

**DEVELOPMENT OF MULTIPLEX PCR FOR DETECTION OF METHICILLIN RESISTANCE AND MLS<sub>B</sub> RESISTANCE GENES IN *STAPHYLOCOCCUS AUREUS***

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**ABSTRACT**

Nosocomial infection caused by multidrug resistant staphylococci such as methicillin or macrolide-lincosamide-streptogramins B (MLS<sub>B</sub>) resistance is a growing problem for many health care institutions. Of all species of staphylococci, *Staphylococcus aureus* (*S. aureus*) has the greatest pathogenic potential. Methicillin-resistant *Staphylococcus aureus* (MRSA) infections are associated with increased morbidity and mortality. Rapid identification of the organism as well as drug resistance is crucial for infected patients. Therefore, in this study, a new multiplex PCR for identification of *S. aureus* and detection of certain antimicrobial resistant genes was developed, in order to improve the speed of detection from suspected bacterial colonies. New specific primers of five target genes, *femA* (for *S. aureus* identification), *mecA* (for oxacillin or methicillin resistance), *ermA*, B and C (for MLS<sub>B</sub> resistance) were designed and tested against 250 clinical isolates of *Staphylococcus* spp. comparing with the conventional identification and susceptibility test in routine process. All five primers revealed 100% specificity to their target genes and the results showed 100% concordance with the phenotypic testings. All methicillin resistant isolates contained the *mecA* gene. The prevalence of the *ermA*, *ermB* and *ermC* genes in erythromycin resistant *S. aureus* were 53.4%, 1.1% and 12.6% respectively while prevalence of the *ermA*, *ermB*, and *ermC* in coagulase negative staphylococci (CoNS) were 6.6%, 1.3%, and 46.1% respectively. In contrast to *S. aureus*, the *ermC* was found to be predominated among erythromycin resistant CoNS isolates. With this specific multiplex PCR, the identification of *S. aureus* and CoNS as well as two groups of most important resistant genes could be performed rapidly and reduced approximately 24 hr of turnaround time comparing to the routine process.

**KEY WORDS: METHICILLIN RESISTANCE AND MLS<sub>B</sub> RESISTANCE / MULTIPLEX PCR**

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