Practical Microbiology

Lab -4-

Laboratory Diagnosis of Staphylococcus bacteria

By

Dr.Rawaa M. Mohammed

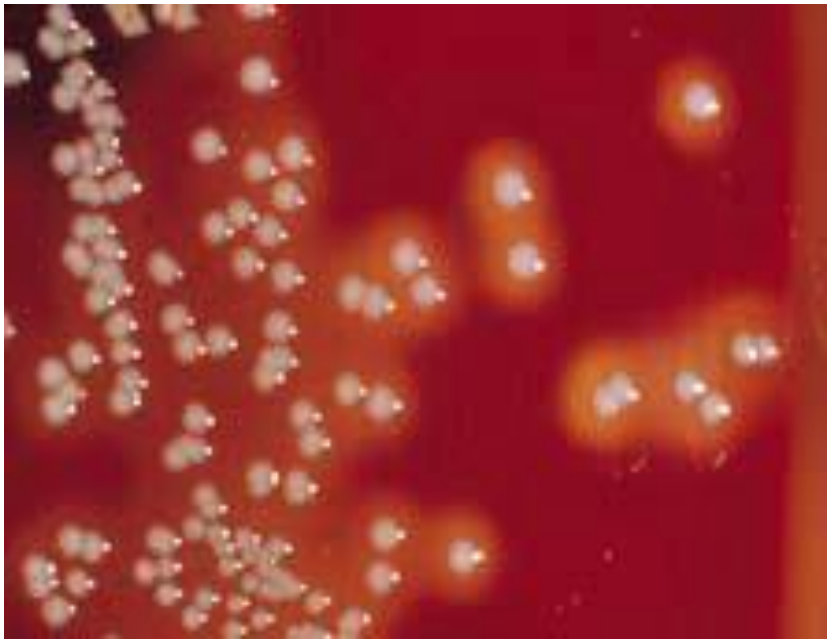
Laboratory Diagnosis: Direct Smear Examination

Microscopic Examination

1. Gram-positive cocci
2. pairs and clusters
3. Numerous polymorphonuclear cells (PMNs)

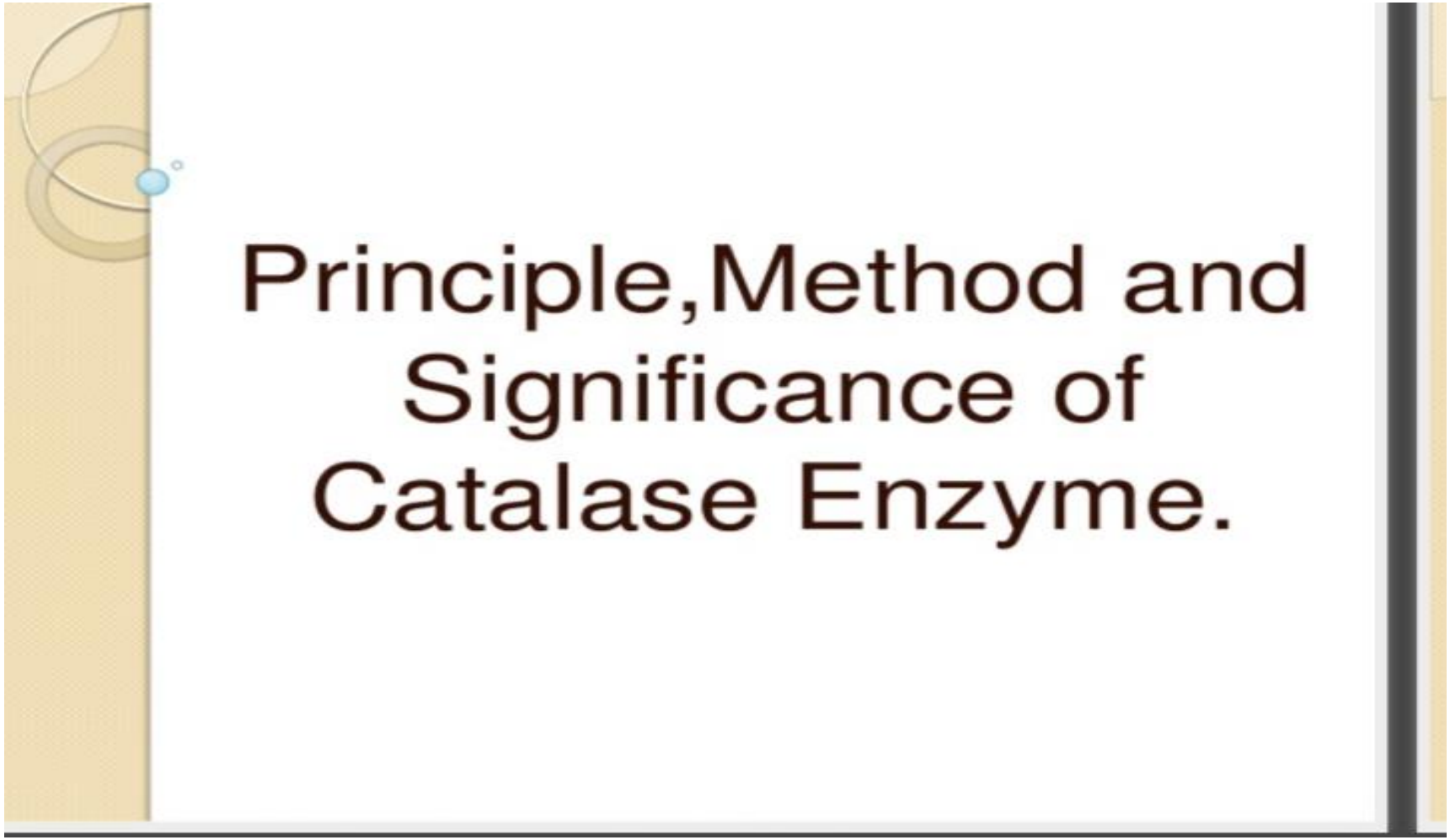
Laboratory Diagnosis: Cultural Characteristics

- Colony morphology
  - Smooth, butyrous, white to yellow, creamy
  - Grow well in 18-24 hours
  - *S. aureus* may produce hemolysis on blood agar



S. aureus

Identification Tests: Catalase



Principle:

Catalase is an enzyme that converts hydrogen peroxide into water and oxygen.

The bacteria that contain this enzyme are Usually aerobic (need oxygen) or facultative anaerobes (can live with or without oxygen).

Catalase test

The catalase test is used to detect the presence of the enzyme catalase in bacteria.

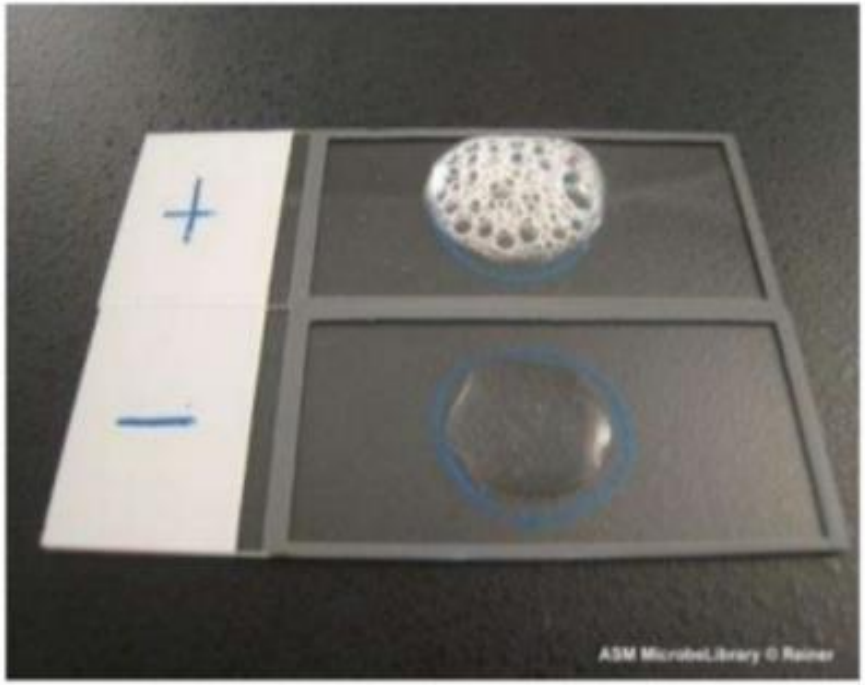
Purpose:-

- Identification for gram-positive & gram-negative organisms.
- It is a primary test used in the differentiation of staphylococci and streptococci.
- Also valuable in differentiating aerobic and obligate anaerobic bacteria.

Staph and Strep

Procedure:-

- Place a small amount of a bacterial colony (18 to 24 hours old) on a clean glass slide.
- Add one to two drops of 3% hydrogen peroxide.
- **Positive:** Rapid bubble formation
- **Negative:** No bubble formation



Slide catalase test results. Hydrogen peroxide was added directly to the culture on a microscope slide. A positive reaction produced by *Staphylococcus aureus* is indicated by bubbling; a negative reaction produced by *Streptococcus pyogenes* is indicated by lack of bubbling. (

Antimicrobial Susceptibility

- Beta-lactam group of antibiotics- (penicillins, cloxacillins, ampicillin, amoxycillin)
- **Beta-lactamase producers** treatment of choice Amoxyclavulinic acid or ampicillinn sulbactam combo or methicillin/ oxacillin
- For methicillin -resistant *S. aureus* **(MRSA)**

  treatment of choice- Vancomycin

Thank You