

TABLE OF CONTENTS

	page
COVER	
FINAL ASSIGNMENT STATEMENT AND UPLOAD AGREEMENT	
APPROVAL BY THESIS SUPERVISOR	
APPROVAL BY THESIS EXAMINER COMMITTEE	
ABSTRACT.....	v
ACKNOWLEDGEMENT.....	vi
TABLE OF CONTENTS.....	viii
LIST OF FIGURES.....	x
LIST OF TABLES.....	xi
LIST OF APPENDICES.....	xii
CHAPTER I INTRODUCTION	
1.1 Background.....	1
1.2 Research Problem.....	4
1.3 Objectives.....	5
1.3.1 General Objectives.....	5
1.3.2 Specific Objectives.....	5
CHAPTER II LITERATURE REVIEW	
2.1 Roselle.....	6
2.2 Microencapsulation.....	11
2.3 Maltodextrin.....	12
2.4 Whey Protein Isolate.....	13
2.5 Spray Drying.....	14
CHAPTER III RESEARCH METHODOLOGY	
3.1 Materials and Equipment.....	15
3.2 Research Method.....	16
3.2.1 Research Stage 1.....	17
3.2.2 Research Stage 2.....	18
3.3 Experimental Design.....	19
3.3.1 Research Stage 1.....	19
3.3.2 Research Stage 2.....	20
3.4 Analysis Procedure.....	22
3.4.1 Yield (AOAC, 2005).....	22
3.4.2 pH value (Septiani <i>et al.</i> , 2013).....	23
3.4.3 Total Anthocyanin Content (Nguyen <i>et al.</i> , 2022 and Pertiwi <i>et al.</i> , 2021 with modifications).....	23

3.4.4 Color Intensity (Wahyuningsih <i>et al.</i> , 2017 with modifications).....	24
3.4.5 Moisture Content (AOAC, 2005 with modifications).....	24
3.4.6 Solubility in Water (Syafi'i <i>et al.</i> , 2016 and Cano-Chauca <i>et al.</i> , 2005)	25
3.4.7 Encapsulation Efficiency (Nguyen <i>et al.</i> , 2022)	25

CHAPTER IV RESULTS AND DISCUSSIONS

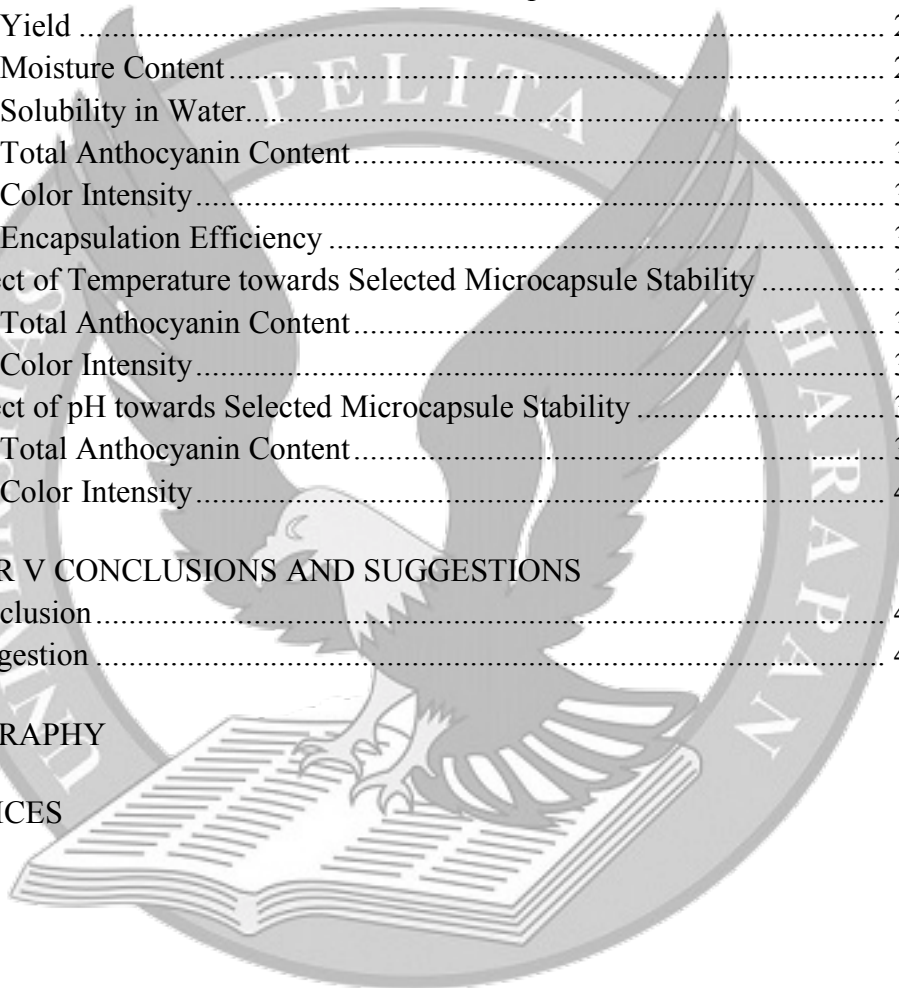
4.1 Characteristic of Roselle Extract	26
4.2 Physicochemical Characteristic of Microencapsulated Roselle Extract	27
4.2.1 Yield	28
4.2.2 Moisture Content	29
4.2.3 Solubility in Water.....	30
4.2.4 Total Anthocyanin Content.....	31
4.2.5 Color Intensity.....	33
4.2.6 Encapsulation Efficiency	35
4.3 Effect of Temperature towards Selected Microcapsule Stability	36
4.3.1 Total Anthocyanin Content.....	36
4.3.2 Color Intensity.....	37
4.4 Effect of pH towards Selected Microcapsule Stability	39
4.4.1 Total Anthocyanin Content.....	39
4.4.2 Color Intensity.....	40

CHAPTER V CONCLUSIONS AND SUGGESTIONS

5.1 Conclusion.....	43
5.2 Suggestion	43

BIBLIOGRAPHY

APPENDICES

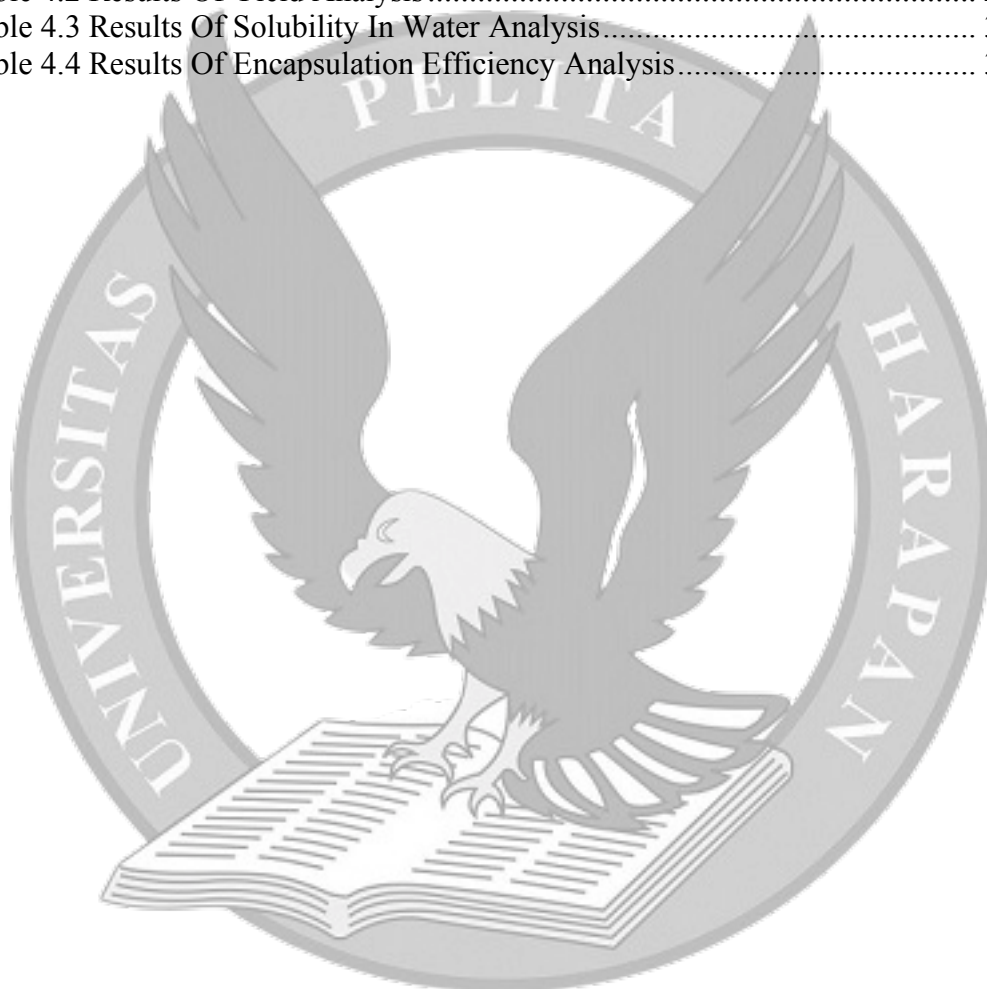


LIST OF FIGURES

	page
Figure 2.1 Roselle Plant.....	7
Figure 2.2 Basic Anthocyanin Structure.....	8
Figure 2.3 Types Of Anthocyanidin Structure.....	9
Figure 2.4 Degradation Of Anthocyanin Structure At Different Ph Values.....	11
Figure 2.5 Structure Of Maltodextrin.....	12
Figure 3.1 Flowchart Of Roselle Flower Extraction Process	17
Figure 3.2 Flowchart Of Roselle Extract Microencapsulation Process.....	18
Figure 3.3 Flowchart Of Temperature And Ph Stability Test.....	19
Figure 4.1 Effect Of Coating Ratio On The Moisture Content Of Microencapsulated Roselle Extract	29
Figure 4.2 Effect Of Coating Ratio On The Total Anthocyanin Content Of Microencapsulated Roselle Extract	32
Figure 4.3 Effect Of Coating Ratio On The Color Intenity Peak Of Microencapsulated Roselle Extract	34
Figure 4.4 Effect Of Temperature On The Total Anthocyanin Content Stability Of Microencapsulated Roselle Extract	37
Figure 4.5 Effect Of Temperature On The Color Intensity Peak Stability Of Microencapsulated Roselle Extract	38
Figure 4.6 Effect Of Ph On The Total Anthocyanin Content Stability Of Microencapsulated Roselle Extract	40
Figure 4.7 Effect Of Ph On The Color Intensity Stability Of Microencapsulated Roselle Extract	41
Figure 4.8 Effect Of Ph On The Color Intensity Peak Stability Of Microencapsulated Roselle Extract	41

LIST OF TABLES

	page
Table 2.1 Anthocyanin Types And TAC On Roselle Calyx.....	10
Table 3.1 Feed Solution Formation.....	16
Table 3.2 Experimental Design Of Research Stage 1	20
Table 3.3 Experimental Design Of Research Stage 2 Of Temperature.....	21
Table 3.4 Experimental Design Of Research Stage 2 Of Ph	22
Table 4.1 Parameter And Analysis Results Of Concentrated Roselle Extract	26
Table 4.2 Results Of Yield Analysis.....	28
Table 4.3 Results Of Solubility In Water Analysis.....	30
Table 4.4 Results Of Encapsulation Efficiency Analysis.....	35



LIST OF APPENDICES

	page
Appendix A. Preliminary Stage Data.....	A-1
Appendix B. Research 1 Stage Data	B-1
Appendix C. Stage 2 Data Temperature.....	C-1
Appendix D. Stage 2 Data pH.....	D-1
Appendix E. Documentation.....	E-1

