

CHAPTER 7

Summary

The antibiotic-resistant strains are the main problem in many hospitals which they acquire the resistant genes or the selective pressure of antibiotic overuse. ESBL- or AmpC β -lactamase-producing *E. coli* is isolated from either the community or the hospital setting which is increasing rate in every year. The correlations of ESBL genotype with cephalosporin resistance are beneficial to provide the guidelines for clinicians in select of appropriate antimicrobial agents. In this study, demonstrated that the correlation between the phenotype of cefotaxime and ceftazidime resistance with the different type of ESBLs.

Initially, the results from minimum inhibitory concentration (MIC) demonstrate ESBL producers are more resistant to cefotaxime than to ceftazidime which the some strains are susceptible to ceftazidime. The presence of *bla*_{CTX-M-1subgroup} has a good correlation with the phenotypic resistance of cefotaxime and ceftazidime. This finding might suggest that *bla*_{CTX-M-1subgroup} could predict resistance to cefotaxime and ceftazidime. In addition, the presence of *bla*_{CTX-M-9subgroup} has a good correlation with the resistance of cefotaxime. Most of isolates are still susceptible to ceftazidime with the only presence of *bla*_{CTX-M-9subgroup}. This result suggests that ceftazidime might be used to treat CTX-M-9 subgroup-producing strains. Even though, we are not study the enzyme kinetics of β -lactamase from each *bla* gene.

Finally, our study shows that the multiplex PCR technique is the significant tool especially in the case of inconclusive results. The molecular method is also used for resolution. Therefore, the multiplex PCR is the method for detection of β -lactamase which coexistence of different classes in a single isolate.