



LIST OF CONTENTS

Contents	Page
TITLE PAGE	i
PAGE OF REQUIREMENT.....	ii
TEST IMPLEMENTATION	iii
RATIFICATION BY THESIS ADVISORS.....	iv
RATIFICATION BY DEAN	v
DEDICATION	vi
ASSERTION.....	vii
ACKNOWLEDGEMENTS	viii
LIST OF CONTENTS	xi
LIST OF TABLES	xiii
LIST OF FIGURES	xiv
LIST OF APPENDICES	xv
ABSTRACT	xvi
INTISARI.....	xvii
I. INTRODUCTION	1
A. Background	1
B. Formulation of Problem	6
C. Research Authenticity	6
D. Research Objective.....	6
E. Benefits of Research	7
II. LITERATURE OVERVIEW	8
A. Literature Review.....	8
1. Cell Proliferation	8
2. Oral cancer.....	13
3. HeLa Cells	16
4. MTT Assay + IC ₅₀	17
5. Mango (<i>Mangifera indica L.</i>)	20
a. Arumanis Mango	22
b. Nutritional composition	23
c. Active compounds in mango peel.....	23
B. Theoretical basis	26



C. Hypothesis.....	27
III. RESEARCH METHOD.....	28
A. Research Design.....	28
B. Identification of Variables	28
C. Operational Definition	28
D. Research Sample	29
E. Apparatus and Materials	29
F. Research Procedure.....	31
G. Data Analysis	34
H. Research Steps	35
IV. RESULTS AND DISCUSSION.....	36
A. Results	36
B. Discussion	40
V. CONCLUSION AND SUGGESTIONS	36
A. Conclusion	36
B. Suggestion.....	36
BIBLOGRAPHY	46
APPENDIX.....	53



LIST OF TABLES

Table	Page
1. The definition of T category of cancer.....	15
2. The definition of N category of cancer.....	15
3. The definition of M category of cancer.....	15
4. The definition of clinical category of cancer.....	16
5. Normality test of cell proliferation with different concentration of mango peel extract.....	37
6. Levene's test of cell proliferation with different concentration of mango peel extract.....	38
7. One Way ANOVA test of HeLa cell proliferation with different concentration of mango peel extract.....	38
8. Post Hoc test of effect of Arumanis mango peel extract on proliferation of HeLa cells.....	39



LIST OF FIGURES

Figure	Page
1. Sequences of events during cell cycles.....	10
2. Mechanical analogy for the cell cycle control systems.....	11
3. Histological section of oral squamous cell carcinoma epithelial....	14
4. HeLa cell.....	16
5. The structures of MTT and coloured formazan product.....	19
6. Arumanis mango fruit.....	22
7. Chemical structure of Mangiferin.....	24
8. Procedures of Research.....	35
9. Bar chart of proliferation of HeLa cells after treatment with mango peel extract for 24 hours.....	36
10. Linear regression of cell inhibition with different concentration of mango peel extract.....	39



LIST OF APPENDICES

Figure		Page
1.	Ethical Clearance (Ethics Committee Approval).....	53
2.	Research Permission Letter for the Laboratory of Systemic Plant, Faculty of Biology, Universitas Gadjah Mada.....	54
3.	Research Permission Letter for the Research Unit of Faculty of Dentistry, Universitas Gadjah Mada.....	55
4.	Research Permission Letter for the Laboratory of Biology, Faculty of Pharmacy, Universitas Gadjah Mada.....	56
5.	Declaration of Completion at Integrated Research Laboratory, Faculty of Dentistry, Universitas Gadjah Mada.....	57
6.	Letter of Plant determination of Arumanis mango (<i>Mangifera Indica L.</i>) plant from Laboratory of Systemic Plant, Faculty of Biology, UGM.....	58
7.	Raw Data of Optical Density and cell proliferation percentage of HeLa cells after 24 hours treatment with Arumanis mango peel extract.....	59
8.	Shapiro-Wik tests of Normality on proliferation of HeLa cells after 24 hours treatment with Arumanis mango peel extract.....	61
9.	Levene's Test of homogeneity on proliferation of HeLa cells after 24 hours treatment with Arumanis mango peel extract.....	61
10.	One-Way ANOVA test on effect of Arumanis mango peel extract proliferation of HeLa cells.....	62
11.	LSD test on proliferation of HeLa cells after 24 hours treatment with Arumanis mango peel extract.....	62
12.	Documentary of Apparatus and Materials.....	66