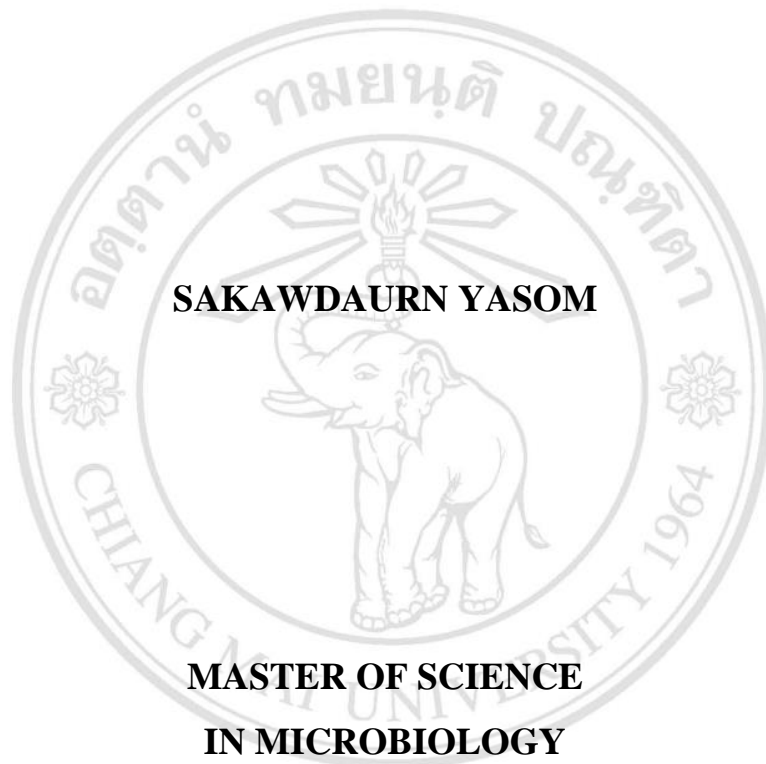


**EFFECTS OF PROBIOTIC *Lactobacillus paracasei* ST11 (HP4)
ON GUT MICROBIOTA, GUT AND SYSTEMIC
INFLAMMATIONS IN HIGH FAT DIET-
INDUCED OBESE RATS**



SAKAWDAURN YASOM

**MASTER OF SCIENCE
IN MICROBIOLOGY**

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

**GRADUATE SCHOOL
CHIANG MAI UNIVERSITY
MAY 2016**

**EFFECTS OF PROBIOTIC *Lactobacillus paracasei* ST11 (HP4)
ON GUT MICROBIOTA, GUT AND SYSTEMIC
INFLAMMATIONS IN HIGH FAT DIET-
INDUCED OBESE RATS**

SAKAWDAURN YASOM

**A THESIS SUBMITTED TO CHIANG MAI UNIVERSITY IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE
IN MICROBIOLOGY**

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

GRADUATE SCHOOL CHIANG MAI UNIVERSITY

MAY 2016

**EFFECTS OF PROBIOTIC *Lactobacillus paracasei* ST11 (HP4) ON
GUT MICROBIOTA, GUT AND SYSTEMIC INFLAMMATIONS
IN HIGH FAT DIET-INDUCED OBESE RATS**

SAKAWDAURN YASOM


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

Examination Committee:

Advisor:


.....Chairman

(Prof. Dr. Pattachai Kiratisin, M.D.)


.....

(Dr. Parameth Thiennimitr, M.D.)


.....Member

(Assoc. Prof. Dr. Siriporn Chattipakorn)


.....Member

(Dr. Parameth Thiennimitr, M.D.)

16 May 2016

Copyright © by Chiang Mai University

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to thesis advisor, Dr. Parameth Thiennimitr, for his guidance and intellectual advice, which allowed me to complete this work. He has always been both a friend and a mentor to give me a great experience in scientific world as well as a positive attitude toward life during the study. Moreover, the great support from both scientific intellect and funding from Professor Dr. Nipon Chattipakorn and Professor Dr. Siriporn Chattipakorn from Center of Excellence in Cardiac Electrophysiology Research, Chiang Mai University. I also wish to express my deeply gratitude to Assistant Professor Dr. Chaiyavat Chaiyasut and Dr. Sasithorn Sirilun from Faculty of Pharmacy, Chiang Mai University for their providing the probiotic *Lactobacillus paracasei* ST11 (HP4). In addition, I would like to thank Titikorn Chunchai, Wannipa Tunapong and Keerati Wanchai for their collaborative in the animal work and metabolic parameters. Finally, I greatly appreciate a warm support from my family members for understanding my work and being by my side during this work.

Sakawdaurn Yasom

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved