

TABLE OF CONTENT

TITLE PAGE	i
APPROVAL PAGE	ii
AUTHENTICITY STATEMENT	iii
PREFACE	iv
TABLE OF CONTENT	vi
LIST OF TABLES AND FIGURES	ix
LIST OF APPENDIX	x
ABSTRACT	xi
CHAPTER I INTRODUCTION	1
I.1. Study Background	1
I.2. Problem Formulation	4
I.3. Study Originality	5
I.4. Study Benefits	6
I.5. Study Objective	6
CHAPTER II LITERATURE REVIEW	7
II.1. Literature Review	7
II.1.1. Epidemiology of Chronic Myeloid Leukimia	7
II.1.2. Clinical stages of Chronic Myeloid Leukimia	7
II.1.3. BCR/ABL and its role in disease progression of Chronic Myeloid Leukimia	9
II.1.4. Genes associated with disease progression	10
II.1.5. CEBPA role in disease progression in vivo with animal model	11
II.1.6. CEBPA role in disease progression in vivo with human sample	13
II.1.7. Genes influencing CEBPA	13
II.2. Theoretical Framework	14
II.3. Conceptual Framework	15
II.4. Hypothesis	15
CHAPTER III STUDY METHODOLOGY	16
III.1. Type and Study Design	16
III.2. Samples Used	16
III.3. Study Variables	16
III.4. Operational Definitions	16
III.5. Equipment and Materials	17
III.6. Course of Study	18
III.7. Ethical Consideration	21
CHAPTER IV RESULT AND DISCUSSION	22
IV.1. Study Result	22
IV.1.1. Characteristics of Subjects	22
IV.1.2. CEBPA mRNA expression in CML-CP and CML-BC	22
IV.1.3. Comparison of CEBPA mRNA level of CML patients to healthy individual	24
IV.1.4. Correlation of CEBPA mRNA Level with Age	24



IV.1.5. Correlation of CEBPA mRNA Level with Gender	26
IV.2. Discussion	27
CHAPTER V CONCLUSION AND SUGGESTION	33
V.1. Conclusion	33
V.2. Suggestion	33
BIBLIOGRAPHY	34
APPENDICES	36

LIST OF TABLE

Table 1. Primer of GAPDH and CEBPA for Real Time PCR.....	18
Table 2. Composition of Reaction Mixture for Real Time PCR.....	20
Table 3. Incubation Condition for Real Time PCR.....	21
Table 4. Subject Characteristics for the Study	23
Table 5. Median Analysis of CEBPA mRNA expression and Its Significance....	24
Table 6. Number of samples presenting CEBPA mRNA downregulation	25
Table 7. Number of samples presenting downregulation and upregulation of CEBPA mRNA categorized based on the Age.....	25
Table 8. Number of samples presenting downregulation and upregulation of CEBPA mRNA categorized based on the Gender.....	28

LIST OF FIGURE

Figure 1. Clinical Stages and Clinical Manifestation of CML Progression (Annamaneni et al. 2014; Frazer et al.2007)	8
Figure 2. Role of CEBPA in Hematopoetic Stem Cells (Castilla 2008)	12
Figure 3. Theoretical Framework.....	14
Figure 4. Conceptual Framework.....	15
Figure 5. Course of Study	19
Figure 6. Data Distribution of CEBPA mRNA Expression.....	23

LIST OF APPENDIX

Appendix 1. Protocol Nanovue Spectrophotometer.....	36
Appendix 2. CEBPA mRNA expression in CML-CP and CML-BC	38
Appendix 3. Normality test with Sapphiro-Wilk	38
Appendix 4. Mann-Whitney Test on CEBPA mRNA	39
Appendix 5. Fischer Exact Test for CML Age	39
Appendix 6. Fischer Exact Test CML Gender.....	40
Appendix 7. Fischer Exact Test CML-CP Age.....	40
Appendix 8. Fischer Exact Test CML-CP Gender.....	40
Appendix 9. Fischer Exact Test CML-BC Age	41
Appendix 10. Fischer Exact Test CML-BC Gender	41
Appendix 11. Sample Size Calculation for Further Research.....	41