

Colloquium on Applied Sciences 2024

19-21 January 2024, Faculty of Applied Sciences, UiTM Shah Alam, Malaysia

Analysis of Glycoproteins And K-Antigen Related to Antibiotic Resistance in *Klebsiella Pneumoniae*

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Structured Abstract

Background: The study of antibiotic resistance in *K. pneumoniae* is important in today's era. Based on the results of many research efforts, most of the bacteria strains are becoming more resistant to various types of antibiotics, including even the last resort treatment with strong antibiotics. The main disadvantage to this problem is the lack of new developments in the pharmaceutical industry. This study utilized strains of *K. pneumoniae* to detect presence of glycoproteins and K-antigen. The purpose of this study is to understand the relationship between glycoproteins, K-antigen, and antibiotic resistance in *K. pneumoniae*.

Methods: The proteins and genomic DNA was extracted from all bacterial strains. These proteins and genomic DNAs will be characterized by a few steps, which include protein extraction and SDS PAGE to achieve the first objective. Result was viewed after using Sypro Ruby Protein Gel Stain for total protein, and Pro-Q Emerald 300 Glycoprotein Gel Stain for glycosylated protein. The second objective include PCR method, the products then will be run on 1% agarose gel electrophoresis while using 1kb DNA ladder for comparison. K2 antigen was applied for this study. Being able to compare its differential expressions will be the result of the study.

Results: This study shows that proteins and genomic DNA were successfully extracted from bacterial strains. Protein extraction method was performed on all samples, the total protein and outer membrane protein were successfully stained on gel. PCR method was performed on 5 of the samples. All samples show good results from agarose gel electrophoresis.

Conclusion: The discovery of new medications to treat people with certain infectious diseases caused by bacteria may be aided by the information contributed. The results of this study may also open the door to the research and development of alternative antibacterial treatments and defence mechanisms. Overall, the project's results could benefit and suggest deeper research into health and antimicrobial field.

Keywords: Glycoprotein, K-antigen, Antibiotic Resistance, *Klebsiella Pneumoniae*

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