### **ACKNOWLEDGMENTS**

Thank you to Jesus Christ who gave His love, blessings, and grace throughout the making of the final project entitled "EFFECTS OF BLANCHING AND DIFFERENT EXTRACTION SOLVENTS ON ANTIOXIDANT ACTIVITY OF KEMANGI (*Ocimum basilicum* L.) LEAVES". This final project was done as the final requirement for students to procure the degree of *Sarjana Teknologi Pertanian Strata Satu* Food Technology, Universitas Pelita Harapan.

This final project cannot be successfully completed without the help, support, and guidance from many people. Thus, the author would like to express her utmost gratitude to:

- 1. Natania, M.Eng. as thesis supervisor and Head of Food Processing Laboratory for the guidance, advices, patience, support, and time throughout the completion of this final project.
- 2. Lucia C. Soedirga, M.Sc., as thesis co-supervisor who has given time, effort and knowledge to help and guide the author throughout the process of the completion of the final project.
- 3. Eric Jobiliong, Ph.D. as Dean of Faculty Science and Technology, Universitas Pelita Harapan.
- 4. Dela Rosa, M.M., M.Sc., Apt., as Vice Dean of Faculty Science and Technology, Universitas Pelita Harapan.
- 5. Ir. W. Donald R. Pokatong, M.Sc., Ph.D. Head of Food Technology Study Program, Universitas Pelita Harapan.
- 6. Ratna Handayani, M.P., Vice Head of Food Technology Study Program, Universitas Pelita Harapan.
- 7. Yuniwaty Halim, M.Sc. as the Head of Quality Control and research Laboratory, Dr. Tagor M. Siregar, S.Si., M.Si., Head of Chemistry Laboratory and Dr. Adolf J. N. Parhusip as Head of Microbiology Laboratory for the permission given to the author to conduct the final project in these laboratories.
- 8. Bryan Anders, S.T.P., Alexander Kevin, S.T.P. and Aileen Neysha, S.T.P. as assistant lecturers for the help, guidance and support. Mr. Adih, Mr, Aji, Mr.

- Darius and Mr. Regy for the help and guidance regarding the use of laboratory equipment.
- 9. All other lecturers and staffs of Food Technology Study Program of Universitas Pelita Harapan who equipped the author with knowledge and skill throughout the university years.
- 10. Beloved family members; Titiek Yuliati, Adelina Mulyani Go, Ardhiyanto Mulyono, Adrian Agus for the endless prayers, love and support for the writer during the completion of this final project.
- 11. Ni-Hsi Day, Stefani Larissa, Devy Yulianti, Angela Rebecca, Evelind Pangestu, Jessica Sidharta for the shared moments, laughter, help and support throughout the university years.
- 12. Astri, Shannis, and Mirna for being very supportive towards the completion of this final project.
- 13. All friends of Food Technology Study Program batch 2016 Universitas Pelita Harapan who cannot be mentioned one by one for providing support and for sharing their knowledge and experiences.
- 14. All relatives, friends and parties who cannot be mentioned one by one for the prayers and support.

The author is fully aware that this report was not perfect and may contain some faults. Thus, the author is open to any criticisms and suggestions for this report.

The author hopes that this report might be useful for the readers. Thank you.

Tangerang, August 19th, 2020

(Angelia Mulyani)

# TABLE OF CONTENTS

	Page
COVER	
FINAL ASSIGNMENT STATEMENT AND UPLOAD AGREEMENT	
APPROVAL BY THESIS SUPERVISOR	
APPROVAL BY THESIS COMMITTEE	
ABSTRACT	V
ABSTRACTACKNOWLEDGEMENTS	vi
TABLE OF CONTENT	viii
LIST OF TABLES	X
LIST OF FIGURES	
LIST OF APPENDICES	xii
CHAPTER I INTRODUCTION	1
1.1 Background	
1.2 Research Problem	4
1.3 Objectives	4
1.3.1. General Objectives	4
1.3.2. Specific Objectives	
CHAPTER II LITERATURE REVIEW	6
2.1.Kemangi	
2.2.Phytochemical Compounds in Leaves	
2.2.1.Phytochemical compounds of <i>Kemangi</i> Leaf	
2.3.Antioxidant	
2.4 Phenolic	
2.5 Flavonoids	
2.6 Extractions.	
2.6.1Maceration	
2.6.2 Percolation.	
2.7 Extraction Solvent	
2.8 Blanching	
2.8.1 Hot Water Blanching	
2.8.2 Steam Blanching	
2.8.3 Microwave Blanching	

CHAPTER III RESEARCH METHODOLOGY	14
3.1.Materials and Equipment	14
3.2.Research Methodology	14
3.3.Experimental Design	
3.4.Method of Analysis	18
3.4.1.Total Phenolic Content (Alara et al., 2019)	18
3.4.2.Total Flavonoid Content (Lamien-Meda et al., 2008)	19
3.4.3.Antioxidant Activity (DPPH) (Parlina et al,2012)	19
CHAPTER IV RESULTS AND DISUSSIONS	21
4.1. Effect of Different Pre-Treatment and Extraction Solvents to	
Kemangi Leaf Yield and Extraction Weight	21
4.2. Effect of Different Pre-Treatment and Extraction Solvents to	
Kemangi Leaf Phytochemical Activity	24
4.2.1 Effect of Pre-Treatment and Extraction Solvent to Total	
Flavonoid Content of Kemangi leaf	26
4.2.2 Effect of Pre-Treatment and Extraction Solvent to activi	
antioxidant activity (IC <sub>50</sub> ) of <i>Kemangi</i> leaf	29
4.3. Correlation of Total Phenolic Content, Total Flavonoid Content	
and Radical scavenging activity (IC <sub>50</sub> )	30
CHAPTER V CONCLUSION AND SUGGESTIONS	32
5.1.Conclusions	32
5.2.Suggestions	32

BIBLIOGRAPHY

# LIST OF TABLES

	Page
Table 3.1 Research experimental design	17
Table 4.1 Yielf of <i>kemangi</i> leaf after freeze drying	
Table 4.2 Extraction weight	
Table 4.3 <i>Kemangi</i> leaf extract overall data	
Table 4.4 Pearson correlation of TPC. TFC and IC <sub>50</sub>	29



# LIST OF FIGURES

	Page
Figure 2.1 Kemangi leaf	6
Figure 3.1 Flowchart <i>kemangi</i> leaves extraction	
Figure 4.1 Extraction Weight	22
Figure 4.2 Total phenolic content of <i>kemangi</i> leaf extract	
Figure 4.3 Effect of solvent type to total flavonoid content	26
Figure 4.4 Effect of pre-treatment type to total flavonoid content	27
Figure 4.5 Radical scavenging activity (IC <sub>50</sub> ) of <i>kemangi</i> leaf extract	28



# LIST OF APPENDICES

	Page
Appendix A. Yield and Yield	
A.1 Data of Extraction Weight of <i>kemangi</i> leaf	A-1
A.2 Yield (%) of kemangi leaf	
A.3 Statistical Analysis of Yield	
A.3 Statistical Analysis of Extraction Weight	A-3
. 110 2 1	
Appendix B. Total Phenolic Content of <i>Kemangi</i> leaf Extract	
B.1 Standard Curve for Total Phenolic Content	B-1
B.2 Data of Total Phenolic Content	
B.3 Statistical Analysis of Total Phenolic Content	
Extract	
Appendix C. Total Flavonoid Content of <i>Kemangi</i> leaf Extract	
C.1 Standard Curve for Total Flavonoid Content	C-1
C.2 Data of Total Flavonoid Content	C-1
C.3 Statistical Analysis of Total Flavonoid Conten	
Extract Based on Solvent	
C.4 Statistical Analysis of Total Flavonoid Conten	
Extract to Based on Pre-treatment	C-2
Appendix D. Radical scavenging activity of <i>Kemangi</i> leaf Extrac	
D.1 Data of Radical scavenging activity	
D.2 Statistical Analysis of Radical scavenging activ	
leaf Extract	
D.3 Statistical Analysis Radical scavenging activity	y -
Extract to Pre-treatment and Type of Solvent	D-2
Appendix E. Correlation of Treatment and Solvent Type to Phyto	ochemical and
Radical scavenging activity	
E.2 TPC, TFC and IC50 Pearson Correlations	E-1
Appendix F. Thesis Documentations	
F.1 Extract Preparation	F-1
F 2 Analysis Documentations	F-2