A STUDY OF ANTIMICROBIAL ACTIVITY AGAINST SKIN PATHOGENS: COMBINATION OF *Lawsonia inermis* and *Zingiber zerumbet* ETHANOLIC EXTRACTS

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

The emerging resistance of pathogenic bacteria against the currently artificial antimicrobial agents demands the search of new antimicrobial agents. The use of medicinal plants as natural substitute of artificial antimicrobial agents is the paramount area of research to overcome the drug resistance of pathogens. Therefore, this study was designed to investigate the antimicrobial activity from the combination of *Lawsonia inermis* and *Zingiber zerumbet* ethanolic extracts and their efficacy against selected skin pathogens. In the present study, antimicrobial activity from the combination of *Lawsonia inermis* and *Zingiber zerumbet* extracts are investigated against skin pathogens of four bacteria including two Gram positive (*Staphylococcus aureus* and *Staphylococcus epidermidis*) and two Gram negative (*Pseudomonas aeruginosa* and *Proteus mirabilis*) using disc diffusion method. Ethanol was used as extraction solvent, while dimethyl sulfoxide (DMSO) and distilled water as dissolution solvents. The minimal concentration of antibiotic to kill or inhibit the microorganism was determined using microdilution broth method. Ethanolic extract from the combination of *Lawsonia inermis* and *Zingiber zerumbet* displayed noteworthy antimicrobial activity against both gram positive and gram negative bacteria. All tested bacteria are significant ($P < 0.05$) when compared with single extract of *Lawsonia inermis* and *Zingiber zerumbet*. The minimum value of minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) for different bacterial strains ranged from 7.81mg/ml to 62.50mg/ml. In conclusion, it was proven that combination of both extracts yield better antimicrobial activity compared to the single extract. The use of combination from both extracts are of great significance as substitute antimicrobial agent in therapeutics.