

Micrococcus

Morphology:

- Gram +ve cocci
- Arrangement : Tetrades
- Non motile, non capsulated, non sporulated

Habitat:

May be normal present in upper respiratory tract

Species :

- 1- *M. varians*
- 2- *M. luteus*
- 3- *M. roseus*

Culture:

- Strictly aerobic at 37°C incubation (24 hr)
- Grow on ordinary media Nutrient agar - Blood agar and

on the Blood agar		
<i>M. varians</i> (yellow)	<i>M. luteus</i> (white)	<i>M. roseus</i> (pink)

- On mannitol salt agar grow given rise to rose or pink colonies except *M. roseus* .

Biochemical

- 1- Catalase (+ve)
- 2- Coagulase (-ve)

3- Oxidative fermentation of glucose : (oxidative)

4- To differential between *Micrococcus* and *Staphylococcus* by Furazolidone test

Micrococcus → resistance.

Staphylococcus → sensitive.

Disease:

Acute endocarditic

Urinary tract infection

Mastitis

Chest infect

Resistance:

Resistance to many antibiotics

Streptococcus

General characteres :

1- Morphology:

- Gram (+ve) cocci
- Arrangement : chain _
- Non motile , non sporulated , may be capsulated or not .

2- Culture characteres :

- Facultative anaerobic
- On fluid media →Sediment
- Grow very poor on ordinary media as dew drops like colonies, but growth enhanced with blood or serum and glucose

Classification

1-Brown`s classification → depend up on degree of hemolysis

* **β- hemolytic** (clear zone of hemolysis) or (complete) e.g *S. pyogens*
[most pathogenic group]

* **α – hemolytic** (incomplete hemolysis) greenish colour in the blood agar
e.g (*S. viridans* _ *S. pneumonia*) [**mild** pathogenic group]

***γ-haemolysis** (non hemolytic group)

e.g *S. lactis*

Mainly saprophytic.

2- Sherman`s classification → depend up on the ability of microorganism to grow at 10°C and 45°C

*** pyogenicgroup**

e.g *S. pyogenic*

- Not grow at 10, 45°C but grow at 37°C
- Pathogenic
- β- hemolytic

*** Enterococci group**



S. fecalis (*E. fecalis*)

- grow at 10& 45°C
- Less pathogenic (present in the intestine)
- Highly resistance to alkaline, bile salts.
& saline NaCl & resistance to Antibiotic

*** Lactic group:**



e.g *S. lactis*

- Grow at 10°C but not at 45°C
- Non pathogenic
- γ- hemolytic

*** Viridans or oral *Streptococcus***



S. viridans

- grow at 45 °C & not 10°C

- α – hemolytic

3- lancefield classification → depend on carbohydrate Antigen in the cell wall

Group A , B ,C ,D ,G , N, K , untenable group

Group A :

S. pyogenes affect the human causing scarlet fever acute tonsillitis – abscess – sore throat – otitis media- puerperal sepsis and pyogenic infection

Also cause post streptococcus disease as :

- Rheumatic fever.
- Rheumatic kidney.
- Bovine mastitis in cattle.

Group B:

S. agalactia → mainly affect the bovine causing mastitis.

Normal present in female vagina causing meningitis in the infant & sepsis.

Group C:

S. dysgalactia → mastitis in cattle.

Group D:

S. faecalis (*E. Faecalis*) → endocarditic

Urinary tract infection

Group G, N, K : → animal strain

Affect the animal

+ *S. lactis* , *S. salivaris* → in saliva.

untypable group

S. pneumonia → pneumonia in man.

S. uberis → mastitis in cattle.

S. pyogens

From group A&B hemolytic

Morphology: As general characters

Culture character : As general character+ β .hemolysis

Biochemical test : As general character

Antibiotic sensitivity: Bacitracin sensitive

Serological test:

* C-reactive protein (CRP):

it is test used for diagnosis of post_streptococcal disease

* Anti-streptolysin O (ASO):

Strept. pyogene → produce. streptolysin O

. streptolysin S

. Erythrogenic toxin produce skin rash

. streptokinase (Fibrinolysin)

streptolysin O → stimulated produce of specific antibody in the serum
after 3-4 weeks from infection, this test used to measure the ASO titer .

What is rheumatic fever ?

It is autoimmune disease due to similarity between Ag on the heart muscle and on strep. , so the Ab-formed against strept. will attack the heart → Carditis

Streptococcus pneumoniae

Its role in pathogenesis is of minor importance.

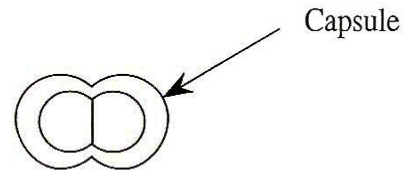
Lancifield group → ungroupable.

Isolated from different species of animals.

Infection always occurs in the immuno-suppressed individual.

Morphology:

* Elongated diplococci.



* Capsulated by polysaccharide capsule $\bar{\omega}$ gives the virulent character of the m.o. as it is highly resistant.

* Typical powerful α - haemolytic.

* Optichin sensitive.

[N.B. Oral Streptococci is optichin resistant].

* Bile soluble:

* Inuline fermenter.

* According to capsular Ag → 80 serovars or more.

Quelling test:

* Also called precipitin capsule test.

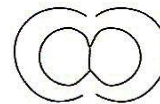
* It is a diagnostic test for *Streptococcus pneumoniae*.

● Film of sputum + Anti pneumococcal serum

+ 3 drops M.B.



Swelling of the capsule



* Used for serovar determination.