

Analysis of Glycoproteins and O-Antigen Related to Antibiotic Resistant in *Klebsiella pneumoniae*

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Structured Abstract

Background: Studies on antibiotic resistant due to *Klebsiella pneumoniae* are essential to ensure success in the treatment and prevention of diseases. New approaches are needed to both prevent and cure these infections as a result of the advent of multi-drug resistance (MDR) *K. pneumoniae*. Therefore, the objective of this study is to pay particular attention to the differential expression of the selected proteins as well as o-antigens in resistant vs non-resistant isolates. This is due to the fact that previous studies have found that they are one of the causes of antibiotic resistance.

Methods: The differential expression of the selected proteins was evaluated by total protein and outer membrane protein extraction. Then, 1D SDS-PAGE was conducted by utilizing Novex Tris-Glycine gel. The gels was stained by Pro-Q® Emerald 300 Glycoprotein Gel Stain to mark glycoproteins and SYPRO™ Ruby Protein Gel Stain to mark total protein. Next, the differential expression of O1 serotype was studied by genomic DNA extraction and performing PCR and samples was ran on 1% agarose gel electrophoresis.

Results: This study shows that protein was successfully extracted from all 8 strains of *K. pneumoniae*. The results indicate that there are differential expression in glycoprotein profiles in both susceptible and MDR strains. Successful staining by both Pro-Q® Emerald 300 Glycoprotein Gel Stain and SYPRO™ Ruby Protein Gel Stain can be seen. Then, the O1 serotype detection by PCR shows that all 8 strains exhibit the presence of the O1 serotype which is has been expected in the early phase of this study.

Conclusion: In conclusion, this study has provided better insight into the involvement of glycosylated proteins as well as o-antigen, specifically O1 serotype with antibiotic resistance of *K. pneumoniae*. This study has contributed to another research data given the lack of studies on *K. pneumoniae* infection in Malaysia. The findings of this study indicated that there is considerable potential in developing vaccine targeting o-antigen as it is able to provide a broad coverage.

Keywords: *Klebsiella pneumoniae*, Glycoproteins, O-antigen, Susceptible, Multi-drug resistant (MDR)

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