Identification of pathogenic microorganisms directly from positive blood vials by matrix-assisted laser desorption/ionization time of flight mass spectrometry - DTU Orbit (02/12/2018)

Identification of pathogenic microorganisms directly from positive blood vials by matrix-assisted laser desorption/ionization time of flight mass spectrometry

Matrix-assisted laser desorption/ionization time of flight mass spectrometry (MALDI-TOF MS) is a promising and fast method for identifying fungi and bacteria directly from positive blood cultures. Various pre-treatment methods for MALDI-TOF MS identification have been reported for this purpose. In-house results for identification of bacterial colonies by MALDI-TOF MS using a cut-off score of 1.5 did not reduce the diagnostic accuracy compared with the recommended cut-off score of 1.8. A 3-month consecutive study of positive blood cultures was carried out in our laboratory to evaluate whether the Sepsityper™ Kit (Bruker Daltonics) with Biotyper 2.0 software could be used as a fast diagnostic tool for bacteria and fungi and whether a 1.5 cut-off score could improve species identification compared with the recommended score of 1.8. Two hundred and fifty-six positive blood vials from 210 patients and 19 blood vials spiked with fungi were examined. Using the cut-off score of 1.8, 81% Gram-negative bacteria were identified to the species level compared to 84% using a cut-off score of 1.5. For Gram-positive bacteria 44% were identified to the species level with a cut-off of 1.8 compared to 55% with the value of 1.5. The overall identification rate was 63% (cut-off 1.5) and 54% (cut-off 1.8). Seventy-seven per cent of fungal species were identified with both log scores. MALDI-TOF MS was in this study found to be a powerful tool in fast diagnosis of Gram-negative bacteria and fungi and to a lesser degree of Gram positives. Using 1.5 as cut-off score increased the diagnosis for both Gram-positives and -negatives bacteria.

General information
State: Published
Organisations: Copenhagen University Hospital
Contributors: Nonnemann, B., Tvede, M., Bjarnsholt, T.
Pages: 871-877
Publication date: 2013
Peer-reviewed: Yes

Publication information
Journal: A P M I S. Acta Pathologica, Microbiologica et Immunologica Scandinavica
Volume: 121
Issue number: 9
ISSN (Print): 0903-4641
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 1.95
Web of Science (2017): Impact factor 2.026
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.87
Web of Science (2016): Impact factor 1.795
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 1.92
Web of Science (2015): Impact factor 1.933
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.95
Web of Science (2014): Impact factor 2.042
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 2.07
Web of Science (2013): Impact factor 1.922
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 2.06
Web of Science (2012): Impact factor 2.068
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 1.97
Web of Science (2011): Impact factor 1.991
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Web of Science (2010): Impact factor 1.944
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Web of Science (2008): Indexed yes
Web of Science (2007): Indexed yes
Web of Science (2006): Indexed yes
Web of Science (2005): Indexed yes
Web of Science (2004): Indexed yes
Web of Science (2003): Indexed yes
Web of Science (2002): Indexed yes
Web of Science (2001): Indexed yes
Web of Science (2000): Indexed yes
Original language: English
DOIs:
10.1111/apm.12050
Source: dtu
Source-ID: n::oai:DTIC-ART:bl/390688745::33719
Research output: Research - peer-review › Journal article – Annual report year: 2013