

UNIVERSITI TEKNOLOGI MARA

**ANTIMICROBIAL PEPTIDES
FROM THE SKIN SECRETIONS OF
MALAYSIAN FROGS FROM KUALA
PELANGAI FOREST RESERVE**

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of the requirements for the degree of
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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Amphibians produce substances in their skin that protect against infection by pathogenic microorganisms. Antimicrobial peptides (AMPs) are a diverse class of naturally occurring molecules that exhibit antimicrobial properties, functioning as part of the amphibian's defence against microbial infections. Skin secretions were collected from seven morphologically distinct specimen of Malaysian frogs and screened for antimicrobial activity. The results indicate the several samples of the collected frog skin secretion have antimicrobial effects against Gram-negative and Gram-positive bacteria *Escherichia coli*, *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Bacillus subtilis*. Size fractionation chromatography and high performance liquid chromatography (HPLC) was used to purified two samples (samples 3A and 6B) to reveal a single antimicrobial peptide each. Mass spectroscopy fragment profiling of the AMP from sample 3A revealed a probable amino acid sequence of LCQSLPFGGVK. Sequence searches among protein and peptide databases indicate that this peptide does not match any known peptides. The AMP from sample 6B was characterised by Edman end-sequencing to provide an amino acid sequence of ALADDLQCXFIDL. Database search again indicate that this peptide has no sequence similarity to known peptides. Thus, both AMPs could be novel peptides. The frog species that produced these AMPs were preliminarily identified using mitochondrial 16S RNA gene sequence analysis to be *Fejervarya multistriata* (sample 3A) and *Fejervarya limnocharis* (sample 6B). Malaysian frogs thus represent a treasure trove of undiscovered AMPs that could be exploited for medicinal purposes.

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