Total listeria environmental screening in 24 hours

There is no simple single test procedure that can give a definitive result for the detection of pathogens such as listeria. All methods involve sample collection devices, enrichment in culture media, process treatments and entail several handling or transfer steps.

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	Black colour			Glo (fluorescence)		
	(Hours)					
	24	30	48	24	30	48
L. monocytogenes	289	114	3	1490	51	5
L. species	1390	67	4	-	-	-
L. species: L. mono and L. species	670	68	3	1490	51	5
Non-listeria	363,553	363,553	313,047	-	-	-

Table 1. Median CFU detected across all bacteria from each group.

These procedures generate a presumptive positive result which only becomes a true positive result when the identity of the isolate is confirmed. A presumptive positive result that subsequently does not confirm the identity, is a negative result and not a false positive. More specific and definitive detection methods are more expensive than simple screening tests.

The benefit of screening tests is that negative samples can be eliminated quickly to verify process control procedures and reduce the need for expensive confirmatory tests.

This enables testing to be more cost effective by directly reducing costs or using the same budget to increasing the number of samples tested, thus minimising the risk exposure and improving quality assurance.

3-in-1 cleaning tool

A new listeria screening test provides a simple convenient cost effective solution. InSite *L. mono* Glo is a single device intended for monitoring environmental surfaces after cleaning. It provides a 3-in-1 screening tool for listeria species with a built-in verification for L. monocytogenes giving visual results in 24-48 hours.

Requiring nothing more than a small portable incubator and a UV flash light, the test is simple to use and self-contained to minimise the risk of cross contamination.

The procedure is a simple swab, snap and squeeze, incubate and read using the naked eye. The visual result can be read at any point and any number of times during the incubation period to get the earliest indication of the result.

The device consists of:

- A 1-inch foam swab prewetted with a neutralising buffer that allows bacteria to recover, grow and to counter the inhibitory effects from any residual sanitiser that may remain on the test surface after cleaning. The large foam swab has been validated to collect and detect listeria after swabbing either 4 x 4-inch or 12 x 12-inch surface area and detect listeria at low numbers after drying overnight at room temperature to apply stress that typically results in a large loss of viability.

- The bulb of the device contains a new improved media that is released when the device is activated by a simple snap and squeeze action. The media is selective for listeria and reduces the incidence of presumptive positive results from bacteria with similar diagnostic characteristics, such as enterococci. The chromogenic media relies on the ability of listeria to hydrolyse esculin enzymatically and produce a blackening of the media.

- The media in the bulb also contains a fluorogenic substrate which is hydrolysed by pathogenic strains of listeria viz L. monocytogenes to release a product that fluoresces green under low level UV light. The fluorescence is visible in the media but also binds to the plastic of the swab tube which makes it more vivid and a definitive positive result.

InSite *L. mono* Glo showed very good specificity and sensitivity. It has been

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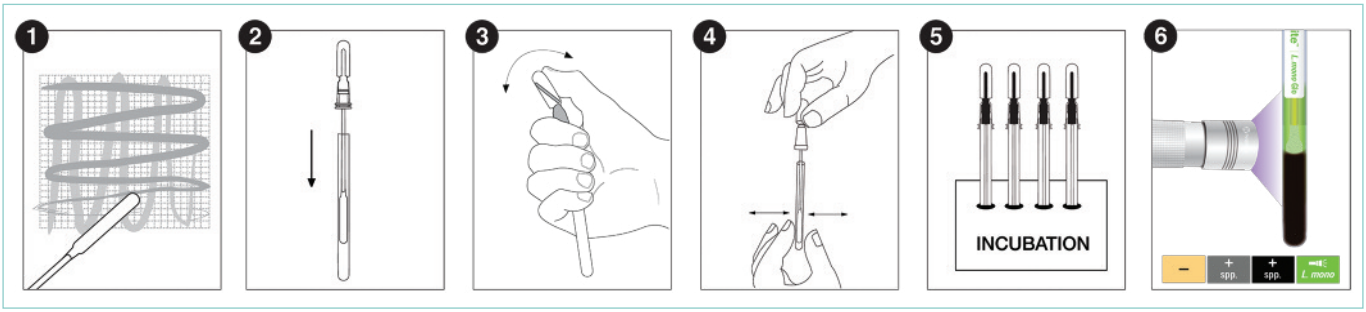

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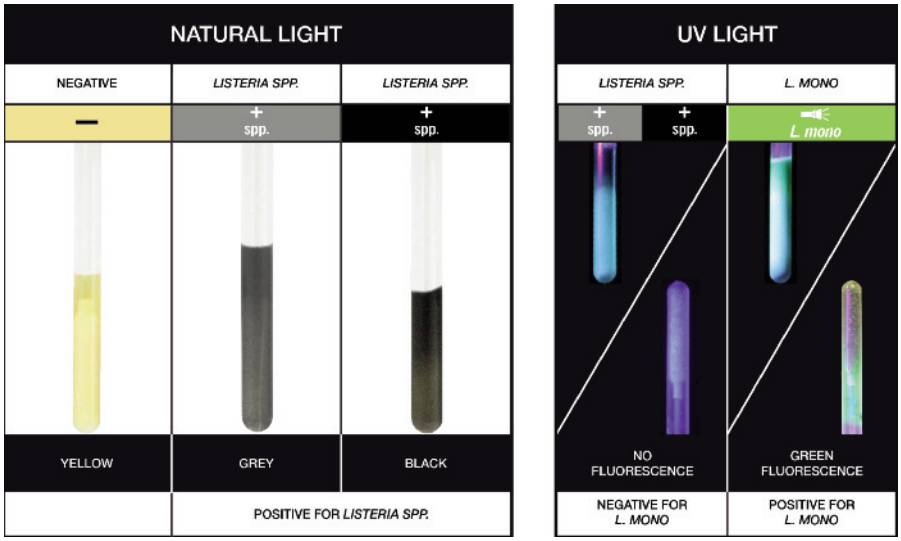
validated with >95 strains of listeria species of which >55 were L. monocytogenes from 12 serotypes, and all were detected. More than 35 non-listeria species were also tested and none of the staphylococci, bacilli, coliform or enterobacteriaceae were detected even at very high inocula. Some enterococci were detected but only at high inocula of ~500,000cfu.

The time to detection with a high probability of detection was dependent on the inoculum. At the lowest inocula at 1-10 cfu per swab area on both 4 x 4 and 12 x 12 inches dried on to stainless steel coupons, the test required 48 hours to detect and verify a positive.

The limit of detection after 30 hours' incubation was 25 cfu/swab whereas after 24 hours' incubation the limit of detection was >1000 cfu (see Table 1).



Typical test results.

Cost effective format

The test format of InSite *L. mono* Glo facilitates cost saving since a neutralising swab and selective media are contained in a single, pre-assembled, ready to use device. The foam swab enables both large and small surface areas to be covered and its narrow diameter also enables samples to be collected from small crevices and nozzles.

Minimal expertise is required to activate and read the test and no opening or transfers are required, thus minimising the risk of cross contamination.

Presumptive positive results for both listeria species and L. monocytogenes are obtained in 24, 30 and 48 hours giving a rapid semi-quantitative result as well as screening out the negative samples in 48 hours.

The media is compatible with other tests such as BAX System PCR tests to confirm the presence of the pathogen in three hours or less. Similarly, the media giving presumptive positive results contains viable cultures from which bacteria can be isolated and identified by conventional or modern methods, and source tracking using fingerprinting methods such as the RiboPrinter.

InSite *L. mono* Glo is a convenient, cost effective, rapid screening tool for listeria in environmental samples. ■