Viable Legionellae detection by PCR a practical tool for evaluating critical samples

Monitoring of viable Legionellae levels in water samples is possible by the means of Viability PCR. Nowadays in a few hours it’s possible to perform a more complete evaluation of the real sanitary risk while avoiding the current approach drawbacks:

- Culture needs more than 5 days to show a first result with a final assay runtime of 10 days (according ISO 11731)
- Conventional qPCR detects DNA from total Legionellae (dead and live) and for this reasons positive results can provide a very biased interpretation of real risk.

“The v-PCR method appears to be a promising and rapid technique for enumerating L. pneumophila bacteria in water and, in comparison with conventional qPCR techniques used to monitor Legionella, has the advantage of selectively amplifying only viable cells.” [1]

“PMA-qPCR is a promising technique for limiting detection to intact cells and makes Legionella surveillance data substantially more relevant in comparison with qPCR alone” [2]

“The results indicate that EMA-qPCR could be used as a complementary tool for the detection and monitoring of Legionella in water systems, especially in hot spring water samples.” [3]

“The EMA-qPCR assay may be useful in environmental surveillance for viable legionellae and in evaluation of superheating efficacy against legionellae.” [4]

Viability PCR combines the use of photo-reactive reagents with a high affinity for DNA with a photo-chemical reaction. The nature of the reagents precludes them from passing through cell membranes. For this reason the DNA from cells with undamaged membrane will remain photo blockage free. After the treatment of microbial aqueous suspension with our reagents in combination with a photo-activation step, only DNA from living microorganisms will be detected through molecular procedures.

PhAST Blue the solution for precise photo-activation

Efficiency

PhAST Blue combines high power LED with the proper optical alignment of the reaction tube to ensure the maximum efficiency in the binding of the reagent to DNA.

Reproducibility and Speed

PhAST Blue improves reproducibility and avoids variations due to manual photoactivation. The PhAST is thermally stable and supplies a constant and uniform light dose, allowing simultaneous photo-activation of 12 samples in a simple and efficient manner in 10-15 min.

Simple treatment previous to PCR workflow

Add the reagent to a sample aliquot, mix and incubate in the dark during 10-30 min prior to photoactivation.