## UNIVERSITI TEKNOLOGI MARA

# IDENTIFICATION AND IMMUNOGENICITY STUDY OF SOLUBLE PROTEIN DERIVED FROM PASTEURELLA MULTOCIDA SEROTYPE B

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Thesis submitted in fulfilment of the requirements for the degree of **Master of Science** 

**Faculty of Medicine** 

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### **AUTHOR'S DECLARATION**

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as reference work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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### **ABSTRACT**

Pasteurella multocida (P. multocida) serotype B is associated with hemorrhagic septicaemia (HS) disease endemic in Africa, India and Asian countries. It is causative agent of thriftily significant disease in livestock. Hence, this study purposed and aimed to identify and express an immunogenic soluble protein of P. multocida in efforts toward development of HS vaccine. Immunogenic soluble protein was identified as lipoprotein B (plpB) using electrospray mass spectrometry. The size of expressed purified recombinant protein was approximately 39kDa. Immunogenicity study of the recombinant protein plpB was carried out using 6 groups of BALB/c mice. The groups were immunized with recombinant protein (Group 1), soluble recombinant protein (Group 2), insoluble recombinant protein (Group 3), vector (Group 4), soluble protein of P. multocida (Group 5) and PBS (Group 6) respectively. Mice in group 4 and 6 showed signs and symptom of HS after challenge with the parental strain (p-value < 0.05). However, immunised mice with purified recombinant protein did not show signs and symptoms of HS. Based on immunoblotting analysis, purified recombinant protein was significantly immunogenic (p-value < 0.05). Additionally, no inflammation was seen in the tissues of organs from mice immunized with purified recombinant protein, which indicates that recombinant protein was 100% protective towards P. multocida infection and eventually towards HS disease. Thus, this study shows that the recombinant protein lipoprotein B (plpB) is significantly immunogenic and could be a potential candidate in developing vaccine against HS.

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