

Listeria: is it a problem?

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Introduction

Listeriosis is a rare disease caused by the bacterium *Listeria monocytogenes*, the normal vehicle of which is food. The disease, which is largely confined to its risk groups - pregnant women, the elderly and immunocompromised individuals - has increased in incidence in recent years.

Foods implicated in outbreaks of listeriosis have included various types of products: dairy, meat, vegetables and seafood (Schlech, 2000).

The real situation regarding listeriosis in Portugal is unknown, and little data exist on the prevalence of *L. monocytogenes* in foods consumed in the country (Mena *et al.*, 2004; Almeida *et al.*, 2006; Ferreira *et al.*, 2007).

The contamination of food products with *L. monocytogenes* has been a matter of concern for many food producers. The acceptable level of *L. monocytogenes* in ready-to-eat foods is 100 CFU/g. Therefore, an efficient method to control this pathogen in the processing units and in foods is crucial. As a natural technology, the interest in the biological control has been increasing. The utilization of bacteriocinogenic cultures and phages with antimicrobial activity have already been described as effective in the control of *L. monocytogenes* (Albano *et al.*, 2007; 2009; Loessner and Carlton, 2008). In fact, these two methods might be important, not only to enhance the safety of food products, but also to increase their shelf-life during storage. The present study aims to discuss the problem of *Listeria* in foods and the biological control as a solution to guarantee the food safety.

Results and Discussion

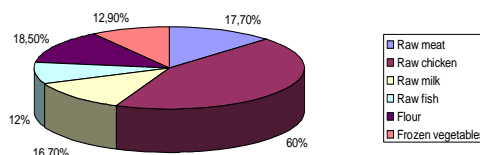


Figure 1. Incidence of *L. monocytogenes* in various products.

The incidence of *L. monocytogenes* in various products is presented in figure 1, reflecting the ubiquity and nature of this microorganism.

The most prevalent serotype was 1/2a and concerning to the susceptibility to arsenic, cadmium and tetracycline the most common profile was sensitive, resistant and sensitive, respectively.

Some of *L. monocytogenes* isolates were used in biological control experiments as target strains. Albano *et al.* (2007) isolated a *Pediococcus acidilactici*, an autochthonous strain of a traditional Portuguese fermented meat sausage, with antimicrobial activity against a cocktail of *L. monocytogenes* strains. More recently, these authors (2009) demonstrated the capacity of *P. acidilactici* to be used as a potential starter culture in the production of traditional products. In fact, the bacteriocinogenic culture reduced the *Listeria* population below the detection limit of enumeration technique and had no effect on the growth of the natural LAB flora or on the pH.

Listeria is a problem; biological control is a potential solution.

Material and Methods

Since 2003, in a routine microbiology laboratory, different *L. monocytogenes* strains were isolated from various food products and stored in the ESBUCP culture collection, for further studies. Several *L. monocytogenes* strains (n=1975) were sub-typed by serotype and resistance to heavy metals and tetracycline.

The differentiation of the major serovars (1/2a, 1/2b, 1/2c, and 4b) of *L. monocytogenes* strains was performed by Multiplex-PCR according to Doumith *et al.* (2004).

Resistance to the heavy metals arsenic and cadmium and the antibiotic tetracycline was achieved according to Vaz-Velho *et al.* (2001).

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