Biochemical Tests for Identification of Gram –ve Bacilli (7/2/2012)

Urease test (semisolid medium): mainly for diagnosis of Proteus

- **Medium**: urea media
- **Indicator**: phenol red
- **Mechanism**: urease splits urea into ammonia and CO_2, ammonia increases pH leading to color change
- **Results**: positive → pink, negative → stays the same (yellow)
- **Species**:
  - **Strong positive** (i.e. in 4 hours): Proteus
  - **Weak positive** (i.e. in 24 hourse): Klebsiella
  - **Negative**: Pseudomonas, E.coli

IMViC test (**I**ndole, **M**ethyl Red, **V**oges-Proskauer, **C**itrate)

- **Indole**: trypton broth
- **M, V:** two test tube containing glucose (*also* broth)
- **Citrate**: slant

1) Indole: if the bacteria has tryptophanase then **positive** (formation of a red ring), if not then **negative** (formation of a green ring)

- **Indicator**: Kovac's reagent (reacts with indole)
- E. coli are positive, Klebsiella are *negative*

2) Methyl Red: we add methyl red to the test tube, if it remains the *same* then **negative** but if changed to *red* then **positive** (i.e. ferments glucose to acid products)

3) Voges-Proskauer: we add KOS, alpha-naphthol, if it becomes cupper brown then negative, but if it becomes red then positive (i.e. ferments glucose to neutral end products)

4) Citrate: if it remains the same (i.e. green) then it is negative, but if it changes to blue then it is positive.

- **Purpose**: detects the ability of an organism to use **citrate** as the sole source of carbon and energy
- **Indicator**: bromothymole blue
- **Name of media**: Simmons citrate agar

Kligler Iron Agar test

Contains glucose, lactose, sucrose and Na thiosulfate

NOTE: for details look at Dr.Safeen's notes provided with this package ;)

"A person who never made a mistake never tried anything new." - Albert Einstein

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