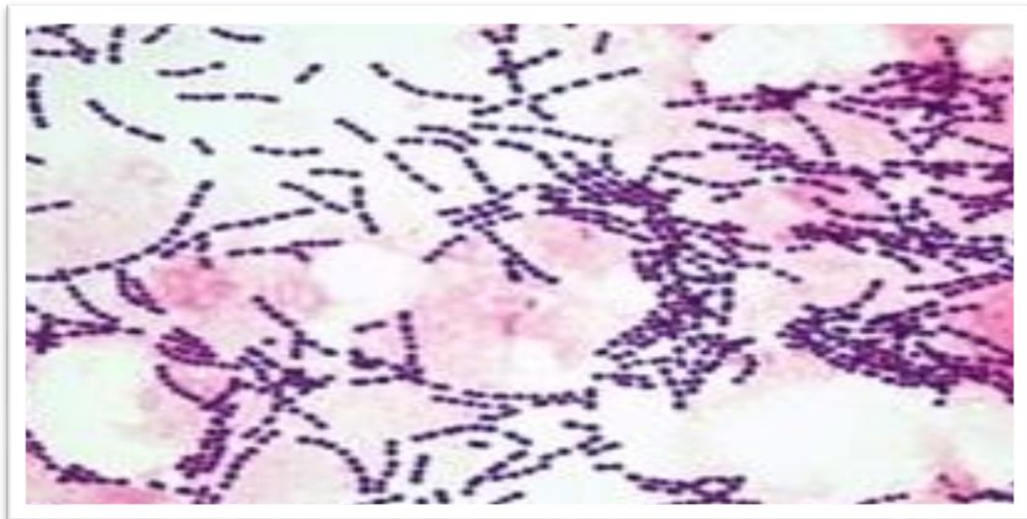


## Lab. 11- Streptococci

### General characteristics:

1. Gram- positive cocci, arranged in chain or pairs.
2. Non-motile, non-spore forming.
3. Some strains are capsulated, which are important in pathogenicity.
4. Catalase – negative.
5. Majority are facultative anaerobes; few are obligate anaerobes.
6. They are fastidious microorganisms grow on enriched media such as blood agar, have small, pin head, opaque , circular colonies.
7. Sensitive to drying, heat and disinfectant



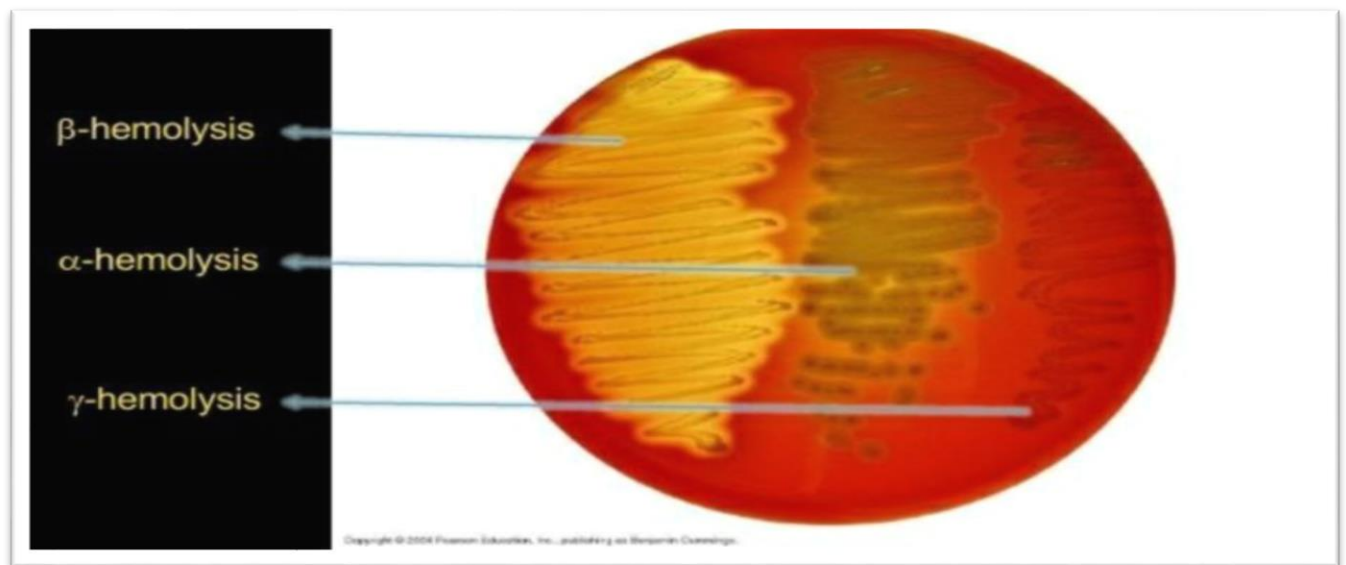
### Streptococcus bacteria

#### Classification:

Species of this genus is classified according to the following:

#### 1- Hemolysis :

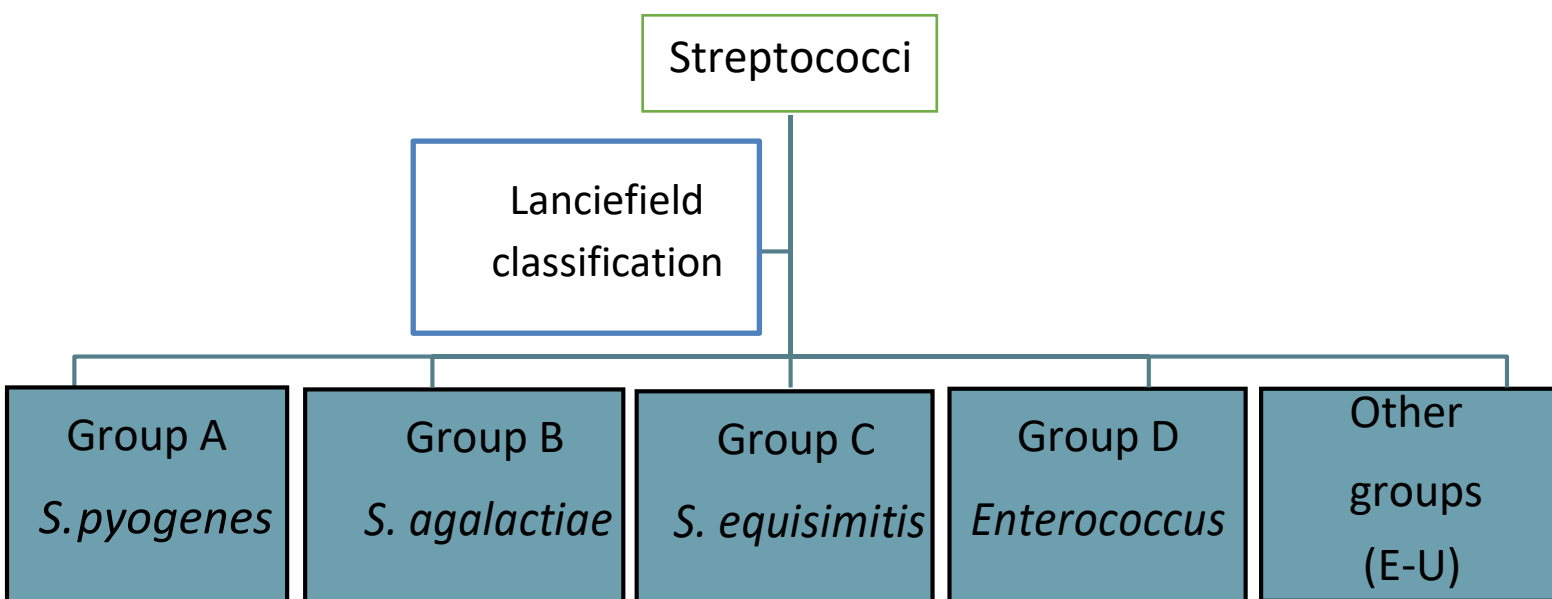
- $\beta$ - Hemolysis : complete destruction of RBCs . e.g. *Streptococcus Pyogenes*
- $\alpha$ -hemolysis : partial destruction of RBCs e,g. *S.mutans*
- $\gamma$ - hemolysis: non- hemolysis .



## Hemolysis on Blood agar

### ► Serology (Lancefield grouping):

There are differences in the polysaccharide antigens (group-specific carbohydrate) of the cell wall. Depending on these specific polysaccharide antigens. Streptococci named as groups from A-H and K- U.



## ○ **Streptococcus pyogenes**

- Gram- positive cocci occurring in chains of varying length ,non – motile and non- spore forming

### ● **Diagnosis**

1. Specimens : swab ( throat in sore throat )

Purulent lesion in wound infection

Blood – in septicemia

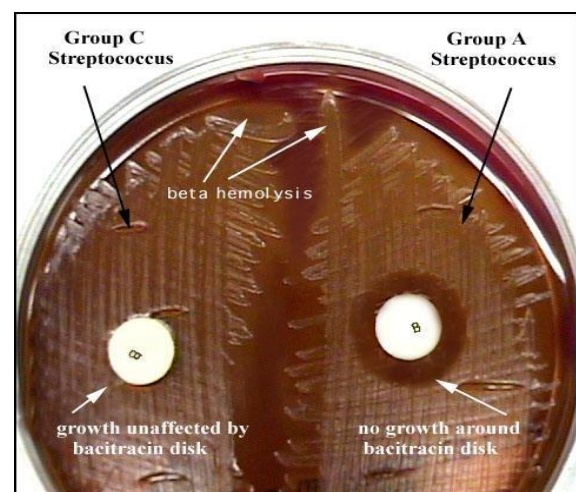
2. Gram -stain
3. from colonies grown on blood agar ( small , semitransparent colonies with large zone of  $\beta$ - hemolysis )  
Incubation at 37c for 24- 48 hrs. With 5-10% Co<sub>2</sub>.
4. Bacitracin sensitivity test:  
A disk 0.04 IU of bacitracin disk placed on the primary culture plate.

**Strep. pyogenes** :  $\beta$ - hemolytic shows a zone of inhibition around the disk .

Catalase test: Give negative reaction.



Hemolysis on blood agar



Bacitracin test

**► Streptococcus pneumonia ( Diplococcus pneumonia ) ( Pneumococcus )**

- The organism typically occurs as oval or spherical cells in pairs, singly or as short chains. The distal ends of paired organism tend to pointed or lancet – shaped.
- Streptococcus pneumonia is non-motile and usually encapsulated.
- Streptococcus pneumonia is bile soluble and this characteristic serves as the most reliable means of differentiating the pneumococcus from other coccal forms.
- The pneumococci differentiated from other alpha hemolytic cocci

**Bile Solubility test****► Principle:**

- *S. pneumonia* produce a self- lysing enzyme to inhibit the growth
- The presence of bile salt accelerate this process

**Procedure:**

Add ten (10 ml) of the broth culture of the organism to be tested to one part (1 ml) of 2% Na deoxycholate (bile) into the test tube.

Negative control made by adding saline instead of bile to the culture. Incubate at 37 c for 15 min, Record the result after 15 min.

**Result:**

Positive test appears as clearing the presence

Of bile, while negative test appears as turbid.

*S. pneumonia* soluble in bile whereas

*S.viridans* insoluble.

