ANTI-BACTERIAL AND ANTI-ULCER ACTIVITY OF SELECTED MALAYSIAN MEDICINAL PLANTS

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Sincerely ,

Nurul Asyikin binti Othman

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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.

1.1 Antibiotic as antibacterial agent.

1.1.1 Early history of antibiotic.

During ancient times, medical practitioners treat patients with bacterial infection by using anything that they believed to have "some sort of antibiotic property". The treatment was different for every parts of the world. For example, Sumerian doctors believed that beer soup that was mixed with snake skins and turtle shells can cure the infection. Babylonian doctors on the other hand, treated his patients with eye infection by using ointment made from frog bile and sour milk. Some Greeks medicinal practitioner uses herbs as the main ingredient for curing the infection (Dr. Hani, 2010).

In 1929, a Scottish bacteriologist, Sir Alexander Flemming went on vacation and was accidentally left the *Staphylococcus sp.* petri dish uncovered in his workplace. As he came back from the vacation, he discovered the presence of mold growth in the petri dish. Upon further observation, he noticed that the area surrounding the mold was free from the bacterial growth. The mold was later named *Penicillium*, and the chemical produced by the mold was named *Penicillin*, as the first antibiotic substance introduced in medical history. Since then, usage of penicillin getting increases. In 1950's, more antibiotics, such as streptomycin, chloramphenicol and tetracycline were discovered.