

TABLE OF CONTENTS

APPROVAL PAGE	2
STATEMENT PAGE.....	3
PREFACE	4
TABLE OF CONTENTS.....	6
LIST OF FIGURES	8
LIST OF TABLES	9
LIST OF APPENDICES.....	10
ABSTRACT	11
CHAPTER I.....	12
1.1 Background	12
1.2 Research Question.....	13
1.3 Research Objectives	14
1.4 Benefit of the Study	14
1.5 Study Originality	15
CHAPTER II.....	17
2.1 Spinal Muscular Atrophy (SMA).....	17
2.2 Curcumin and Curcumin Analogs.....	22
2.3 Theoretical Framework	25
2.4 Conceptual Framework	26
2.5 Hypothesis.....	26
CHAPTER III.....	27
3.1 Research Design.....	27
3.2 Research Subject	27
3.3 Tools and Materials.....	28
3.4 Research Method.....	29
3.5 Research Variables and Operational Definition of Variables ...	33
3.6 Result Analysis.....	35
3.7 Ethical Clearance	35
3.8 Research Schedule	35

3.9	Research Cost.....	36
CHAPTER IV		37
4.1	SMA Type 1 Fibroblast Treatment Result.....	37
4.2	SMA Type 2 Fibroblast Treatment Result.....	44
4.3	Discussion	50
4.4	Strength and Limitation of this Study	54
CHAPTER V		56
5.1	Conclusion.....	56
5.2	Suggestion	57
REFERENCES.....		58
APPENDICES		67

LIST OF FIGURES

Figure 2.1 Theoretical Framework.....	25
Figure 2.2 Conceptual Framework.....	26
Figure 3.1 Research Flow Chart.....	33
Figure 4.1 SMA Type 1 Fibroblast Morphology and Viability	38
Figure 4.2 Dose-Time Interaction Graph of SMA Type 1	42
Figure 4.3 SMA Type 2 Fibroblast Morphology and Viability	45
Figure 4.4 Dose-Time Interaction Graph SMA Type 2	49

LIST OF TABLES

Table 4.1 Two-way ANOVA in SMA type 1.....	38
Table 4.2 Tukey test in SMA type 1.....	39
Table 4.3 Tukey's Honestly Significant Difference in SMA type 1	40
Table 4.4 Statistical description of SMN protein level in SMA type 1....	41
Table 4.5 Two-Way ANOVA in SMA type 2.....	45
Table 4.6 Tukey Test in SMA type 2	46
Table 4.7 Tukey's Honestly Significant Difference in SMA type 2	47
Table 4.8 Statistical description of SMN protein level in SMA type 2....	48

LIST OF APPENDICES

Appendix 1. Ethical Clearance from the Medical and Health Research Ethics Committee	67
--	-----------