

**Non-spore forming G+ bacilli**

***Listeria monocytogenes***

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## ***Listeria***

Members of the genus *Listeria* are G+, non-spore forming, facultatively anaerobic rods. *L. monocytogenes* are small coccoid rods that frequently occurs in chains. *L. monocytogenes* is an important causative agent of wide spectrum of disease in human & animals.

### **Morphology & identification:**

Is a short G+ rods. It has a tumbling end-over-end motility at 22 C, but not at 37 C. It is facultative anaerobe, catalase positive.

### **Culture & growth :**

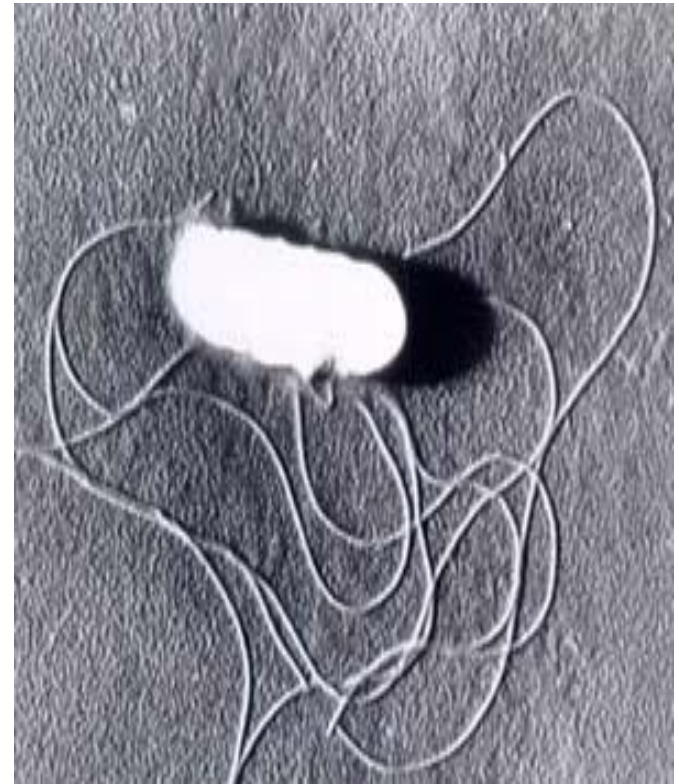
*Listeria* grow on media e.g. Muller-Hinton agar. On blood agar (sheep RBCs) small zone of hemolysis may be observed.

### **Pathogenesis:**

listeriosis, a serious infection caused by eating food contaminated with the bacteria. it has been recognized as an important public health problem. The disease affects primarily pregnant women, newborns, & adults with weakened immune systems.

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*L. monocytogenes* enters the body through the GIT with the contaminated food e.g. Cheese or vegetables. enters the epithelial cells and start to produce lysteriolysin O which facilitate the spread of bacteria from one cell to another without being exposed to antibodies, complements or phagocytic cells. The two main clinical manifestations are **sepsis & meningitis**. Meningitis is often complicated by encephalitis, a pathology that is unusual for bacterial infections.

## Virulence Factors:

### Growth at low temperatures :

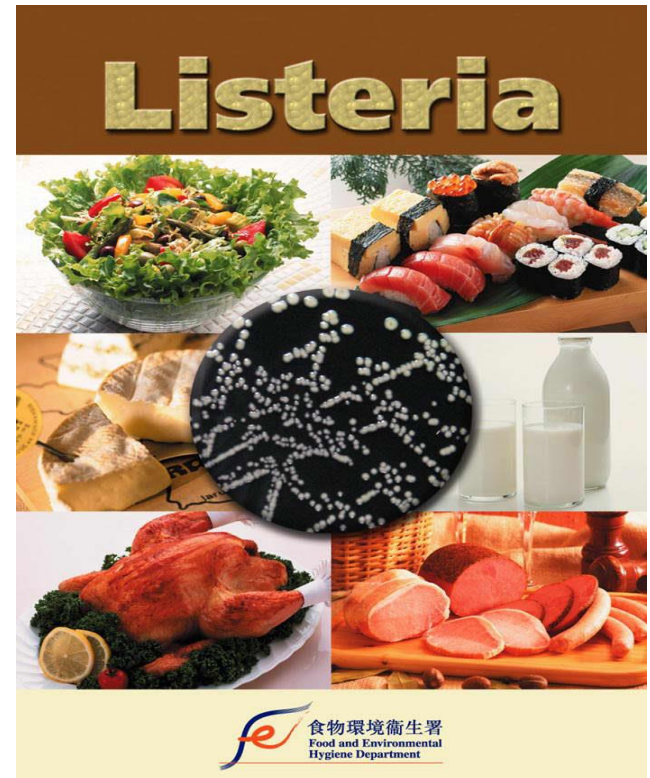
A noval property of *L. monocytogenes* that affects its food-borne transmission is the ability to multiply at low temperatures ( $4^{\circ}\text{C}$ ), So listeriosis is usually associated with ingestion of milk, meat or vegetable products.

### Motility:

like *V. cholerae*, *Listeria*, which is also acquired by ingestion are attach to the intestinal mucosa. although *Listeria* are actively motile by means of peritrichous flagella at room temperature ( $20-25^{\circ}\text{C}$ ), the organisms do not synthesize flagella at body temperatures ( $37^{\circ}\text{C}$ ).

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## **Adhesion:**

*Listeria* can attach to and enter mammalian cells. The bacterium is thought to attach to epithelial cells of the GI tract. The bacteria then taken up by induced phagocytosis. After engulfment, the bacterium may escape from the phagosome before phagolysosome fusion occurs mediated by a toxin, which also acts as a hemolysin, **listeriolysin O (LLO)**. Survival of the bacterium within the phagolysosome also occurs, aided by the bacterium's ability to produce catalase and superoxide dismutase which neutralize the effects of the phagocytic oxidative burst

## **Clinical findings:**

Intrauterine infection results in sepsis and death before or after delivery.

Meningitis: between the birth and the 3<sup>rd</sup>. week of life.

## **Laboratory diagnosis:**

1. Isolation & identification of *L. monocytogenes* from blood or CSF.

2. serology: by detection of *L. monocytogenes* Ag in CSF using specific antisera.

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