

S7 PARALLEL SESSION 02

Potentially pathogenic microorganism's sampling and detection in water thermal SPAs.

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Thermal bathing pools in spa centers have been increasing in Portugal. Considering that thermal water is not disinfected or treated, microorganisms such as *Staphylococcus*, *Pseudomonas aeruginosa* and *Legionella* sp. may grow in the indoor environment of these facilities and influence the health of users and staff. *S. aureus*, particularly methicillin-resistant strains and *P. aeruginosa* are well-known worldwide as a cause of numerous hospitalizations and deaths associated with extremely high mortality rates for invasive infections, while, several *L. pneumophila* outbreaks have been recorded potentially associated with severe pneumonia and Pontiac fever which is a severe public health issue. These microorganisms can spread through water vapor, making health care centers, such as SPA facilities, extremely susceptible to contamination.

This study aims to assess the presence of potentially pathogenic microorganism's namely, *S. aureus* methicillin sensible (MSSA) and resistant (MRSA), *P. aeruginosa* and *Legionella* in two thermal SPAs in Portugal.

Samples were collected in May 2019 according to the orientations from Health General Direction and the culture method described in ISO 11731:2017 was applied for the isolation of *Legionella* and estimation of their quantity in water samples.

Four water samples (1L for place) were collected from workers toilets showers and Vichy shower, filtered and the culture method for the detection of *Legionella* applied in the same day of sampling. For *S. aureus* and *P. aeruginosa* detection, samples were inoculated in Tryptic Soy Broth for 24h at 37°C and inoculated in non-selective Columbia blood agar and selective culture media plates Chromogen MRSA and Cefrimide Selective Agar, respectively. MRSA isolates were confirmed by immunologic assays.

In the analysed samples, it was not detected culturable *Legionella* species. On the other hand, we have identified MSSA and MRSA in the analysed samples 17,6% and 5,9%, respectively and a prevalence of 11,7% of *P. aeruginosa*.

Thermal spa environments can create extremely good conditions for the development of potentially pathogenic microorganisms, with associated antibiotic resistance mechanisms which can represent a health hazard for workers and users and became a public health

- concern. It should also be taken into consideration that although negative results obtained in the *Legionella* detection, in future work molecular methods will be utilized in order to confirm these results. Nevertheless, effective monitoring must be done periodically, during all the year, to prevent the infection of users and staff.

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