

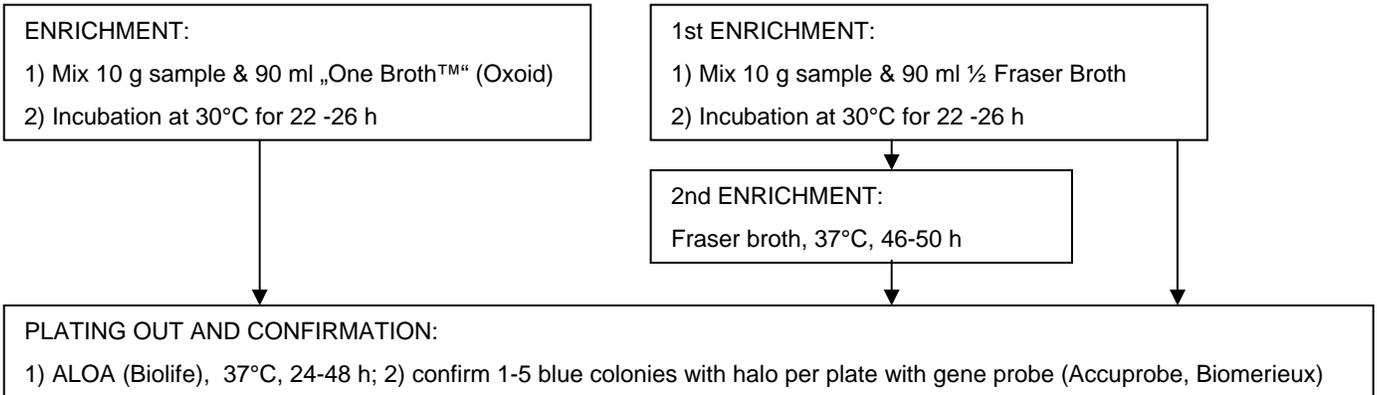
Detection Of *Listeria monocytogenes* In Cheese And Samples Of The Production Environment: Comparison Of The One-Step Enrichment Broth “OneBroth™” With Reference Method ISO 11290-1

J. Hummerjohann, D. Weik, B. Ulmann, R. Imhof

For *Listeria monocytogenes* (LMO), two-step enrichment procedures gave the most satisfying recovery rates in all relevant food matrices so far, but they are still time-consuming. Recently, a procedure called “One Broth (TM)” containing a single enrichment step with 24 hour incubation was successfully validated against the reference method ISO 11290-1/Amd:2004. However, before implementing an alternative method, one has to verify the performance, especially on matrices which are often used or known to be problematic for LMO recovery. Results of our verification procedure are reported here.

Methods*: „One Broth™”

ISO 11290-1/Amd:2004



Design of spiking experiments:

- smear water, brine (20% NaCl), red smear soft cheese, hard cheese smear analysed after scheme above
- 3 levels of contamination (low, medium, high)
- 3 strains, isol. from cheese (LMO 1/2a, LMO 4b & *L. innocua*)
- 15 samples per contamination level and strain (e.g. in Tab. 1)
- 5 blanks/food type

And 14 naturally smear water contaminated samples

		cfu/sample	OneBroth +ve of 15	ISO 11290-1 +ve of 15
Brine Samples Spiked with <i>L. monocytogenes</i> & <i>L. innocua</i>	LMO 1/2a	7	7	14 (1)*
		35	14	14 (8)*
		485	15	15 (14)*
	LMO 4b	3	6	15 (3)*
		28	15	15 (10)*
		402	15	14 (14)*
	LMO 4b & LIN	3 LMO + 7 LIN	8	15 (5)*
		28 LMO + 82 LIN	15	15 (8)*
		402 LMO + 680 LIN	15	15 (15)*

Tab. 1: Design of spiking experiments and results (brine samples)
* in (): samples positive from plating out after first enrichment

ISO 11290		+	-	Σ
One Broth™	+	500	11	511
	-	31	32	63
	Σ	531	43	574 = n

Tab. 2: Summary of method comparison
Clear concordance between both methods (kappa=0.57), calculated after Swiss SAS guideline No. 328

* deviations from AFNOR validation study or ISO 11290 method: 10g sample; ALOA agar for all experiments; no second agar; Accuprobe is a validated alternative confirmation test

Results:

- For brine samples spiked with low levels, only 21/45 positive with „One Broth™” in contrast to reference (44/45 positive) (Tab.1)
- Second enrichment of ISO 11290 strongly needed for LMO recovery from brine samples (Tab. 1)
- Clear concordance between both methods (kappa=0.57, Tab 2); strong concordance (kappa=0.71), if brine samples excluded
- Successful recovery of LMO at low numbers in brine, if „OneBroth™” is incubated for 48 h (data not shown)

The one-step enrichment procedure „One broth™” is suitable for the fast and successful recovery of *Listeria monocytogenes* in cheese and samples from the production environment, but may need modification in case of certain matrices (e.g. 48 h incubation of brine samples). These results are showing the need of a carefully performed verification procedure, even when already validated alternative methods are applied.

