THE EXTRACTION OF RESVERATROL FROM BUTTERFLY PEA SEEDS

By

Andre Armando Cornelius Tomahuw 14310052

BACHELOR'S DEGREE

In

ELECTRICAL ENGINEERING -

BIOMEDICAL ENGINEERING CONCENTRATION

FACULTY OF LIFE SCIENCES AND TECHNOLOGY

SWISS GERMANUMVERSITY

SWISS GERMAN UNIVERSITY
EduTown BSD City
Tangerang 15339
Indonesia

Revision after the Thesis Defense on 10 August 2015

STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

Andro Ammo	ndo Cornelius Tomahuw		
	ido Comenus Tomanuw		
Student			Date
Approved by	:		
Dr.rer.nat. M	aruli Pandjaitan	AI IIIAIIA	/FDQI
Thesis Advis	or	M UNIN	Date
Kholis Abdu	rachim Audah, M.Sc, Ph.I	D	
Thesis Co-A	dvisor		Date
Dr. Dipl,-Ing	. Samuel P Kusumocahyo)	
	<u> </u>		Date

ABSTRACT

THE EXTRACTION OF RESVERATROL FROM BUTTERFLY PEA SEEDS

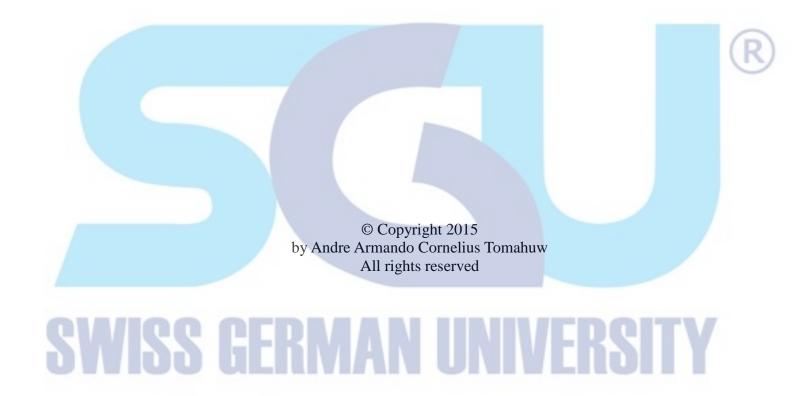
By

Andre Armando Cornelius Tomahuw Dr.rer.nat Maruli Pandjaitan, Advisor Kholis Abdurachim Audah, M.Sc, Ph.D, Co-Advisor

SWISS GERMAN UNIVERISTY

Butterfly pea plant has been known as medical plant for example as anti-cancer, antiaging, alzheimer, etc. Resveratrol is also known to have ability as anti-aging and anticancer. The objective of this research is to find and measure the amount of resveratrol in butterfly pea seeds. Seeds were extracted using soxhlet extractor. The parameter is the different duration to extract. The phenol content in 6 hours duration has 308.163 mg/l, in 7 hours has 311.564 mg/l, and in 8 hours has 313.605 mg/l. The highest content is in 8 hours extraction with phenolic amount per g seeds is 0.627 mg/g seeds. The resveratrol qualitative analysis was analyzed using chromatographic (LC – MS). The mass spectrum graphic shown that resveratrol mass (228.24 g/mol) is exist in butterfly pea seeds extract. The resveratrol content in butterfly pea seeds is 4.774µg/g seeds.

Keywords: Anti-aging, Resveratrol, Butterfly Pea Seeds, Clitoria ternatea,



DEDICATION

I dedicate this works for the future of the country I loved: Indonesia, for all scientist, and for anti-aging researcher.



ACKNOWLEDGEMENTS

First of all I want to express my biggest gratefulness to my wonderful, awesome, and lovely GOD. Jesus Christ. King of king. GOD of god. This was a miracle that my thesis was done this year. After several depressing condition, His words always keeps comfort me and strength me. His favor and grace upon me so I can find the right path to move forward.

I also want to give my gratitude to my thesis advisor. Dr.rer.nat Maruli Pandjaitan. His advice helps me to do my thesis. He also always support me when I was in difficult time during my research. I also want to give my thanks to my co-advisor Kholis Abdurachim Audah, M.Sc, Ph.D. His knowledge also help me to finish my thesis. Mr. Azhar from Forensic lab and Tabligh Permana thank you for your helps and advice in laboratories so I can done my research in better method.

I also want to give thanks to my family. Mama, Papa, Aldi and Dian. Thank you for your support and pray. That keeps strengthening in my research. To my big family, Tomahuw – Pical, especially to Oma who was gone just before submission. I am sorry I cannot finish this research when you were alive. You were the inspiration of this thesis topics.

My friends. SGU batch 2010. Even though, I was graduate later than them, but they keep support me and accompany me during thesis research until midnight. Biomed Batch 2011. Thank for supporting each other so we can finish together this year. One year is a short time to know all of you, but it was a lovely time to study together.

TABLE OF CONTENTS

		Page
STAT	TEMENT BY THE AUTHOR	2
ABS	ГRACT	3
DED	ICATION	5
ACK	NOWLEDGEMENTS	6
TABI	LE OF CONTENTS	7
LIST	OF FIGURES	9
	OF TABLES	
CHA	PTER 1 - INTRODUCTION	11
1.1	Background	11
1.2	Research Problems	12
1.3	Research Objectives	12
1.4	Significance of Study	
1.5	Research Questions	13
1.6	Hypotheses	13
CHA	PTER 2 – LITERATURE REVIEW	14
2.1	Butterfly Pea	15
2.2	Butterfly Pea Seed	16
2.3	Resveratrol	
2.4	Soxhlet Extractor	18
2.5	LC-MS	19
CHA	PTER 3 - RESEARCH METHODS	21
3.1	Time and Venue	21
3.2	Materials and Equipment	21
3.3	Preliminary Research	22
3.4	Experimental Procedure	23
3.5	Analytical Procedure	25
CHA	PTER 4 – RESULTS AND DISCUSSIONS	28
4.1	Phenolic Content	28
4.2	Resveratrol Qualitative Analysis	29
4.3	Resveratrol Quanitative Analysis	39
CHA	PTER 5 – CONCLUSION AND RECCOMENDATIONS	40

IKOM	DOTTER ETTEASEEDS	
5.1	Conclusion	40
5.2	Recommendations	40
GLO	OSSARY	41
REF	ERENCES	42
APP]	ENDIX	45
CLID	DDICH HM VITAE	

