Characterization of some virulence genes isolated from antibiotic resistant staphylococci

Thesis
Submitted in partial fulfillment for the requirements of the Master degree of Science in Microbiology

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Approval sheet

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Declaration

This dissertation has not been previously submitted for any degree at this or at any other university

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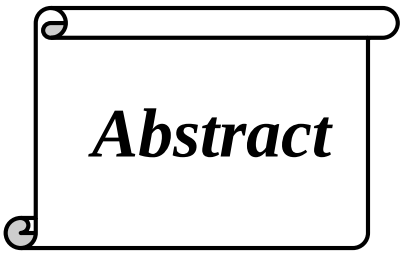
Abstract

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Characterization of some virulence gene isolated from antibiotic resistant Staphylococci

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In this study, one hundred staphylococci were isolated from several Egyptian hospitals and laboratories including 85 isolates from clinical samples and 15 from hospital surrounding surfaces. Upon testing the resistance to methicillin and vancomycin, it was found that resistance is dominant in isolates from clinical samples than that from the surrounding surfaces. The isolates were identified by bacteriological, biochemical and molecular techniques. Fifty isolates were identified as *Staphylococcus aureus* (SA), forty were *Staphylococcus epidermidis* (SE) while ten isolates were identified as *Staphylococcus* species (SS). A total of 100 isolates were tested for sensitivity against methicillin, vancomycin, linezolid, clindamycin, ampicillin, tobramycin, ciprofloxacin, erythromycin and doxacycline. Also, minimal inhibitory concentration of methicillin and vancomycin were examined for all isolates.

Methicillin resistance was higher in clinical isolates than that in isolates from surrounding surfaces. In addition the percentage of resistance to methicillin was higher than that to vancomycin.

Multiplex PCR was carried out to characterize the staphylococci-specific region of 16S rRNA gene, *mec*A gene associated with methicillin resistance and the virulence marker-associated genes Panton-Valentine leukocidin (PVL) *lukS*/*F-PV* gene which are responsible for leukocyte destruction and tissue necrosis. All tested isolates were confirmed as staphylococci due to the presence of staphylococci specific region of 16S rRNA gene, the methicillin resistant isolates were found to be *mec*A^{+} on the other hand thirty percent of the methicillin sensitive isolates were found to harbor *mec*A gene which could be a result of horizontal gene transfer. Only five methicillin resistant isolates carried *lukS*/*F-PV* gene. This study highlights the importance of using conventional and multiplex PCR technique together for the simultaneous identification of staphylococci and detection *mec*A and (PVL).

Keywords: Methicillin resistance, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *mec*A, PVL.

1. INTRODUCTION

2. LITERATURE REVIEW

3. MATERIALS AND METHODS

4. RESULTS

5. DISCUSSION

SUMMARY

الملخص العربى

REFERENCE