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P2210 Identification of yeasts directly from blood cultures using MALDI-TOF MS and the rapidBACpro II kit in an experimental model

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Background: Although MALDI-TOF MS has already demonstrated its capacity to identify microorganisms directly from positive blood cultures (BC), rapid and reliable identification of yeasts still remains a challenge for this technology. A commercial kit has been evaluated for the identification of commonly encountered yeasts from spiked BC bottles.

Materials/methods: Forty BC bottles identified as negative in the microbiology laboratory from the Hospital Gregorio Marañón (Madrid, Spain) were spiked with 250µl of previously identified yeasts at 0.5 McFarland. When they all flagged positive (after 2-3 days), 1 ml of BC was applied to the rapidBACpro II kit (Nittobo, Tokyo, Japan) following the manufacturer instructions. In parallel, the BCs were also processed using differential centrifugation followed by standard protein extraction and also by lysing the blood culture with 0.1% SDS according to Bidart et al. (2015). All the isolates were analyzed in duplicates. The yeast strains were coded before the BC bottles were spiked and, therefore, their identification was performed blindly. A benchtop Microflex LT mass spectrometer (Bruker Daltonics) was employed for the identification of the yeast isolates using default settings.

Results: The yeasts present in 35 bottles (87.5%) were reliably identified at the species level using the rapidBACpro II kit. They belonged to 7 *Candida* species, *Magnusiomyces capitatus* and *S. cerevisiae*. Their identifications matched those obtained by DNA sequencing analysis in all cases. The score values recorded were ≥2.0 in 9 cases (22.5%) and between 1.99 and 1.6 in 18 cases (45.0%). Although the remaining 13 cases were identified with score values <1.6, only 5 of them were unreliable (*C. glabrata* n=2; *C. orthopsilopsis* n=2; *C. tropicalis* n=1). On the other hand, the use of SDS and the differential centrifugation method yielded 13 and 5 species-level identifications, respectively. The latter method only produced identifications with score values below 1.6

Conclusions: In our hands, the in-house methods provided a low rate of species-level identifications with score values indicating low-confidence in most of the cases. Thus, the implementation of the commercial kit would allow a cost-efficient use of MALDI-TOF directly from BCs when the presence of yeasts is suspected.