

UNIVERSITI TEKNOLOGI MARA

ANALYSIS OF *ARUNDINA GRAMINIFOLIA* IN-VITRO CULTURE COMPOUNDS

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Written Thesis submitted to Universiti Teknologi Mara

Dissertation submitted in fulfilment of the requirement for the degree of

Bachelor of Pharmacy

Faculty of Pharmacy

DESEMBER 2014

ACKNOWLEDGEMENTS

First and foremost, I would like to express my gratitude to Allah SWT for ease and allow me to finish the project on scheduled time. Alhamdulillah to the Most Gracious and Most Loving. I would also like to thank my supervisor, madam Noor Anilizawatima binti Sulong for her guidance and support through this one year project. Secondly, to my co-supervisor, Dr Norhuda Manshoor for her guidance and commitment to help me. Special thanks also to the post-graduate students due to their continuous help and support to finish this project. Aside, credit to Wan Rozita Wan Ngah from Malaysian Agricultural Research and Development Institution (MARDI) Serdang because allow us to obtain the natural plant samples.

I would also like to thank my parents for their encouragement, support and prayer during any moments to finish this research. Other than that, my research members who are doing the same subject, Nur Najuwa binti Abdul Ghani and Anisah binti Mohamad Ali for accompanying and struggling with me together to finish the project.

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ABSTRACT

A. graminifolia belongs to the group of Orchidaceae. It is widely distributed in Asian region, including Malaysia and Indonesia. The orchids are used for many purposes, ranging from ornamental to medicinal purposes. The main components of *A. graminifolia* are stilbenoids and triterpenes. Thus, there is a need to further determine the bioactive compounds present in *A. graminifolia* so that it can be used to make a new drug from the plant extract. In this research, tissue culture technique was applied to obtain the plant culture in greater amounts. The phytochemistry of *A. graminifolia* was analyzed using thin-layer chromatography (TLC) and high-performance liquid chromatography (HPLC) techniques. The result in TLC showed that there was a presence of terpenes and stilbenoids in the roots of *A. graminifolia* plant in normal and *in-vitro* culture, respectively. HPLC result showed that there were more metabolites present in *in-vitro* culture of *A. graminifolia*. This might be due to the differences in environmental conditions and the use of the medium in *in-vitro* culture that might affect the distribution and composition of the compounds in the plant. In overall, the compounds present in all three parts; leaves, stems and roots were different from each other. Since the roots of *in-vitro* plant contain more variation of metabolites and presence of steroid, further research need to be conducted to study the orchid in terms of its composition and therapeutic effects. Hence, the plant might have the potential to be the candidate for new drug isolated from the orchidaceae species.

CHAPTER ONE

INTRODUCTION

1.1 Background of study

Orchidaceae, or commonly called as orchid's family, is one of the diverse family of flowering plants with colourful and fragrant flowers (Das, Choudhury, & Mazumder, 2013). Orchidaceae has approximately 800 genera and 25,000 species that were widely distributed around the world (Tremblay, Ackerman, Zimmerman, & Calvo, 2005). They can easily be found from trees, dense tropical jungles, tropical grasslands to hot and dry deserts. Orchids possess elegance characteristics which make it suitable to be commercialized in large scale for ornamental values.

Orchidaceae family includes *Arundina graminifolia*, a terrestrial and epiphytic plant that grow mostly on farm-fields or roadside. Like many other orchids' species, *A. graminifolia* are vulnerable to extinction due to massive collection and loss of habitat for modern civilization (Jalal, Kumar, Rawat, & Pangtey, 2008). Due to this problem, the techniques of plant tissue cultures are widely applied for *ex-situ* multiplication and hence, provide preservation for endangered plant species (Seeni & Latha, 2000).