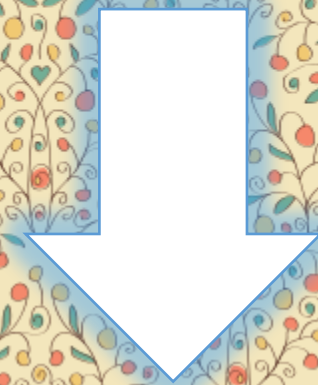
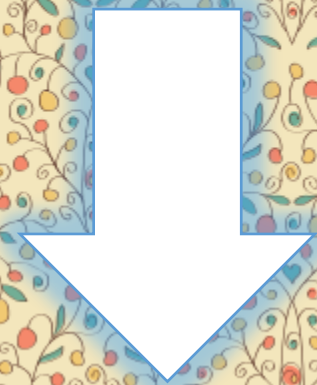


Enterobacteriaceae

Shigella

Salmonella

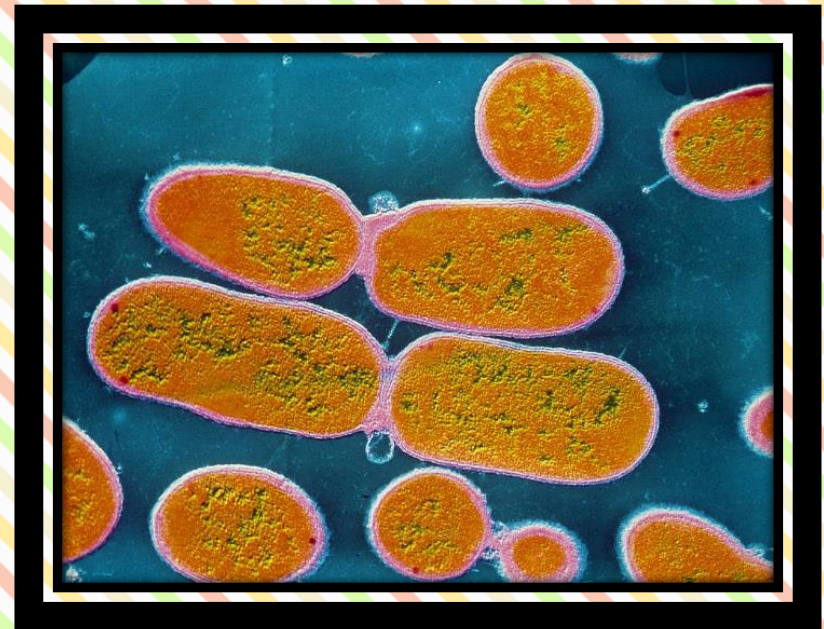


Species

1. Group A : *Sh. dysentery*
2. Group B : *Sh. flexneri*
3. Group C : *Sh. Boydii*
4. Group D : *Sh. Sonnei*



1. *Salmonella Typhi*,
2. *Salmonella Paratyphi A, B, C*
3. *Salmonella Typhimurium*
4. *Salmonella Enteritidis*
5. *Salmonella Choleraesuis*



Microscopical appearance

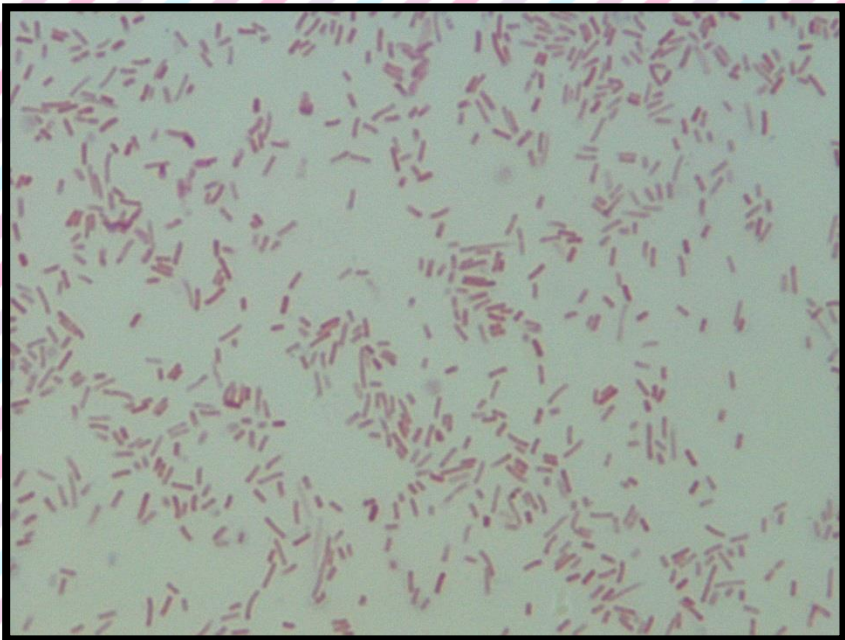
Gram negative

non-motile

non- capsulated

bacilli

non-spore forming



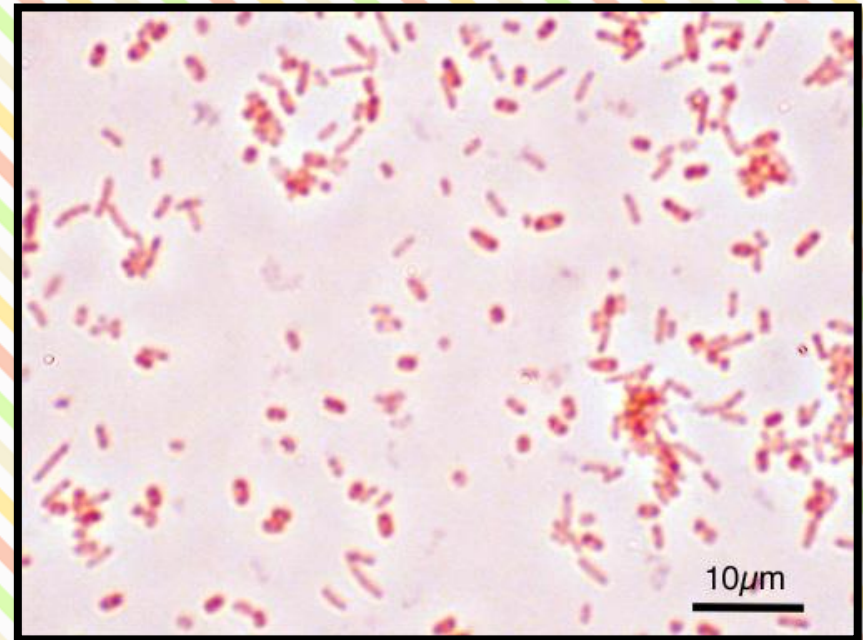
Gram negative

motile

non- capsulated

bacilli

non-spore forming



Cultural characteristics

Aerobic

Facultatively anaerobic

Grow on simple media

MacConkey medium:

1- colonies are pale (colorless)

2- non-lactose fermenter

3- *Sh. sonnei* is late lactose fermenter

Nutrient agar:

1- convex colony

2- circular

3- 2mm in diameter

4- transparent

5- smooth

6- entire edge

Aerobic

Facultatively anaerobic

Grow on simple media

MacConkey medium:

1- colonies 2-4 mm in diameter

2- moist

3- circular

4- smooth

5- dome shape

6- entire edge

7- pale (NLF)

Bismuth Sulfite Agar:

1- H₂S production

2- black to brown color

3- metallic sheen appearance


A petri dish containing a bacterial culture on a pink agar medium. The plate is divided into four quadrants by a white line. Various colored colonies are visible: pale pink with tan centers, teal with black centers, pink to violet, and teal. Red lines with arrows point from the text labels to specific colonies in the dish.

Plate incubated aerobically for 24 hours at 35 °C

Proteus mirabilis

showing pale pink colonies with tan centers.

Salmonella enterica

showing teal colored colonies with black centers.

Escherichia coli

showing pink to violet colored colonies.

Shigella sonnei

showing teal colored colonies.
Non-H₂S producing Salmonellas will look the same.

Shigella sp., Escherichia sp., and Proteus sp.



MacConkey Agar



Shigella-Salmonella Agar



Bismuth Sulfite Agar



Brilliant Green Agar

SS-agar

Selective : → bile salt

for isolation of pathogenic bacilli (salmonella-shigella)

Inhibit the growth of Gram +ve and some coliform m.o

&

Differential: → lactose & neutral red indicator

For differentiation between LF and NLF

Colonies :

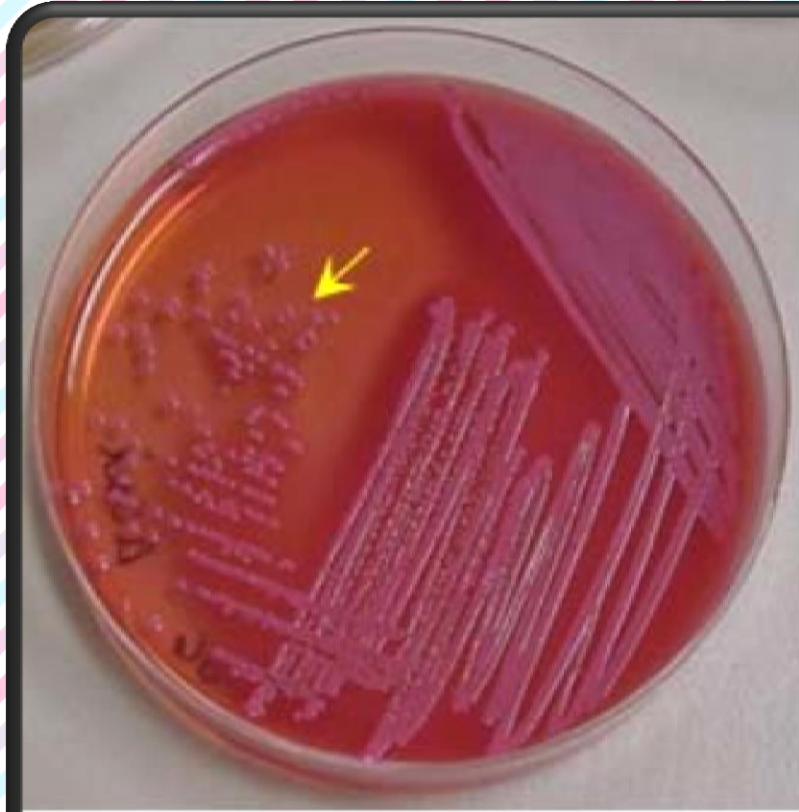
1- colorless (NLF)

2- no black centers (not produce H₂S)

Colonies :

1- colorless (NLF)

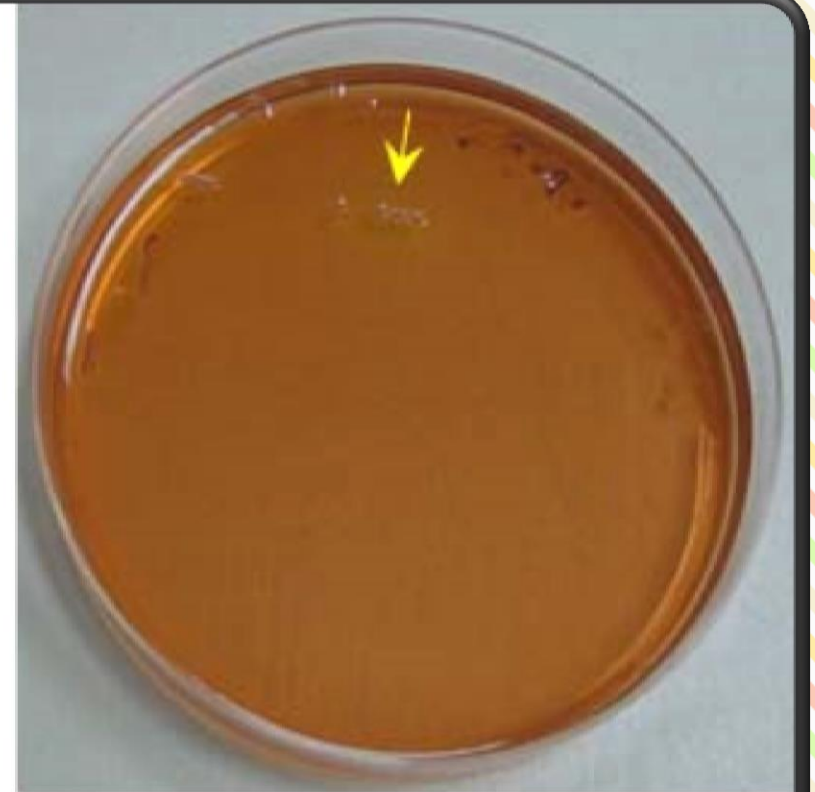
2- black centers (produce H₂S)



Escherichia coli



Salmonella



Shigella

Escherichia coli

Salmonella

Shigella

Triple Sugar Agar (TSI)

Used to determine :

- 1- the ability of m.o to attack sugars incorporated in the medium
- 2- the production of gas which induce cracking and bubbling in the medium
- 3- formation of H₂S which causes blackening of the medium

- Alkaline slant (red)
- Acidic butt (yellow)
- no gas
- no H₂S
- (K / A / G- / H₂S-)

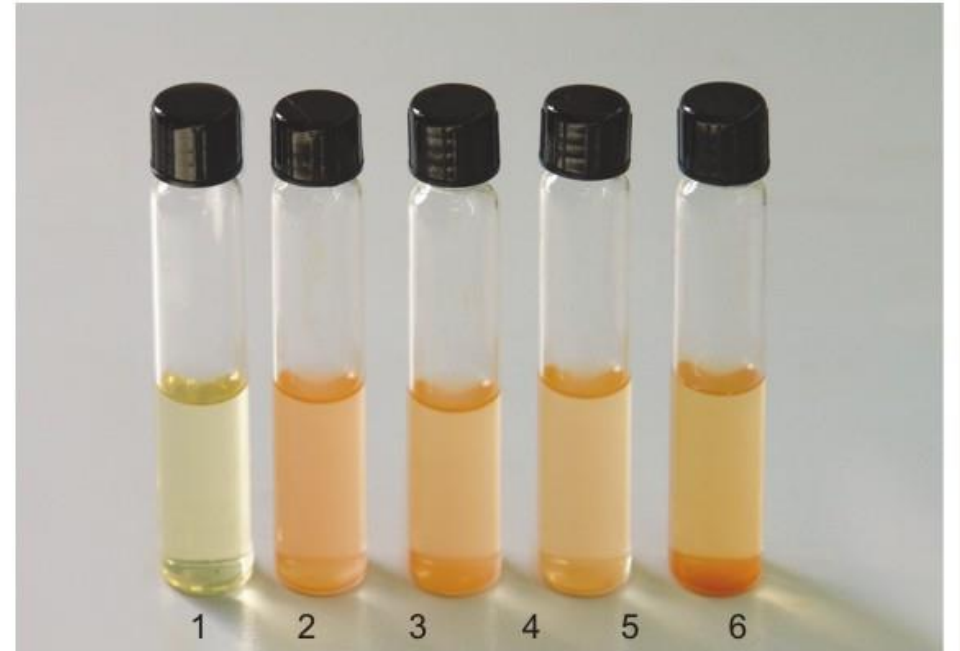
- Alkaline slant (red)
- Acidic butt (yellow)
- gas
- H₂S
- (K / A / G+ / H₂S+)



Control	Red Slant	Red Slant	Yellow Slant	Yellow Slant	Red Slant
	Red Butt	Yellow Butt	Yellow Butt	Yellow Butt	Yellow Butt
	No Gas	No Gas	+ Gas	+ Gas	+ Gas
	No H₂S	No H₂S	No H₂S	+ H₂S	+ H₂S

Selenite broth

Is a selective enrichment medium designed to increase the number of *Salmonella* and inhibits the growth of other m.o ((temp. and\or PH-dependent))



**Fluid Selenite Cystine Medium
(Selenite Cystine Medium) (Twin Pack)
M025**

1. Control
2. *Salmonella* Typhimurium ATCC 14028
3. *Salmonella* Choleraesuis ATCC 12011
4. *Salmonella* Typhi ATCC 6539
5. *Escherichia coli* ATCC 25922

Biochemical activities

- ***Can* ferments glucose and mannite**
- **Acid production**
- **The IMViC results are V - - -**
- **No H₂S production**

- ***Can* ferments glucose and mannite and maltose**
- **Acid and gas production**
- **The IMViC results are -+--+**
- **H₂S production**

Diseases

Bacillary dysentery

Symptoms:

- 1- abdominal pain
- 2- fever
- 3- diarrhea
- 4- tenesmus
- 5- stool(mucus-blood-pus)

- 1- Enterocolitis (food poisoning)
- 2- Enteric fevers
- 3- Septicaemia with metastatic abscesses.
- 4- Bacteraemia
- 5- Osteomyelitis
- 6- Pneumonia

عمل الطلاب :
عمر يقظان
عيدة مزيد
عبد الملك عبد اللطيف