

ANTIMICROBIAL ACTIVITY OF SELECTED MALAYSIAN MEDICINAL PLANTS



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1. Letter of Report Submission

RMI
Director
UiTM Shah Alam

Respected Sir/Madam,

RE: FINAL RESEARCH REPORT

I Dr. Jamal Houssaini, principal investigator for the research project titled ‘Antimicrobial Activity of selected Malaysian Medicinal Plants’ grant No. 600-RMI/ST/DANA 5/3/Dst (356/2011), would like to submit my final research report and close the grant. Attached along with this letter is the final report.

I would like to thank you for the financial support and encouragement to carry out this project.

Thank you

Yours truly,



Dr. Jamal Hussaini
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5. Report

5.1 Proposed Executive Summary

Antibiotic resistance in human pathogens due to increasing abuse of drugs has reached an alarming stage. The options in combating multiple drug resistance organisms are decreasing; hence there is a desperate need of new antimicrobial drugs. Several Malaysian medicinal plants have been used in traditional folk medicine for the treatment of various conditions. The purpose of this study is to investigate the anti-microbial activity of selected Malaysian medicinal plants *in vitro* and to detect the acute toxicity of the plants in experimental animals. The plants to be screened are *Psidium guajava* Linn (leaf), *Illicium verum* Hk.f. (fruit), and *Swietenia macrophylla* (seed). The medicinal plant extracts will be tested by *in vitro* antibacterial test against six bacterial species, both Gram positive and Gram negative organisms. Disc-diffusion assay (Bauer *et al.*, 1966) will be employed for assessing antimicrobial activity. The plants will be subjected to acute toxicity study, using experimental laboratory animals. With the help of the natural product obtained from these plants we hope to fight the emerging multiple drug resistance and increasing cost of drugs.

There are more than 35 000 plant species being used in the world that are useful for medicinal purposes. In peninsular Malaysia, 1200 species of higher plants and 2000 species in Sabah and Sarawak were reported to show medicinal properties and were also used for traditional health care (Jantan, I., 1998 ; Koshy Philip et al, 2009).

In this study, we chose the plants that we used based on its traditional usage, the availability in Malaysia, and also based on previous researches information of its usage that has been proven together with their active chemical constituents that may help us to achieve our objectives.

5.2 Enhanced Executive Summary

An impressive number of medicinal plants contains high amount of flavonoids and antioxidant compound which are very useful as they promotes anti-inflammatory, anti-bacterial and various therapeutic values. Antibiotic resistance in human pathogens due to increasing abuse of drugs has reached an alarming stage. The options in combating multiple drug resistance organisms are decreasing.

Besides that, gastric ulcer has become a major problem worldwide. Acid, peptic activity and collapse of mucosal defense mechanism has been proven to be the pathological process in the formation of gastric ulcer. Proton–pump inhibitors have been introduced as the treatment. However, long term use of these drugs has been proven to cause various adverse effects. Hence, there is a need to develop new antimicrobial and antiulcer drugs.

The purpose of this study was to investigate the antimicrobial and anti-ulcer activities of selected Malaysian medicinal plants *in vitro*.

The medicinal plant extracts were tested by *in vitro* antibacterial test against six bacterial species, both Gram positive and Gram negative organisms. Disc diffusion assay was employed for assessing antimicrobial activity. The ethanol-induced gastric ulcer method in laboratory animals was used to determine anti-ulcer activity of the plants. Screening for antioxidant levels has also been carried out on the plant extracts.

From this study, all plants were showed to have antibacterial activities within them except for *Swietenia macrophylla*. However, for antiulcer studies, all plants showed high antiulcer activity. As for the antioxidant screening, only two of the plants used were high in antioxidant level whereas the other two were not.

The mechanism of action of both antiulcer antimicrobial activities of these plants was poorly understood. More and deeper studies need to be taken to really consider these plants as a replacement of therapy.