

**INHIBITION OF PATHOGENIC BACTERIA CAUSING
SKIN DISEASE AND FREE RADICALS BY SOME
MEDICINAL PLANT EXTRACTS**

WIPAWAN PUKUMPUANG

**DOCTOR OF PHILOSOPHY
IN APPLIED MICROBIOLOGY**

GRADUATE SCHOOL

CHIANG MAI UNIVERSITY

MAY 2014

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**A THESIS SUBMITTED TO CHIANG MAI UNIVERSITY IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
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THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY
IN APPLIED MICROBIOLOGY

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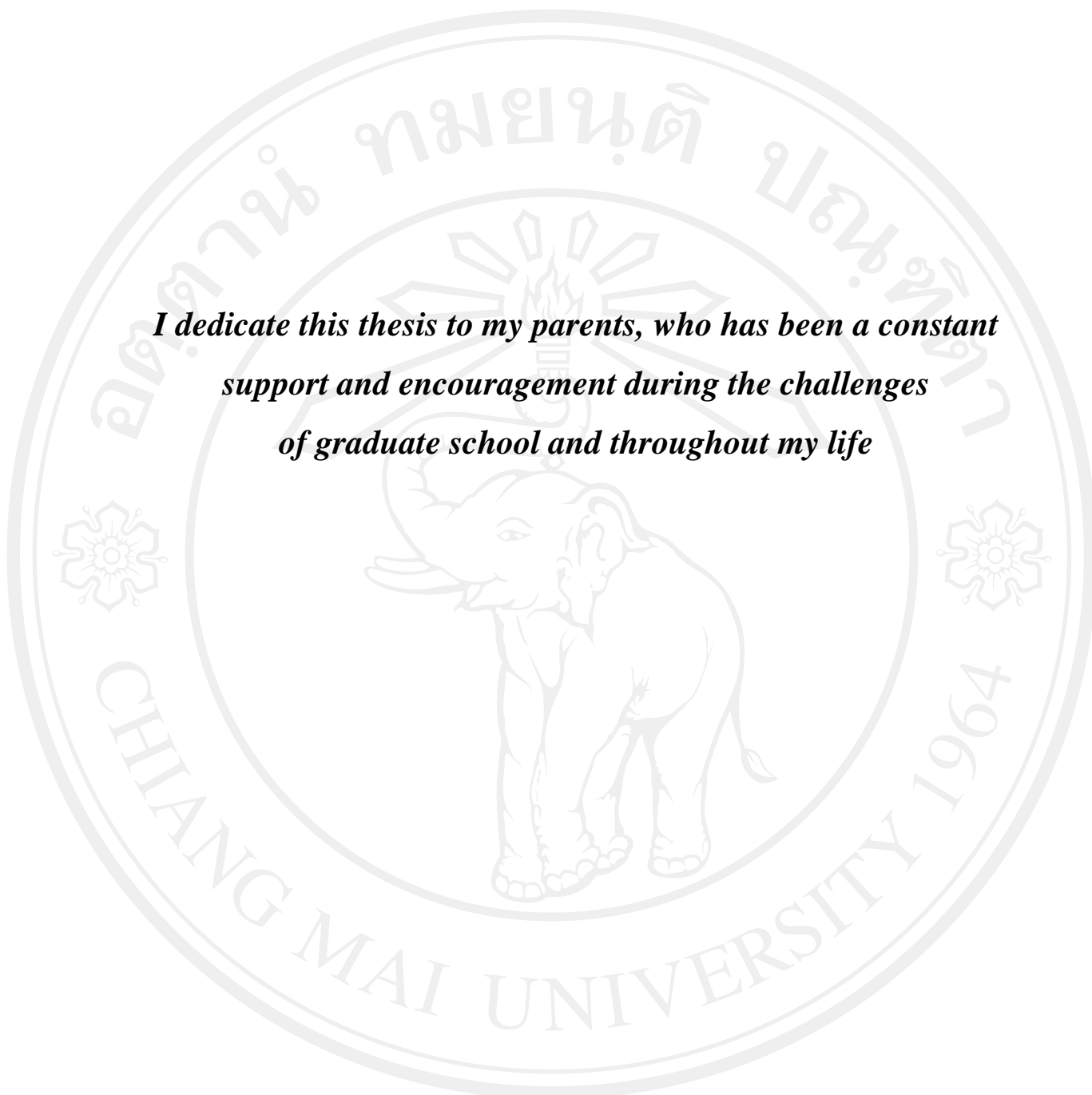
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22 May 2014

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The seal of Chiang Mai University is a large, light gray circular emblem in the background. It features a central illustration of an elephant standing and facing left, with a sunburst or flame-like symbol above its head. The Thai text "มหาวิทยาลัยเชียงใหม่" (Mahavithayalai Chiang Mai) is written in a circular path around the top, and "CHIANG MAI UNIVERSITY 1964" is written around the bottom. There are also decorative floral motifs on the sides.

*I dedicate this thesis to my parents, who has been a constant
support and encouragement during the challenges
of graduate school and throughout my life*

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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