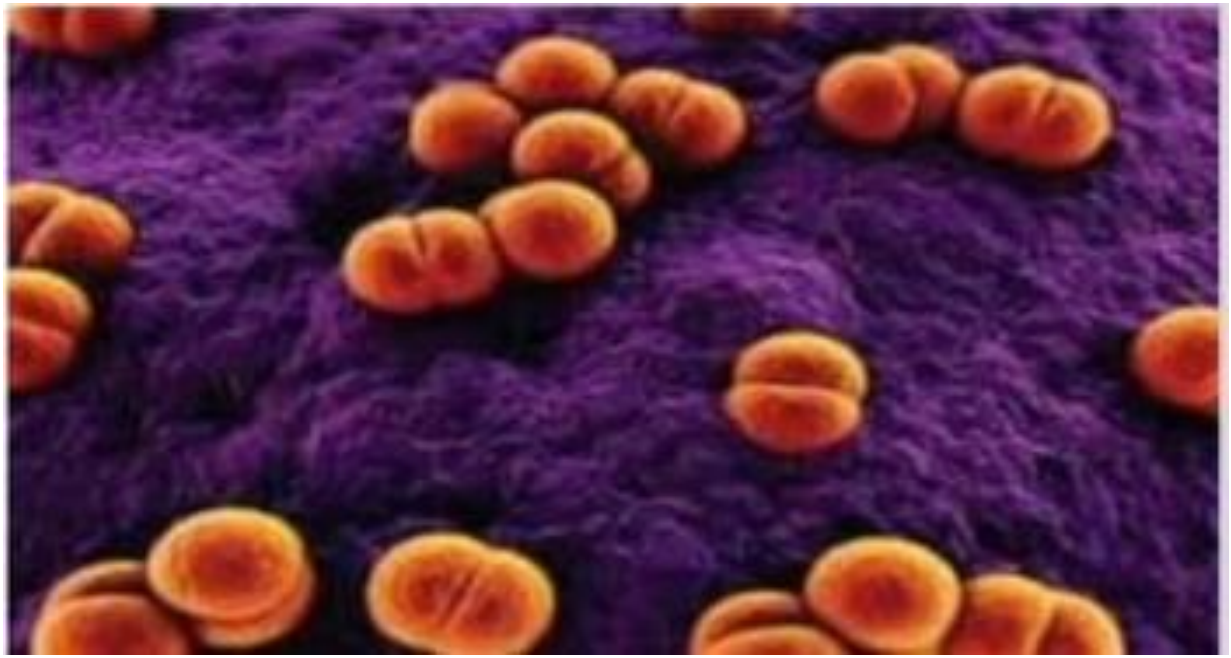
Neisseriae



The Neisseriae are Gram negative diplococci

- Pathogens are:- **N.Meningitidis**
  N.Gonorrhoeae

Neisseria Meningitidis

General characteristics

- Gram-negative, bean-shaped, diplococci
- Do not possess flagella or spores
- Capsulated and possess pili.
- Strict parasites, do not survive long outside of the host
- Aerobic
- Oxidative metabolism
- Produce catalase and oxidase
- Pathogenic species require enriched complex media and CO_2

Morphology

- Gram-negative, bean-shaped, diplococci
- Do not possess flagella or spores.
- Capsulated and possess pili.
- 0.8 x 0.6 µm in diameter.

Cultural characteristics

- Can grow in blood agar, Chocolate agar.
- Growth is improved by addition of blood or serum.
- Growth is also improved by incubation in the presence of 2- 8 % CO_2
- Growth temperature is 36-39^{0}C and pH ranges of 6-8.
- Colonies are 1-2 mm in diameter, convex, grey and transparent. No hemolysis in blood agar.

Biochemical properties

- Oxidase-positive; i.e., they possess the enzyme cytochrome and produce oxidase.
- N.Meningitidis is maltose fermenter.
- N.Meningitidis produces no beta lactamases.

It has three important virulence factors:

1. Polysaccharride capsule. It is antiphagocytic in nature.
2. The endotoxin of N. Meningitidis is a lipopolysaccharide (LPS). It induces septic shock by causing release of cytokines.
3. IgA protease. It cleaves the IgA antibodies present in respiratory mucosa.

Pathogenesis

- Humans are the only natural hosts
- The organisms are transmitted by **airborne droplets**
- Colonize the nasopharynx and become transient flora of the upper respiratory tract.
- From the nasopharynx, the organism can enter the bloodstream and spread to meninges and grow in the cerebrospinal fluid.

Diseases

- N. Meningitidis is the most common cause of meningitis in persons between the ages of 2 and 18 years.
- Outbreaks of meningitis are most common in winter and early spring, and favored by close contact between individuals.

1. Meningitis
2. Meningococcemia (multiplication of bacteria in the blood stream)

Laboratory diagnosisi

- It is frequently isolated from samples such as blood,csf
- Different methods for laboratory diagnosisi are :

*Gram staining

*Culture

*oxidas

*Latex agglutination test

Gram staining

The diagnosis is suggested by the finding of gram negative bacteria bean shaped capsular diplococci.