

**ANTIOXIDANT AND ANTIAGING PROPERTIES OF
METHANOL AND AQUEOUS EXTRACTS OF
Bougainvillea glabra LEAVES**

AINA NADHIRA AZIZ

**BACHELOR OF SCIENCES (Hons.) BIOLOGY
FACULTY OF APPLIED SCIENCES
UNIVERSITI TEKNOLOGI MARA**

FEBRUARY 2023

**ANTIOXIDANT AND ANTIAGING PROPERTIES OF METHANOL AND
AQUEOUS EXTRACTS OF *Bougainvillea glabra* LEAVES**

AINA NADHIRA AZIZ

**Final Year Project Report Submitted in
Partial Fulfilment of the Requirements for the
Degree of Bachelor of Science (Hons.) Biology
in the Faculty of Applied Sciences
Universiti Teknologi MARA**

FEBRUARY 2023

This Final Year Project Report entitled “**Antioxidants and Antiaging Properties of Methanol and Aqueous Extracts of *Bougainvillea glabra* Leaves**” was submitted by Aina Nadhira Binti Aziz in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Biology, in the Faculty of Applied Sciences, and was approved by

Dr. Ahmad Suhail Khazali, PhD
Supervisor
Faculty of Applied Sciences
Universiti Teknologi MARA
02600 Arau
Perlis

Mr. Muhammad Syukri Noor Azman
Project Coordinator
Faculty of Applied Sciences
Universiti Teknologi MARA
02600 Arau
Perlis

Dr. Rosyaini Afindi Zaman
Head of Programme
Faculty of Applied Sciences
Universiti Teknologi MARA
02600 Arau
Perlis

Date: _____

ABSTRACT

ANTIOXIDANT AND ANTIAGING PROPERTIES OF METHANOL AND AQUEOUS EXTRACTS OF *Bougainvillea glabra* LEAVES

Skin aging caused by photoaging, is a serious skin-health concern including in Malaysia as this affects individual of all ages due to the continuous exposure to high UV radiation annually. Currently, there are a wide range of cosmetic products available. However, since most of these are available over the counter, the efficacy of these products is unclear as these products are less regulated. In addition, some of these products contain toxic ingredients such as mercury, hydroquinone, tretinoin, and azelaic acid that may exacerbate the skin condition. Therefore, recent studies revealed that most consumers prefer natural-based products. The main purpose of this study is to assess the antioxidant and antiaging activities of *Bougainvillea glabra*. The samples were extracted using two different solvents, namely absolute methanol and aqueous using maceration method. Antioxidant activity was assessed using 2,2-diphenyl-1-picrylhydrazyl (DPPH) scavenging assay, resulting in an average of $76.403 \pm 10.158\%$ for methanolic extracted while aqueous extract of *B. glabra* showed an average of $50.912 \pm 12.194\%$. The antiaging activities were assessed using tyrosinase assays following with an average of $32.032 \pm 5.699\%$ for methanolic extract and aqueous extract with average of $27.35 \pm 3.938\%$. The antiaging activities correlated with the level of anti-tyrosinase activities. Overall, the study shows that methanol and aqueous extracts of *B. glabra* leaves exhibited potent antioxidant property and moderate level of anti-tyrosinase activity. Successful completion of this study may result in a novel skincare formulation using *B. glabra* leaf extract which can be beneficial to those with chronic skin problems. This study also adds new knowledge on the medicinal property of *B. glabra*.

TABLE OF CONTENT

	Page
ABSTRACT	iii
ABSTRAK	iv
ACKNOWLEDGEMENTS	v
TABLE OF CONTENT	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF SYMBOLS	x
LIST OF ABBREVIATIONS	xi
CHAPTER 1 INTRODUCTION	1
1.1 Introduction	1
1.2 Problem statement	2
1.3 Objectives and aims	3
1.4 Significant of studies	4
CHAPTER 2 LITERATURE REVIEW	5
2.1 Structure of skin	5
2.1.1 Structure of skin	5
2.1.2 Layers of skin & cells function	5
2.2 Skin aging	9
2.2.1 Factors of skin aging- intrinsic & extrinsic	9
2.2.2 Skin alteration during aging	10
2.3 Molecular mechanism of skin aging	12
2.4 Prevention and treatment	15
2.4.1 Antioxidants	15
2.4.2 Sunscreen protection	16
2.5 Cosmetic Industry in Malaysia	17
2.5.1 Cost & market industries	17
2.5.2 Toxic cosmetic	18
2.5.3 Natural based product	18
2.6 <i>Bougainvillea glabra</i>	19
2.6.1 Introduction	19