

UNIVERSITI TEKNOLOGI MARA (UiTM)

**ASSESSMENT OF BIOPHYSICAL PROPERTIES OF HUMAN SKIN
FOLLOWING TOPICAL APPLICATION OF MARINE SEAWEED**

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Dissertation submitted in partial fulfillment of the requirements

for the degree of

Bachelor of Pharmacy (Hons.)

July 2014

ACKNOWLEDGEMENTS

Alhamdulillah, all praise and glory be to Allah for making things easier for me in my life. My parents, without their encouragement, I would not have been here. I thank them for their unflinching prayers. It is my pleasure to express my deepest gratitude and appreciation to my main supervisor, Dr. NorHayati Abu Samah also to both of my co-supervisors Dr. SitiAlwaniArififin and Mr. Tommy Julianto for their guidance. My special thanks and gratitude to my colleagues for their sincere help, useful suggestions and moral supports while carrying out this project. Last but not least, I would like to express my heartfelt thanks to Faculty of Pharmacy staff, especially all the PharmaceuticsDepartment members for their kindness during my research project.

TABLE OF CONTENTS

	Page
TITLE PAGE	
ACKNOWLEDGEMENTS	ii
TABLE OF CONTENTS	
LIST OF ABBREVIATIONS	vi
LIST OF FIGURES	vii
LIST OF TABLES	viii
ABSTRACT	ix
CHAPTER ONE (INTRODUCTION)	
1.1 Background	1
1.2 Problem Statement	3
1.3 Significance of Study	4
1.4 Objectives	4
1.5 Hypothesis	5
CHAPTER TWO (LITERATURE REVIEW)	
2.1 Seaweeds	6
2.2 Skin Morphology	10
2.3 Drug Delivery via Skin	12
2.4 Cosmetics	12
2.5 Biophysical assessments	13
CHAPTER THREE (MATERIALS & METHODS)	
3.1 Materials	15
3.2 Methods	
3.2.1 Preparation of Seaweed Extract	16
3.2.2 Preparation of a cream formulation of <i>K. alvarezii</i> extracts	17
3.2.2.1 Characterization and Stability	
Studies of Cream Formulation	
3.2.2.1.1 Droplet Size Characterization	18
3.2.2.1.2 pH characterization	19
3.2.2.1.3 Rheology of Cream Formulation	19
3.2.2.1.4 Texture Analysis of Cream	20
Formulation	
3.2.2.1.5 Sunscreen Protection Factor (SPF)	20
Analysis	
3.2.2.1.6 Stability Studies	21
3.2.3 Panel Study	
3.2.3.1 Study Protocol	21
3.2.3.2 Biophysical Assessments	
3.2.3.2.1 TEWL	23

ABSTRACT

Seaweeds are plant-like organisms which received great attention as they were reported to possess various potential benefits such as antioxidant, antimicrobial, anti-proliferative and others. For this reason, *Kappaphycusalvarezii* of the red seaweeds was selected for further investigations to study its benefits on biophysical parameters of the human skin. In this study, a cream formulation containing 3% w/w aqueous extract of *K. alvarezii* was prepared. The cream was characterized in terms of its mean droplet size, rheology, texture, pH, stability and sun protection factor (SPF) properties. Following that, a panel study comprising of 20 panelists were carried out to assess the effect of *K.alvarezii* cream on the skin elasticity, hydration and transepidermal water loss (TEWL) over a 6-hour application on the volar forearm area. The mean droplet size of the cream was found to be ~15 µm with a pH of mildly acidic (pH 3.9). The cream showed elastic feature, which indicated its good spreadability for application on the skin. However, there were no significant improvements of the studied biophysical parameters in comparison to the placebo cream (without the active). In conclusion, the *K.alvarezii* has potential for further investigations for cosmetic purposes with some formulation improvements.

CHAPTER 1

INTRODUCTION

1.1 Background

Marine algae are plant-like organisms which attached to rock or any other hard substances in coastal areas. Marine algae can be divided into three types, which are red, brown and green algae. The most commercially used marine algae is red algae which is *Kappaphycusalvarezii* known as *Eucheumacottoni*. *Kappaphycusalvarezii* are from family of Solieriaceae and genus of Kappaphycus. Recently they receive attention as they have the antioxidant property. Besides that, they also possess nutraceutical potentials such as antimutagenic, anticoagulant, anticancerous and antibacterial activity. For this reason, various kind of cosmetic were developed which include the marine algae as the active ingredient.

Skin is the largest organ and one of the defensive systems in the body. It functions as barrier to outside environment or the harmful substance from entering the body besides prevent loss of water and regulation of body temperature. Skin mainly composed of three layers which are epidermis, dermis and subcutaneous layer. The outermost layer is formed by epidermis layer which act as barrier to prevent invasion of many type of organism and substances (Clara, Isabel and Miriam).