

Guide to Thesis Preparation and Submission

Advanced Medical and Dental Institute (AMDI) Universiti Sains Malaysia (2018)

Adapted from 'Postgraduate Student's Guide to Thesis Preparation' by Institute of Postgraduate Studies, USM (2013)

Contributors:

Dr. Rafidah Zainon, PhD

Dr. Siti Hawa Ngalim, PhD

Dr. Emmanuel Jairaj Moses, PhD

Associate Prof Tan Mei Lan, PhD

Puan Sarina Hj. Yusoff (Academic Office)





TABLE OF CONTENTS

				Page			
1.	INTR	ODUCTIO	DN .	4			
2.	GEN	ERAL REGULATIONS FOR THESIS SUBMISSION AND EXAMINATION					
3.	STEF	BY STEF	P GUIDE TO THESIS SUBMISSION				
	3.1.	Notice o	of Thesis Submission	8			
	3.2.	Submiss	sion of the Final Three (3) Copies	9			
4.	WRIT	ING STYL	LE	10			
5.	LAYC	LAYOUT AND ARRANGEMENT OF CONTENTS					
	5.1.	5.1. Preliminaries					
		5.1.1.	Title Page	10			
		5.1.2.	Acknowledgement	10			
		5.1.3.	Table of Contents	10			
		5.1.4.	List of Tables and Figures	10			
		5.1.5.	List of Symbols and Abbreviations	10			
		5.1.6.	Abstract	11			
		5.1.7.	List of Publications (Optional)	11			
	5.2.	Text					
		5.2.1.	Introduction	11			
		5.2.2.	Literature Review	11			
		5.2.3.	Materials and Methods	12			
		5.2.4.	Results & Discussion	12			
		5.2.5.	Summary and Conclusion	12			
		5.2.6.	Future direction	12			
	5.3.	Referen	ce Materials				
		5.3.1.	Bibliography or References	12			
		5.3.2.	Appendices	12			
	5.4.	Thesis F	-ormat				
		5.4.1.	Length of Thesis	13			
		5.4.2.	Printing	13			
		5.4.3	Hard Bound Cover	13			
		5.4.4.	Binding	13			
		5.4.5.	Label for CD Cover	13			
		5.4.6.	Typing Format	13			
		5.4.7.	Spacing	14			
		5.4.8	Symbols	14			
		5.4.9.	Margin	14			
		5.4.10.	Pagination	14			
		5.4.11.	Subdivision	14			
		5.4.12.	Notes and Footnotes	15			

				Page		
		5.4.13.	Tables	15		
		5.4.14.	Figures	15-16		
6.	FAQ'	s		17		
7.	APPE	ENDICES				
	7.1.	Appendi	x 1: Thesis Examination Fees	18		
	7.2.	Appendi	x 2: Examination Payment Form	19		
	7.3.	Appendi	x 3: Example of Thesis Writing	20-28		
8.	CHE	CKLIST 29				
9.	LIST OF FORMS			30		
	9.1.	Notice of	f Thesis Submission			
	9.2	Degree S	Scroll Information Form			
	9.3	Submiss	sion of The Final 3 Copies			
	9.4.	Re-subm	nission of 7 Copies			
	9.5.	Thesis S	Submission Form			
	9.6.	Declarat	tion			

1. INTRODUCTION

This guidebook describes in detail the procedures and format which your thesis must fulfill before the final submission. Throughout this document, the word "thesis" is used broadly to refer to either Masters or PhD Theses.

As you begin to prepare your thesis following the guidelines given, we would like to emphasize that Universiti Sains Malaysia upholds the policy of ensuring all candidates for higher degrees are trained to practice highest standards of intellectual honesty and integrity. This means that ideas and data of other researchers that you used must be duly acknowledged in your thesis by citing the quoted materials and providing the full references in the reference list. Failure to do this will make you liable for plagiarism. Please remember that a writer may unconsciously commit plagiarism but nonetheless it does not absolve him/her from the charge.

In view of the severity of plagiarism, upon submission of ten copies (10) for MSC and PhD for examination, Universiti Sains Malaysia requires that all graduate students sign a form declaring the originality of their research work and that it has not been submitted or published elsewhere.

(MPSU 208th 12 September 2002, Senate 160th 12 October 2002)

All thesis drafts (in soft copies) are subjected to a through checking using the plagiarism software "Turnitin" before it is deemed acceptable for examiners' assessment.

2. GENERAL REGULATIONS FOR THESIS SUBMISSION AND EXAMINATION

Appointment of Examiners

	STUDENT	SUPERVISOR	SCHOOL	Institute of Graduate Studies (IPS)	[MPSU]/SENAT
STAGE 1	Download, Fill, Print and Submit Notice of Submission of Thesis Form to School	Signs Notice of Submission of Thesis Form	Determines Examiners using Notice of Submission of Thesis Form	Notifies and Appoints Examiner	Endorse Appointment of Examiners
	Submits Thesis Submission – Final 3 copies Form	•	Signs Thesis Submission – Final 3copies Form		

Notice of Submission

	STUDENT	SUPERVISOR	SCHOOL	Institute of Graduate Studies (IPS)	[MPSU]/SENAT
STAGE 2	Downloads, Fills, Prints and Submits the Submission of 10 Copies of Thesis	Signs Submission of 10 Copies of Thesis Form	Director signs Submission of 10 Copies of Thesis Form		
	Submits 6 copies of the thesis to the school		Distributes to the Director, Assistant Registrar, Supervisors		
	Signs and submits Declaration Form Submission Form together with 4 copies of thesis to IPS			Receives 4 copies, check if student has paid all fees and exam fees	Send Thesis to Examiners 1 month for Masters/ 2 months for PhD to be examined
				Schedule viva upon receiving all examiners' reports	Submits Report
				Prepares for Viva	

Viva and Submission of Final Copies

	STUDENT	SUPERVISOR	SCHOOL	Institute of Graduate Studies (IPS)	[MPSU]/SENAT
				Notifies Examination Panel. Notifies Student. Notifies School	
Е 3				VIVA Thesis Examination Panel Convense	
STAGE	Makes Corrections as recommended by Thesis Examination Panel			The Secretary of the Examination panel will pass the list of correction done by the supervisor and examiners	
	Submit corrected thesis to supervisor and director for endorsement	Endorses Corrections	Director Endorses Corrections		
	Submits Thesis Submission – Final Three (3) copies Form	Signs Thesis Submission – Final Three (3) copies Form	Signs Thesis Submission – Final Three (3) copies Form		
	Submits Final 3 Copies with the Submission Form and CD of the thesis			Obtains endorsement from the University Graduate Studies Council (MPSU)	MPSU endorses results SENATE Confirms results

Remember:

The submission of your thesis for examination MUST be made within your period of candidature. The ten (10) copies for MSc and PhD thesis must be in red soft cover for Masters and blue soft cover for PhD in comb or plastic bound. No spiral binding is allowed.

- Step 1: Download, Fill, and Print submission of thesis draft copies from AMDI website together with Turnitin declaration form
- Step 2: Obtain the signature of your Supervisor and the Director of AMDI.
- Step 3: Ensure that you have paid all your tuition fees and examination fees. Proof of payment is the clearance statement from the Student Accounts Section, Bursary (see example in Appendix 1).
- Step 4: Submit the ten (10) copies:
 - (a) Four (4) copies to IPS together with Submission of Thesis Form. Examination Fees Receipt, and Declaration Form. Make sure you submit the coloured version of your plates, figures and graphs if you have them in your thesis. Include one (1) softcopy of your thesis as well
 - (b) Six (6) copies to AMDI academic office. The School will distribute the 6 copies to the Director and Supervisors.
- Step 5: Please check the IPS website for viva schedule (also available at AMDI academic website)

3. STEP BY STEP GUIDE TO THESIS SUBMISSION

3.1. Notice of Thesis Submission

This should be sent to the Institute of Postgraduate Study at least three (3) months before the submission of your thesis .Kindly fill the form and submit it to the Director of AMDI, and this form will be forwarded to IPS. The procedures for thesis submission are as follows:

- Step 1: Download from the AMDI website, fill, and print the information required in FORM A1: Notice of Thesis Submission (Please ensure that your title is correct)
- Step 2: Submit the form to your Supervisor for approval.
- Step 3: Your Supervisor will then submit the form to AMDI academic office for approval of examiners
- Step 4: The director of AMDI will forward the form to IPS for appointment of examiners.
- Step 5: Check with IPS for the status of your Notice of Thesis Submission.

The Notice of Thesis Submission is valid up to 12 months upon receipt by IPS. If you fail to submit your thesis within the stipulated time, you have to put in a fresh application.

Step 1: Examiners are given 1 month to examine a Masters thesis and 2 months for a PhD thesis. Once your thesis has been examined, you will be required to attend a viva voce.

Viva voce outcomes:

- SCALE 1- Pass (The candidate is awarded a Doctor of Philosophy/Master's Degree)
- **SCALE 2- Pass with minor corrections** (The candidate is awarded a Doctor of Philosophy/Master's Degree subject to changes/ corrections to the thesis as listed in the Panel of Examiners Report)
- SCALE 3- Pass with major corrections (The thesis MUST be revised and verified by the Panel of Examiners after the candidate has made the changes/corrections. The candidate is awarded a Doctor of Philosophy/Master's Degree subject to changes/ corrections to the thesis as listed in the Panel of Examiners Report)
- **SCALE 4- Re-examination** (The candidate is allowed to re-submit the thesis for re-examination after the candidate has made changes/corrections to the thesis as required in the Panel of Examiners Report. The thesis MUST be re-examined and the candidate MUST attend another viva voce)
- **SCALE 5- Fail** (The candidate is not eligible to be awarded a Doctor of Philosophy/Master's Degree and is not allowed to re-submit the thesis for examination)
- Step 2: After the viva, the Thesis Examination Panel will inform you the outcome and necessary course of actions. You must get the list of corrections from the secretary of the thesis examination panel after the viva.
- Step 3: Once the corrections have been completed and verified, download and fill out submission of final copies of thesis form
- Step 4: Obtain the approval of your Supervisor and the Director of AMDI.
- Step 5: For Masters, the 3 hardbound copies of the thesis must be in **RED** hard bound cover with gold lettering; for PhD. the 3 hardbound copies of the thesis must be in **BLACK** hard bound cover with gold lettering.

Submission of thesis in CD format

Step 1: Make 1 CD of the final corrected thesis in PDF format

4. WRITING STYLE

The following styles are acceptable:

Harvard (AMDI format – is available from AMDI library) and Vancouver style

5. LAYOUT AND ARRANGEMENT OF CONTENTS

5.1. Preliminaries:

- 5.1.1. Title Page (Must contain the following):
 - · Title of Thesis.
 - · Full name of Candidate.
 - Thesis submitted in fulfilment of the requirements for the Degree of (Doctor of Philosophy, Master of Science)
 - · Month and Year thesis was submitted for examination to IPS
 - DO NOT number this page.
 - See sample in Appendix 3.

All pages in Preliminaries (except Title page) are numbered in Roman numerals e.g. i, ii, iii.... accordingly.

5.1.2. Acknowledgement

- This is a statement of appreciation to supervisors, source of scholarship, assistance obtained during research etc.
- Number this page "ii".

5.1.3. Table of Contents

- Comprises the titles of, sections of preliminaries, chapters and their subdivisions.
- Must be worded exactly as in the text. Must have Headings (1,2,3 and so on), sub-headings (1.1, 1.2, 1.3) and sub sub-headings (1.2.1, 1.2.2 and so on).
- Further divisions to be indicated by small letters in parenthesis e.g. 1.2.1(a), 1.2.1(b) and so on.
- Number this page "iii".
- See Appendix 3.

5.1.4. List of Tables and Figures

· Must be worded exactly as in the text.

5.1.5. List of Symbols and Abbreviations

- If applicable, this should appear after the List of Tables and Figures.
- List of abbreviations should be in alphabetical order

5.1.6. Abstract

- An abstract is a summary of the entire thesis and should contain a brief write-up of the problem statement, objective, methodology, and summary of the findings in context of the whole study.
- Must be in Bahasa Malaysia and English.
- The Bahasa Malaysia abstract appears first.
- Both versions must have their respective titles.
- · Not more than 400 words and double spacing.
- · Placed immediately before Chapter 1.
- See Appendix 7.

5.1.7. List of Publications (Optional)

- List all publications (including conference articles from the research work).
- · List only accepted publications.
- Manuscript that has been accepted but not published yet must be printed as •in press.
- Use the same style as the references.
- Obtain written permission to borrow any copyrighted material. You need to keep your own file of permission letters for any copyrighted materials used in your dissertation or thesis.

5.2. TEXT

This section outlines the contents of your thesis. The text is made up of chapters with a number of sections and subsections. All these sections must begin on a new page. It usually comprises of: Introduction, Materials and Methods, Results and Discussion, Recommendation for Future Research, Summary and Conclusion.

5.2.1. Introduction

- Gives a background and highlight the problems under investigation by describing the status of the problems conceptually or theoretically.
- Set forth the scope and objectives of the study.
- Outline plan of action or research protocol. Include a fullyreferenced review of the existing literature.
- Note: A separate chapter may be written specifically for literature survey under the heading Literature Review.

5.2.2. Literature Review

- A standalone chapter.
- Can be integrated into Introduction chapter, if preferred.

5.2.3. Materials and Methods

- List and describe all the materials used in the experimental work.
- Detailed description of experimental protocol
- The protocol should be written as comprehensive as possible so that another researcher will have no difficulty to repeat them.

5.2.4. Results and Discussion

- · Consists of results obtained from the study.
- Can be presented as a series of figures, tables etc. with a descriptive text.
- Analysis of data such as statistical analysis can be stated.
- Discuss the outcome of the research work

5.2.5. Summary and Conclusion

- Recapitulation of the study's findings.
- · Conclusion of the study

5.2.6. Future Directions

Recommendations for future research.

5.3. REFERENCE MATERIALS

5.3.1. Bibliography or Reference

- Start on a fresh page.
- The title of REFERENCES to be centred in capital letters.
- Five (5) cm from the top.
- · List begins four (4) spaces from the heading.
- · Single spacing within entry.
- · Double-spacing between entries.
- 3-space indentation for entry exceeding a single line.
- Refer to Appendix 3 for details.

List all reference materials cited in your thesis according to the appropriate style used in your discipline (Harvard-AMDI format or Vancouver)

We recommend that you use the bibliographic management software EndNote available from the USM Library website or Mendeley

5.3.2. Appendices

- Should be placed after References, comprises of supplementary illustrative materials, and quotations too long for inclusion in the text or lengthy experimental methods.
- Words APPENDICES to be centred in capital letters.
- Do not number this page.

5.4. THESIS FORMAT

5.4.1. Length of Thesis

 Generally, PhD dissertations and Masters theses should not exceed 80,000 and 50,000 words respectively. [MPSU 208 (12 Sept. 2002), Senate 160 (12 Oct. 2002)].

5.4.2. Printing

- All copies must be clean and legible. Consult IPS if you are uncertain about the acceptability of the paper selected.
- Use 80 gm, A4 size (210 x 297 mm), and white paper.
- Print on one side only.
- · Computer paper or carbon copies are NOT allowed.

5.4.3. Hard bound Cover

- The cover must contain the following:
- Full thesis title.
- · Your full name.
- UNIVERSITI SAINS MALAYSIA.
- Month and Year of submission.
- All printed in gold, font size of 18, Arial and capitalised.

5.4.4. Binding

- The final 3 copies must be bound in black for PhD theses and red for Masters theses, buckram or rexine with stiff boards
- The spine must contain:
 - Your full name.
 - > Full thesis title.
 - Month and Year of submission.
 - Degree.
 - All printed in gold, capitalised and appropriate font size Arial.

5.4.5. Label for CD cover

- The CD must have the following on the label:
- · Your full name.
- · Full thesis title.
- · Month and Year of submission.
- · Degree.

5.4.6. Typing format

- Typed on one side.
- Arial.
- Font size 10-12.
- All narratives, tables, and graphs must be typeset and NOT handwritten.

5.4.7. Spacing

- · Double spacing for text.
- Single spacing for long tables, table titles, long quotations, notes, footnotes, multiline caption and bibliographic entries.

5.4.8. Symbols

- Please use appropriate software to generate symbols or special characters not foundon the computer key board.
- For formula, use an equation editor including subscripts and superscripts.
- Please observe proper convention for scientific names.

5.4.9. Margins

- All Text, Tables, Figures and their captions must conform to the following margins:
 - Top edge: 2.5 cm
 Bottom edge: 2.5 cm
 Right side: 2.5 cm
 Left side: 4.0 cm
- Typing cannot be done below the bottom margin except to complete a footnote or last line of a chapter, subdivision or caption.
- A new paragraph must have at least 2 full lines in a page. Otherwise begin on the next page.

5.4.10. Pagination

- Remember: The Title page of the thesis is considered page (i), but the number is not typed.
- Pagination
 - > All page numbers are without punctuation.
 - Placed 1 cm from bottom centre.
 - > Preliminaries are numbered in lower case Roman numerals.
 - All text and reference pages are numbered in Arabic numerals.
 - All pages including those with diagrams, tables, etc. must have a page number.
 - Appendices are labelled with alphabet e.g. Appendix A with or without page numbering.

5.4.11. Subdivision

- Text in each chapter may be divided under headings and subheadings such as 1.1,
- 1.2, 1.3 etc and 1.1.1,1.1.2 etc.
- All subdivisions begin from the left margin.

5.4.12. Notes and Footnotes

- Font sizes for notes and footnotes must be smaller than general text
- Footnotes are not encouraged for the Sciences, Engineering, Medical and Business; and should be kept to a minimum.

As a general guideline we suggest you refer to the style used in your discipline for tables, figures and plates. The following are basic guidelines:

5.4.13. Tables

- Properly centred within the margin. Numbered in relation to chapter, e.g. in Chapter 1, tables should be numbered Table 1.1, Table 1.2 and so on.
- Numbered in Arabic numeral {Table 1.1, Table 1.2 etc) and a caption.
- · Number of table must correspond with text.
- Place tables near to related discussion in text.
- Put heading above the table.
- Single-space in all tables.
- · Align all of the decimals in any column.
- Tables too large to fit the margins may be changed to landscape orientation.
- The table number and title should be in the same font size as the rest of your writing. Format all tables consistently throughout, including the appendix tables.
- Tables too long or too wide for a single page {vertically or horizontally) may be continued on to the following page. The heading should be e.g. "Table 1-1. Continued"{do not repeat the table title).Column and row headings must be repeated for continued tables.
- Notes {if any) belong in the bottom row of the table. Do not vertically list your table notes (at the bottom of the table): instead let them wrap automatically, like paragraph text (do not put a hard return after each entry).

5.4.14. Figures

- Can be illustrations, photographs, graphs or anything other than tables and script.
- Line diagrams should be drawn with the aid of a computer or with mechanical aids using black permanent ink or equivalent on white paper.
- Unless necessary, the use of colour in graphs and figures is discouraged.
- · Put heading below the figures.
- Put only 1 blank line space between the figure and figure heading.
- Minimize clutter. Label subparts of figures as A and B, not (A) and (B).
- If a figure and all of its subparts run more than one page, the entire
 figure heading (including descriptions of all subparts) must appear
 at the bottom of the first page of the figure. Any additional pages of
 subparts of this figure get only this heading at the bottom of the
 page.

 Any table or figure that is borrowed from copyrighted publication, you need to secure permission and give a complete source (the full reference PLUS the table or figure number and page number where it appeared in the original). For tables, this goes in the notes row (the last row) of the table. For figures, this goes at the end of the figure heading.

6. FAQ's

a. I intend to submit my thesis in June but my candidature expires in April. What should I do?

The regulation states that your candidature status must be Active when you submit your thesis. In your case, you have to apply for an extension of your candidature period at least two months before your candidature expires i.e. latest by February. For extension, you have to fill up the IPS/HEP-03 form, obtain the signatures of your Supervisor and AMDI Director and submit the form to IPS. You will be informed of the outcome by IPS once your application has been approved.

b. I submitted the Notice of Thesis Submission in November but am unable to submit my thesis three (3) months from my first notice. Should I submit another Notice after the first notice has expired?

The first notice is valid for six (12) months. Therefore, you only need to submit the notice for the second time after the expiry period.

c. I have been given six months to do my corrections after my viva. What happens if I cannot finish my corrections within the stipulated time?

You have to write in officially to the Deputy Vice Chancellor (Academic Affairs), stating your reasons. Please bear in mind, this is very risky and further extensions are commonly not allowed under normal circumstances.

d. Do I have to pay the thesis examination fee again if I have to resubmit my thesis?

Yes, but the re-examination fee is half the designated Examination fees.

e. How many copies of the thesis should I hand in to IPS if I have to resubmit my thesis?

You need to submit 7 copies together with the thesis resubmission form (available from IPS) which has been signed by your Supervisor and AMDI Director to IPS.

f. Who signs the section for Dean's signature in the IPS/Exam-03 Form if my Supervisor is the Dean of the School?

The Dean of IPS will sign that particular section.

g. How do I get permission from my company to attend my Viva?

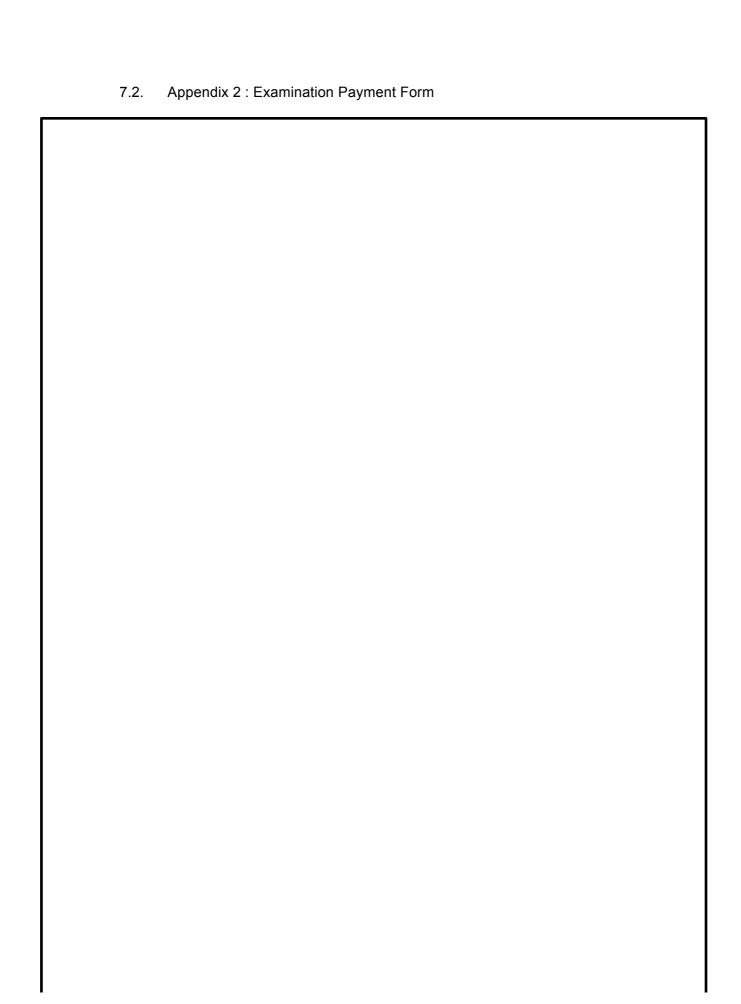
IPS can issue an official letter to your company confirming the date of attendance of the viva.

7. APPENDICES

7.1. Appendix 1: Thesis Examination fees

Thesis Examination Fees (all fees in Malaysian Ringgit)

	Masters		PhD	
Registered	Local	International	Local	International
< 1997	200	200	300	300
1998	200	300	300	450
1999 >	300	450	500	750
2007>	750	1000	1000	1500



Appendix 3

7.3. Appendix 3: Sample of Thesis Writing

Mimosa Pudica Flower Extract Treats Colorectal Cancer by Targeting the Transforming Growth Factor-β Signalling

by

Dorae Mon

A thesis submitted in fulfilment of the requirements of the degree of

Doctor of Philosophy

May 2016

Table of contents

Acknowledgement	ii
Table of Contents	iii
List of Tables	iv
List of Figures	V
List of Plates	vi
List of Abbreviations	vi
List of Symbols	vi
Abstrak	ix
Abstract	x
List of publications	хi
References	хi
Chapter 1 – Introduction	
1.1 Background of the study	1
1.2 Problem statement	4
1.3 Objectives	5
1.4 Hypotheses	5
1.5 Suggested outcomes	6

List of Tables

- Table 2.1 Literature summary regarding extracts from different regions of *Mimosa*pudica plant, the effects on cells and the cell signalling involved.
- Table 2.2 Different types of drug delivery mode.
- Table 3.1 Filters and dyes utilised in fluorescence microscopy.
- Table 4.1 List of active ingredients of *Mimosa pudica* flower extract.
- Table 4.2 The effects of encapsulated *Mimosa pudica* flower extract at different phases of cell cycle.

List of Figures

- Figure 4.1 The effects of the encapsulated *Mimosa pudica* flower extract on the proliferation of colorectal cancer cell line.
- Figure 4.2 The number of cell colonies upon treatment with the encapsulated

 Mimosa pudica flower extract.
- Figure 4.3 The properties of cell invasiveness when the cells were treated with the encapsulated *Mimosa pudica* flower extract.
- Figure 4.4 Erk1/2 inhibition suppresses Smad 2/3 and transcription of cancer cell growth.

List of Abbreviations

Akt AKT8 virus oncogene cellular homolog

AU Arbitrary unit

CCD 184 CoN A designated nomenclature for normal human colon cell line

CO₂ Carbon dioxide

DAPI 4',6-diamidino-2-phenylindole

DMSO Dimethyl sulfoxide

FBS Fetal bovine serum

FESEM Field Emisssion Scanning Electron Microscopy

FITC Fluorescein isothiocyanate

G1 phase Gap 1 phase

G2 phase Gap 2 phase

HT-29 A designated nomenclature for a human colorectal adenocarcinoma

cell line.

M phase Mitosis phase

MP Mimosa pudica

N₂ Nitrogen

NA Numerical aperture

Np Nanoparticles

List of Symbols

Å Angstrom

°C degree celcius

μm micrometre

nm nanometer

¶ Paragraph

± Plus-minus

§ Section

T_{1/2} Half-life

v/v volume per volume

w/v weight per volume

Abstrak

Kanser kolorektal adalah antara punca utama kejadian kanser yang berkaitan dan kematian di Semenanjung Malaysia setakat ini. Perubatan Alternatif melibatkan Mimosa pudica ekstrak (MP) bunga dan pengaruhnya terhadap pertumbuhan kanser pada peringkat molekul tidak difahami dengan baik. Di sini, sebatian aktif dari bunga MP telah diekstrak menggunakan kaedah alkali dan juzuk utama ekstrak termasuk mimosine alkaloid, sterol, asid lemak dan tannin. Ekstrak terkandung dalam micelle asid polylactic (PLA) dengan 70% w / v kecekapan pengkapsulan. Ekstrak MP bunga terkandung mempunyai diameter purata 156 ± 37 nm dengan kestabilan optimum dengan potensi zeta -45 mV. Analisis pelepasan terkawal menunjukkan PLA pembawa separuh hayat adalah 5 jam. HT-29 dan CCDbahagian sel 841 con telah digunakan sebagai kanser dan model barisan sel normal. bunga ekstrak MP yang terkandung memberi kesan HT-29 dan CCD 184 con daya maju sel dengan kepekatan perencatan median, IC50, pada 20 ng / mL dan 1 mg / mL masingmasing. Dari situ, 20 ng / mL telah digunakan sebagai rawatan kepekatan yang standard untuk kedua-dua talian sel. Selepas pengenalan ekstrak terkandung MP bunga, percambahan sel HT-29 dipengaruhi di S fasa-lebih lagi daripada fasa M, fasa G1, dan sekurang-kurangnya pada fasa G2. percambahan sel tidak terjejas untuk CCD 184 sel Con. Bilangan koloni sel kanser HT-29 telah dikurangkan 70% dan ujian sel invasiveness menunjukkan pengurangan 90% selepas rawatan. keputusan lanjut menunjukkan aktiviti SMAD 2/3 dan Transformasi Faktor Pertumbuhan beta (TGF-β) telah terjejas dengan ketara pada HT-29 berbanding dengan CCD 184 Con. Single sel phenotype analisis menunjukkan spready (kawasan permukaan sel besar) dan bulat (kawasan permukaan sel rendah) HT-29 sel sebelum dan selepas rawatan, masing-masing. Sifat-sifat fenotip tunggal sel CCD 184 con tidak terjejas tanpa rawatan. Pendek kata, terkandung ekstrak bunga Mimosa Pudica adalah calon yang baik untuk menyasarkan rawatan kanser kolorektal

Abstract

Colorectal cancer is amongst the top 3 leading causes of cancer-associated incidence and deaths in Peninsular Malaysia to date. Alternative medicine involving *Mimosa pudica* (MP) flower extracts and its influence on cancer growth at the molecular level are not well understood. Here, active compounds from MP flowers were extracted using alkaline method and major constituents of the extracts include alkaloid mimosine, sterol, fatty acids and tannins. The extracts were encapsulated in polylactic acid (PLA) micelle with 70% w/v encapsulation efficiency. The encapsulated MP flower extract has an average diameter of 156 ± 37 nm with optimal stability with zeta potential of -45 mV. Controlled release analysis show the PLA carrier half-life is 5 hours. HT-29 and CCD 841 CoN cell lines were used as cancer and normal cell line models. The encapsulated MP flower extract affects HT-29 and CCD 184 CoN cell viability with median inhibition concentration, IC50, at 20 ng/mL and 1 mg/mL respectively. Thence, 20 ng/mL was used as a standardised concentration treatment for both cell lines. After introduction of the encapsulated MP flower extract, the cell proliferation of HT-29 is affected at S phase more so than the M phase, G1 phase, and the least on G2 phase. Cell proliferation was unaffected for CCD 184 CoN cells. Number of HT-29 cancer cell colonies were reduced 70% and the cell invasiveness test showed 90% reduction after the treatment. Further results show Smad 2/3 and Transforming Growth Factor beta (TGF-β) activities were significantly affected in HT-29 than that of CCD 184 CoN. Single cell phenotype analysis show spready (large cell surface area) and rounded (low cell surface area) HT-29 cells before and after the treatment, respectively. The phenotypic properties of single cell CCD 184 CoN were unaffected regardless of the treatment. In short, encapsulated Mimosa Pudica flower extract is a good candidate for targeting colorectal cancer treatment.

List of publications

References

- 1. Mon, D. Ta. N. (2016) Encapsulated *Mimosa pudica* flower extract affects colorectal cancer cell growth and invasion. Journal of Cell Biology: 98: 12-17.
- 2. Mon, D., Ta. N. (2015) Transforming Growth Factor- β pathway as a target for colorectal cancer treatment. Annual Reviews of Cancer Biology: 83, 28-35.

8. CHECKLIST

Appointmen	t of e	examiners (Stage 1)
Student		Download, Fill, Print and Submit Notice of thesis submission
Supervisor		Signs notice of thesis submission form and nominates
		Examiner's
Submission	of th	esis (Stage 2)
Student		Download, fill, prints and submits submission of thesis draft copies form
		Submit soft bound copies of the thesis to AMDI academic office together with Turnitin declaration form. Ensure that you have paid all your tuition fees and examination fees. Proof of payment is the clearance statement from the student accounts bursarysection.
Supervisor		Signs submission of thesis draft copies form
Viva and sul	omis	sion of final copies (Stage 3)
Student		Makes amendments as recommended by the Thesis Examination Panel. Fills up Endorsement of corrections made as required by thesis examination panel form and submission of final copies of Thesis form.
		Submit amended thesis to supervisor and AMDI Director for Approval
Supervisor		Endorse amendments made to the thesis
		Signs respective forms
Director		Endorse amendments made to thesis
Student		Submit final 3 copies of the thesis
		Submit 1 CD of the final thesis

9. LIST OF FORMS

- 9.1. Notice of Thesis Submission
- 9.2. Degree Scroll Information Form
- 9.3. Submission of The Final 3 Copies

- 9.4. Re-submission of 7 Copies of Thesis
- 9.5. Thesis Submission Form
- 9.6. Declaration

All forms are available to be download from AMDI Academic website