

# Prevalence of *Listeria monocytogenes* in foods from animal origin in Belgium

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## Introduction

*Listeria monocytogenes* is a common environmental Gram-positive bacterium causing listeriosis in human and animals. It is implicated in severe foodborne infections with high rate of mortality in susceptible individuals, such as immunocompromised hosts, elderly people, infants and pregnant women. It might cause severe diseases as meningitis and be involved in abortions or premature birth. The assessment of the rate and overall the level of this pathogen in several foods is essential for the risk prevention.

## Material and methods

Since 2000, the Belgian zoonosis surveillance program has assessed the contamination with *Listeria monocytogenes* in minced meat of beef and pork (in 1g), in ham, in pâté (in 25g) and in salami (in 25g in 2000 and in 1g in 2001). Approximately 300 samples were taken for each matrix and each year.

The detection of *Listeria monocytogenes* has been carried out with the officially validated method AFNOR BIO-12/3-03/96 Vidas *Listeria monocytogenes* followed by isolation on chromogenic *L. monocytogenes* medium. Briefly, this method consists of a pre-enrichment into Fraser (24h at 30°C) followed by an enrichment in Fraser and the immunoassay Vidas LMO. Confirmation occurs on ALOA (AES) or Rapid *L. mono* (Bio-Rad) medium. The serovar of *Listeria monocytogenes* was determined for each isolate of meat products.

## Results and discussion

In 2000 and 2001, the prevalence of *Listeria monocytogenes* varied between 14 and 25% in minced meat, was around 5% in cooked products and 8,6% (2001) for salami (Fig.1).

The minced meat samples were equally distributed in the three categories of locations : low capacity establishments, supermarkets and butcheries. Most of the isolates were found in low capacity establishments. For ham and pâté, 2/3 of the samples had been handled after packaging (the others were cooked in the final packaging of consumer portion). More than 70% of isolates from these samples were found in handled products after packaging. For salami, 90% of the samples were equally distributed in little and big grade, the other samples were pure pork salami. More than 70% of the positive samples were isolated in little grade salami and none in pure pork salami (Fig. 2-4).

In butchery products, approximately half of the isolates of *Listeria monocytogenes* belonged to the serovar 1/2a, which does not correspond to the most frequent serovars in human isolates. In human isolates (Belgian sentinel laboratories), 43% of the isolates are of serovar 4 and 36% of serovar 1/2a (Fig. 5).

Fig. 1 : Prevalence of *Listeria monocytogenes* in meat (2000-2001)

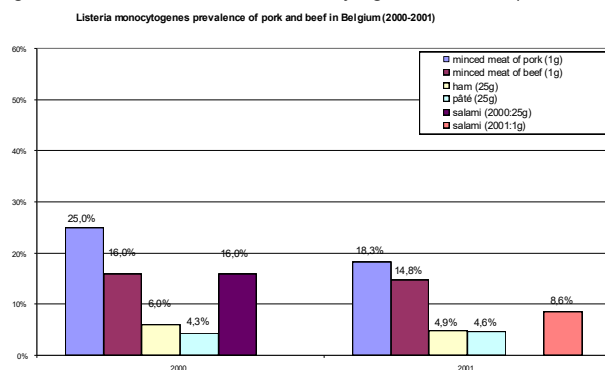
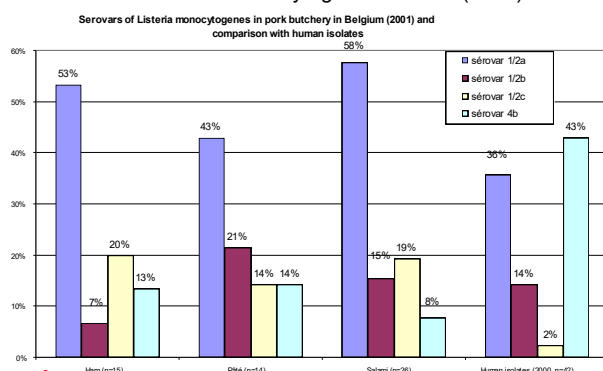


Fig. 5 : Serovars of *Listeria monocytogenes* in meat (2001) and human isolates (2000)



## Conclusion

During storage, growth of *Listeria monocytogenes* is possible and many raw foodstuffs will probably never be completely free of *Listeria*. The consumption of raw or undercooked food, but also of some ready-to-eat meat products, could be an important factor in the transmission and epidemiology of *Listeria* infection. Appropriate application of hygiene and technology is therefore a basic requirement to control *Listeria monocytogenes*. Furthermore, consumers should be educated in proper handling.

## References

G. Ducoffre. Surveillance des Maladies Infectieuses par un Réseau de Laboratoires de Microbiologie 2000 - Tendances Epidémiologiques 1983 - 1999 Institut Scientifique de la Santé Publique, Section d'Epidémiologie, Janvier 2002.

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Fig. 2-4 : Number of *Listeria monocytogenes* isolates in relation with the origin of the samples (2001)

