ANTIMICROBIAL ACTIVITY OF *Allium cepa* var. *cepa* (PURPLE TYPE) AGAINST FOODBORNE PATHOGENS

By

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DECLARATION

"I hereby declare that this thesis is my original work and has not been submitted previously or currently for any other degree at UiTM or any other institutions."

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ABSTRACT

Allium cepa or commonly known as onion was primarily used in cooking. The wide use of onion increased due to its medicinal values. Nowadays, the food safety became the main concern as the foodborne disease increased. Thus, the synthetic antimicrobials or drugs were taken in order to treat the foodborne disease. However, these drugs contributed to adverse side effects like antibiotics resistance. This study was to evaluate antimicrobial activity of *Allium cepa* var. *cepa* purple type against foodborne pathogens and to screen the phytochemical compounds in the *Allium cepa* var. *cepa* purple type. Three tests were done in order to evaluate the antimicrobial of Allium cepa which were Antimicrobial Sensitivity Testing (AST) by disc diffusion assay, Minimum Inhibitory Concentration (MIC) by broth microdilution method and Minimum Bactericidal Concentration (MBC) by subculturing on Trypic Soy Broth (TSB). The phytochemical compound testing was done by standardized methods based on colour changes of reagent used. The result was showed the sensitivity of Gram positive bacteria against methanolic and aqueous were greater compared to Gram negative bacteria. Gram negative bacteria did not show any sensitivity to aqueous extract of *Allium cepa*. The largest zone of inhibition was shown by *Bacillus cereus* and the smallest zone of inhibition was shown by *Escherichia coli*. All the zones of inhibition for all the bacteria were considered significant since the *p*-value was less than 0.05. From the phytochemical compounds analysis result, the methanolic extract of *Allium cepa* contained all the tested phytochemical compounds such as glycosides, alkaloids, tannin, terpenoids, proteins and flavonoids. The aqueous extract of *Allium cepa* contained all tested phytochemical compound except tannins. In conclusion, the methanolic extract of *Allium cepa* was effective against both Gram positive and Gram negative bacteria. *Allium cepa* var. *cepa* purple type had the value in replacement of synthetic antimicrobial against foodborne pathogens. Additions, all the tested phytochemical compounds were present in this methanolic extract of *Allium cepa*.

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