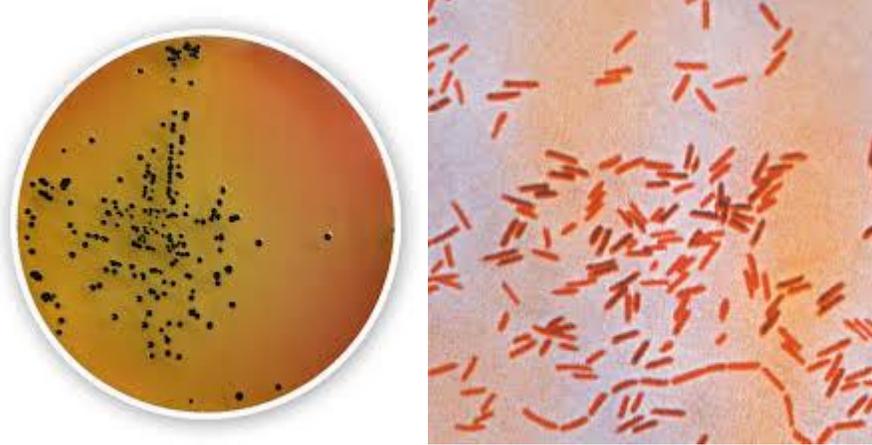


Family : Enterobacteriaceae

Genus: Salmonella and Shigella :



Salmonella

Gram negative bacilli, non sporing , motile by peritrichous, citrate positive, catalase (+), oxidase (-), aerogenic (H₂S) production, able to ferment sugar strongly and it is facultative anaerobes.

These are three types of salmonella genus:-

- 1- Enteric fever (typhoid fever): S.typhi and S. paratyphi A,B,C.
- 2- Gastroenteritis : S.entritidis , S.typhimurium
- 3- Septicemia: S.cholerasuis.

Typhoid fever:

Ingestion of 10⁴ to 10⁸ organisms via food or drink they enough to infect by typhoid fever in human.

Specimen:

First week – blood

2-5 week – stool

3-4 week – urine

Chronic carriers mostly harbor *S. typhi* in the gall bladder *S. typhi* is found in the case.

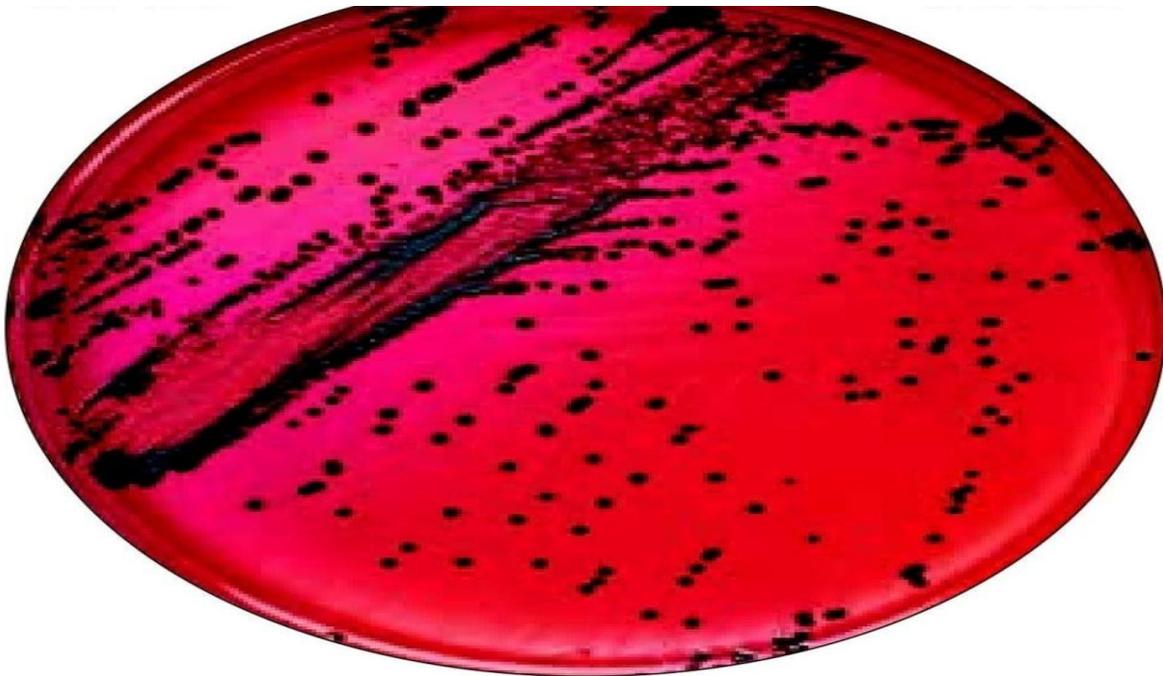
Rarely urinary tract carriers may develop who excrete *S. typhi* in their urine.

Gastroenteritis , septicemia are usually acquired by contaminated foods like eggs and poultry.

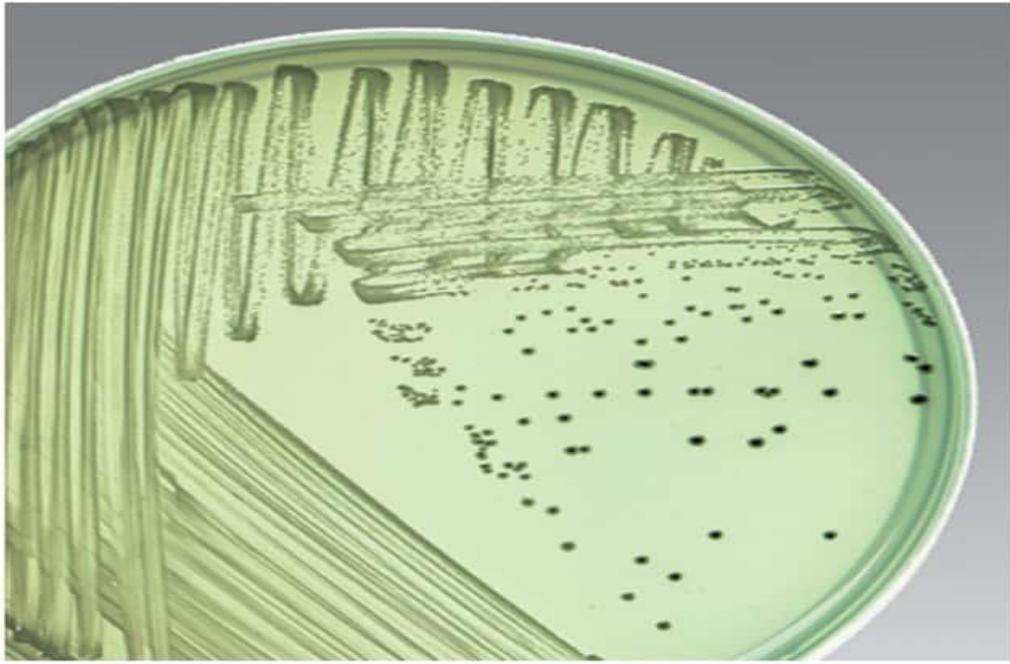
Lab diagnosis:

- 1- Gram stain (G- bacilli)
- 2- MacConkey agar(pale colonies)
- 3- Deoxycholate agar(DCA), Salmonella Shigella agar (SSA) colorless with black center. DCA, SSA are selective medium for isolation of enteric pathogens (Salmonella, shigella) with inhibition for G+ bacteria.
- 4- Xylose Lysine Deoxycholate agar (XLD): red with black center.
- 5- Bismuth sulfite agar: black with metallic sheen colonies, selective medium especially for the isolation of Salmonella typhi from feces, urine, sewage.
- 6- Selenite broth, enrichment medium for isolation of Salmonella typhi and other members of the Salmonella group from feces, urine and infected tissues.

- 7- Tetrathionate broth: selective liquid enrichment medium employed in the isolation of *S.typhi* and other member of the Salmonella which isolation from feces, urine, water.
- 8- TSI: K/A (H₂S)+, Gas production.
- 9- Motility.
- 10- IMVC.
- 11- Urase (- ve)
- 12- Widal test for serological detection (titers of antigens O& H)
- 13- Antigen detection : Counter – immuno electrophoresis (CIE) of a single specimen of serum to detect *S.typhi* (O antigen) can yield early result for disease.



Xylose Lysine Deoxycholate agar (XLD): red with black center(*S.typhimurium*)



Bismuth sulfite agar black with metallic sheen colonies (**Salmonella typhi**)

Shigella:

Shigella are facultative, non motile, Gram negative bacilli. They possess the heat stable endotoxin (LPS) as characteristic of Gram-negative bacteria. Shigella are pathogenic primarily due to their ability to invade intestinal cells, *S. dysenteriae* also produces a heat labile exotoxin.

Important species:

- ✓ *Shigella dysenteriae* (serogroup A) (12 serotypes)
- ✓ *Shigella flexneri* (serogroup B) (6 serotypes)
- ✓ *Shigella boydii* (serogroup C) (18 serotypes)
- ✓ *Shigella sonnei* (serogroup D) (1 serotypes)

Specimens:

1. Bloody, stool (bright red).
2. Microscopic Examination

Stool smears from patients with amebiasis should reveal erythrophagocytic trophozoites in the absence of PMNs (polymorpho nuclear cells), whereas bacillary dysentery is characterized by sheets of PMNs.

Laboratory diagnosis

1. MacConKey (less color)
2. Salmonella – shigella agar(SSA): this media contain bile salts to inhibit the growth of other Gram-negative bacteria and pH indicators to differentiate lactose ferment (Coli forms) from non-lactose fermenters such as *Shigella*.
3. TSI or KIA (Kligler iron agar): K/A (H₂S⁺) Gas production
4. Motility: (-)
5. IMVC tests.