



**DETERMINATION OF ANTIMYCOTIC AND ANTIOXIDANT ACTIVITIES IN
Morus nigra L (BLACK MULBERRY) LEAVES EXTRACT GROWN IN
MALAYSIA**

By

SHAFINAZ BINTI MOHAMMAD YUSUF


**Thesis submitted in Partial Fulfillment of the Requirements for
Bachelor of Medical Laboratory Technology (Hons)
Faculty of Health Sciences, Universiti Teknologi MARA**

2015

DECLARATION

I hereby declare that this thesis is my original work and has not been submitted previously or currently for any other degree at UiTM or any other institutions.

Name : Shafinaz Binti Mohammad Yusuf
Matric Number : 2012433996
Programme : Bachelor of Medical Laboratory Technology (Hons)
Faculty : Health Sciences, Puncak Alam Campus, UiTM
Title of Thesis : Determination of Antimycotic and Antioxidant Activities In *Morus Nigra* L (Black Mulberry) Leaves Extract Grown in Malaysia

Signature :  _____

Date : July 2015

ABSTRACT

Spreading of Candidiasis cause by *Candida albicans* required more effective treatment that is not harmful to the patient. The presence of antioxidant properties could be a treatment for debilitating disease from free radical that contains with high reactive compound, which contributes to damage many structures of cell in human body. *Morus nigra* L (black mulberry) native from China is popular as the traditional herb due to the medicinal properties and phytochemical composition. The present study was designed to observe the antimycotic properties against *Candida albicans* (ATCC 60193) and antioxidant activity of *Morus nigra* L leaves extract grown in Malaysia. Antimycotic effect of *Morus nigra* L leaves extract was evaluated by Minimum Inhibitory Concentration (MIC), Minimum Fungicidal Concentration (MFC) and Antimycotic Sensitivity Testing (AST). For antioxidant activities evaluation, the DPPH radical scavenging assay was carried out. The methanol extract of *Morus nigra* L leaves extract was found to be active against *Candida albicans* and it was determined to have antioxidant activities. The Minimum Inhibitory Concentration (MIC) determined to be 37.5mg/ml and Minimum Fungicidal Concentration (MFC) for methanol extract of *Morus nigra* L leaves were determined to be 75.5mg/ml while the Antimycotic Sensitivity Testing showed effects of the inhibition zone on PDA media for concentration 1000mg/ml, 500mg/ml, 250mg/ml and 75.5mg/m. Besides, the results of comparison between *Morus nigra* L and L-ascorbic acid in antioxidant activity proved that there are significantly ($p < 0.05$). It revealed that methanolic extract of the *Morus nigra* L leaves contain potential antioxidant activity.

TABLE OF CONTENT

	PAGE
TITLE PAGE	
DECLARATION	ii
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
TABLE OF CONTENT	v
LIST OF TABLE	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS	x
CHAPTER 1	
INTRODUCTION	1
CHAPTER 2	
LITERATURE REVIEW	
2.1 <i>Morus nigra</i> L	7
2.1.1 Nomenclature	8
2.1.2 <i>Morus nigra</i> L background	8
2.1.3 Antimicrobial properties of <i>Morus nigra</i> L	10
2.1.4 Medicinal Use of <i>Morus nigra</i> L	10
2.1.5 Phytochemicals in <i>Morus nigra</i> L	11
2.2 Antimycosis	
2.2.1 Definition	12
2.2.2 Effect of Antimycotic Activity Against <i>Candida albicans</i>	12
2.3 Antioxidant	
2.3.1 Definition	13
2.3.2 DPPH Free Radical Scavenging Assay	14

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

In the past few decades, many studies have identified that plant extract not only contain primary metabolites and lot of minerals but also contain secondary metabolites which are related to antioxidant potential and antimicrobial properties (Ifesan et al., 2013). Almost all the plant structure such as fruit, leaves, roots, barks, corms, bulk, stem, rhizomes, flower and seed have been identified to possess different active components depending on the environmental, genetic and pre-and post-harvest treatment (Ifesan et al., 2013).

Morus nigra L. is a popular medicinal plant that is rich with both primary and secondary metabolites. It is known as black mulberry and popular for food production such as marmalades, juice, natural dyes and ice cream (S.J et al., 2012). In addition, black mulberry contains healthy properties, as one of the dark-coloured fruits besides blackberry, raspberry, and blueberry. The pigment in these fruits valuable for human health by lowering the risk to disease (S.Ercisli et al., 2010). Despite *Morus nigra* L., there are about 12-16 species from the genus of *Morus*. The most popular species includes *Morus alba*, known as white mulberry and *Morus rubra* known as purple mulberry (H.L.Ramesh et al., 2014)

Antimycotic activity is a process of inhibiting growth of fungi and its determination becomes more vital because of yeast infections from pathogenic strains such as *Candida albicans*. Infections of *Candida albicans*, which is the predominant organism related to candidiasis, may cause serious diseases that can range from superficial infections to life