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Types of Culture Media

- MacConkey agar
  - is a selective and differential media for Enterobacteriaceae
  - contains
    - bile salt and crystal violet
      - inhibits growth of G+ bacteria
      - cause of selectivity
    - lactose
      - cause of differential
      - lactose fermenter, pink colony
        - E.coli
        - Klabsiella
        - enterobactor
        - citrobactor
      - not lactose fermenter, colorless colonies
        - salmonella
        - schigella
        - proteus
        - yersinina
    - natrual red
      - pH indicator
      - if acidic pink
- blood agar
  - Enriched medium: containing peptones, yeast extracts, liver or heart extracts (depending on the medium), and blood.
  - Differential medium: containing blood
  - differentiate between
    - 1- Alpha hemolytic bacteria
      - Incomplete (partial) lysis of RBCs
      - steps
        - Hemoglobin containing Fe2+ (ferrous
        - hydrogen peroxide
          - produced by the bacterium
        - Oxidation of Fe2+
          - into Fe3+ (ferric) state
        - Hemoglobin converted into
          - methemoglobin (greenish color)
    - 2- Gamma hemolytic bacteria
      - No hemolysis, and no change in the medium
    - 3- Beta hemolytic bacteria
      - Complete hemolysis
  - an enzyme called hemolysin that is able to lyse RBCs
- Mannitol salt agar
  - Selective agent: 7.5% NaCl
  - Differential agent: mannitol to differentiate between mannitol
    - Fermenters and nonfermenters
  - pH indicator: Phenol red

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Types of Culture Media

- **Salmonella -Shigella agar (SS agar)**
  - components
    - Bile salt: inhibit the growth of gram positive bacteria (selective agent)
    - Lactose: carbon source
      - Lactose fermenters: pink to red colonies (few can grow)
        - flora
      - Non lactose fermenters: translucent, colorless colonies
        - with black centre like salmonella
          - Due to the production of FeS
        - without black centre like shigella
    - Neutral red: pH indicator, red in acidic conditions
    - Sodium thiosulfate ($Na_2S_2O_3$): sulfur source
    - Fe^{3+} (ferric) H_2S indicator
- **Thiosulfate citrate bile salt sucrose (TCBS) agar**
  - The medium is alkaline (pH 8.6)
    - selective to Vibrio bacteria
  - components
    - Sucrose: sugar source
      - differential
        - Vibrio cholera: Ferment sucrose smooth yellow colonies
        - Vibrio parahemolyticus: non-sucrose fermenter, green colonies
    - Bromothymol blue: pH indicator
      - - pH<6.0 - yellow
      - - pH>7.6 –blue
- **Löwenstein–Jensen (LJ) medium**
  - used for culture of Mycobacterium, notably Mycobacterium tuberculosis.
  - Penicillin and Nalidixic acid along with malachite green
    - prevents growth of the majority of contaminants surviving decontamination of the specimen
    - encouraging earliest possible growth of Mycobacteria
- **chocolate agar**
  - Used to isolate Haemophilus influenzae
  - Is a hemolysed blood either by heating blood to 80°C or using enzyme treatment