

ANTIMICROBIAL ACTIVITIES OF *Agave americana* Simplex

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RESEARCH ON ANTIBIOTIC ACTIVITY OF *Agave americana* Simplex.

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ANTIMICROBIAL ACTIVITIES OF *Aglaonema simplex*

By

Ma Nyuk Ling

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the requirements for the degree of
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**Department of Biological Sciences
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APPROVAL AND CERTIFICATION FORM
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I certify that the research report entitled: Antimicrobial Activities of *Aglaonema simplex* by Ma Nyuk Ling Matric No. UK 6065 have been read and all corrections recommended by the examiners have been done. This research report is submitted to the Department of Biological Sciences in partial fulfillment of the requirements for the degree of Bachelor of Applied Science in Conservation and Management of Biodiversity, Faculty of Science and Technology, Kolej Universiti Sains dan Teknologi Malaysia.

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ABSTRACT

Antimicrobial activities of crude extracts of the Malaysia Sword, *Aglonema simplex* on bacteria and fungus were investigated. The plants which collected from Lata Tembakah, Terengganu were separated into leaves, rhizomes, roots and petioles and extracted using aqueous or methanol as a solvent. The disc diffusion test was used. The crude extracts were found to inhibit the growth of four Gram positive bacteria: *Bacillus cereus*, *Staphylococcus aureus*, *Bacillus subtilis*, *Enterococcus faecalis* and six Gram negative bacteria: *Escherichia coli*, *Pseudomonas aeruginosa*, *Salmonella typhimurium*, *Klebsiella pneumoniae*, *Aeromonas hydrophila* *Proteus mirabilis*. No activity was observed on fungus; *Aspergillus niger* and *Candida albicans*. Methanol extracts exhibited the highest activities against bacteria. The extracts made inhibition zones of diameter ranging from 7-25 mm for concentration ranges of 25mg/ml-250mg/ml. Distill water extracts produced inhibition zones of 7-25 mm in concentration ranges of 50mg/ml-300mg/ml. The Minimum Inhibition Concentration (MIC) value of methanol was 25mg/ml and 50mg/ml for aqueous extracts. No significant differences of fresh and dry samples. *A. Simplex* contained some bioactive compounds that positive against bacterial.

ABSTRAK

Penyaringan aktiviti antimicroorganisma oleh sumber produk bioaktif semulajadi dari *Aglaonema simplex* dikutip dari Lata Tembakah telah dikaji. Sample tumbuhan dibahagi kepada bahagian daun, petiol, akar dan rizom dengan menggunakan methanol dan air suling sebagai pelarut. Ekstrak kemudian disaringkan kepada Gram positive bacteria: *Bacillus cereus*, *Staphylococcus aureus*, *Bacillus subtilis*, *Enterococcus faecalis* dan enam jenis Gram negative bacteria: *Escherichia coli*, *Pseudomonas aeruginosa*, *Salmonella typhimurium*, *Klebsiella pneumonia*, *Aeromonas hydrophila*, *Proteus mirabilis* dan mendapat keputusan yang positif. Samples tidak memberi kesan kepada dua jenis fungus yang diuji: *Aspergillus niger* dan *Candida albicans*. Ekstrak yang menggunakan pelarut methanol didapati memberikan kesan aktiviti antibacteria yang lebih baik di mana saiz perencatan adalah di antara 7-25 mm pada kepekatan 25mg/ml-250mg/ml. Manakala ekstrak yang larut dalam air suling memberi saiz perencatan 7-25 mm pada kepekatan yang lebih tinggi 50mg/ml-3000mg/ml. Nilai MIC bagi methanol ialah 50mg/ml dan nilai MIC bagi air suling adalah lebih tinggi iaitu 100mg/ml. Tiada perbezaan bagi sample yang kering atau basah. *A. Simplex* yang mengandungi sebatian bioaktif yang dapat menghalang pertumbuhan bakteria.