A Correlation Between the Genes Responsible for Penicillin and Erythromycin Resistance in Streptococcus Pneumoniae and the Minimum Inhibitory Concentration (MIC) Values: A Potential Approach for Molecular Detection of Susceptibility


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Abstract

The correlation of pbp 2b restriction fragment length polymorphism (RFLP) patterns of fifty clinical isolates of Malaysian Streptococcus pneumoniae, as well as the distribution of determinant genes for erythromycin resistance; mefE and ermB, with the respective minimum inhibitory concentration (MIC) values for penicillin and erythromycin (determined by agar dilution method) were examined. Strains with penicillin MIC of ≥ 0.5 µg/ml had unique pbp 2b RFLP patterns that were absent in the penicillin susceptible strains. The prevalence of ermB, either alone or together with mefE, was frequently observed in strains with higher MIC values (> 8 µg/ml) whereas mefE alone was observed in strains with lower MIC values (1 µg/ml - 4 µg/ml). This showed that the pbp 2b RFLP patterns and the distribution of mefE and ermB genes followed certain patterns in relation to the susceptibility. This correlation may thus be used as a diagnostic criterion for molecular detection of resistance.

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