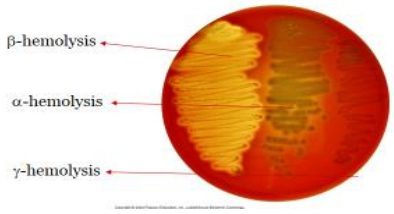
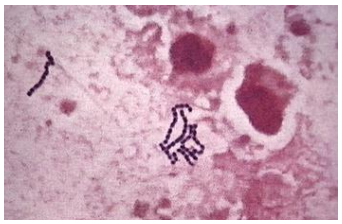


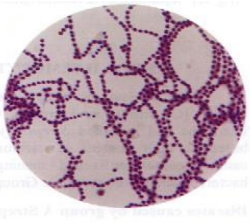
STREPTOCOCCI

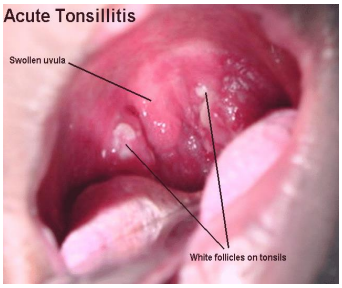
General characters	Classification of Streptococci Based on Hemolysis on Blood Agar		
• facultative anaerobe • Gram-positive • chains or pairs • catalase negative	**α-hemolysis**	**β-hemolysis**	**γ-hemolysis**
	Partial hemolysis Green discoloration around the colonies e.g. non-groupable streptococci (*S. pneumoniae* & *S. viridans*)	Complete hemolysis Clear zone of hemolysis around the colonies e.g. Group A & B (*S. pyogenes* & *S. agalactiae*)	No lysis e.g. Group D (*Enterococcus spp*)

The most frequent etiologic agents of bacterial tonsillitis and tonsillopharyngitis are *Streptococcus pyogenes* strains (80-90 %).

LABORATORY DIAGNOSIS DISEASES CAUSED BY S. PYOGENES







Samples:
differs according to the clinical presentation.
Direct film stained with Gram stain: Gram positive cocci arranged in long chains, non spore forming, non motile and have a capsule of hyaluronic acid.

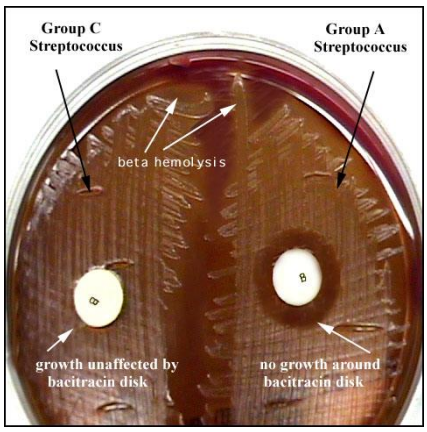
Culture:
- Culture characters: facultative anaerobes, can grow in normal atmospheric CO_2 concentration, (10% CO_2 enhance growth); optimum temp. 37°C.
- Ordinary media: no growth.
- On blood agar: *S. pyogenes* cause β haemolysis with small (pin point) and translucent colonies

Growth can be identified systemically by:
- Film stained by gram to show the morphology.
- Catalase test: negative (differentiate them from staphylococci).
- Bacitracin (0.04 μg) sensitivity: sensitive (differentiate them from other beta hemolytic streptococci which are bacitracin resistant).
- Specific identification of S. pyogens can be done by reaction with specific antibodies.

Positive test: rapid appearance of gas bubbles.

Catalase +ve
Staphylococci

Catalase -ve
Streptococci



Thug's

DIAGNOSIS OF RHEUMATIC FEVER

Clinical picture & history of preceding streptoccal infections.

Laboratory diagnosis by:

Non specific tests:

C- reactive protein & high ESR .

Specific tests : by detection of an increase in antibody titer to at least one of the streptococcal antigens including

- antistreptolysin O (ASO) which is most widely used
- anti-DNase
- antihyaluronidase
- antistreptokinase

DIAGNOSIS OF SCARLET FEVER

a) Specimen: throat swab, examined as mentioned before.

b) Schultz Charlton reaction

- *Principle:* it is a neutralization test in vivo.
- *Method:*

Intradermal injection of the anti–erythrogenic toxin in the erythematous area of skin rash will lead to fading of the rash within 6-12 hours in positive cases.

c) Dick test:

- ***Uses:***

The test is used to assess the susceptibility of individuals to scarlet fever.

- ***Principle:***

Erythrogenic toxin is irritating and causes local reaction when injected intradermal unless it is neutralized by specific antitoxin.

- ***Method:***

0.1 ml of toxin is injected intradermal in one forearm (test) and the same amount of heated toxin (detoxified) is injected in the other forearm (control) the test is read within 4-7 days.

INTERPRETATION

Positive test	Negative test	Pseudo- reaction	Combined reaction
(susceptible) redness and swelling in the test arm that reaches maximum after 4-7 days and disappear gradually. No reaction in the control arm.	(immune) No reaction on both arms.	(hypersensitivity) reaction that appears and disappears in both arms at the same time.	reaction in both but the reaction in the control arm disappear rapidly more than the tested arm.