



Tikrit University  
College of Veterinary Medicine

# Lect.4: Microbiology

Subject name: *Enterobacteriaceae*

Subject year: Third-year

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SCAN ME

Lecturers link

## *Enterobacteriaceae*

### *Escherichia coli*

#### **Morphology and staining :-**

- 1-Gram –ve rod.
- 2-Motile.
- 3-Posses capsule (mucoid).
- 4-Non-spore forming.

#### **Cultural characteristics :-**

The important media used for growth is :

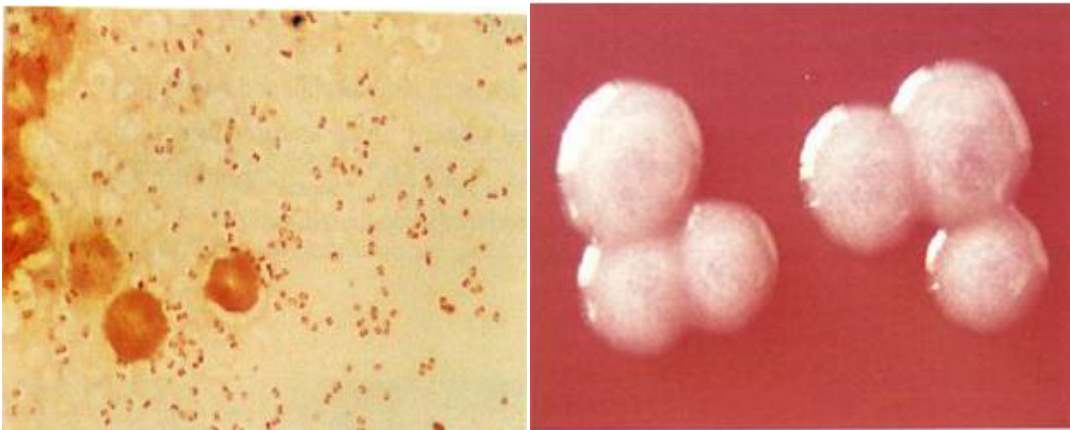
- 1-**Blood agar** :- the colonies are grey color .
- 2-**MacConkey's agar** :- the colonies are pink color (selective media).
- 3-**Eosin methylene blue** :- the colonies are metallic sheen color (selective media).

#### **Biochemical tests (IMVC,HUM) :-**

Species	Methyl-red	Indole	Voges-proskauer	Citrate	H <sub>2</sub> S	Urease	Motility
<u><i>E.coli</i></u>	+	+	-	-	-	-	-

#### **Diagnosis :-**

- 1-Isolation of the bacteria from (fecal, intestinal, internal viscera) and culturing on the blood agar, MacConkey's agar and Eosin methylene blue.
- 2-Biochemical tests :-



## *Klebsiella pneumoniae*

### Morphology and staining :-

- 1-Gram ve-.
- 2-rod(thick short rods ).
- 3-it has round ends, arranged as diplobacilli.
- 4- non-spore forming ,non-motile and posses capsule.

### Cultural characteristics :-

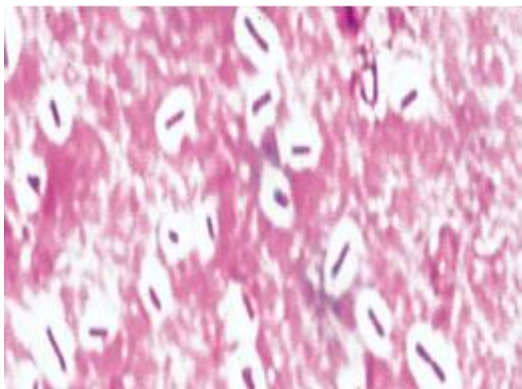
- 1-MacConkey's agar :- the colonies are brown color.

### Biochemical tests :-

Species	Indole	Methyle red	Voges proskauer	Citrate	H2S	Urease	Motility
<u><i>Kleb. Pneumonia</i></u>	-	-	+	+	-	+	-

### Diagnosis :-

- 1-Isolation of the bacteria on the MacConkey's agar from lesion and specimens
- 2-Negative staining :- inorder to see the capsule



## *Salmonella*

### Species :-

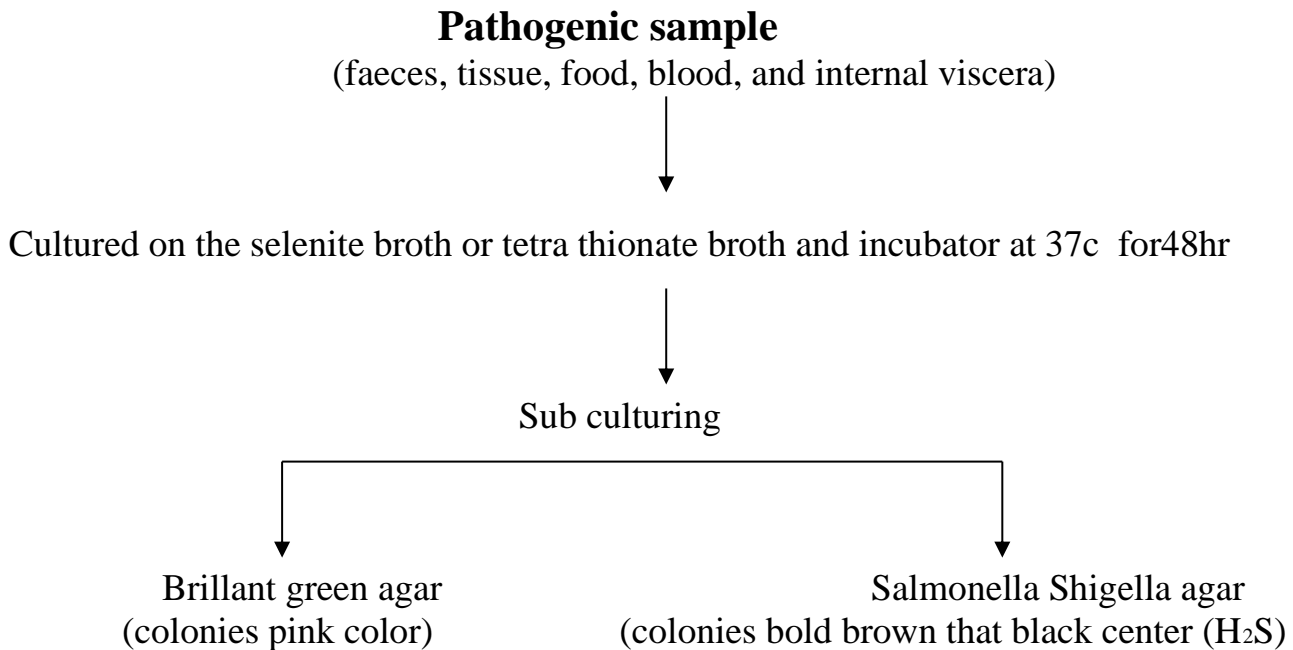
- Salmonella pullorum*
- Salmonella gallinarum*
- Salmonella thyphimurium*

- Salmonella dublin
- Salmonella abortusequi
- Salmonella abortusbobis
- Salmonella abortusovis

**Morphology and staining :-**

- 1-Gram-ve
- 2-Rod ( short or long rod ) or coccobacilli
- 3-Non-spore forming
- 4-Some types posses capsule
- 5-Motile except Salmonella pullorum and Salmonella gallinarum.

**Cultural characteristics :-**



**Biochemical test :-**

Species	Indole	Methyl red	Voges proskauer	Citrate	H <sub>2</sub> S	Urease	Motility
<i>Salmonella</i>	-	+	-	+	+	-	+

**Diagnosis :-**

- 1-The Culture pathogenic samples (food,blood,faeces and internal viscera) on the selective broth and subculturing on the selective media of the salmonella .
- 2-Biochemical test.

## Proteus

Species :-

- 1- Proteus vulgaris
- 2- Proteus mirabilis
- 3- Proteus rettgeri

Morphology and staining :-

- 1- Gram-ve
- 2- rods sometimes pleomorphic cocci rods or filamentous
- 3- motile
- 4- non-spore forming
- 5- non-capsulated

Cultural characteristics :-

- 1- on blood agar and nutrient agar / the swarming phenomena can be seen on it ( thin layer of swarming on the surface of media from seawaves ).

2- Biochemical test :-

Species	Indole	Methyle red	Voges-proskauer	Citrate	H <sub>2</sub> S	Urease	Motility
<u>Proteus mirabilis</u>	-	+	-	+	+	+	+
<u>Proteus vulgaris</u>	+	+	-	+	+	+	+

Diagnosis :-

- 1- Specimens culturing / ( blood, faeces and internal viscera) on the blood agar and nutrient agar to see the swarming phenomena
- 2- Biochemical test /