

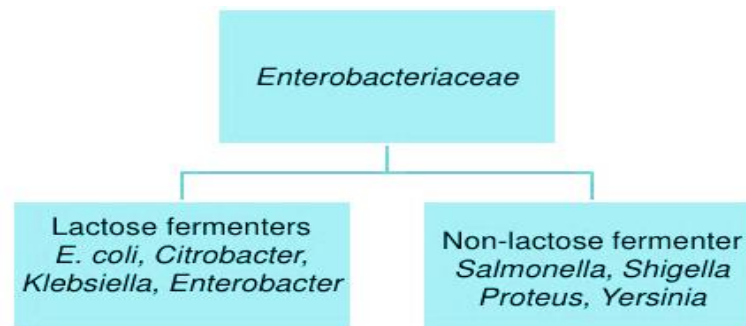
Lab.15 . Enterobacteriaceae

General characters

All Enterobacteriaceae

- Gram-negative rods
- Ferment glucose with acid production
- Reduce nitrates into nitrites
- Oxidase negative
- Facultative anaerobic
- Motile **except** *Shigella* and *Klebsiella*
- Non-capsulated **except** *Klebsiella*
- Non-fastidious
- Grow on bile containing media (MacConkey agar)

Classification of Enterobacteriaceae



There are several selective and differential media used to isolate and distinguish between LF & LNF

- The most important media are:
 - MacConkey agar
 - Eosin Methylene Blue (EMB) agar
 - Salmonella Shigella (SS) agar
 - Triple Sugar Iron (TSI) agar

E.coli

Cultural characters

- Aerobic / Facultative Anaerobic
- Grows between 10 – 40 c optimal at 37 c
- Grown in simple medium
- Produce Large grayish ,Thick white , moist smooth opaque colonies
- May contain capsule.
- On MacConkey medium Produce **Bright pink** Lactose fermenters.



E.coli on **Blood Agar** : colony morphology of *E. coli* are **smooth, dull gray, small in size**. Many pathogenic strains are haemolytic on blood agar (**β-hemolytic**)

Biochemical reactions

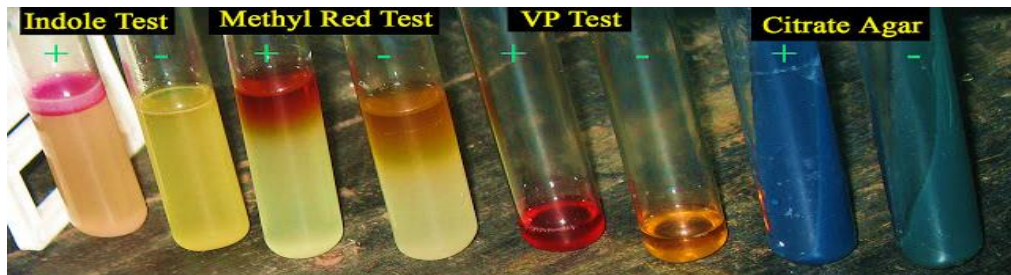
Oxidase test

- All members of Enterobacteriaceae are oxidase negative
- *Pseudomonas* is oxidase positive

Nitrate reductase

- All members of Enterobacteriaceae are nitrate reductase positive
 - *Pseudomonas* is nitrate reductase negative.
- ❖ Glucose,Lactose,Mannitol,Maltose fermented. with A/G
- ❖ **I,M,Vi,C tests.**
- Indole +
 - Methyl Red +
 - Voges Proskauer – ve
 - Citrate –ve

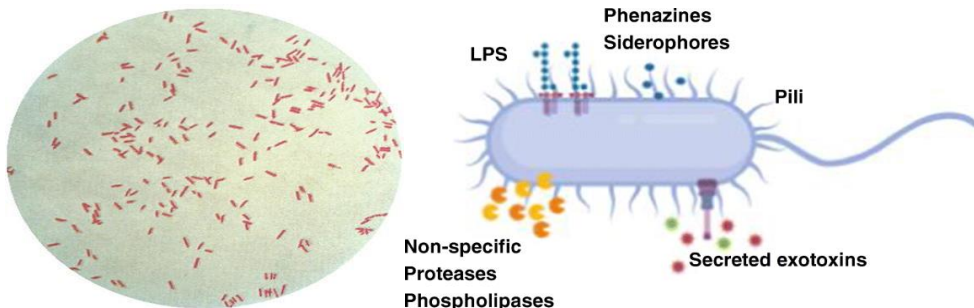
- Urease not produced



Pseudomonas

General character

- Gram-negative rods.
- Motile by polar flagella.
- aerobics.
- Grow well at 42^oC.
- Non-lactose fermenting
- Medically important *Pseudomonas*: *P. aeruginosa*.



Specimen:

- Wound discharge , sputum , Blood , Urine ,and CSF

Culture character

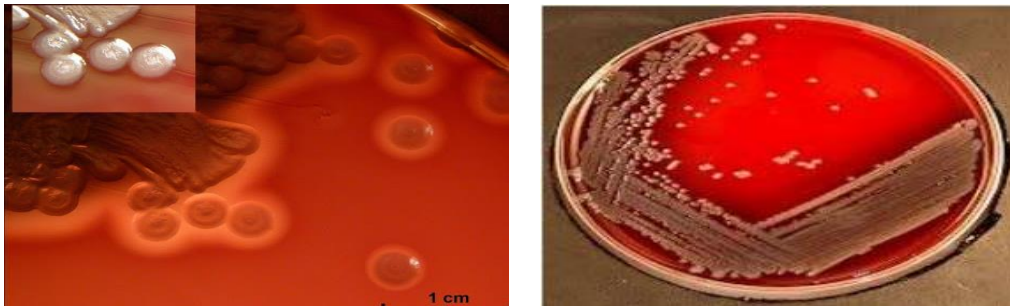
- Form smooth and round colonies.
- Fluorescent greenish colour.
- production of fruity odor (grape-like) .
- Inability to ferment lactose.



On nutrient agar : Colonies are smooth, large, translucent . Greenish blue diffusible pigment



On blood agar : Grayish colonies . Many are haemolytic (beta hemolysis)



On MacConkey agar : Non-lactose fermenting (colourless colonies)



On EMB : Non lactose fermenting

