

TABLE OF CONTENTS

| | |
|---|-------------|
| RATIFICATION PAGE | ii |
| STATEMENT PAGE | iii |
| DEDICATION | iv |
| PREFACE | v |
| TABLE OF CONTENTS | vi |
| LIST OF FIGURES | viii |
| LIST OF TABLES | ix |
| LIST OF APPENDICES | x |
| ABSTRACT | xi |
| INTISARI | xii |
| CHAPTER I INTRODUCTION | 1 |
| I.1 Background | 1 |
| I.2 Research Purposes | 4 |
| I.3 Research Benefits | 4 |
| CHAPTER II LITERATURE REVIEW AND HYPOTHESIS FORMULATION | 5 |
| II.1 Literature Review | 5 |
| II.1.1 Chalcone | 5 |
| II.1.2 Pyrazoline | 7 |
| II.1.3 Sonochemistry method | 8 |
| II.1.4 Antimalarial activity assay | 9 |
| II.2 Hypothesis Formulation and Research Plan | 10 |
| II.2.1 Hypothesis formulation I | 10 |
| II.2.2 Hypothesis formulation II | 11 |
| II.2.3 Hypothesis formulation III | 11 |
| II.2.4 Hypothesis formulation IV | 12 |
| II.2.5 Research Plan | 12 |
| CHAPTER III RESEARCH METHOD | 13 |
| III.1 Materials | 13 |
| III.2 Equipment | 13 |
| III.3 Research Procedure | 14 |
| III.3.1 Synthesis of ((E)-1,3-bis(4-methoxyphenyl)prop-2-en-1-one) (Chalcone A) | 14 |
| III.3.2 Synthesis of ((E)-1-(2,4-dimethoxyphenyl)-3-phenylprop-2-en-1-one) (Chalcone B) | 14 |
| III.3.3 Synthesis of 3,5-bis(4-methoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carbaldehyde (N-formyl Pyrazoline A) | 14 |
| III.3.4 Synthesis of 3-(2,4-dimethoxyphenyl)-5-phenyl-4,5-dihydro-1H-pyrazole-1-carbaldehyde (N-formyl Pyrazoline B) | 15 |

| | | |
|-------------------|---|-----------|
| | III.3.5 Antimalarial activity assay of synthesized chalcone and pyrazoline derivatives compounds against <i>Plasmodium falciparum</i> 3D7 | 15 |
| CHAPTER IV | RESULT AND DISCUSSION | 17 |
| | IV.1 Synthesis of (E)-1,3-bis(4-methoxyphenyl)prop-2-en-1-one (Chalcone A) | 18 |
| | IV.2 Synthesis of (E)-1-(2,4-dimethoxyphenyl)-3-phenylprop-2-en-1-one (Chalcone B) | 25 |
| | IV.3 Synthesis of 3,5-bis(4-methoxyphenyl)-4,5-dihydro-1H-pyrazole-1-carbaldehyde (N-formylpyrazoline A) | 30 |
| | IV.4 Synthesis of 3-(2,4-dimethoxyphenyl)-5-phenyl-4,5-dihydro-1H-pyrazole-1-carbaldehyde (N-formylpyrazoline B) | 37 |
| | IV.V The antimalarial activity assay against <i>Plasmodium falciparum</i> | 42 |
| CHAPTER V | CONCLUSION | 46 |
| | REFERENCES | 47 |
| | APPENDIX | 52 |