

Prevalence of Staphylococcus aureus toxins genes in clinical and food isolates in Iraq

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Abstract:

Objectives: This study aims to determination of the prevalence and presence of genes encoding exfoliative toxins (eta and etb), toxic shock syndrome toxin-1 (tst), enterotoxins (sea, seb, sec, sed and see) and methicillin resistance (mecA) in *S. aureus* isolates that isolated from clinical samples and food samples in Iraq using multiplex PCR technique, and to determine the relationship between toxins genes distribution with antimicrobial resistance. **Methods:** From July 2017 to December 2017, 113 specimens were collected from different sources of clinical and food specimens. Conventional and molecular methods were accomplished for identify of *S. aureus*, sequencing technique was used to confirm the diagnosis of *S. aureus* enterotoxins genes and statistical analysis was done by Chi square test for determination the relationship between toxins genes distribution with antimicrobial resistance. **Results:** Results of routine methods were demonstrated discrepancy with results of molecular method which showed all 89 (100%) isolates were harboring femA and mecA gene (MRSA), while toxins genes were distributed on *S. aureus* isolates as following: tst (86.51), eta (5.61), etb (2.24), sea (48.31), seb (44.94), sec (6.74), sed (3.37) and see (16.85). Out of 89 *S. aureus* isolates, 86 (96.62%) isolates were toxigenic and 66 (76.74%) isolates were harbored more than one gene of superantigenic toxins genes. Statistically, toxins genes showed significantly associated with MRSA isolates, but there is no association with VISA and VRSA isolates. **Conclusion:** High prevalence of toxins genes between MRSA isolates, that making local *S. aureus* isolates high virulent and difficult in therapy. Results showed that conventional bacteriological methods are nonspecific for identification and epidemiological study of *S. aureus* strains because of their phenotypic and genotypic variations.

Keywords: Multiplex PCR, Staphylococcus aureus, Toxins.
