



news digest #002

Evolution in the water testing laboratory

Water testing laboratories know the tedious rhythm they deal with every day, to reassure we all can benefit from the luxury of clean and safe water. A whole series of organisms are growing on different agars, and with the first tiny colony appearing, the second part of the meticulous yet slow identification and confirmation workflow begins. Would you like to bring some more swing and speed into this workflow? Let's have a look at how water testing laboratories processing such samples can evolve while implementing our solution, applicable for e.g. water supply organizations, pharmaceutical QC/QA, environmental, food and biotechnology laboratories, and more.

When looking at the main water-relevant microorganisms summarized in the table on page 2, you count a lot of different species which can possibly be present in your routine samples. How many different PCR assays or biochemical tests would you need to identify them all, being more than 30 species?

Bruker's MALDI Biotyper[®] offers an easy-to-use microorganism identification solution, covering all these species with one system, one method, one set of consumables. The MALDI Biotyper[®] can reliably test multiple colonies in one run, saving crucial time for the confirmation of coliforms, *Pseudomonas aeruginosa*, *Salmonella* spp., *Enterococcus* spp., sulfite-reducing anaerobes (*Clostridium*), and other microorganisms. Fast identification results, delivered in minutes starting from the colony, facilitate quick decision making, to ensure the quality and safety of water or your production environment.



MALDI Biotyper[®] sirius

Selection of important water-relevant microorganisms

Gram-negative

Alphaproteobacteria

Brevundimonas bullata, *Ensifer adhaerens*,
Sphingomonas paucimobilis

Betaproteobacteria

Alcaligenes faecalis, *Burkholderia cepacia*,
Janthinobacterium lividum, *Ralstonia pickettii*,
Variovorax paradoxus

Epsilonproteobacteria

Campylobacter coli

Gammaproteobacteria

Buttiauxella agrestis, *Citrobacter gillenii*,
Acinetobacter baumannii, *Enterobacter chloacae*,
Escherichia coli, *Klebsiella pneumoniae*, *Legionella*
pneumophila, *Lelliottia amnigena*, *Proteus*
vulgaris, *Pseudomonas aeruginosa*, *Salmonella*
enterica, *Serratia marcescens*, *Stenotrophomonas*
maltophilia, *Yersinia enterocolitica*

Gram-positive

Actinobacteria

Corynebacterium glutamicum, *Micrococcus luteus*

Bacilli

Bacillus cereus, *Enterococcus faecalis*, *Listeria*
monocytogenes, *Staphylococcus aureus*,
Streptococcus uberis

Clostridia

Clostridium difficile

A booklet called "[Blue Book - The Identification of Microorganisms using MALDI-TOF Mass Spectrometry](#)" was published recently on the British SCA website (www.standingcommitteeofanalysts.co.uk). The SCA series of booklets all deal with different topics on microbiology of drinking water. The MALDI-TOF confirmatory method recently has been demonstrated to produce equivalent or better confirmation rates of coliforms, *Enterococci* and *C. perfringens* bacteria from a range of water samples, compared to the traditional confirmation methods (see Appendix 3 of the booklet, A single laboratory method validation study of Coliform, *Enterococci* and *Clostridium perfringens* confirmatory analysis via MALDI-TOF). Recently, Welsh Water (UK) invested in MALDI-TOF mass spectrometry and performed this validation study to assess the MALDI-TOF instrument.

Besides this study, the SCA booklet covers a comprehensive overview on the principle, limitations, analytical procedure and more, with many useful pictures and screenshots. Additionally, the SCA booklet contains a technical protocol for the characterization and verification of MALDI-TOF, also giving guidance on selecting microorganisms to execute a validation study for MALDI-TOF identification and to be used as confirmatory analysis. Direct comparison to the traditional confirmation methods is shown in another chapter, and was not limited to coliforms, *Enterococci* and *C. perfringens*, but includes additional results for *Salmonella*, *Legionella* and *Pseudomonas aeruginosa*. We strongly recommend reading this very nice booklet. Well done!

[Read more](#) on our webpage on Water Microbiology

Not for use in clinical diagnostic procedures. Please contact your local representative for availability in your country.

As of May 2021, Bruker Daltonik GmbH is now Bruker Daltonics GmbH & Co. KG.



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