

## TABLE OF CONTENTS

	page
TITLE PAGE	
STATEMENT OF AUTHENTICITY AND APPROVAL TO UPLOAD FINAL PROJECT	
THESIS SUPERVISOR APPROVAL	
APPROVAL BY THESIS EXAMINING COMMITTEE	
ABSTRACT .....	vi
ACKNOWLEDGEMENTS .....	vii
LIST OF FIGURES .....	xi
LIST OF TABLES .....	xii
LIST OF APPENDICES .....	xiii
CHAPTER I INTRODUCTION	
1.1 Background .....	1
1.2 Research Problem.....	2
1.3 Objectives .....	3
1.3.1 General Objectives.....	3
1.3.2 Specific Objectives .....	3
CHAPTER II LITERATURE REVIEW	
2.1 Intestinal Microbiome .....	4
2.2 Probiotic .....	5
2.3 Lactic Acid Bacteria .....	6
2.3.1 <i>Bifidobacterium</i> .....	6
2.3.1.1 <i>Bifidobacterium animalis</i> .....	7
2.3.2 <i>Lactobacillus</i> .....	8
2.3.2.1 <i>Lactobacillus acidophilus</i> .....	8
2.3.2.2 <i>Lactobacillus fermentum</i> .....	10
2.4 Co-cultures .....	11
CHAPTER III METHODOLOGY	
3.1 Materials and Equipment.....	12
3.1.1 Materials .....	12
3.1.2 Equipment.....	12
3.2 Research Method.....	12
3.2.1 Preliminary Stage.....	12
3.2.2 Research Stage I.....	14

3.3 Experimental Design .....	16
3.3.1 Research Step I .....	16
3.4 Analysis Procedure.....	17
3.4.1 Turbidimetric Determination .....	17
3.4.2 Gram Staining .....	17
3.4.3 Selective Media for <i>Bifidobacterium</i> Isolation.....	17

#### CHAPTER IV RESULTS AND DISCUSSION

4.1 Morphological Observation of Microbes .....	20
4.2 Growth Curve Analysis of Cultures Used .....	21
4.3 Analysis of Ratios Used for Co-cultures .....	24
4.4 Isolating <i>Bifidobacterium animalis</i> .....	27

#### CHAPTER V CONCLUSION AND SUGGESTIONS

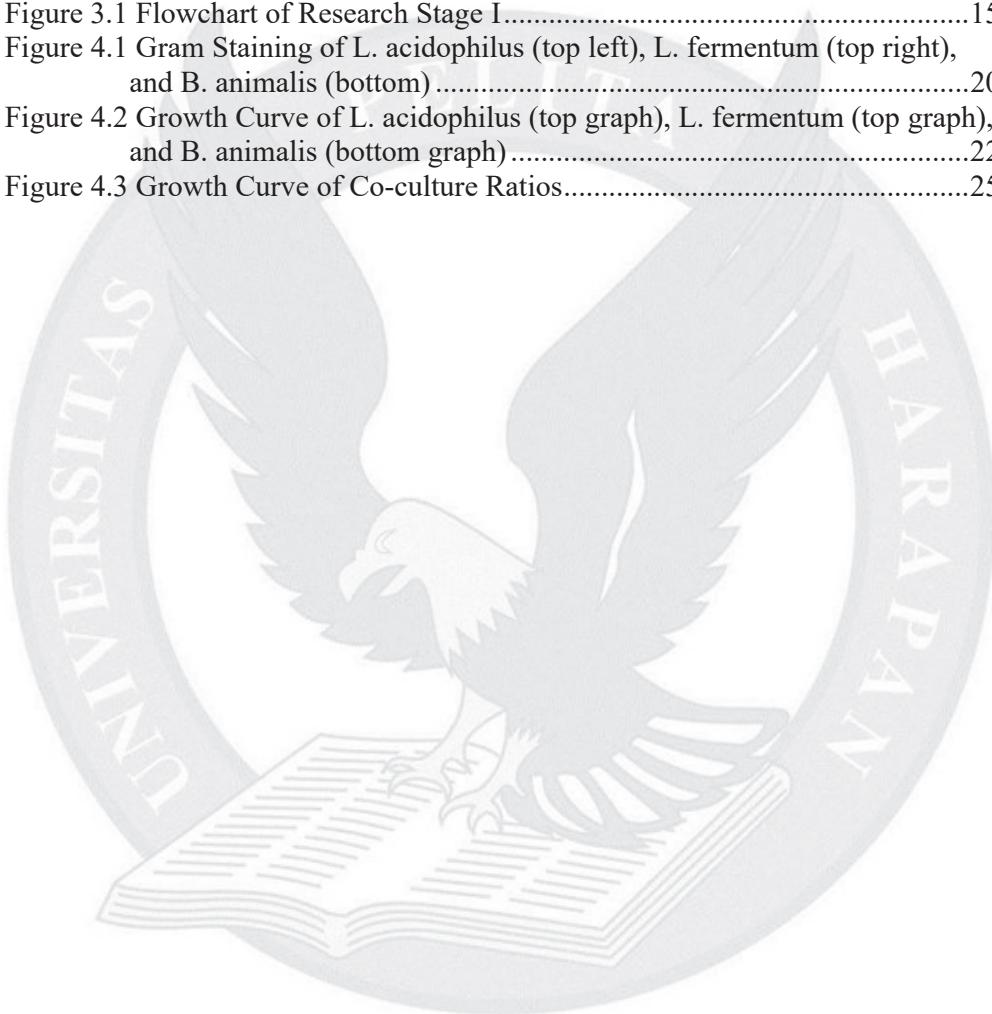
5.1 Conclusion.....	30
5.2 Suggestion .....	30

#### BIBLIOGRAPHY

#### APPENDIX

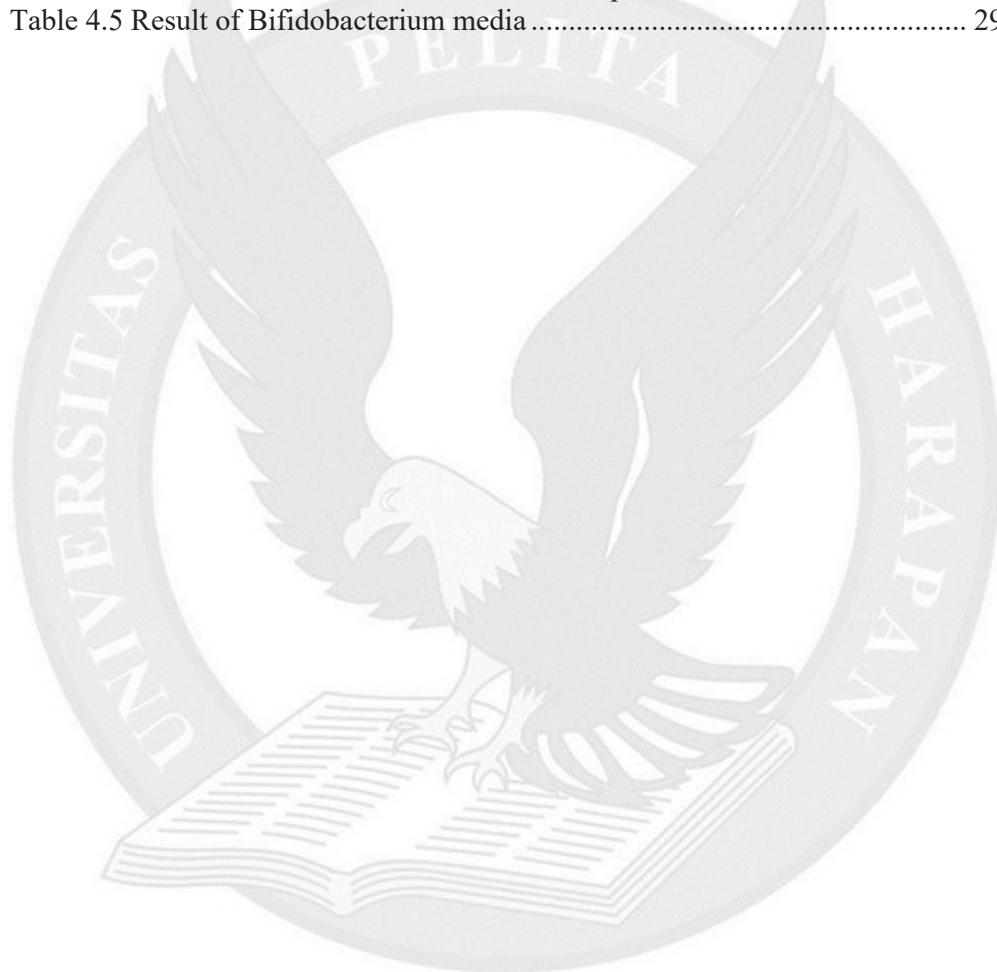
## LIST OF FIGURES

	page
Figure 2.1 Growth curves of <i>L. acidophilus</i> obtained measuring the absorbance at 600 nm .....	9
Figure 2.2 Growth curves of <i>L. fermentum</i> obtained measuring the absorbance at 600 nm .....	10
Figure 3.1 Flowchart of Research Stage I.....	15
Figure 4.1 Gram Staining of <i>L. acidophilus</i> (top left), <i>L. fermentum</i> (top right), and <i>B. animalis</i> (bottom) .....	20
Figure 4.2 Growth Curve of <i>L. acidophilus</i> (top graph), <i>L. fermentum</i> (top graph), and <i>B. animalis</i> (bottom graph) .....	22
Figure 4.3 Growth Curve of Co-culture Ratios.....	25



## LIST OF TABLES

	page
Table 3.1 Experimental design of research stage I .....	16
Table 3.2 Formulation of Selective Medias Used.....	18
Table 4.1 Growth Rate of Each Microbe .....	24
Table 4.2 Result of Growth Rate.....	26
Table 4.3 Result of Mupirocin Media .....	27
Table 4.4 Result of Lithium Chloride-Sodium Propionate Selective Media .....	28
Table 4.5 Result of Bifidobacterium media .....	29



## LIST OF APPENDICES

	page
Appendix A. Gram staining of Microbes .....	A-1
Appendix B. Analysis of Growth Curve (OD600).....	B-1
Appendix C. Analysis of Co-Cultures Data .....	C-1
Appendix D. Results of Selective Media for Isolating <i>B. animalis</i> .....	D-1

