

## **Acute phase response in mice experimentally infected with whole cell and exotoxin (PLD) extracted from *Corynebacterium pseudotuberculosis***

### **ABSTRACT**

Acute Phase Proteins (APP) are blood proteins that contribute to restoring homeostasis and limiting microbial growth in an antibody-independent manner in animals subjected to infection, inflammation, surgical trauma or stress. There are still lack of knowledge of acute phase protein profiles in mice associated with infection of *Corynebacterium pseudotuberculosis* and its exotoxin Phospholipase D (PLD). In this study, serum concentrations of three different positive Acute Phase Proteins (APPs) are studied; Serum Amyloid A (SAA), Haptoglobin (Hp) and 1 Acid Glycoprotein (AGP). This study was conducted to acquire a better way of understanding the pathophysiology response of *Corynebacterium pseudotuberculosis* and its exotoxin in mice model. A total of 48 mice, 2-3 weeks of old both sexes were enrolled and equally divided into three groups; namely control, whole cell and exotoxin groups. Mice of whole cell groups were exposed intraperitoneally to 1 mL of the inoculums containing 10<sup>9</sup> Colony-Forming Unit (CFU) mL of live *C. pseudotuberculosis*. Exotoxin group were infected intraperitoneally with a single dose of exotoxin (PLD) extracted from *C. pseudotuberculosis*. While control group were exposed intraperitoneally to 1 mL of Phosphate-Buffered Saline (PBS), pH 7. Blood samples were collected by cardiac puncture for acute phase protein analysis. All APPs were quantified by commercially available ELISA methods and AGP was assessed by highly sensitive clourometric assay. The results revealed that there were statistically significant differences ( $p < 0.05$ ) between APPs concentrations throughout the experimental period in groups of mice induced with whole cell and exotoxin of *C. pseudotuberculosis* compared to control groups. The concentrations of Hp and SAA were significantly induced after infection of *C. pseudotuberculosis* with mean maximum levels from days 1-4 of post infection whereas the AGP concentration was significantly induced after 3rd day of post infection. About >70 fold increase was observed in Hp concentrations after experimentally induced whole cell and single intraperitoneal dose of exotoxin whereas SAA and AGP increased <15 fold. No significant differences ( $p > 0.05$ ) were observed in acute phase proteins profiles between whole cell and exotoxin groups. Therefore, the results of this study indicated that acute phase proteins can be used as potential biomarkers for assessing caseous lymphadenitis.

**Keyword:** 1-AGP and Hp; *C. pseudotuberculosis*; Exotoxin (PLD); Malaysia; SAA