

## Evaluation of DNA Microarray System in the Identification of Microorganisms Isolated from Blood

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**Abstract :** Bacteremia is a clinical entity with high morbidity and mortality rates when immediate diagnose, or treatment cannot be achieved. Microorganisms which can cause sepsis or bacteremia are easily isolated from blood cultures. Fifty-five positive blood cultures were included in this study. Microorganisms in 55 blood cultures were isolated by conventional microbiological methods; afterwards, microorganisms were defined in terms of the phenotypic aspects by the Vitek-2 system. The same microorganisms in all blood culture samples were defined in terms of genotypic aspects again by Multiplex-PCR DNA Low-Density Microarray System. At the end of the identification process, the DNA microarray system's success in identification was evaluated based on the Vitek-2 system. The Vitek-2 system and DNA Microarray system were able to identify the same microorganisms in 53 samples; on the other hand, different microorganisms were identified in the 2 blood cultures by DNA Microarray system. The microorganisms identified by Vitek-2 system were found to be identical to 96.4 % of microorganisms identified by DNA Microarrays system. In addition to bacteria identified by Vitek-2, the presence of a second bacterium has been detected in 5 blood cultures by the DNA Microarray system. It was identified 18 of 55 positive blood culture as E.coli strains with both Vitek 2 and DNA microarray systems. The same identification numbers were found 6 and 8 for Acinetobacter baumannii, 10 and 10 for K.pneumoniae, 5 and 5 for S.aureus, 7 and 11 for Enterococcus spp, 5 and 5 for P.aeruginosa, 2 and 2 for C.albicans respectively. According to these results, DNA Microarray system requires both a technical device and experienced staff support; besides, it requires more expensive kits than Vitek-2. However, this method should be used in conjunction with conventional microbiological methods. Thus, large microbiology laboratories will produce faster, more sensitive and more successful results in the identification of cultured microorganisms.

**Keywords :** microarray, Vitek-2, blood culture, bacteremia

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