

UNIVERSITI TEKNOLOGI MARA

**STUDY OF THE EFFECT OF CULTURE CONDITIONS ON
METABOLITE PRODUCTION BY ENDOPHYTIC STRAIN SK9
(OSMAC)**

FARADIA BINTI MOHMAD

**Dissertation submitted in partial fulfillment of requirement for the
degree of Bachelor of Pharmacy (Hons)**

November 2008

ACKNOWLEDGEMENTS

I would like to thank my advisor Professor Dr. J. F. F. Weber Abdullah for her guidance and assistance during my research project for my degree at the University of Technology Mara (UiTM) Shah Alam. I would also like to thank Dr. Sadia Sultan for her cooperation to help me to finish my thesis and also special thank for Mrs. Siti Hajar for his guidance to do every step in this project. I am indebted to Mr. Rozi for helping me to search all the information regarding my writing thesis through internet that available at level 9 lab computer faculty of Pharmacy.

I would like to give special thanks to my friends Azizah Abidi, Shahfini Ishak, Syakiqa Nisha Basah and Nurul Hidayah Kamaruzaman for standing by my side during my experimental reseach at Ikus (Institute Kajian Ubat Semulajadi) at level 7 faculty of Pharmacy.

TABLE OF CONTENT

TITLE	PAGE
APPROVAL	i
ACKNOWLEDGEMENT	ii
TABLE OF CONTENT	iii
LIST OF TABLE	v
LIST OF FIGURE	vi
LIST OF ABBREVIATION	vii
ABSTRACT	viii
CHAPTER 1: INTRODUCTION	
1.1 Nature as important source of drug discovery	4
1.2 Brief information on fungi and endophytes	5
1.3 Brief information on OSMAC (one strain many compound)	6
CHAPTER 2: LITERATURE REVIEW	
2.1 Natural product as major source of bioactive compound	7
2.2 Overview of <i>Stachybotrys</i>	7
2.3 Biologically active compound produced by <i>Stachybotrys</i> spp.	
2.3.1 Glycosyl-enzyme intermediate	9
2.3.2 Potentially useful antibiotic and antifungal in <i>Stachybotrys bisbyi</i> (Srinivasan)	10
2.3.3 Immunosuppressant and the highly cytotoxic macrocyclic trichothecenes compound	12
CHAPTER 3: MATERIALS AND METHOD	
3.1 Materials	
3.1.1 Media	16
3.1.2 Biological materials	16
3.1.3 Laboratory apparatus	16
3.2 Methods	

ABSTRACT

The major objective of this project is to determine the effect of culture condition on metabolite production by endophytic fungal strains SK9. There are two culture condition involve in this study which are potato dextrose agar and potato dextrose broth. First step was growing the endophytic fungal strain on solid agar and static broth media. The resulting extracts were taken as subjected for antimicrobial activity testing against selected bacteria and fungi by disc diffusion method. The HPLC analysis also been done in order to detect secondary metabolites resulting from the acculturation of the fungal strain SK9 in different media. Throughout the whole stage, fungi were observed macroscopically and microscopically. The observations were recorded and shall be included into the database developed by Faculty of Pharmacy, UiTM.

CHAPTER 1

INTRODUCTION

1.1 Nature as important source of drug discovery

Before the 20th century, crude and semi-pure extracts of plants, animals, microbes and minerals represented the only medications available to treat human and domestic animal illnesses. The idea that effect of drug in human body are mediated by specific interactions of the drug molecule with biological macromolecules (proteins or nucleic acids in most cases) led scientists to the conclusion that individual chemical compounds in extracts, rather than some mystical “power of life” are the factors required for the biological activity of the drug. This made for the beginning of a totally new era in pharmacology, as pure, isolated chemicals, instead of extracts, became the standard treatments for diseases. Indeed, many bioactive compounds, responsible for the effects of crude extract drugs, and their chemical structure was elucidated. Classical examples of drug compounds discovered this way are morphine, the active agent in opium, and digoxin, a heart stimulant originating from flower *Digitalis lanata*. The evolution in synthetic chemistry also led to chemical synthesis of many of the elucidated structures.