UNIVERSITI TEKNOLOGI MARA

DETECTION OF *STAPHYLOCOCCUS EPIDERMIDIS* EITHER A PATHOGEN OR A COMMENSAL

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ABSTRACT

DETECTION OF STAPHYLOCOCCUS EPIDERMIDIS EITHER A PATHOGEN OR A COMMENSAL

Staphylococcus epidermidis is one of the common contaminants isolated in clinical samples. This microorganism has been long treated as non-pathogenic bacteria because there are no sufficient evidence and studies conducted to determine the clinical importance of *Staphylococcus epidermidis*. A prospective study was conducted to determine the clinical importance of Staphylococcus epidermidis and further test to confirm its pathogencity features and susceptibility pattern. This study consists of 20 subjects with suspected upper respiratory tract infections such as cough and sore throat. Since there were no medical cares or drugs administration, it reflexes its non-severity. Although, it may persist as a pathogen with comparatively low virulence factors, extended duration may lead to severe diseases, which in turn encourage the initiation of secondary bacterial infections. Ten isolates of *Staphylococcus epidermidis* were obtained from the 20 subjects and the isolates were subjected to biochemical tests for isolation and characterization. In order to meet National Committee for Clinical Laboratory, Kirby Bauer's disc diffusion was adopted to study the susceptibility patterns of *Staphylococcus epidermidis*. The study revealed that that 90% *Staphylococcus epidermidis* isolates were sensitive to Ciprofloxacin (5mcg) and Ampicilin/Sulbactam (20mcg) but 70% of the confirmed isolates were resistant to Penicillin G and Vancomycin, 60% of confirmed isolates were resistant to Ampicilin and 50% of the *Staphylococcus epidermidis* isolates were resistant to oxacillin respectively. This suggests that, Ciprofloxacin and Ampicillin/ Sulbactam (SAM) could be used in the treatment of multiresistant *Staphylococcus epidermidis* infections. The findings of this project not only indicate that regular observation of the drug is necessary, the drug's policy also need to be strictly followed by clinician to avoid emergence of resistant *Staphylococcus epidermidis*. Ideally, the prevention of *Staphylococcus epidermidis* infections based on better understanding of epidemiology, hospital reservoirs, mechanism of transmission and host defense against these organisms.

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CHAPTER 1

INTRODUCTION

Members of the genus Staphylococci are gram positive cocci about 0.5 to 10.5um diameter that occur singly in the pair. They are non motile, non spore forming, usually catalase positive and typically unencapsulated or with limited capsule formation (Murray *et al.*, 2003). Due to such characteristics, they are called staphylococci, where "staphyle" means a bunch of grapes in Greek (Shimeld and Rodgers, 1999).

According to Bergey's Manual (2001), there are more than 35 species of staphylococci. Among all the species, *Staphylococcus aureus* and *Staphylococcus epidermidis* are opportunistic pathogen in human (Gill, 2004). Between the two, *Staphylococcus aureus* always has been regarded as human opportunistic pathogen (Murray *et al.*, 2003; Pfaller and Herwaldt, 1988). In contrast, strains of *Staphylococcus epidermidis* are usually considered to be non-pathogenic and though some can cause nosocomial infection (Wang *et al.*, 2003).

Recent study have shown that the frequency and severity of nosocomial infections caused by gram positive pathogens are increasing, due in the part of emergence and progressive in antimicrobial resistance among gram positive cocci bacteria such as staphylococci, especially in intensive care units, ICU (Fridkin *et al.*, 1999).