UNIVERSITI TEKNOLOGI MARA

THE ANTIMICROBIAL ACTIVITY OF MARINE ENDOPHYTIC FUNGI FROM *PADINA AUSTRALIS*

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Dissertation submitted in partial fulfillment of the requirements for

the degree of

Bachelor of Pharmacy (Honours)

Faculty of Pharmacy

June 2013

ACKNOWLEDGEMENT

In the Name of Allah, Most Gracious, Most Merciful, I would like to express my gratitude to the Almighty God for the his grace and mercy I able to complete this research project.

I wish to express my sincere appreciation and gratitude to my supervisor, Dr. Siti Alwani Ariffin, where she was willing to be a supervisor for the research project as well has put her knowledge and experience in guiding me to complete this project. I really appreciate all the helps in terms of time and effort that she has rendered. I will never forget and squander all the experience and knowledge that has been given.

I also would like to take this opportunity to thank to the Marine Pharmaceutical Research group (MaReg) for allowing me to use their laboratory and equipment and not forgetting to the Department of Pharmacology and Chemistry, Department of Pharmaceutics and Department of the Life Sciences that has allowed me to use the equipment in their labs for me to complete my project.

Not to forget to Mdm. Raja Noorfatihah Raja Lias, Mdm. Sarazila Mohammad Shafiee and Siti Nur Atiqah Alias where they had helped in providing equipment and materials for me to be use to complete my project.

TABLE OF CONTENT

ABSTRACT

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The endophytic fungi were investigated previously to produce promising compound as antimicrobial agent. However, the antimicrobial activity of marine endophytic fungi isolated from marine plants have not been further explored and documented. In present study, six marine endophytic fungi extracts (PA1, PA2, PA3, PA4, PA5, PA6) were isolated form Malaysian marine seaweed, *Padina australis* and growth in two media (PDA, PDA + 3% AS). The endophyte extracts (PA1 PDA, PA1 3%, PA2 PDA, PA2 3%, PA3 PDA, PA3 3%, PA4 PDA, PA4 3%, PA5 PDA, PA5 3%, PA6 PDA, PA6 3%) were tested for antibacterial (six common pathogenic bacteria) activities and antifungal (three common pathogenic fungi) activities. From the result on antibacterial test three extracts that were extracted from marine endophytic fungi growth in PDA media (PA1 PDA, PA2 PDA, PA3 PDA) are much better because they have the inhibition effect to three bacteria out of six bacteria tested. This result indicates that marine endophytic fungi have antibacterial activity. The antifungal test showed out of 12 (PA1 PDA, PA1 3%, PA2 PDA, PA3 PDA, PA3 3%, PA4 PDA, PA4 3%, PA5 PDA, PA5 3%, PA6 PDA , PA6 3%) four extract (PA1 PDA, PA1 3%, PA2 3% and PA4 3%) was gave the antifungal effect and endophytes that were growth in PDA+3% AS were better to give antifungal effect toward fungi tested where three of endophyte growth in PDA+3% AS (PA1 3%, PA2 3% and PA4 3%) were inhibited growth of fungi tested compared to PDA only one extract (PA1 PDA) able to give antifungal effect. The result manifested that marine endophytic fungi have antifungal activity. Therefore these marine endophytic fungi isolated from *Padina australis* might have a great potential to be antimicrobial agent due to bioactivity of its extracts.

Keyword: marine endophytic fungi, antibacterial activities, antifungal activities, antimicrobial activity.

CHAPTER 1

INTRODUCTION

1.1 Background of the study

Natural product is naturally derived metabolites and/or by product from a living organism (Chatter et al., 2011). The natural products have been important materials in searching for novel drugs due to their enormous structural diversity and complexity (Demirel, 2012).

In fact the world most popular use drug aspirin which are coming from the plants where it can find in many species of plant genera *Salix* and *Populous*. The plants have been used for human benefits from a long time ago, and plants have been the chief source of compound used in medicine (Strobel & Daisy, 2003).

Medicinal plant has been used for a long time as remedies for human diseases because they contain components of therapeutic value. Currently, the use of plants as the traditional medicine have been accepted as an alternative form of antimicrobial activity and this has caused many researchers to further studies on antimicrobial activity of medicinal plants (Nostro et al., 2000). Antimicrobial substances are the substance that causes harmful to bacterial and fungal. Based on the studies in the previous years the plants have become the main source of antimicrobial compound (Banerjee, 2010).