Comparison between 3 methods to confirm positive results from Vidas LMO® for the detection of *Listeria monocytogenes* in naturally contaminated raw meat

JY. François, K. Peschon, Y. Ghafir and G. Daube
Food microbiology, Faculty of Veterinary Medicine, University of Liege, Liege, Belgium

Introduction

Listeria monocytogenes is an important foodborn pathogen. With cheese, meat is among the most frequently implicated foods. For 10 years, outstanding detection methods have been developed by the main standardisation organisms. The disadvantage of these methods is that the results are based the characterisation of a few isolates. Vidas LMO® (bio-Mérieux, France) may be a good alternative for Palcam and Oxford media because it allows to distinguish *Listeria monocytogenes* among the other *Listeria* species by using its antigenical properties. However, the positive results have to be confirmed.

Material and methods

Sixty naturally contaminated samples (Table1) were assayed for the presence of *Listeria monocytogenes* in 25g. The protocol of enrichment and plating is described in Figure 1.
The three confirmation methods performed were :
- Plating on Rapid *L. mono*® medium (Sanofi Diagnostics Pasteur, France) which contains a chromogenic substrate specific for *L. monocytogenes*
- Accuprobe® *Listeria monocytogenes* (Gen-Probe) : RNA based assay with chemiluminescence revelation.
- CAMP-test and fermentation of xylose and rhamnose.

In the same time, these samples have been tested with an internal method (Figure 2) compiling normalised AFNOR method (NF-V-08-055) and validated chromogenic medium (Rapid *L. mono*®).

Table 1: Matrixes investigated

Matrixes	n=
Retail cuts of beef	11
Ground minced meat of beef	10
Ground minced meat of pork	37
Lamb	2
Total	60

Figure 1: Protocol A (Vidas LMO®)

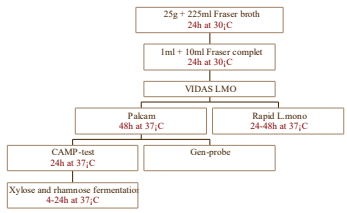
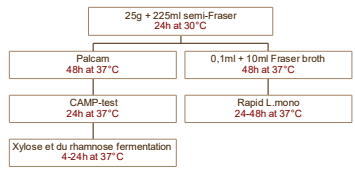


Figure 2: Protocol B (Internal)



Results

The results of the three confirmation methods are shown in Table 2.

Table 2: results of confirmation methods

	Positive samples (n=)	Confirmation rate (%)
Vidas LMO	26	
Palcam and CAMP-test	21	81%
Rapid L. mono	25	96%
Gen-probe	26	100%

The results obtained by the two protocols are shown in Table 3.

Table 3: results of the two methods

	Internal	Internal	
Vidas LMO +	21 (35,0%)	5 (8,3%)	43,3%
Vidas LMO -	11 (18,3%)	23 (38,3%)	56,7%
	53,3%	46,7%	

Discussion and conclusion

From the 26 positives samples, Accuprobe *Listeria monocytogenes* seems to be the best alternative in order to confirm positive results from Vidas LMO®. The traditional method does not allow to distinguish easily *Listeria monocytogenes* among the other *Listeria* species in 19% of the positive samples. The chromogenic *Rapid L. mono*® give good results but can be poorly selective in some cases (highly contaminated raw meat for example).
The comparison between the Vidas® protocol and the internal protocol shows that the preenrichment broth chosen by bio-Mérieux is maybe not the best choice in regard to results obtained. In fact, this preenrichment medium could be too selective for stressed *Listeria* (for example in frozen or technologically processed samples).
The use of Accuprobe® *Listeria monocytogenes* is the more efficient and time saving method in order to confirm the presence of *Listeria monocytogenes* from positive Vidas LMO®.
However, because of its too high selectivity, the preenrichment in Fraser should be usefully replaced by a semi-Fraser preenrichment.