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P2211 Accurate identification of dermatophyte fungi using MALDI-TOF MS

Estreya Zvezdanova[1], Lidia Quiroga[1], Jesus Guinea Ortega[1], Elena Reigadas Ramirez[1], Patricia Muñoz[1], Pilar Escribano[1], Belen Rodriguez-Sanchez*[1]

[1] Instituto de Investigación Sanitaria Gregorio Marañón, Hospital General Universitario Gregorio Marañón, Madrid, Spain

Background: The identification of filamentous fungi using MALDI-TOF has been increasingly improved due to the development of sample preparation methods that allow an enhanced extraction of fungal proteins and expanded, in-house libraries containing reference spectra of dermatophyte molds. In our study, an in-house library containing isolates from two genera of dermatophyte fungi (*Microsporum* and *Trichophyton*) was evaluated as part of a bigger database containing fungal species of clinical interest.

Materials/methods: We selected a total of 88 dermatophyte isolates molecularly identified by sequencing of internal transcribed spacer (ITS) region. Isolates were revived on potato-dextrose agar, and a small portion of conidia from the colonies grown after 2-3 days incubation were resuspended in 300µl and vortexed for 5 min in the presence of 30µl of 0.5mm glass beads. Then, 900ml of ethanol were added and the mixture was centrifuged for 2 min at 13000 rpm. The pellet was dried thoroughly and submitted to a formic acid-acetonitrile protein extraction. 1µl of the supernatant was spotted on the MALDI target plate and covered with 1µl of HCCA matrix prepared after the manufacturer instructions (Bruker Daltonics). An in-house library was built with 28 isolates from 6 dermatophyte species (*Microsporum canis, M. audouinii, Trichophyton benhamiae, T. concentricum, T. interdigitale* and *T. rubrum)* following the manufacturer instructions. The remaining 60 isolates were identified in parallel using the Filamentous Fungi 1.0 library (Bruker Daltonics) and a combination of this commercial library and the in-house database.

Results: Out of the 60 isolates analyzed, 40 were correctly identified by MALDI-TOF at the species level using the commercial database. From the remaining isolates, 6 could not be reliably identified and the rest (n=14) were misidentified as a closely related species (*T. tonsurans* instead of *T. interdigitale*). However, the in-house library provided an accurate species-level identification in 59/60 cases. Only one isolate of *M.canis* could not be reliably identified.

Conclusions: Dermatophyte fungi can be reliably identified using MALDI-TOF with an expanded library where these molds are well represented. The use of MALDI-TOF for the identification of dermatophyte molds is a rapid and inexpensive alternative to conventional and DNA-based diagnostic methods.