

ACKNOWLEDGEMENTS

Foremost, I would like to express my sincere appreciation and gratitude to Assoc. Prof. Dr. Waraporn Putalun, my best advisor for great opportunities and experiences during several years of my studies at the faculty of Pharmaceutical Science. I'm sincerely thank for her inspire, advice, patience, guidance, motivation, support, understanding and for everything.

I also would like to sincere thank to my thesis committee: Assist. Prof. Dr. Natsajee Nualkeaw and Dr. Supaart Sirikantaramas for their helpful suggestions and discussion.

Beside that I would like to thank Assoc. Prof. Dr. Boonchoo Sritularak for mulberroside A (an inspiring compound), Assoc. Prof. Dr. Hiroyuki Tanaka for surprising opportunity and experiences from Japan, it's cool.

I would like to thank and grateful for suggestion, recommendation, discussion, friendship and help from all members of the tissue culture laboratory including Miss Tharita Kitisripanya, Mr. Gorawit Yusakul, Miss Orapin Udomsin, Miss Patcharin Tassanawat, Miss Latiporn Udomsuk and Miss Benyakan Ponkitwitoon. Not only these nice members but I also would like to thank to Miss Angkana Samdaengfai and Miss Phetcharawarin Wangsuphadilok, good undergraduate students from Prince of Songkla University for their help.

Gratefully, I would like to acknowledge valuable financial support from The National Research Council of Thailand, Bangkok, Thailand, Kanae Foundation for the Promotion of Medical Science, Tokyo, Japan, Faculty of Pharmaceutical Sciences, Khon Kaen University, Thailand, Graduate School of Pharmaceutical Science, Kyushu University, Fukuoka, Japan and Graduate School, Khon Kaen University, Thailand.

Finally, I would like thank to my lovely family for their understanding, inspiring and support.

Jukrapun Komaikul