

**IDENTIFICATION OF ACTIVE COMPOUNDS IN GINGER EXTRACT
THAT INHIBITS TELOMERASE EXPRESSION AND ACTIVITY**

NAVAKOON KAEWTUNJAI

**MASTER OF SCIENCE
IN BIOCHEMISTRY**

**THE GRADUATE SCHOOL
CHIANG MAI UNIVERSITY**

SEPTEMBER 2011

**IDENTIFICATION OF ACTIVE COMPOUNDS IN GINGER EXTRACT
THAT INHIBITS TELOMERASE EXPRESSION AND ACTIVITY**

NAVAKOON KAEWTUNJAI

**A THESIS SUBMITTED TO THE GRADUATE SCHOOL IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS**

**FOR THE DEGREE OF
MASTER OF SCIENCE**

IN BIOCHEMISTRY

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

Copyright© by Chiang Mai University
All rights reserved

**THE GRADUATE SCHOOL
CHIANG MAI UNIVERSITY**

SEPTEMBER 2011

**IDENTIFICATION OF ACTIVE COMPOUNDS IN GINGER EXTRACT THAT
INHIBITS TELOMERASE EXPRESSION AND ACTIVITY**

NAVAKOON KAEWTUNJAI

**THIS THESIS HAS BEEN APPROVED
TO BE A PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF SCIENCE
IN BIOCHEMISTRY**

EXAMINING COMMITTEE

W. Pompimon CHAIRPERSON

Assoc. Prof. Dr. Wilart Pompimon

Wirat MEMBER

Asst. Prof. Dr. Wirote Tuntiwechapikul

Arisa Bonness MEMBER

Dr. Arisa Bonness

Ariyapong Wongnoppavich MEMBER

Asst. Prof. Dr. Ariyapong Wongnoppavich

Rawirwan Wongpoomchai MEMBER

Asst. Prof. Dr. Rawiwan Wongpoomchai

THESIS ADVISORY COMMITTEE

Wirat ADVISOR

Asst. Prof. Dr. Wirote Tuntiwechapikul

Arisa Bonness CO-ADVISOR

Dr. Arisa Bonness

Ariyapong Wongnoppavich CO-ADVISOR

Asst. Prof. Dr. Ariyapong Wongnoppavich

2 September 2011

© Copyright by Chiang Mai University

ACKNOWLEDGEMENTS

I wish to express my gratitude and my deepest appreciation to Asst. Prof. Dr. Wirote Tuntiwechapikul for his excellent guidance, valuable advice, and encouragement through this research work. Without his support, this thesis would not be succeeded. I would like to extend my gracious thank to Dr. Arisa Bonness for her valuable suggestion, training, and consultation in this thesis.

A special appreciation is also expressed to Assoc. Prof. Dr. Wilart Pompimon and his staff from Faculty of Science, Lampang Rajabhat University, who provided us the ginger extracts, and taught me techniques in TLC and HPLC. Without his support and encouragement, this thesis could not be completed.

This thesis would not be completed without the assistance from my examining committee members: Asst. Prof. Dr. Ariyapong Wongnoppavich and Asst. Prof. Dr. Rawiwan Wongpoomchai. I am also thankful to all staff members in the Department of Biochemistry, Faculty of Medicine, Chiang Mai University who have always provided me with valuable advice and assistance when needed.

I would like to give special thanks to Mr. Thanachai Taka and Mr. Khajohn Joonlasak for the training, advice, friendship, and their generous helps during this study.

Finally, I am especially grateful to my family members for their wonderful inspiration, useful guidance, and emotional support.

Navakoon Kaewtunjai