Culture Media

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Definitions

Culture media

Microbiological culture media (plural) medium (single) is medium that provide essential nutrients and minerals to support the growth of microorganisms in the laboratory.



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Types of culture media

A. Based on physical properties

culture media

1- Liquid media

Broth



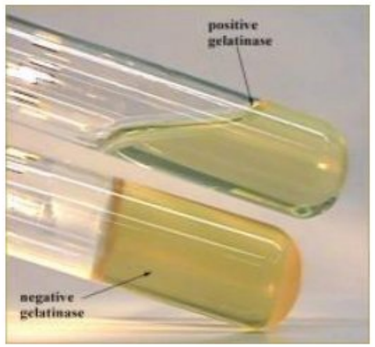
2- Solid media

Agar



3- Semi solid media

Gelatin



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- Solid media: They contain solidifying agent such as agar-agar. The agar is added at 1.5-2.0% to make the medium solid. It solidify at 45-50 °C.
- Semisolid media: They have 0.2-0.5% agar concentration, and due to the reduced agar concentration, it appears as a soft, jelly-like substance.
- Liquid media: These media do not contain any solidifying agents such as agar-agar or gelatin. The liquid media are also called broth.

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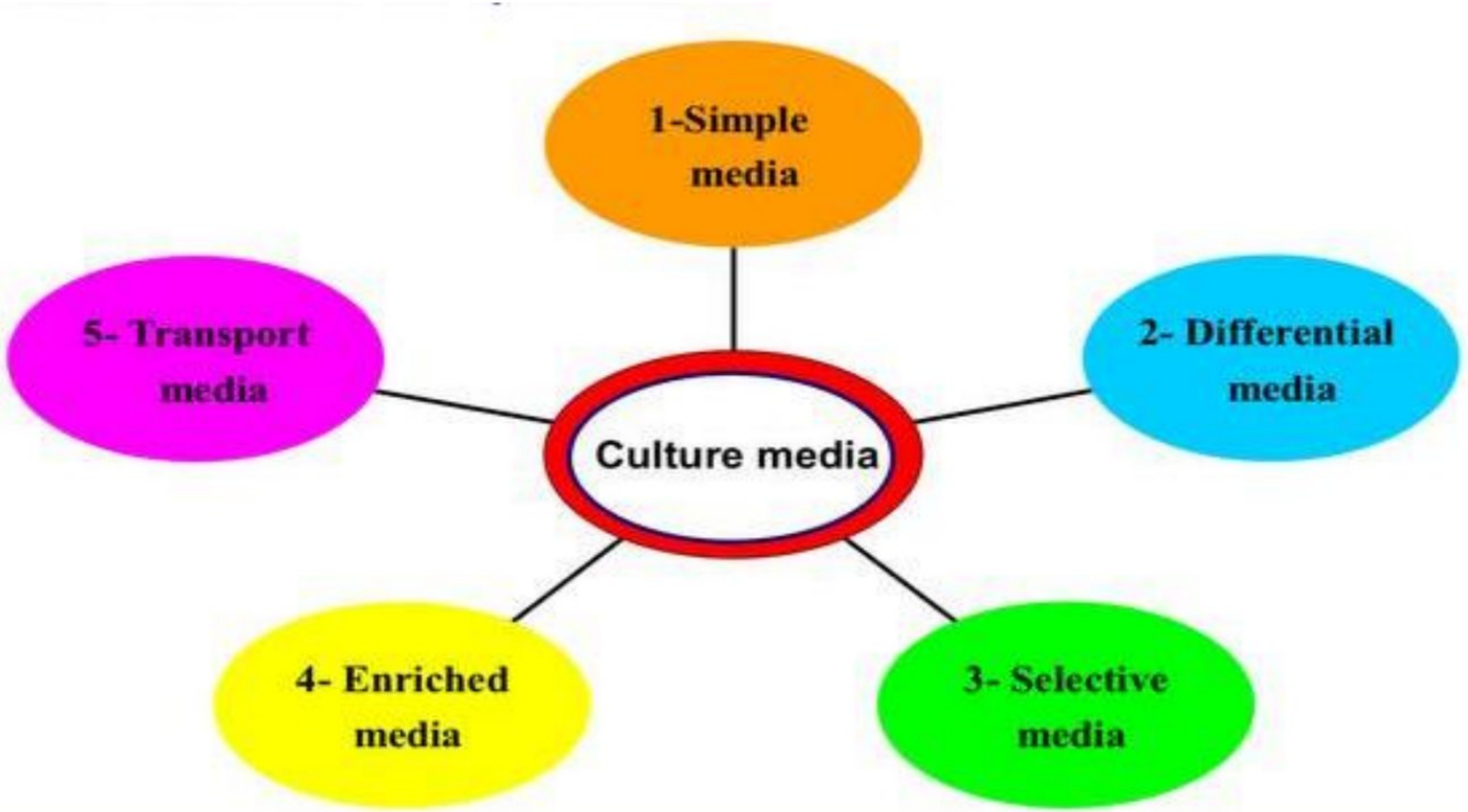
B. Based on nutritional composition



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1- Simple media

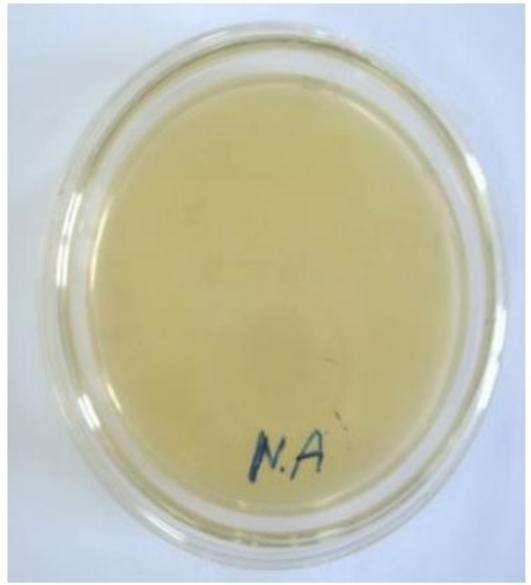
Contains the essential nutrients as source of nitrogen and carbon such as:



Nutrient broth



Nutrient agar



Nutrient agar

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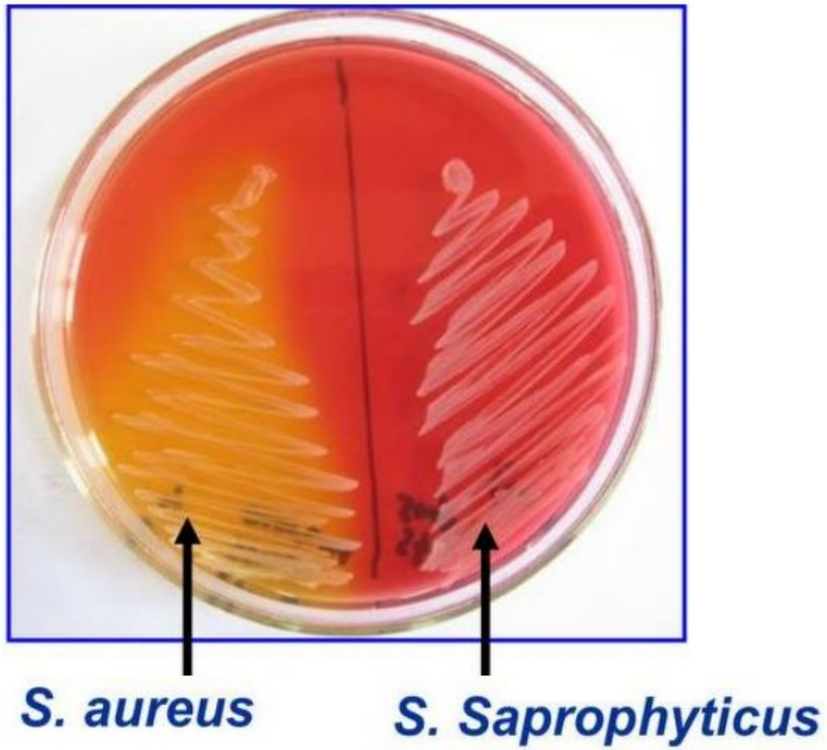
2- Differential media

Media that distinguish between different groups of bacteria and allow identification of microorganisms based on their biological characteristics. e.g. MacConkey agar, mannitol salt agar and blood agar.

- Mannitol Salt agar (MSA)

(Selective and differential)

It contains a high concentration 7.5–10% NaCl. It is selective for some Gram-positive bacteria such as Staphylococcus spp. that tolerate high salt concentrations.



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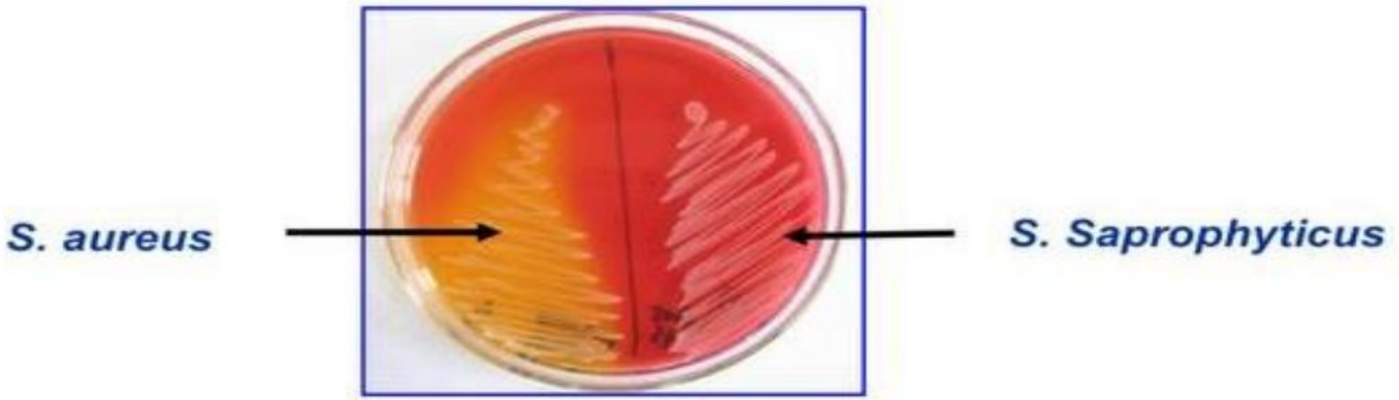
3- Selective media

- It favors the growth of particular microorganism i.e. these media allow the growth of certain microbes while inhibiting the growth of others.
- It’s an agar-based medium that is used to isolate microorganisms in labs. The inhibitory substance may be salt (NaCl), acid, a toxic chemical (crystal violet), an antibiotic (streptomycin)



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4- Enriched media

Certain types of bacteria need special nutrients in order to growth, simple media can be enriched by adding serum, vitamins, yeast and salt e.g.

- **Blood agar**
- **Heated Blood agar (Chocolate agar)**
- **Brain heart infusion agar**
- **Tissue and body fluid's extract**
- **Serum agar**

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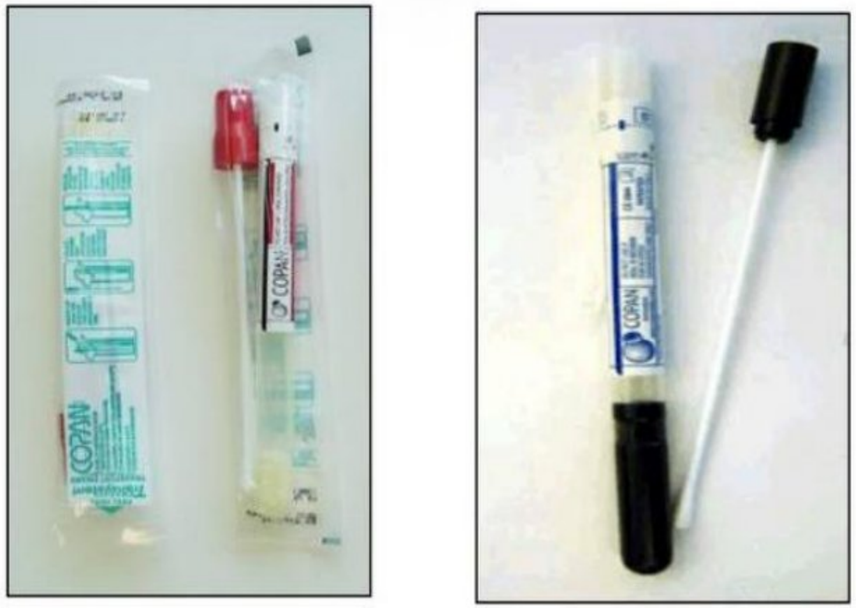
5- Transport media

Simple media used for transport samples from different regions to the lab. e.g. Stuart transport mediu



Transport Swab

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Preparation of culture media



1- measure the amount of dehydrated medium that you need



3-Sterilize the medium using the autoclave



2- Dehydrated medium is dissolved in a measured amount of distilled water and pH adjusted.



4- Cool after autoclaving

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5- Flaming for flask opening and pour in to Petri dishes

6- Flam the medium surface and leave it to cool

7- Put in special bags and keep it in refrigerator





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Formula:

Amount of media powder to weigh out (g) =

Amount of medium you want to prepare (L) x Concentration of medium (g/L)

Example: You want to make 500 ml (0.5 L) of a medium, and the instructions on the bottle say to make a concentration of 40 g/L.

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