

Medical bacteria :

General Characteristics of the Staphylococci:-

- Common inhabitant of the skin and mucous membranes
- Spherical cells arranged in irregular clusters
- Gram-positive
- Lack spores and flagella
- May have capsules
- 31 species



Staphylococcus aureus : produce golden yellow colonies on nutrient agar and it is pathogenic .

- Grows in large, round, opaque colonies
- Optimum temperature of 37°C
- Facultative anaerobe
- Withstands high salt, extremes in pH, and high temperatures
- Produces many virulence factors



Virulence factors of *S. aureus*

Enzymes:

- Coagulase – coagulates plasma and blood; produced by 97% of human isolates; diagnostic
- Hyaluronidase – digests connective tissue
- Staphylokinase – digests blood clots
- DNase – digests DNA
- Lipases – digest oils; enhances colonization on skin
- Penicillinase – inactivates penicillin



Toxins:

- **Hemolysins** (α , β , γ , δ) – lyse red blood cells
- **Leukocidin** – lyses neutrophils and macrophages
- **Enterotoxin** – induce gastrointestinal distress
- **Exfoliative toxin** – separates the epidermis from the dermis
- **Toxic shock syndrome toxin (TSST)** – induces fever, vomiting, shock, systemic organ damage



Epidemiology and Pathogenesis

- Present in most environments frequented by humans
- Readily isolated from fomites
- Carriage rate for healthy adults is 20–60%
- Carriage is mostly in anterior nares, skin, nose, pharynx, intestine



- Predisposition to infection include: poor hygiene and nutrition, tissue injury, preexisting primary infection, diabetes, immunodeficiency
- Increase in community acquired methicillin resistance – MRSA.



Clinical Concerns and Treatment

- 95% have penicillinase and are resistant to penicillin and ampicillin
- MRSA – methicillin-resistant *S. aureus* – carry multiple resistance
 - Some strains have resistance to all major drug groups except vancomycin
- Abscesses have to be surgically perforated
- Systemic infections require intensive lengthy therapy

Staphylococcus albus : produce white colonies on nutrient agar and it is non pathogenic . it found normaly on skin .



Thank You

Questions?

Comments and opinions would be appreciated.