Listeria monocytogenes is a pathogenic microorganism that was first identified in 1924 by Murray et al. in rabbits. A few years later, in 1929, the first human listeriosis outbreaks were observed, but it was not until after many years that this illness was associated with the consumption of contaminated beef and dairy products.

Listeria monocytogenes is a foodborne human pathogen responsible for invasive infections, overall presenting a high mortality. Despite the ubiquity of the microorganism, the actual disease rate is quite low and the disease is most often associated with an underlying predisposition.

Where is it found?
- L. monocytogenes is widely distributed in nature. It has been isolated from healthy animals and humans, as well as soils and vegetation.
- Listeria monocytogenes is a very persistent bacterium in food processing plants that can survive and grow at very low temperatures. Therefore, L. monocytogenes has become one of the most important microorganisms in the food industry.
- Special risk materials are raw or processed meat, raw milk products, raw or smoked fish, ready prepared salads and long stored vacuum packaged food.

Why is it a problem?
- L. monocytogenes has been known to cause a serious but rare infection known as listeriosis. Listeriosis is one of the most relevant food-borne diseases.
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Why is it a problem?
L. monocytogenes has been known to cause a serious but rare infection known as listeriosis. Listeriosis is one of the most relevant food-borne diseases. The bacterium is relatively insensitive to high concentrations of salts and acids and is able to multiply at fridge temperature and inside vacuum packaging.

Between 85 and 90% of listeriosis cases result from the ingestion of contaminated products.

Listeriosis is a human disease with low morbidity but high mortality rate (between 20-40%), higher than that caused by Salmonellosis or Campylobacteriosis.

Although some adults experience only mild infections of the eye and skin, and gastroenteritis, it can lead to severe blood poisoning (septicaemia) or meningitis.

Who is especially at risk?
- Pregnant women, the elderly and people with weakened immune systems, including those suffering from cancer, AIDS or alcoholism, are more susceptible to listeria.
- In pregnant women spontaneous abortion or stillbirth may result.

How can we reduce the risk?
- Cleaning and disinfection in food processing plants is essential, as well as the use of measures and good practices in handling and the Hazard Analysis and Critical Control Points (HACCP).
- To slow the growth of L. monocytogenes, high risk foods should be kept below 4°C and for the shortest time possible.
- Avoiding cross contamination of food through good food hygiene and proper food handling can also reduce the risk of infection.
- Susceptible individuals can further minimize the risk of listeriosis by taking special dietary precautions, which include avoiding high risk foods.

International regulations
- In the US, any RTE (“ready to eat”) food in which the pathogen is detected should be considered adulterated and therefore withdrawn from the market.
- In the European Union, RTE foods which are not meant for at-risk-populations as well as those which do not permit the growth of L. monocytogenes, have an imposed limit of 102 cfu/g throughout their shelf-life. Conversely, foods intended for groups at risk, as well as those allowing the growth of the pathogen, are required an absence in 25 g for each analytical unit.

How can we identify it?
- A variety of culture and rapid methods are available for the detection of Listeria spp. in foods. Although the presence of L. innocua may indicate potential contamination with L. monocytogenes, only the latter species is pathogenic for humans. Therefore, the most adequate tests are those which specifically detect L. monocytogenes.
- There is not a single marker available to test the virulence of field isolates for this species. In the future, the combination of different molecular markers will probably allow the screening of food contamination by only the virulent clones of L. monocytogenes, thus improving the prevention of foodborne human listeriosis.
- The most commonly used culture reference methods world-wide for the detection of Listeria in foods are the ISO 11290 -1/ISO 11290 -2 standards (ISO, 1996; EC, 1999).
BIOCHEMICAL PROFILE

Listeria spp. Gram- positive, catalase-positive, oxidase- negative, non-spore forming, short rhods, motile at 30°C or less.

HEMOLYSIS

- Mannitol Fermentation
  - Listeria gravi
  - Listeria welshimere
  - Listeria innocua
  - Listeria ivanovii
  - Listeria londoniensis
  - Listeria ivanovii
  - Listeria seeligeri
  - Listeria monocytogens

+ Rhamnose Fermentation

+ Xylose Fermentation

BIBLIOGRAPHY


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