FAMILY: ENTEROBACTERIACEAE

General character:

Morphology:

1- Gram negative bacilli & non spore forming.
2- Short to medium size bacilli
3- Member of this family usually motile
   - Some strain non motile (Salmonella pollorum, S. gallinarum).
   - Motility due to presence of peritrichous flagella
4- Some species are capsulated as... (Enterobacter – klebsiella pneumonria – Yersinia enterocolitica) developed capsule producing mucoid colony on sugar containing media)
5- Arrangement is single or pairs.
6- They found mainly in the intestinal tract of man or animal
   either as normal non pathogenic as ... (E.coli, Proteus spp., Morganella). Found in the intestine as pathogenic incase of Salmonella cause enteric typhoid fever and as Shigella produce sever gastroenteritis

Culture character:

1- Facultative anaerobic on simple laboratory media (ordinary nutrient media).
2- Grow at 37°C.
3- Selective media (MacConkey): lactose fermenter (give pink color as in Escherichia coli, Klebsiella, Enterobacter → coliform bacteria. Other are non lactose fermenter (give white color) → Salmonella, Shigella, Proteus
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Coliform bacteria: member of F. Enterobacteraceae that ferment lactose.

Biochemical test:
1- All of them ferment dextrose or glucose give acid & gases after fermentation (aerogenic)
2- Oxidase test –ve
3- a lot of genera within the family are differentiated by their biochemical character, Specially IMViC test (indol, methyl red, vogus prauskeur, citrate utilization)
4- Reduce nitrate to nitrite

Media use for isolation of Enterobacteracea:-
1- Non-inhibitory & non-differential media as Nutrient agar
2- Non-inhibitory but differential media as .. bromothymol blue lactose agar media
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3- Differential inhibitory selective media as
- MacConkey bile salt lactose agar media.
- Haekton enteric agar media
- Liefson desoxy media
- Xylose lysine desoxycholate agar media (XLD media)

*Shigella*

- **Disease:**
  Bacillary dysentery.
- **Morphology:**
  Gram (-) bacilli, non motile and non capsulated.
- **Culture character:**
  They produce non lactose fermenting colonies on MacConkey medium and pink colonies on XLD.
- **Biochemical reaction:**
  - Some ferment glucose only with production of acid e.g. *Shigella dysenteriae*.
  - Other ferment glucose and mannite with acid e.g. *Shigella flexneri, Shigella boydii* and *Shigella sonnei*.
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Bacillary dysentery:
Cause the most severe abdominal pain, fever, diarrhea with pus, blood and mucous in stool.
Infection leads to local ulcers in the intestine but no blood invasion.

- **Diagnosis:**
  - Direct microscopical examination.
  - Culture character.

Biochemical reaction as salmonella.