

CORRELATION ANALYSIS BETWEEN ANTIHYPERTENSIVE EFFECT WITH TOTAL PHENOLIC CONTENT AND ANTIOXIDANT ACTIVITY OF *Syzygium polyanthum* (SERAI KAYU) LEAVES FRACTIONS

Azlini Ismail^{1*}, Erlena Nor Asmira Abd Rahim², Muhammad Nor Omar², Wan Amir Nizam Wan Ahmad³

¹Department of Fundamental Dental & Medical Sciences, Kulliyah of Dentistry, International Islamic University Malaysia, 25200 Kuantan, Pahang, Malaysia

²Department of Biotechnology, Kulliyah of Science, International Islamic University Malaysia, 25200 Kuantan, Pahang, Malaysia

³Biomedicine Program, School of Health Sciences, Health Campus, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia

*Corresponding author email: dr_azlini@iium.edu.my

ABSTRACT

Syzygium polyanthum (Wight) Walp leaves are consumed by locals as fresh salad (*ulam*) and as decoction for hypertension remedy. The leaves were previously reported with antihypertensive and antioxidant properties, but the relation between these two effects is unknown. The present study aimed to examine correlation between magnitude of antihypertensive effect with total phenolic content (TPC) and ferric reducing antioxidant power (FRAP) activity for *S. polyanthum*. Aqueous crude extract from *S. polyanthum* leaves (ASP) was fractionated using silica-based column chromatography with binary solvent system of ethyl acetate and methanol, followed by thin-layer chromatography (TLC) for qualitative analysis on the fractions' chemical profiles. These fractions and ASP were analysed for TPC and tested using FRAP assay (n=3); while for antihypertensive study, these fractions were intravenously administered into pentobarbital-anaesthetized Spontaneously Hypertensive rats (n=5) for recording of mean arterial pressure (MAP), systolic blood pressure (SBP) and diastolic blood pressure (DBP). Correlation between the maximum antihypertensive activity (measured as maximum percent (%) reduction in MAP, SBP and DBP) with the level of TPC and antioxidant activity was analysed using Spearman Rank Correlation test in GraphPad® PRISM Version 6. Fractionation of ASP afforded nine fractions, later combined into three fractions (F1ASP, F2ASP and F3ASP) according to their TLC profiles. Maximum antihypertensive effect was exerted by F2ASP with the reductions of $37.94 \pm 5.84\%$, $38.54 \pm 7.26\%$ and $35.81 \pm 4.86\%$ for MAP, SBP and DBP, respectively. TPC and FRAP activity were recorded highest in ASP by 232.80 ± 0.39 mg GAE/g and 5.50 ± 0.15 Fe mM/mg, respectively, while the lowest was recorded by F2ASP. TPC was positively correlated ($P < 0.001$, $r = +0.9228$) with antioxidant activity, but they had no significant correlations with the magnitude of antihypertensive effects. TPC of *S. polyanthum* leaves has significant association with its antioxidant activity only, but not with its antihypertensive effect.

Keywords: *Syzygium polyanthum*, Antihypertensive, Antioxidant, FRAP, TPC

Acknowledgement: This research was funded by FRGS19-025-0633 by the Ministry of Higher Education, Malaysia.