



# **A rapid detection of *Listeria monocytogenes* in food samples by colony hybridization and polymerase chain reaction**

F Dilasser, Mo Delbart, Ml de Buyser, P Fach

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bâtiment, dont 5 fois en association avec *L. innocua* : surface des murs (2 fois), des abreuvoirs (2 fois), aliments des mangeoires (1 fois), fientes fraîches (*L. monocytogenes* sans *L. innocua*, 1 fois). *L. innocua* a été isolé à partir de 5 autres bâtiments (3 de poulets, 2 de dindes). Aucune *Listeria* n'a été détectée dans 7 des 13 bâtiments. D'après ces observations, l'eau et les aliments ne semblent pas des sources importantes de contamination. Les différences entre bâtiments demanderaient à être confirmées par l'analyse d'un plus grand nombre de bâtiments avicoles en y associant des données relatives aux conditions d'environnement.

**A rapid detection of *Listeria monocytogenes* in food samples by colony hybridization and polymerase chain reaction.**

F Dilasser, MO Delbart, ML De Buyser, P Fach (CNEVA, Laboratoire Central d'Hygiène Alimentaire, 43, rue de Dantzig, 75015 Paris)

Recent outbreaks of Listeriosis have emphasized the urgent need for rapid and reliable detection methods for *Listeria monocytogenes* in food samples. Haemolysin production is a major factor in the pathogenesis of Listeriosis. Therefore, 2 oligonucleotides chosen from the sequence of the *hlyA* gene coding for listeriolysin were shown to be specific for *L. monocytogenes* under high stringency conditions of hybridization (Mengand *et al*, 1988). These oligonucleotides were used in colony hybridization tests to identify *L. monocytogenes* among all species of the genus *Listeria* and other bacterial species that may be found in food samples; they also allowed us to count *L. monocytogenes* colonies grown on selective agar plates after direct plating of contaminated food samples (Bohnert *et al*, 1992). Many artificially and naturally contaminated food samples were tested with good results and no cross-reactions. How-

ever, this method required a radioactive-labelled system and cannot be easily used in food safety laboratories. We have also developed a rapid method of detection of *L. monocytogenes* in food samples by adjusting the polymerase chain reaction (PCR). A nested-PCR method was tested and used with a third oligonucleotide, including a 24–48 h enrichment period in Fraser broth. It was possible to detect 10 *L. monocytogenes* in 25 g of contaminated dairy and meat food products. This enrichment step was necessary to distinguish viable bacteria and probably reduced the problems of inhibition frequently encountered when testing food samples in direct PCR. Unfortunately, the enrichment steps cannot be eliminated but immunomagnetic separation using magnetic beads coated with specific antibodies might reduce the enrichment periods before PCR. The nested-PCR method developed for food analysis can be performed in a few hours after a rapid treatment (30 min) of the Fraser enrichment broth and does not require any hybridization step or radioelements. Therefore, it should be an attractive tool for rapid screening of foods.

## References

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**Plasmids in *Listeria monocytogenes* in relation to cadmium resistance and phage typing.** N Marquet-Van der Mee<sup>1</sup>, M Lebrun<sup>1,2</sup>, J Loulergue<sup>1</sup>, A Fenneteau<sup>1</sup>, A Audurier<sup>1</sup> (<sup>1</sup> Laboratoire de Bactériologie, Faculté de Médecine, 37032 Tours;