

Biotechnologies towards Sustainable Development in Malaysia

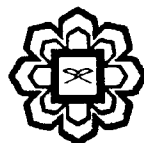
Zarina Zainuddin

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Zarina Zainuddin



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Chapter 18

Identification and characterization of *Burkholderia pseudomallei* serine and metallopeptidases

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Introduction

Melioidosis, a life-threatening disease affecting both human and animals, comprises a broad spectrum of disease presentations resulting from infection with the gram-negative bacterium *Burkholderia pseudomallei* (White 2003). The disease is a major cause of community-acquired septicaemia and acute pneumonia (Wiersinga *et al.* 2006). The infection is endemic to Southeast Asia, Northern Australia and temperate areas that lie near the equator (Cheng & Currie, 2005). *B. pseudomallei* is a Gram negative, motile, aerobic and non-sporing bacterium (Holden *et al.*, 2004). The genome of this bacterium consists of two circular replicons of 4.07 Mb and 3.17 Mb each with a high G + C content. The recent completion of the *B. pseudomallei* genome provides a basis on which to identify new peptidases.

Peptidases are important enzymes that are present in all cellular organisms. Commonly, between 1% and 2% of all protein coding genes in a genome encode peptidases and their homologues. Peptidases catalyze the cleavage of peptide bond and provide a source of amino acids for protein manufacturer by degrading extracellular proteins and by recycling intracellular proteins. In addition, the pathogenic bacterium uses peptidase for their life cycle and for infection of host cells. Therefore, peptidases are important drug targets because pathogens utilize