

ACKNOWLEDGEMENTS

An immense gratitude to God for his guidance and blessings that had given the author strength to complete this thesis report entitled “THE EFFECTS OF THE RATIO OF SUGAR TO HONEY AND GELATINE CONCENTRATION TOWARDS THE PROPERTIES OF PINEAPPLE JELLY CANDY”.

This thesis was written based on the research conducted from September 2020 to November 2020. This report serves as the final project to be done according to the curriculum of Food Technology Study Program in Universitas Pelita Harapan. This thesis is also beneficial for the author to implement the knowledge obtained and acquire new experiences.

It would not have been possible to complete this report without the support, assistance, and guidance from others. Therefore, the author would like to acknowledge her deepest gratitude towards those, including:

1. Eric Jobiliong, Ph.D. as Dean of Faculty of Science and Technology.
2. Dr. Nuri Arum Anugrahati as Vice Dean of Faculty of Science and Technology.
3. Laurence, S.T., M.T., as Director of Administration and Student Affair of Faculty of Science and Technology.
4. Ir. W. Donald R. Pokatong, M.Sc., Ph.D., as Head of Food Technology Study Program.
5. Ratna Handayani, M.P. as Vice Head of Food Technology Study Program.
6. Lucia C. Soedirga, M.Sc. as thesis supervisor for the time, guidance, benevolence, and support throughout this internship program.
7. Yuniwaty Halim, M.Sc. as the Head of Quality Control and Research Laboratory and Natania, M.Eng. as the Head of Food Processing and Technology Laboratory where the author conducted this project.
8. All other lecturers, lecturer assistant, and staff of Food Technology Study Program for the help and support.

9. The author's beloved parents and sisters for the endless love, support, and prayers throughout the thesis completion.
10. Calmness Felia Halim, Charlene Octavian Anggono, Diandra Tirta Kusuma, Febiana Christy, Ida Ayu Komang Chandra Devi, Irene Natasha, Michael Austin, Michael Djurijanto, Mona Felicia, Steven Ibrahim, Wilfrina Gracia, Yesyurin Kirana, and Yolita Lilian as the author's friends for the endless help, time, and prayers.
11. Joanne Tirto as the author's thesis partner for the endless time, support, and prayers.
12. Hilda Setiawarga, Stefanny Djunawan, and Nina Gunawan as the author's friends for the endless time, support, and prayers.
13. All others who have not been mentioned but took part in supporting the author during the thesis completion period.

The author is aware that flaws may be present and reflected on this paper. Therefore, any criticism and/or suggestion would be accepted with the utmost humility. Finally, the author hopes that this report would be useful for future references. Thank you.

Tangerang, January 22nd, 2021

(Shania Edeline)

TABLE OF CONTENTS

	page
COVER.....	
FINAL ASSIGNMENT STATEMENT AND UPLOAD AGREEMENT.....	
APPROVAL BY THESIS SUPERVISOR.....	
APPROVAL BY THESIS EXAMINATION COMMITTEE.....	iv
ABSTRACT.....	v
ACKNOWLEDGEMENTS.....	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.....	3
1.3 Objectives.....	4
1.3.1 General Objectives.....	4
1.3.2 Specific Objectives.....	4
CHAPTER II LITERATURE REVIEW	
2.1 Gelatine.....	5
2.1.1 Composition and Structure.....	6
2.2 Honey.....	8
2.2.1 Composition.....	9
2.3 Sucrose.....	15
2.4 Pineapples.....	16
2.5 Jelly Candies.....	18
2.5.1 Ingredients.....	19
2.5.2 Production Steps.....	20
CHAPTER III RESEARCH METHODOLOGY	
3.1 Materials and Equipment.....	21
3.2 Research Methodology.....	21
3.2.1 Preliminary Stage.....	22
3.2.2 Main Research.....	22
3.3 Experimental Design.....	24
3.4 Analysis Procedure.....	26
3.4.1 Raw Material Analyses.....	26
3.4.2 Pineapple Jelly Candy Analyses.....	28
CHAPTER IV RESULTS AND DISCUSSION	
4.1 Characterisation of Raw Materials.....	31
4.1.1 Pineapples.....	31

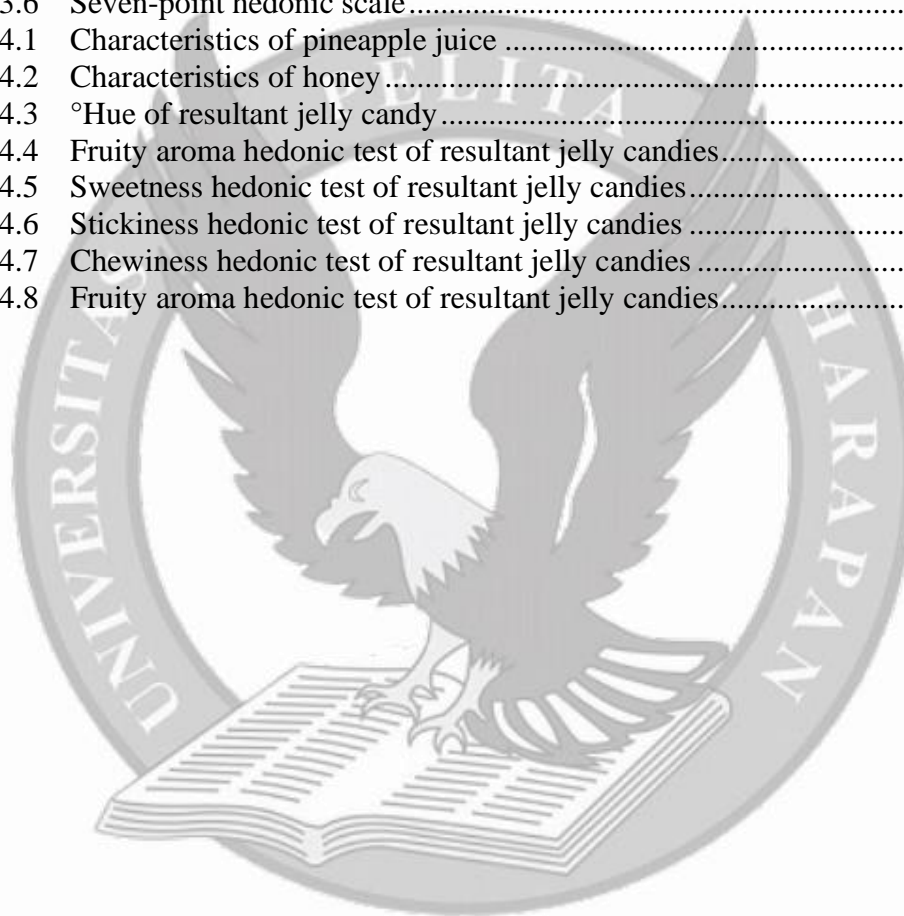
4.1.2	Honey	33
4.2	Effect of Ratio of Sugar to Honey and Gelatine Concentration towards the Texture of Pineapple Jelly Candy	34
4.2.1	Hardness	34
4.2.2	Cohesiveness	36
4.2.3	Gumminess	37
4.3	Effect of Ratio of Sugar to Honey and Gelatine Concentration towards the Colour of Pineapple Jelly Candy	39
4.3.1	Lightness (L*)	39
4.3.2	Hue (°H)	40
4.4	Effect of Ratio of Sugar to Honey and Gelatine Concentration towards the Moisture Content of Pineapple Jelly Candy	41
4.5	Effect of Ratio of Sugar to Honey and Gelatine Concentration towards the Scoring Test of Pineapple Jelly Candy	44
4.5.1	Colour	44
4.5.2	Fruity Aroma	45
4.5.3	Fruity Taste	46
4.5.4	Sweetness	47
4.5.5	Stickiness	48
4.5.6	Chewiness	50
4.6	Effect of Ratio of Sugar to Honey and Gelatine Concentration towards the Hedonic Test of Pineapple Jelly Candy	52
4.6.1	Colour	52
4.6.2	Fruity Aroma	53
4.6.3	Fruity Taste	54
4.6.4	Sweetness	55
4.6.5	Stickiness	55
4.6.6	Chewiness	56
4.6.7	Overall Acceptance	57
4.7	Determination and Characteristics of Preferred Formulation ..	58
CHAPTER V CONCLUSION AND SUGGESTIONS		
5.1	Conclusion	60
5.2	Suggestions	61

LIST OF FIGURES

Figure 2.1	Glycine-proline-alanine structure in gelatine	6
Figure 2.2	Glycine-proline-hydroxyproline structure in gelatine	7
Figure 2.3	Structure of sucrose	15
Figure 2.4	Pineapple plant morphology	17
Figure 2.5	Flowchart of jelly candy production	20
Figure 3.1	Flowchart of juice extraction from pineapple	22
Figure 3.2	Flowchart of jelly candy production	23
Figure 4.1	Effect of sugar:honey ratio and gelatine concentration on hardness of resultant jelly candies.....	34
Figure 4.2	Effect of gelatine concentration on cohesiveness of resultant jelly candies	36
Figure 4.3	Effect of sugar:honey ratio and gelatine concentration on gumminess of resultant jelly candies	38
Figure 4.4	Effect of sugar:honey ratio on lightness (L*) value of resultant jelly candies	39
Figure 4.5	Effect of sugar:honey ratio and gelatine concentration on moisture content of resultant jelly candies	42
Figure 4.6	Effect of sugar:honey ratio on colour score of resultant jelly candies	44
Figure 4.7	Effect of gelatine concentration on fruity aroma score of resultant jelly candies	45
Figure 4.8	Effect of sugar:honey ratio on fruity taste score of resultant jelly candies	46
Figure 4.9	Effect of gelatine concentration on sweetness score of resultant jelly candies	47
Figure 4.10	Effect of sugar:honey ratio on stickiness score of resultant jelly candies	49
Figure 4.11	Effect of gelatine concentration on stickiness score of resultant jelly candies	50
Figure 4.12	Effect of and sugar:honey ratio and gelatine concentration on chewiness score of resultant jelly candies	51
Figure 4.13	Effect of sugar:honey ratio on colour hedonic test of resultant jelly candies	52
Figure 4.14	Effect of gelatine concentration on fruity taste hedonic test of resultant jelly candies	54

LIST OF TABLES

Table 2.1	Cayenne pineapple nutrient composition per 100 g fresh weight	18
Table 2.2	Quality parameter of jelly candies	19
Table 3.1	Formulation by weight (g) for 100 g of jelly candies	23
Table 3.2	Ratio of sugar to honey	23
Table 3.3	Research experimental design for main research	24
Table 3.4	CIELAB hue angle	28
Table 3.5	Sensory parameters for scoring test	30
Table 3.6	Seven-point hedonic scale	30
Table 4.1	Characteristics of pineapple juice	31
Table 4.2	Characteristics of honey	33
Table 4.3	°Hue of resultant jelly candy	40
Table 4.4	Fruity aroma hedonic test of resultant jelly candies	53
Table 4.5	Sweetness hedonic test of resultant jelly candies	55
Table 4.6	Stickiness hedonic test of resultant jelly candies	56
Table 4.7	Chewiness hedonic test of resultant jelly candies	57
Table 4.8	Fruity aroma hedonic test of resultant jelly candies	58



LIST OF APPENDICES

	page
Appendix	A. Characteristics of Raw Materials.....A-1
	A1. Yield of Pineapple Juice.....A-1
	A2. Colour Analysis of Pineapple Juice and Honey.....A-1
	A3. pH of Pineapple Juice and Honey.....A-2
Appendix	B. Texture of Resultant Jelly Candies.....B-1
	B1. Data of Hardness of Resultant Jelly Candies.....B-1
	B2. Statistical Analysis of Hardness of Resultant Jelly Candies..B-2
	B3. Data of Cohesiveness of Resultant Jelly Candies.....B-4
	B4. Statistical analysis of Cohesiveness of Resultant Jelly Candies.....B-5
	B5. Data of Gumminess of Resultant Jelly Candies.....B-6
	B6. Statistical Analysis of Gumminess of Resultant Jelly Candies.....B-8
Appendix	C. Data of Lightness of Resultant Jelly Candies.....C-1
	C1. Data of Lightness and Hue of Resultant Jelly Candies.....C-1
	C2. Statistical Analysis of Lightness of Resultant Jelly Candies.C-6
Appendix	D. Moisture Content of Resultant Jelly Candies.....D-1
	D1. Data of Moisture Content of Resultant Jelly Candies.....D-1
	D2. Statistical Analysis of Moisture Content of Resultant Jelly Candies.....D-4
Appendix	E. Scoring Test Questionnaire.....E-1
Appendix	F. Scoring Test of Resultant Jelly Candies.....F-1
	F1. Data of Scoring Test of Resultant Jelly Candies.....F-1
	F2. Statistical Analysis of Scoring Test of Resultant Jelly Candies.....F-2
	F2.1 Statistical Analysis of Scoring Colour of Resultant Jelly Candies.....F-2
	F2.2 Statistical Analysis of Scoring Fruity Aroma of Resultant Jelly Candies.....F-3
	F2.3 Statistical Analysis of Scoring Fruity Taste of Resultant Jelly Candies.....F-4
	F2.4 Statistical Analysis of Scoring Sweetness of Resultant Jelly Candies.....F-5
	F2.5 Statistical Analysis of Scoring Stickiness of Resultant Jelly Candies.....F-6
	F2.6 Statistical Analysis of Scoring Chewiness of Resultant Jelly Candies.....F-7

Appendix	G. Hedonic Test Questionnaire.....	G-1
Appendix	H. Scoring Test of Resultant Jelly Candies.....	H-1
	H1. Data of Hedonic Test of Resultant Jelly Candies.....	H-1
	H2. Statistical Analysis of Hedonic Test of Resultant Jelly Candies.....	H-2
	H2.1 Statistical Analysis of Hedonic Colour of Resultant Jelly Candies.....	H-2
	H2.2 Statistical Analysis of Hedonic Fruity Aroma of Resultant Jelly Candies.....	H-3
	H2.3 Statistical Analysis of Hedonic Fruity Taste of Resultant Jelly Candies.....	H-4
	H2.4 Statistical Analysis of Hedonic Sweetness of Resultant Jelly Candies.....	H-5
	H2.5 Statistical Analysis of Hedonic Stickiness of Resultant Jelly Candies.....	H-6
	H2.6 Statistical Analysis of Hedonic Chewiness of Resultant Jelly Candies.....	H-7
	H2.7 Statistical Analysis of Hedonic Overall Acceptance of Resultant Jelly Candies.....	H-8
Appendix	I. Water Activity of Preferred Formulation.....	I-1
Appendix	J. Documentation during Research.....	J-1

