

# ตัวอย่าง บทความผลงานทางวิชาการที่น่าสนใจ

## Molecular Characterization of Methicillin-Resistant *Staphylococcus aureus* in Siriraj Hospital

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### Objective

To characterize and differentiate Methicillin-resistant *Staphylococcus aureus* (MRSA) clones isolated from patients in Siriraj Hospital by molecular techniques.

### Materials and Methods

MRSA clones were characterized by pulsed-field gel electrophoresis (PFGE), PCR for *mecA* and aminoglycoside resistance genes, and restriction fragment analysis using *mecA*, Tn554, *aad (9)* and IS1181 as specific probes.

### Results

MRSAs causing nosocomial infection in Siriraj Hospital were classified into a few clones, A, A<sub>1</sub> and B by PFGE. Resistance determinants identified in all of studied MRSA were *mecA* and aminoglycoside resistance genes, *aad (9)*, *aac (6)/aph (2)* and *aph (3)* III. Restriction fragment analysis of chromosomal DNA by Southern hybridization using *mecA* gene, Tn554, *aad (9)* gene and IS1181 as specific probes provided interesting results. Based on the *ClaI-mecA* analysis, the Southern blot analysis showed that the types of SCC<sub>mec</sub> on the MRSA chromosome were type III SCC<sub>mec</sub> with some minor variations. In addition, *HindIII-IS1181* polymorphism could differentiate MRSAs into two types with 2 and 3 bands. However, the Southern hybridization of *EcoRI-Tn554* and *EcoRI-aad (9)* analysis showed that MRSA harbored at least two fragments of Tn554 on its chromosome but the finding could not discriminate MRSAs into subtypes. The plasmid profiles demonstrated the repetitive patterns among these MRSA clones.

### Conclusion

Molecular techniques as PFGE, PCR and restriction fragment analysis using resistance gene, transposon and insertion sequences as probes are useful for differentiation of MRSA isolated in Siriraj Hospital. The *mecA* gene has been identified on SCC<sub>mec</sub> element, most likely to be type III, and there are at least three different aminoglycoside resistance genes in their genomes. There are evidences showing that most MRSAs isolated from patients in Siriraj Hospital descend from a few clones.