

P2236 Identifying anaerobic bacteria using MALDI-TOF MS: a year experience

Luis Alcalá¹, Mercedes Marín¹, Adrian Ruiz¹, Lidia Quiroga¹, Maribel Zamora¹, Antonia Fernandez Chico¹, Emilio Bouza¹, Belen Rodriguez-Sanchez*¹

¹*Instituto de Investigación Sanitaria Gregorio Marañón, Clinical Microbiology and Infectious Diseases, MADRID, Spain*

Background: Because of the special culture requirements of anaerobic bacteria, their low growth-rate and the difficulties to isolate them MALDI-TOF MS represents a reliable identification tool since it requires little amount of bacteria and allows high-throughput. Its implementation in the routine from the microbiology laboratory has increased the number of anaerobic isolates correctly identified within minutes and, in parallel, the number of isolates requiring additional test for a final identification.

In this study, the performance of MALDI-TOF MS for the identification of anaerobic isolates during a whole year is described.

Materials/methods: Between January and December 2016, 1056 anaerobic isolates were routinely identified in our clinical microbiology laboratory. They were grown at 35°C on Brucella agar under anaerobic conditions. Isolated colonies were directly smeared onto the MALDI-TOF target plate and submitted to on-plate protein extraction with 1µl of 100% formic acid. Once dried, the spots were covered with α -HCCA matrix and protein spectra were analyzed with MALDI Biotyper 3.1 (Bruker Daltonics, Germany) and the BDAL database updated with 6903 Main Spectra. Score values ≥ 1.8 and ≥ 1.6 were established for reliable species- and genus-level, respectively. Sequencing analysis of the 16S rRNA gene was used as a reference method for the identification of isolates unreliably identified by MALDI-TOF MS.

Results: Overall, 89.4% of the isolates were identified with score values ≥ 1.8 and 7.7% with score values between 1.8 and 1.6. Only 2.9% of the anaerobic bacteria obtained score values below 1.6, which correlated with those unreliably identified or identified only at the genus level. Besides, no differences between gram-positive and gram-negative isolates were detected.

Conclusions: MALDI-TOF has proved to be a rapid, reliable and inexpensive technique for the routine identification of anaerobes. The high correlation between species-level identification with score values above 1.8 makes this score more suitable for routine identification of anaerobic isolates.