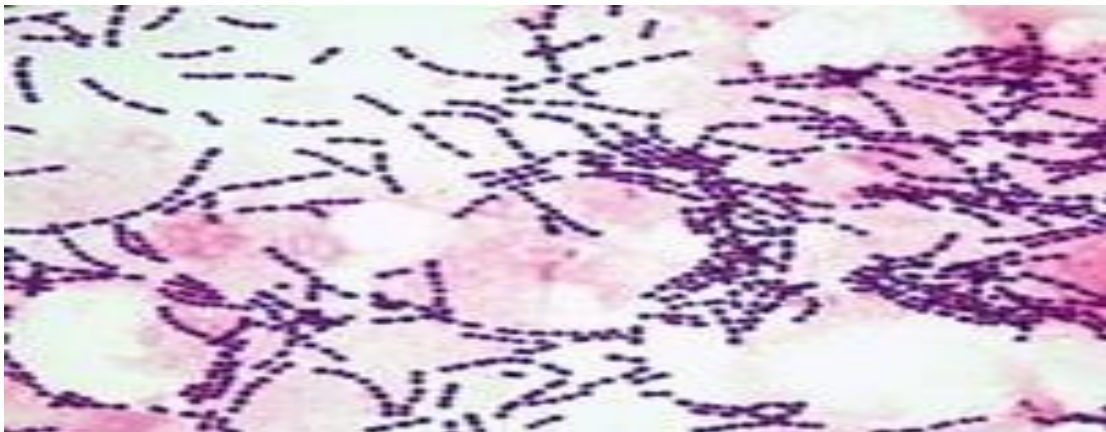


Lab. 11- Streptococci

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



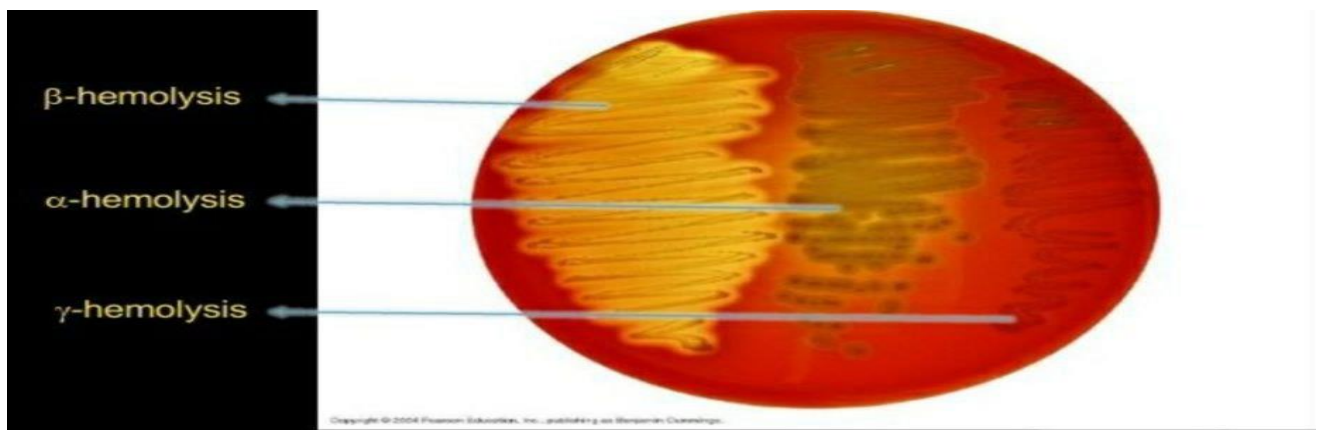
Streptococcus bacteria

Classification:

Species of this genus is classified according to the following:

1- Hemolysis :

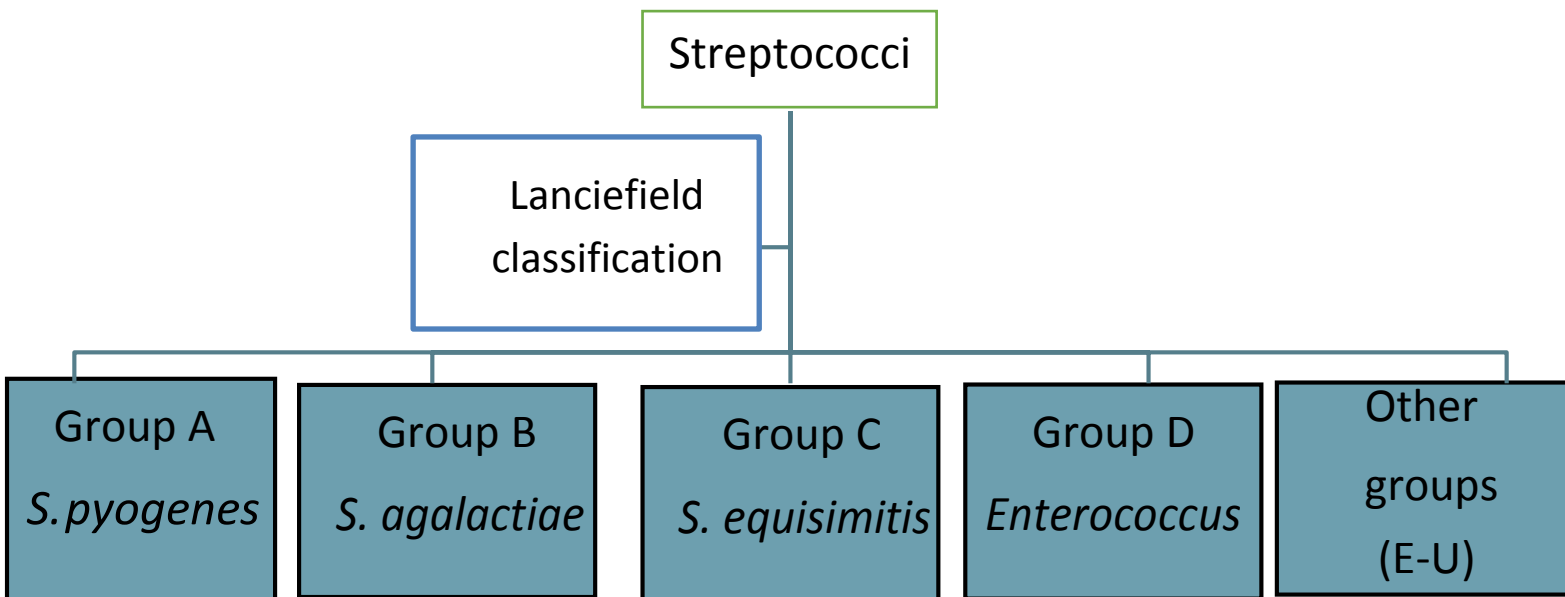
- β - Hemolysis : complete destruction of RBCs . e.g. *Streptococcus Pyogenes*
- α -hemolysis : partial destruction of RBCs e,g. *S.mutans*
- γ - hemolysis: non- hemolysis .



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 are 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 β - hemolysis)

Incubation at 37c for 24- 48 hrs . with 5-10% Co2 .

4. Bacitracin sensitivity test:

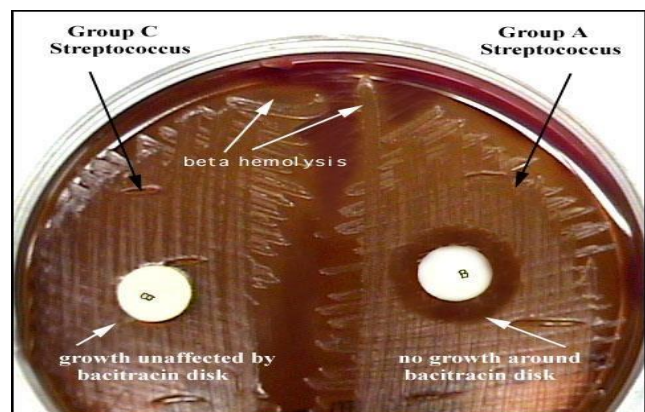
A disk 0.04 IU of bacitracin disk placed on the primary culture plate .

Strep. pyogenes : β - 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 is 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 .

