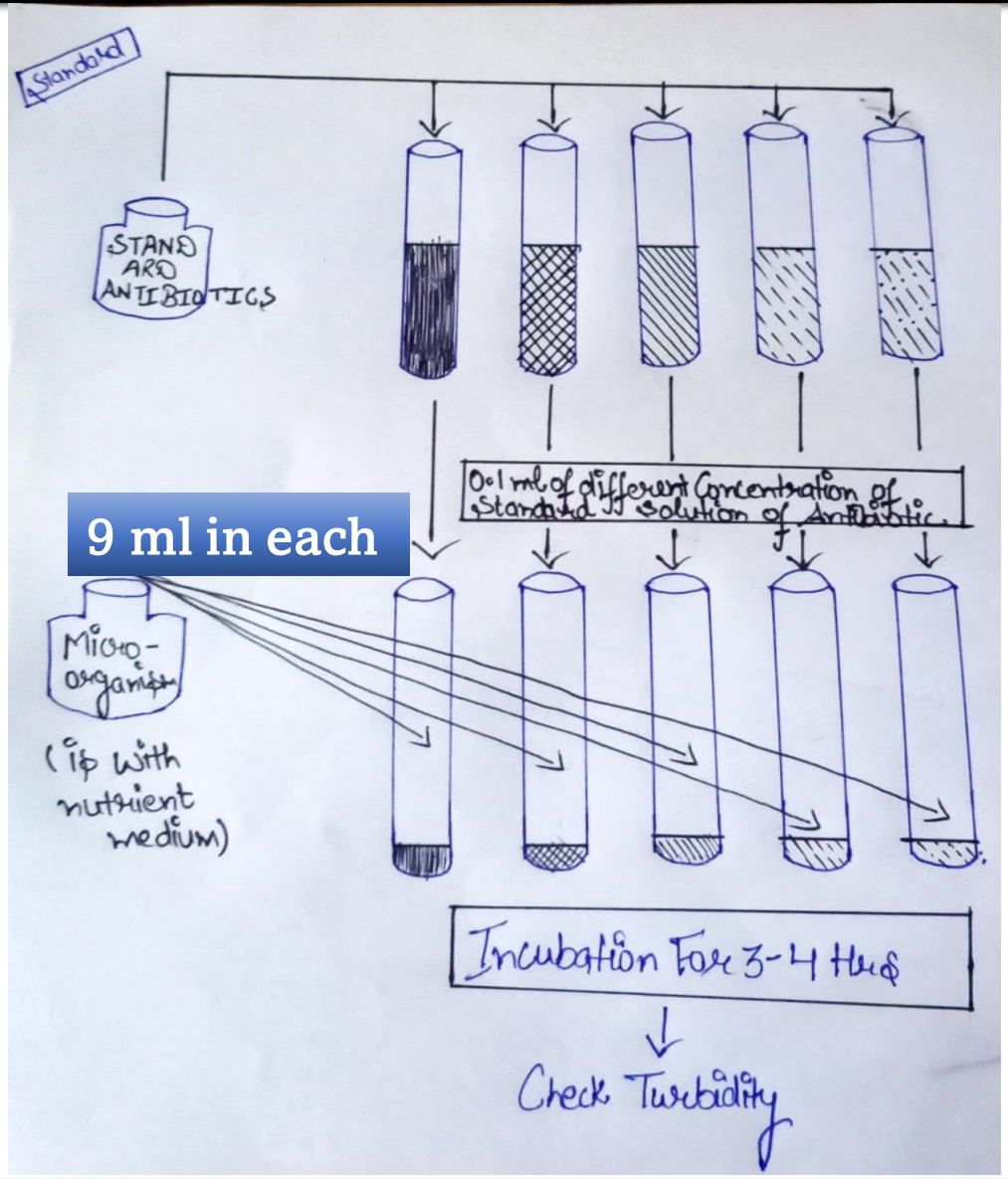

At the same time →

Three control tubes , one containing the inoculated culture Media , second treated with 0.5 ml of dilute formaldehyde solution (blank) and third containing un – inoculated culture Media are prepared

## Same For test →

If test turbidity increases as compared to standard

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Then test is not prefect (because more turbidity more microorganism)