Listeria Monocytogenes Characteristics

Listeria monocytogenes is a gram-positive coccobacilli that causes the infection listeriosis. In humans, manifestations of listeriosis include meningitis, granulomatosis infantiseptica, influenza-like symptoms and gastrointestinal symptoms. It is a facultative intracellular microbe that grows and reproduces inside host's cells and moves within eukaryotic cells by explosive polymerization of actin filaments, called actin rockets. This organism exhibits a characteristic motility, described as tumbling motility when viewed with light microscopy, which can help with identification. It is catalase- positive and expresses a beta-hemolysin, which causes destruction of red blood cells. Listeria was initially thought to be unique among gram-positive bacteria because it appeared to possess lipopolysaccharide, which serves as an endotoxin. Later, it was classified as not a true endotoxin. However, the cell walls contain lipoteichoic acids which resemble the lipopolysaccharides of gram- negative bacteria in structure and function.

PLAY PICMONIC

Characteristics

Gram Positive
Graham-cracker Positive-angel
This organism stains positive on Gram stain due to thick peptidoglycan layer which absorbs crystal violet.

Bacillus
Rod
This organism has a bacillus (rod) shape. After 26 hours it can often be visualized as an intermediate shape as cocci (sphere).

Intracellular
In-a-cell
Listeria is a facultative intracellular microbe that grows and reproduces inside host's cells.

Survives in Cold Temperature
Lives in Frozen-cage
Listeria is a tough organism that can survive in 4 degrees Celsius environment, which is why it is not hindered by refrigeration. This helps distinguish this organism from other gram-positive organisms.

Actin Rocket
Actin rocket
Listeria monocytogenes is a facultative intracellular microbe that grows and reproduces inside host's cells, and moves within eukaryotic cells by explosive polymerization of actin filaments called actin rockets.

Tumbling Motility
Tumbleweed
This organism exhibits a characteristic motility described as tumbling motility when viewed with light microscopy, which can help with identification.

Catalase-Positive
Positive-cat
Characteristically, Listeria is catalase-positive, meaning it produces the enzyme catalase. This enzyme allows the bacterium to convert hydrogen peroxide to water and oxygen.

Beta-Hemolytic
Beta-fish in Petri-dish
Listeria expresses a beta hemolysin, which causes destruction of red blood cells forming a clear area of hemolysis on blood agar.

Only Gram-Positive with Endotoxin-Like Structure
Graham-cracker-Positive-angel holding Unpopped-toxic-balloon
Listeria was initially thought to be unique among gram-positive bacteria because its cell wall appeared to be composed of lipopolysaccharides, which was believed to serve as an endotoxin. Later, it was classified as not a true endotoxin. In fact, the cell walls contain lipoteichoic acids, and not

lipopolysaccharides, which they closely resemble. Thus, listeria are unique because of the endotoxin-like structure they possess, which is composed of lipoteichoic acids that resemble the lipopolysaccharide cell walls of gram negative bacteria.