Culture Methods

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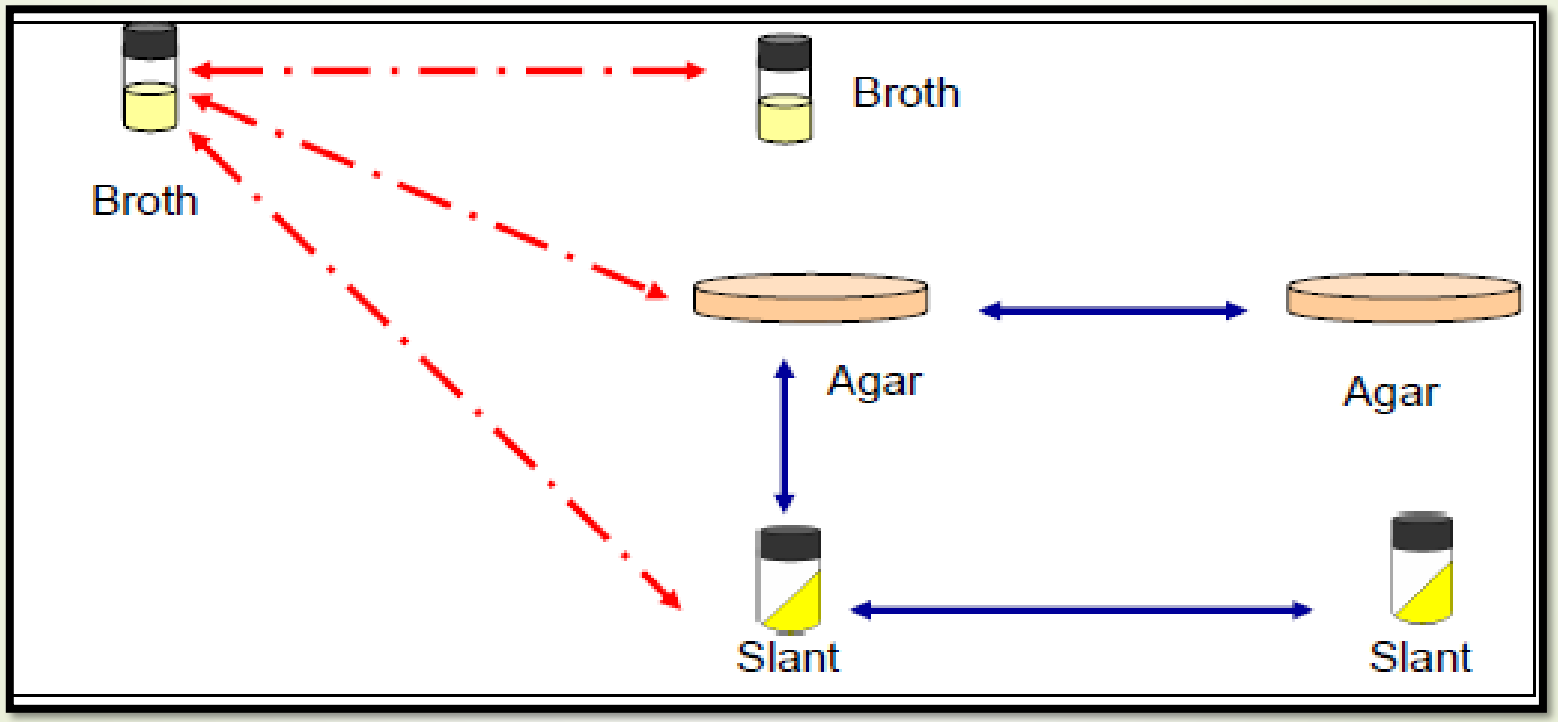
Culture :It is growing of microorganisms on a culture medium

Pure culture: It is growing of a single bacterial species on a culture medium, to be able to study its cultural, morphological, and physiological characteristics.

Mixed culture: It contains two or more different bacteria

Colony: It is a large number of bacterial cells on solid medium,which is visible to the naked eye

Subculture : It is transferring of microorganisms from one culture medium to another by using specific procedures.



Types of bacterial culture methods

Bacteria can be cultured in 3 main different methods

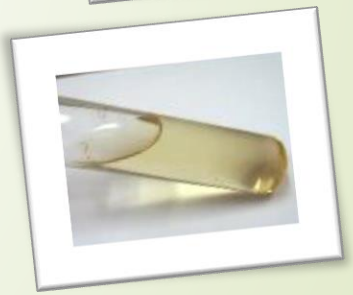
A. Bacterial cultured in liquid media

B. Bacterial cultured on solid media

C. Bacterial cultured in semisolid media







A. Bacterial growth in liquid media (growth phenomena)

1. Turbidity : Most bacteria produce turbidity as a result of growth in liquid media like *Escherichia coli*.

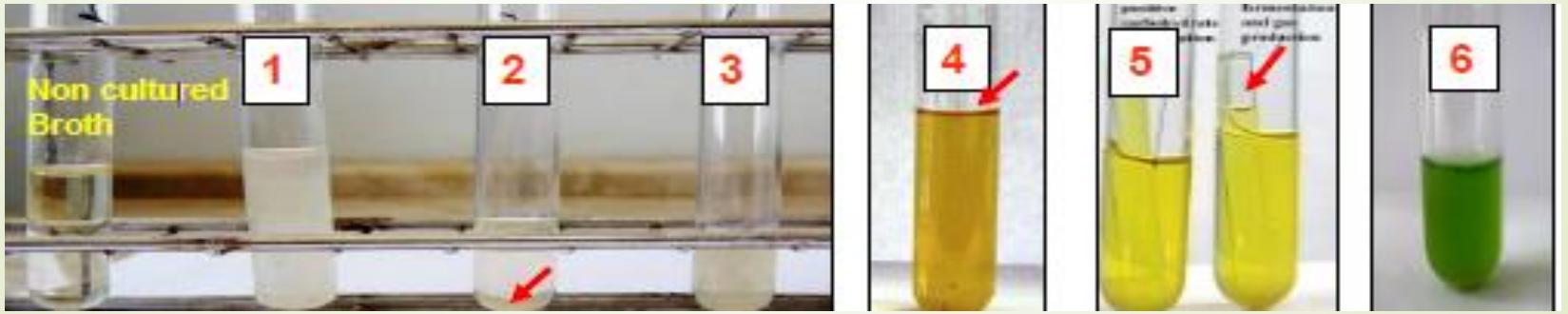
2.Sediment formation : *Staphylococcus spp*.

3.Slime: *Klebsiella pneumonia*

4.Pellicle formation: *Bacillus spp*

5.Gas : *Escherichia coli*

6.Exopigmentation : *Pseudomonas aeruginosa*



B. Bacterial growth in solid media



1- Streak plate method



2- Spreading plate method

Methods used for pure culture techniques



3.Agar slop method

A method used for preservation of stocks and performing biochemical test.

Methods of cultivating microorganisms on culture media :-

1- streak plate method: is the most common method to get pure cultures of bacteria.It involves dilution of the bacteria so that the individual bacterial species can be selected from the others.

An inoculating loop is sterilized first, and then a loop with bacteria either from solid culture (colony) or liquid broth is streaked over a nutrient plate.

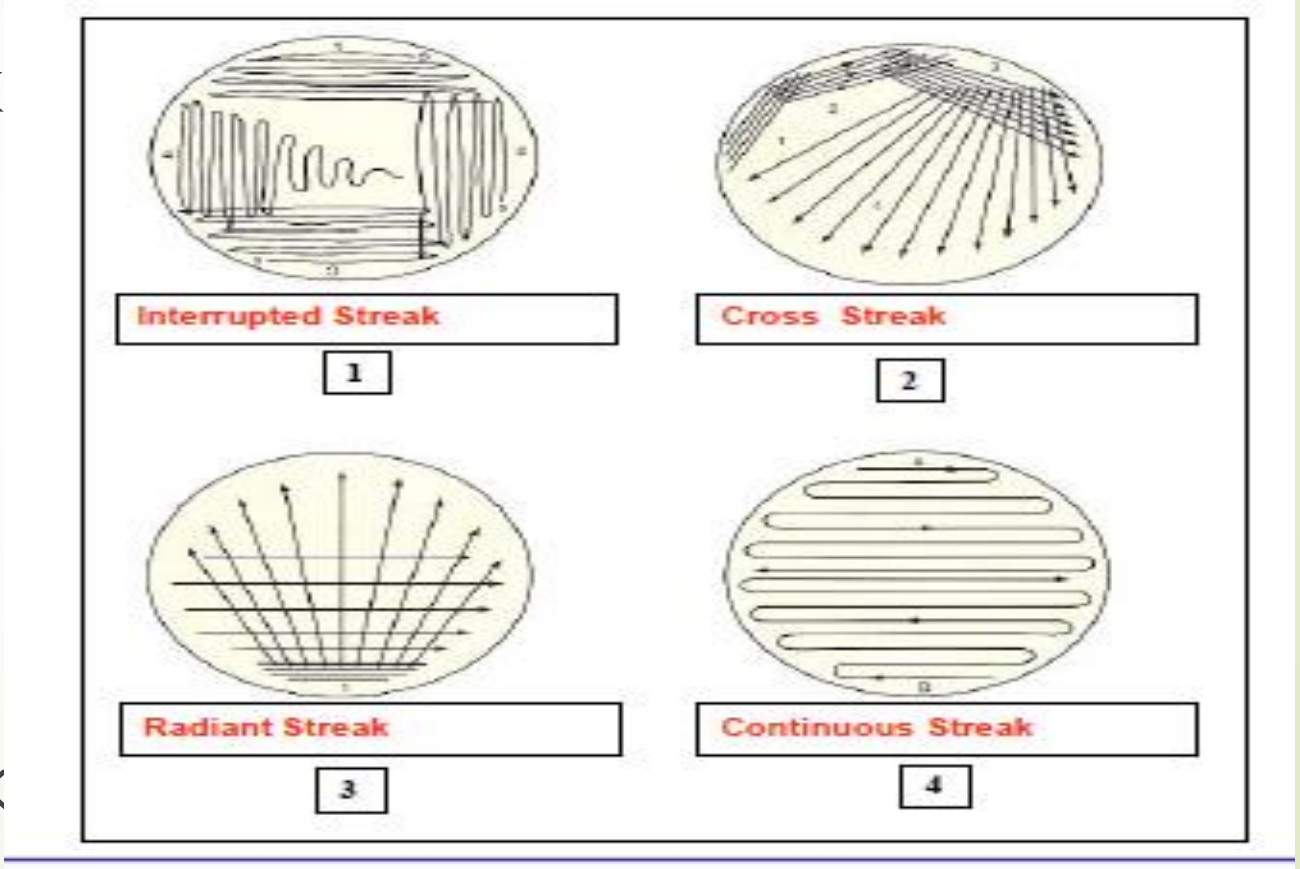
Streak Patterns

1. Interrupted Streak

2. Cross Streak

3.Radiant Streak

4. Continuous Streak



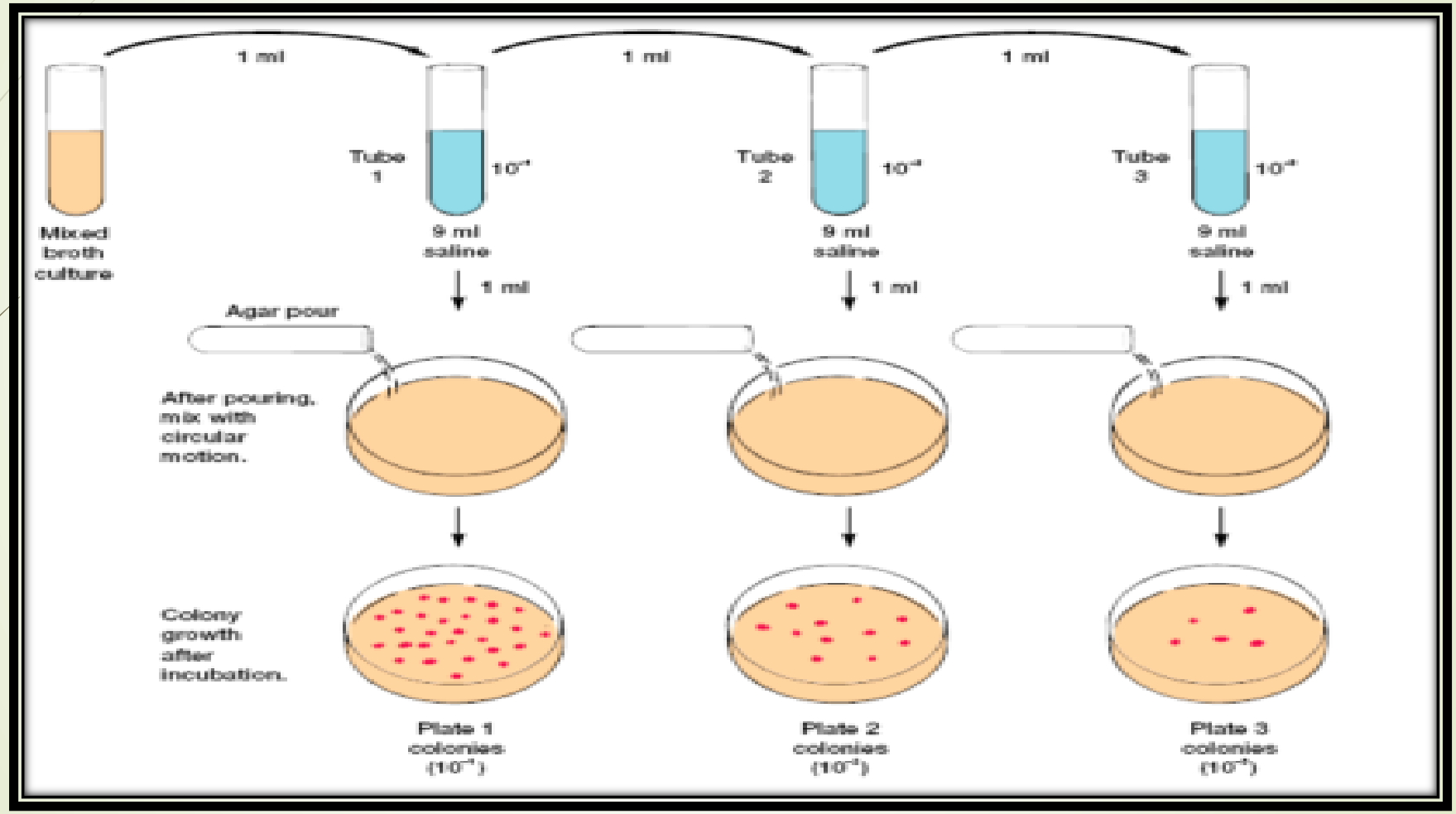
2- Pour Plate Method

1.The original sample is diluted several times to decrease or dilute the population sufficiently.

2. A volume of 1 ml of each dilution is then dispensed into the bottom of a Petri plate.

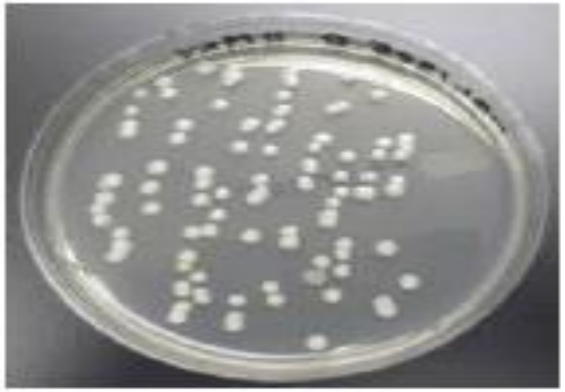
3.Agar is then poured into to each plate and left to solidify.

4. The surface colonies are circular and large, subsurface colonies are lens shaped and much smaller.


1 ml
1 ml
1 ml
Tube 1
Tube 2
Tube 3
10^{-1}
10^{-2}
10^{-3}
Mixed broth culture
9 ml saline
9 ml saline
9 ml saline
1 ml
1 ml
1 ml
Agar pour
After pouring, mix with circular motion.
Colony growth after incubation.
Plate 1 colonies (10^{-1})
Plate 2 colonies (10^{-2})
Plate 3 colonies (10^{-3})

3. Spreading Plate Method

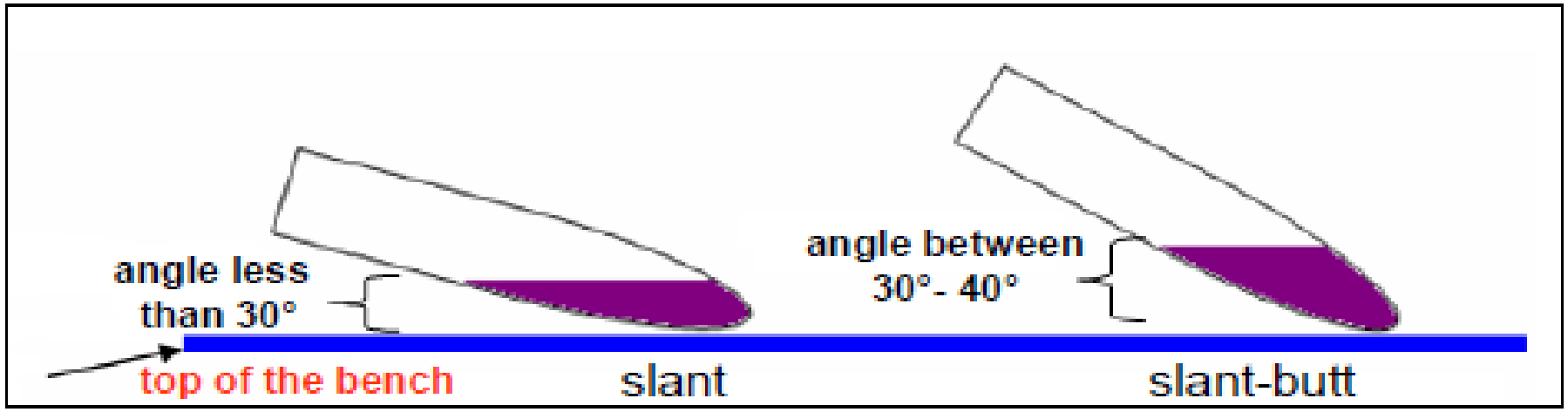
1. Pipette 0.1 ml of the diluted broth onto the surface of a plate of nutrient agar.
2. Spread the inoculum over the surface of the agar with a bent glass rod (L shape).
3. Incubate the plate, inverted, at 37° C for 24 hours.





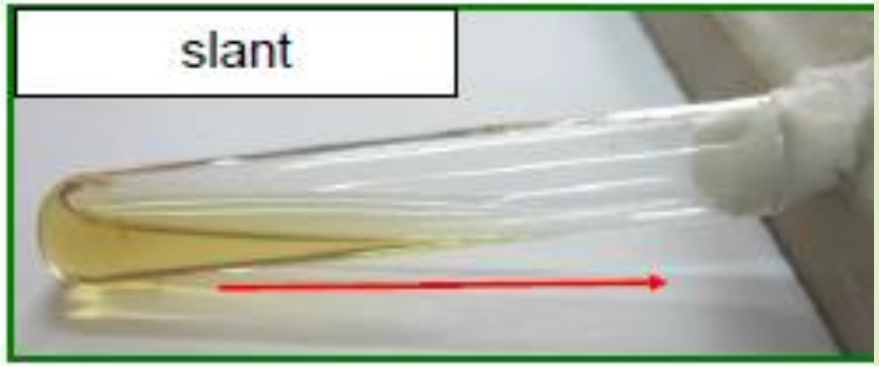
4. Agar Slop Method

- The test tubes are held at a slant (angle less than 30°) and are allowed to solidify on an angle, called a **slant**.
- The test tubes are held at a slant (angle between 30°- 40°) and are allowed to solidify on an angle, called a **slant - butt.**



- A slant increases the surface area for organism growth.
- This method is used for preservation of bacterial stocks and performing biochemical tests.





C . Growth in Semisolid Media

- These media are used for:
- Motility test, to Determine whether certain bacteria are motile .
- Gelatin hydrolysis test, as certain bacteria have the ability to hydrolyze Gelatin.

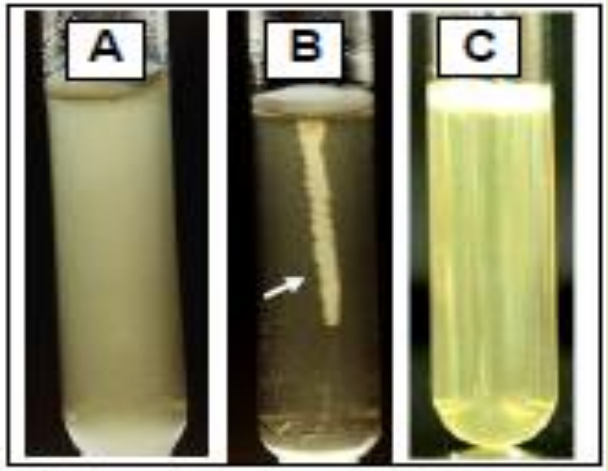
Motility test



Flame the inoculating needle.



Make a deep stab inoculation with tested bacteria into the semi solid medium



A- Motile bacteria.
B- Non motile bacteria.
C- Uninoculated medium.

Thanks