ORT_02 - Evaluation of Fourier-Transform Infrared Spectroscopy as a rapid method to type *Stenotrophomonas maltophilia* strains isolated from pharmaceutical industry

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Introduction: The typing of micro-organisms in pharmaceutical factories often relies on expensive and time- consuming molecular techniques. So, the implementation of cheap, fast and reliable typing methods in the routine of the microbiology laboratories would speed up the procedures investigations improving the contamination control strategy. The Fourier-transform infrared (FT-IR) spectroscopy is a method that generates spectra, aiming at typing the micro-organisms within 3 h, which can be a promoting method for pharmaceutical industries.

Objectives: This study aimed to evaluate the discrimination power of FT-IR among *S. maltophilia* strains isolates from clinical and from the production chain of an immunobiological pharmaceutical industry in Rio de Janeiro/Brazil.

Methodology: Forty-three strains identified as *S. maltophilia* by Matrix-Assisted Laser Desorption Ionization- Time of Flight Mass Spectrometry and 16S rRNA gene sequencing were evaluated. Nine strains were isolated from samples of clinical specimens and 37 were isolated from a pharmaceutical industry. The FT-IR was performed according to the manufacturer's instructions using IR Biotyper®. Three dendrograms were built, one with just the clinical strains, another with the strains isolated from the pharmaceutical industry, and finally one with all strains. All dendrograms were created with the raw data to cluster the separation spectrum and the cut-off value was automatically calculated using OPUS v.7.5 software.

Results: At the dendrogram with the 43 strains, four large clusters were formed, two composed of clinical strains and two composed of strains from the pharmaceutical industry. FT-IR was able to differentiate all clinical strains, with the exception of two of them. However, these two strains did not form clusters and were aligned very distantly in the dendrogram, demonstrating that they are very different from the others, which may justify their grouping with the strains isolated from the pharmaceutical industry.

Conclusion: The FT-IR has shown to be promising and applicable technique for *S. maltophilia* typing since it was able to differentiate 43 strains from clinical pharmaceutical industry. Moreover, FT-IT has a great potential to be applied in the long term since its constant use will expand its database and enlarge its power of bacterial discrimination. As far as the authors concern, this method has not previously been applied to *S. maltophilia*.

Keywords: *S. maltophilia*; FT-IR; Typing