

LPS extraction (Lab3)

LPS:- is the main outer membrane component of gram negative bacteria which constitutes about 75% of the surface and 5-10% of total dry weight of G-ve .

The basic structure

- 1- **Lipid A** core: consisting of oligosaccharide and repetitive polysaccharide designed O Ag.
- 2- **O-Ag** : consisting of carbohydrate chain is a polymer of repeating oligosaccharide its differ between species and responsible for the serological specificity of bacteria.

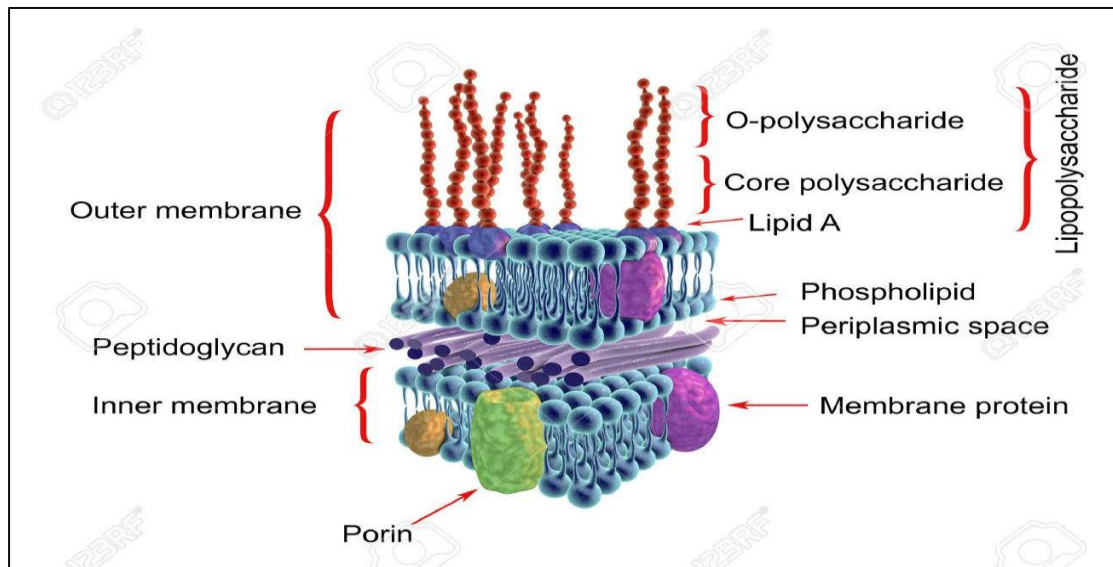
❖ LPS causes :

1. Fever
2. Leucopenia
3. Leukocytosis
4. Shwartzman reactivity

E.Coli considered as enteric bacteria can be differentiated upon O-Ag region into:-

- a. Rough strain : mutant strain that lacks O-Ag
- b. Smooth strain: strain has O-Ag

3- **Core region** : the core polysaccharide is similar in the all G-ve species that have LPS and it consists from Keto-deoxyoctanoic acid (KDO) ,heptose, glucose, galactose and N-acetyl glucosamine .The core region links to lipid A by glucoside bond and have an important role in G-ve as immunogen



The basic structure of G-ve Cell wall

Characteristics of LPS

1. Play an important role as polyclonal antigen stimulates B-lymphocyte to produce immunoglobulin's.
2. Stimulates macrophage and monocyte to produce cytokines and tumor necrosis factor (TNF).
3. Activates complement to produce super oxide from PMNs (neutrophils).
4. Play an important role in adherence and cause disease .It is virulent factor on host tissue causes multiple organ system failure.
5. The toxicity of this structure referred to lipid A which can be neutralized by Polymyxins B and aminoglycosides or chelating agents.