



Grade: 4

Lecture : 4

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Laboratory media

Culture media are required to isolate the bacteria from the clinical specimens; following which the appropriate biochemical tests can be performed to identify the causative agent.

01

Water

02

Electrolytes

03

Peptone

04

Agar

05

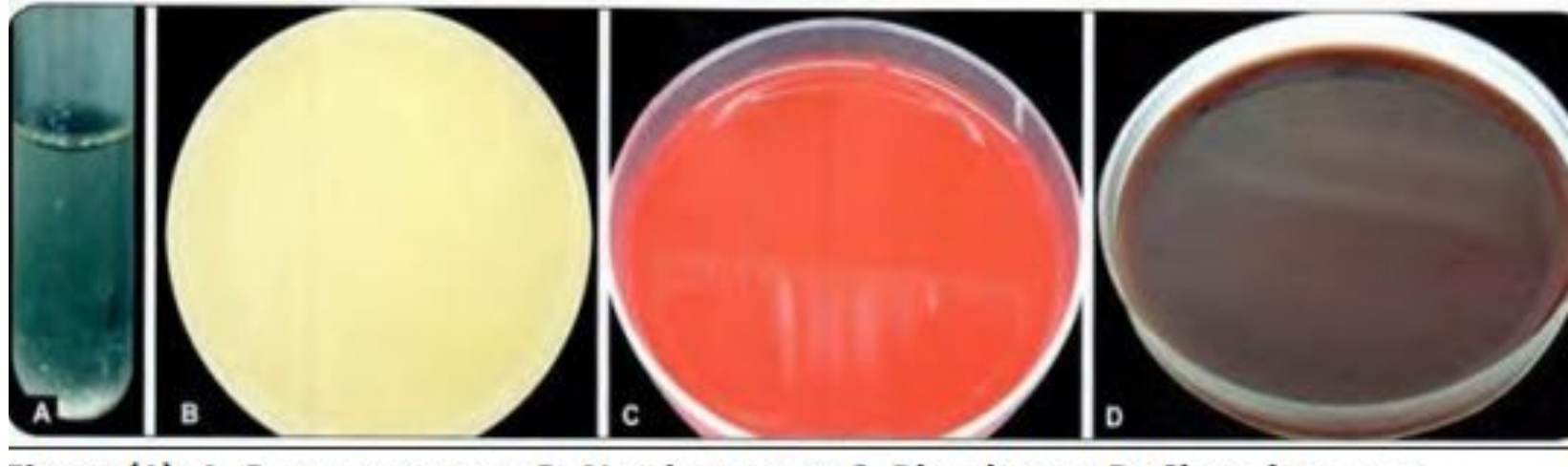
**Meat
extract**

06

Yeast extract

07

Malt extract



Constituents of culture media:



The basic constituents of culture media are

08

Blood and serum

Constituents of culture media

This is a subheading

01

Water

Distilled water or portable water with low mineral content is suitable for culture media preparation

02

Electrolytes

sodium chloride or other electrolytes

03

Yeast extract

Baking yeast. It contains amino acids, inorganic salts (potassium and phosphates) and carbohydrates

04

Meat extract

highly concentrated meat stock, usually made from beef. It contains protein degradation products, inorganic salts, carbohydrates and growth factors



Constituents of culture media

05

Peptone

it is a complex mixture of partially digested proteins heart muscle, casein or fibrin, or soya flour usually by digestion with proteolytic enzymes, such as pepsin

06

Agar agar

seaweeds (red algae of species Gelidium and Gracilaria)

07

Maltose extract

it consists of maltose (50%), starch, dextrin, glucose 5% and protein products

08

Blood and serum

enriched media and provide extra nutrition to fastidious bacteria. Usually 5- % of sheep blood is used. Horse, ox or human blood can also be used



Types of culture media:

Three forms according to the consistency :-

1-Solid :-

Agar 1.2 up to 2%

Plates or bottles

Isolation from specimens

2-Semi – solid :-

Agar < 1% [0.4 - 0.5%]

Bottles & tubes

Motility

Some biochemical reactions

Preservation

Transport media

3- Fluid / Broth :-

Blood culture bottles

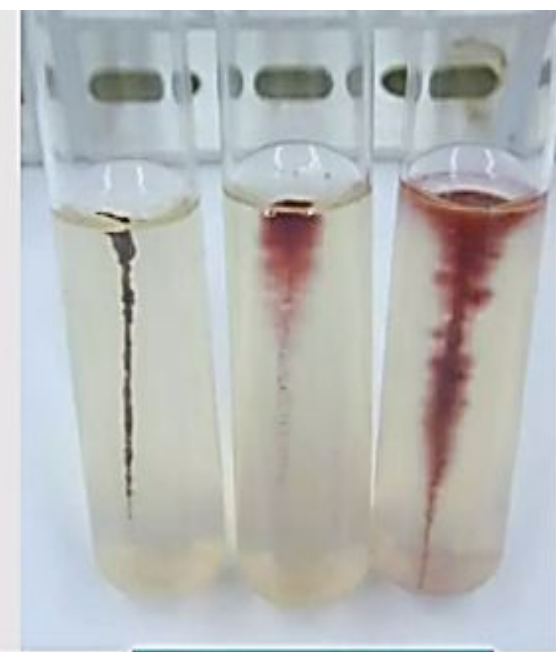
Enrichment media

Some biochemical reactions

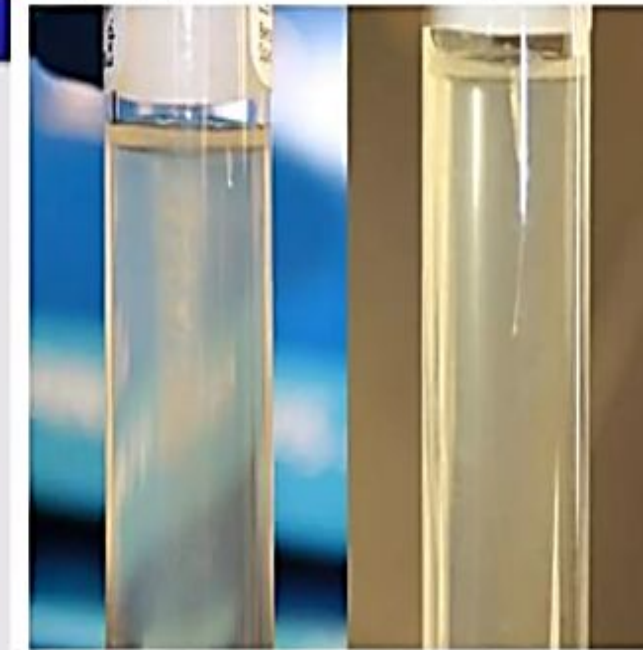
[Carbohydrates fermentation]



Solid Media



Semi solid Media



Liquid Media

Culture media

Definition :-

1-Synthetic media :

2-Routine culture media:

Routine culture media

Common ingredients :-

Dehydrated powders

Bacteriological quality



Synthetic medium

A petri dish containing a clear agar medium with numerous bacterial colonies. The colonies are mostly yellowish-orange, with a few smaller, reddish ones. The dish is being held by a gloved hand, and the background is a blurred laboratory setting.

- Synthetic or chemically defined medium: A chemically defined medium is one prepared from purified ingredients and therefore whose exact composition is known.
- Synthetic medium may be simple or complex depending up on the supplement incorporated in it.

swormage

Types of routine culture media :-

1- Basic or simple media :

Definition :

Nutrient agar

nutrient broth

Non-fastidious organisms

staphylococci

E.coli



2- Enriched media :

Definition :

Blood agar

Fastidious organisms

Streptococcus pyogenes



Chocolate blood agar

Niesseria



3- Differential media :

Definition :

Fermentation : indicator media

MacConkey agar :

lactose & non-lactose fermenters

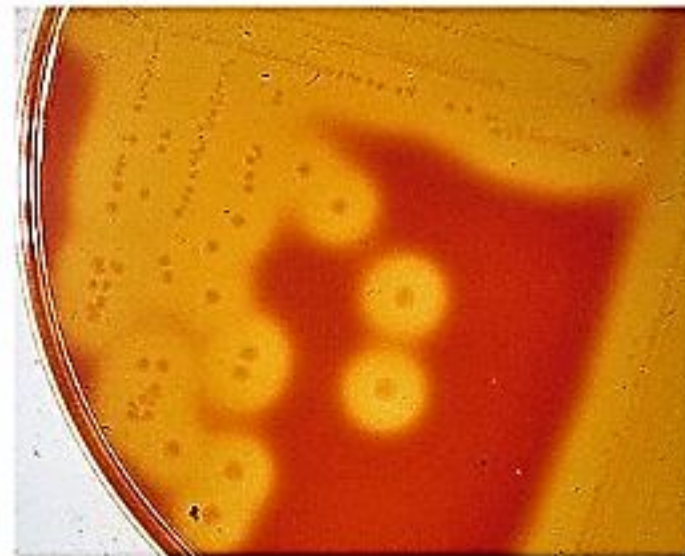


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Haemolysis :

Blood agar

α - and β hamolysis



4- Selective media :

Definition :

- 1) Adding substances
- 2) Changing the PH

Dyes :

Crystal violet **blood agar** *[S.pyogenes]*
Malachite green **L.J** *[Mycobacteria]*



Bile salts :

Sodium deoxycholate **[DC]**
Salmonella & Shigella



Mineral salts :

Sod.chloride [6.5%]

Mannitol salt agar
staphylococci



Chemicals :

Potassium tellurite
Tellurite blood agar
Corynebacteria



Antimicrobial agents : **[Antibiotics]**

Neomycin blood agar [Clostridia]

Thayer-Martin medium



Changing the PH :-

Alkaline peptone water : Vibrios

Sabouraud medium : Fungi



5- Enrichment media :-

Definition :

Selenite F broth : Salmonella

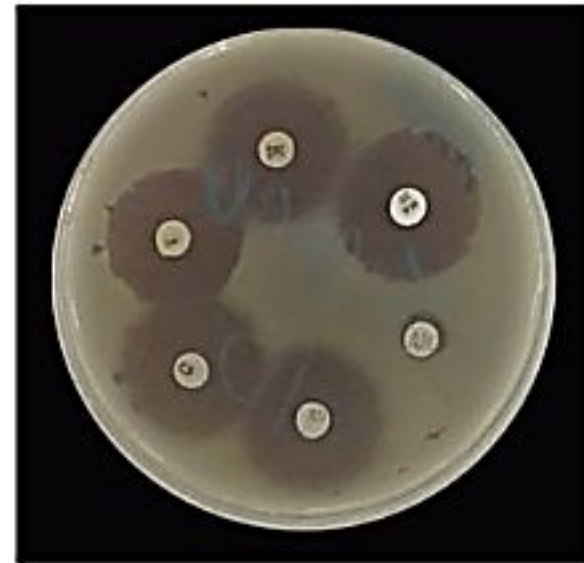
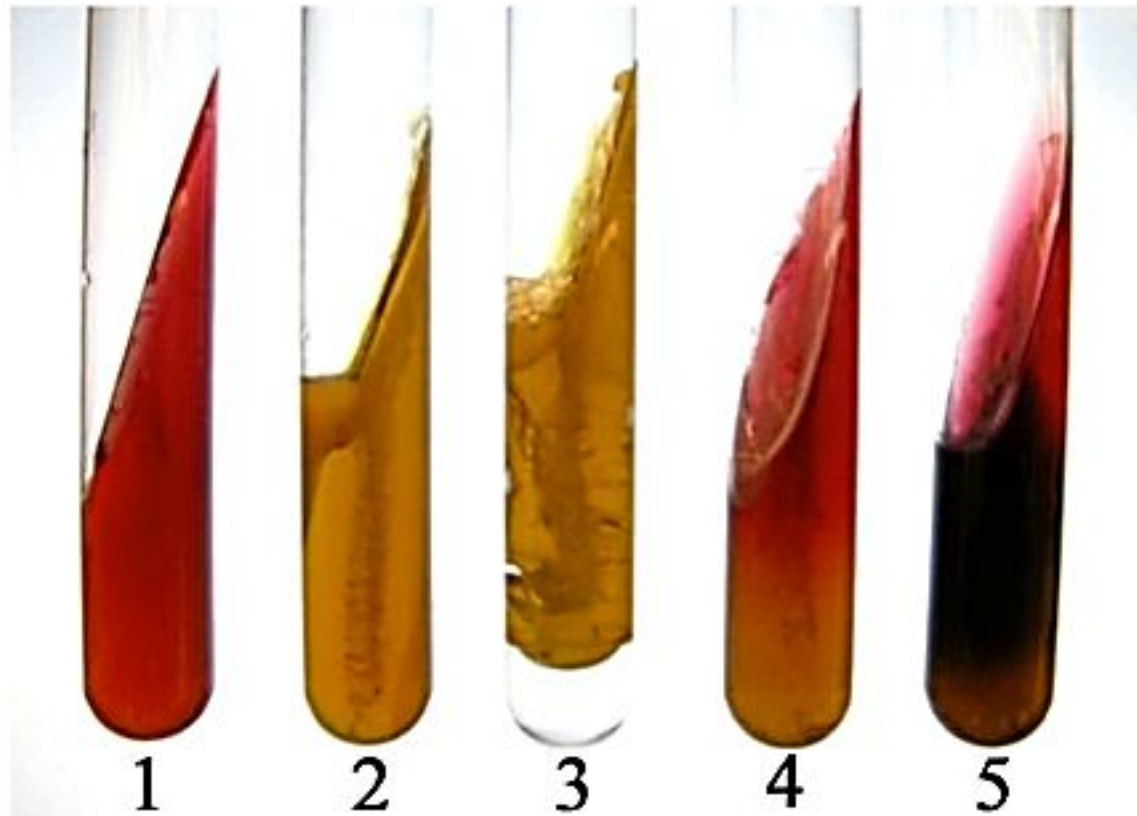


6- Specialized media :-

Definition :

Identification media

Antimicrobial Susceptibility Testing media



7- Transport media :-

Definition :

Preservation

Buffers - Glycerol - Charcoal - Sod.thioglycolate

Stuart - Amies - Cary - Blair





THANK YOU