UNIVERSITI TEKNOLOGI MARA

DETECTION OF *Acinetobacter baumannii* USING POLYMERASE CHAIN REACTION

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ABSTRACT

Acinetobacter baumannii is a multidrug resistant bacterium and a major pathogen causing nosocomial infections worldwide, including pneumonia, wound infections, urinary tract infections, bacteremia and meningitis. A rapid, sensitive and specific detection method is needed for cases involving *A.baumannii*. Thus, the objective of this study is to develop a diagnostic test, which is PCR for the detection of *A.baumannii*. The primers were designed for Conserved gene 1, Conserved gene 2 and *ada*[H] gene. Results showed that the detection of those genes was successful. Through visualization of gel electrophoresis result for PCR products, DNA bands for Conserved gene 1, Conserved gene 2, *ada*[H] gene and multiplex PCR were observed. This showed that those genes were present in *A.baumannii* and were successfully detected using the developed diagnostic test. The detection of *A.baumannii* using the novel primers was successful. PCR assay can be applied as a robust, rapid, sensitive and specific detection method for *A.baumannii*.

CHAPTER 1

INTRODUCTION

1.1 *Acinetobacter baumannii*

Acinetobacter baumannii is an aerobic gram-negative coccobacillus which can be found in soil, as skin flora, and in the hospital environment. *A. baumannii* is able to survive on abiotic surfaces for extended periods of time and contain antimicrobial resistance genes. These factors make *A. baumannii* a successful nosocomial pathogen and make its treatment difficult, whether it be community or hospital acquired (Whitman *et al.*, 2008).

This organism is responsible for hospital acquired infections such as pulmonary tract infections, urinary tract infections, bacteremia and surgical site infections in immunocompromised patients (Whitman *et al.*, 2008).

Although carbapenems have long been regarded as drugs of choice to treat infections caused by *A. baumannii*, nowadays *A. baumannii* resistance to carbapenems is common. Isolates resistant to colistin and polymyxin B have also been reported (Bosó-Ribelles et al., 2008). Sulbactam has been successfully used in the treatment of serious *A baumannii* infections however, its activity against carbapenem-resistant isolates is decreasing (Karageorgopoulos & Falagas, 2008).