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1286 - MALDI-TOF for rapid antimicrobial susceptibility testing: a new alternative for broth microdilution

Patricia Orlandi Barth, Fabiana Caroline Zempulski Volpato, Priscila Lamb Wink, Aymê Duarte Echevarria, Afonso Luís Barth

HOSPITAL DE CLÍNICAS DE PORTO ALEGRE
UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL

Introduction: Currently, antibiotic resistance is considered one of the main global threats, which directly impacts the public health and economy of nations. The extensive use of carbapenems in recent years has led to the emergence of carbapenem resistant (CBR) and also multidrug-resistant bacteria. Polymyxins are considered as a last resort for treatment CRB. However, the standard method for determining the susceptibility to polymyxins (broth microdilution - BMD) is very laborious and requires around 24 hours to present the result. **Objective:** To evaluate a new methodology for determining the susceptibility of Polymyxin B in only 4 hours with the aid of MALDI-TOF technology. **Methodology:** A total of 69 isolates of Enterobacteriales (33 resistant and 36 susceptible to polymyxin by BMD) obtained patients attending at Hospital de Clínicas de Porto Alegre were evaluated for susceptibility to Polymyxin B using MALDI-TOF. Suspensions of pure cultures of the isolates at 0.5 McFarland were diluted to 1:10 in cation-adjusted Mueller Hinton broth. The latter were placed onto two MALDI-TOF spots one spot without the antibiotic (positive control) and the other spot with 2 ug/mL of Polymyxin B - and incubated at 35 ± 1 °C for 4 hours. After incubation, HCCA matrix was added over the spots and, after drying, the plate was ed into a MALDI-TOF Microflex equipment for reading. The interpretation was performed as follows: when the MALDI-TOF was able to identify the bacteria at concentrations of 2 ug/mL, the isolate was considered resistant to Polymyxin B; when the identification was possible only in the positive control, the isolate was considered susceptible to Polymyxin B. Experiments were made in triplicate. **Results:** In comparison to the standard method (BMD), the Polymyxin B susceptibility by MALDI-TOF presented 92.7% of categorical agreement and 97.0% of essential agreement between the rapid method and the standard broth microdilution method. **Conclusion:** The MALDI-TOF method proved to be a rapid and easy alternative for the determination of susceptibility to Polymyxin B, reducing the time to obtain the result by up to 1 day.