

Culture Media

Culture Media used in Microbiology



Common Contents of Culture Media

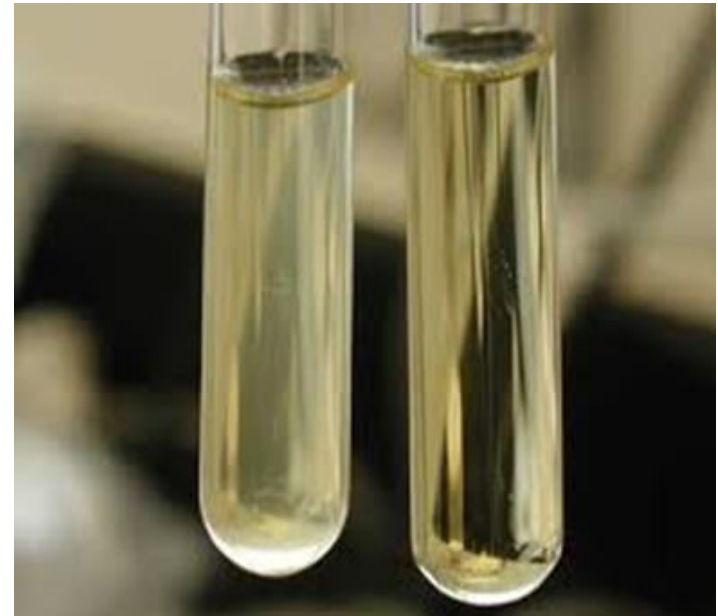
- **Water:** essential for bacterial growth (deionized or distilled water is used).
- **Peptone:** it is hydrolyzed animal or plant protein, used as a source of nitrogen which help bacteria to make a.a. and proteins.
- **Meat extracts:** it provide the bacteria with amino acid, vitamins, mineral salts (phosphate and sulphate).
- **Yeast extract:** used to stimulate the growth of bacteria

- **Mineral salts:** media should contain little amount of: Mg, k, Fe, Ca>> which is essential for stimulate bacterial enzyme activity.
- **Carbohydrates:** to provide the bacteria with energy and carbon.
- **Agar:** its inert polysaccharide extracted from seaweed or marine algae.
 - Used as solidifying agent.
 - Dissolves at 90-100 C
 - Solidify at 45 C

Forms of Culture Media

1. Liquid form:

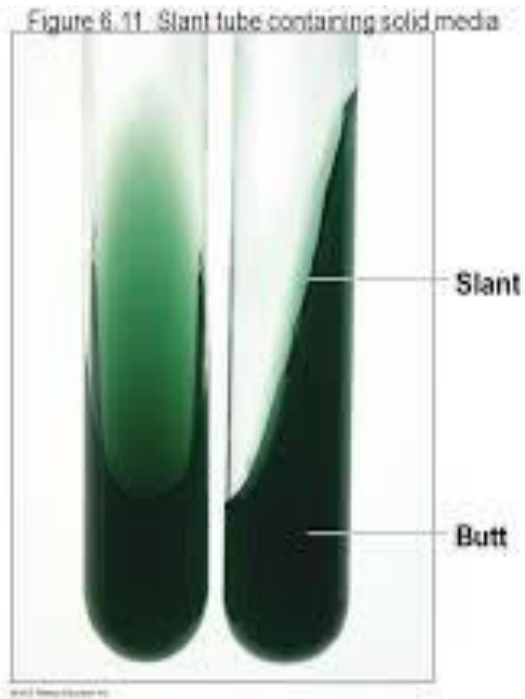
- Called: broth.
 - Without agar (solidifying agent).
 - Used to grow bacteria in large quantity.
- Growth of bacteria-----> **turbidity**
- No growth -----> **clear**



2- Solid form:

- With agar.
- Its can be:
 - **Slant:** used to keep the bacteria for long period of time (3 months)
 - **Deep agar:** keep the organism for long time.
 - **Agar plate:** to get pure culture of bacteria (isolated colony).

Slant



Deep



Agar plate



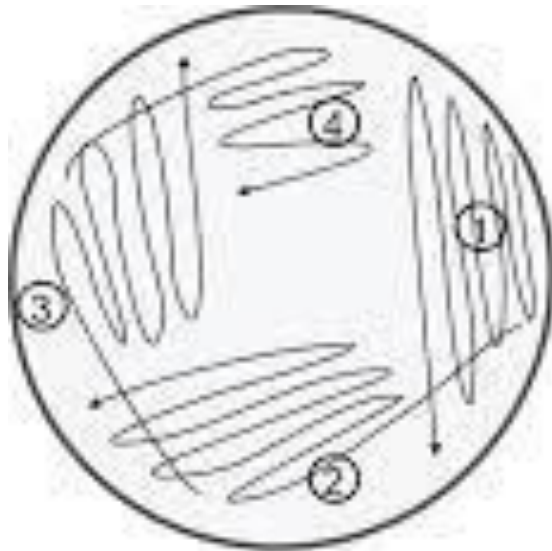
Pure culture:

It is Culture containing only one type of bacteria.

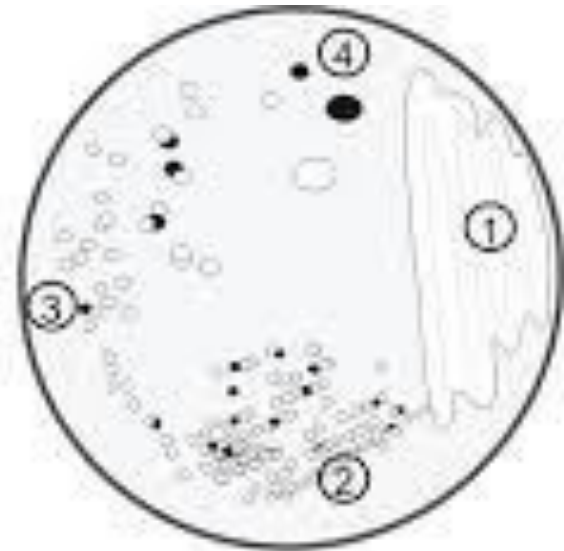
Inoculation or Streaking:

Putting (culture) of organism into the media

Streaking



(a)



(b)

Types of Culture Media

1- Basal media:

It allow the growth of most non-pathogenic bacteria.

Ex: Nutrient agar (NA).



2- Enriched media:

It is basal media has been enriched by adding blood, serum or protein.

It allow the growth of fastidious and pathogenic bacteria.

Ex: Blood agar (BA).



3- Selective media:

Inhibit the growth of some bacteria and allow the growth of others by adding inhibiting agnt.

Examples:

a. Macconkey agar (Mac):

- Inhibiting agent>> bile salt & crystal violet
- It allow the growth of gram –ve bacteria and inhibit the growth of gram +ve bacteria

b. Eosin methylene blue agar(EMB):

- Inhibiting agent>> methylene blue
- It allow the growth of gram –ve bacteria and inhibit the growth of gram +ve bacteria.

Mac



EMB



4- Differential media:

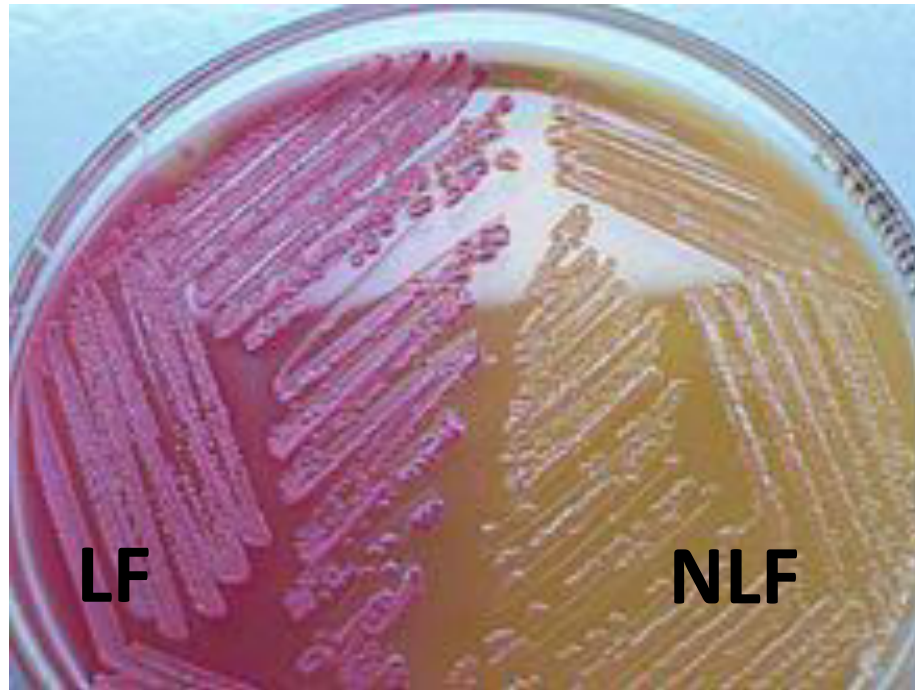
Contain indicator which differentiate between two types of bacteria.

Examples:

a. Mac:

- Use it to differentiate between lactose fermenting (LF) & Non-lactose fermenting (NLF) bacteria
- LF>> pink colonies NLF>> yellow colonies
- The media contain: Sugar (lactose), Indicator (neutral red)

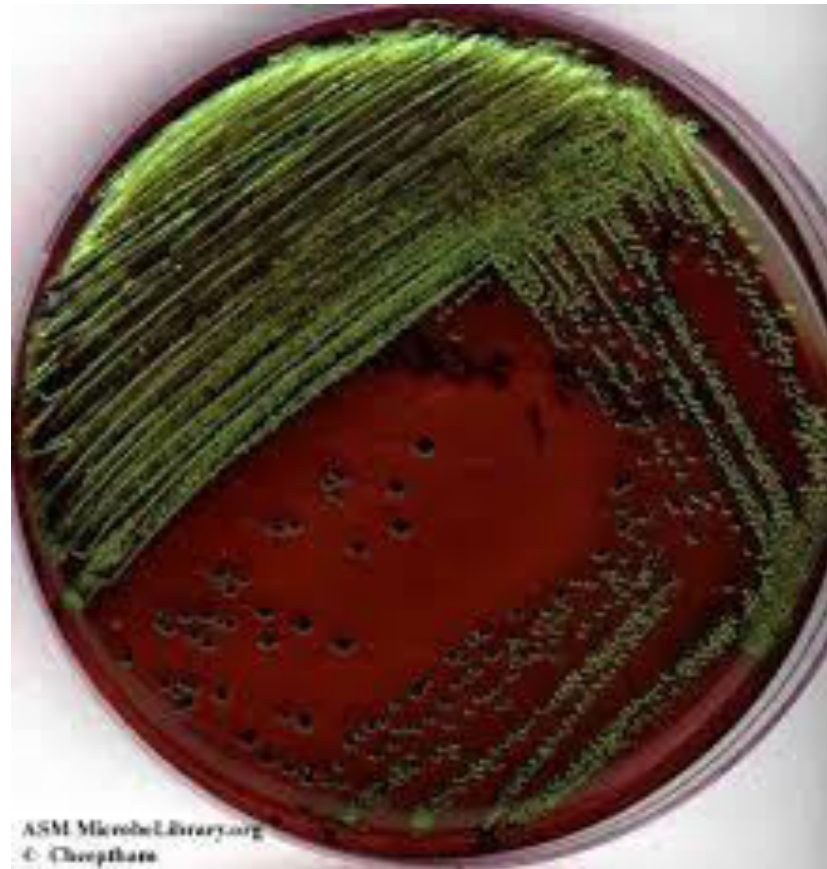
Mac



b. EMB:

- Use it to differentiate between LF & NLF bacteria
 - LF>> pink colonies NLF>> colorless colonies
 - The media contain: Sugar (lactose), Indicator (eosin + methylen blue)
- E.coli: LF with characteristic “green metallic sheen”

- E. coli on EMB media

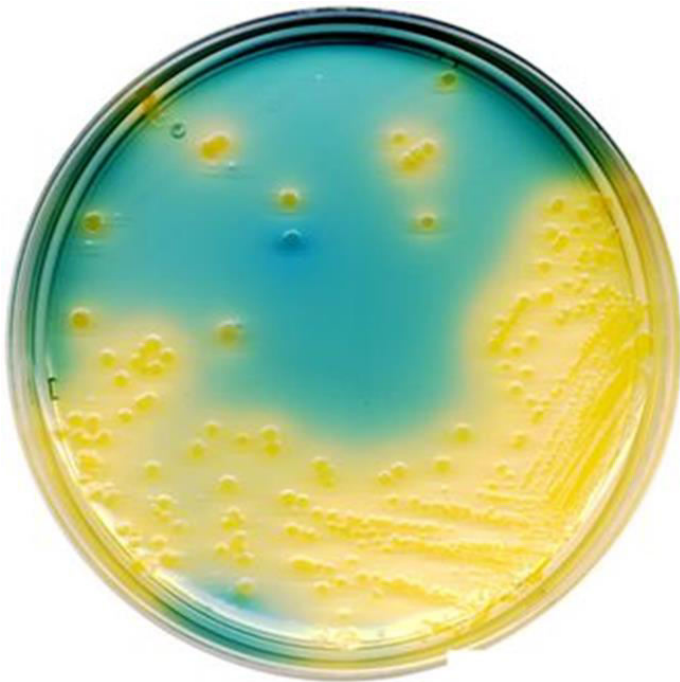


c. CLED (cystine lactose electrolyte deficient):

- Use it to differentiate between LF and NLF bacteria.
- LF>> yellow colonies
NLF>> colorless colonies
- The media contain:
sugar (lactose),
Indicator (bromo
thymol blue)



LF



NLF

