

*IN VITRO* EFFECTS OF CHITOSAN, METHYL JASMONATE,  
SILICIC ACID AND THEIR COMBINATIONS ON  
INHIBITION OF POST-HARVEST FUNGAL PATHOGENS OF  
TROPICAL FRUITS

CHIN POH TEAN

BIOTECHNICAL TECHNOLOGY AND FOOD SCIENCE  
UNIVERSITY MALAYSIA

2000



***IN VITRO* EFFECTS OF CHITOSAN, METHYL JASMONATE, SALICYLIC  
ACID AND THEIR COMBINATIONS ON INHIBITION OF POST-HARVEST  
FUNGAL PATHOGENS OF TROPICAL FRUITS**

**Chin Poh Tean**

**This project report is submitted in partial fulfillment of the requirement of the  
degree of Bachelor of Science in Agrotechnology (Post-Harvest Technology)**

**FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE  
UNIVERSITI MALAYSIA TERENGGANU**

**2008**

This project report should be cited as:

Chin, P. T. 2008. *In vitro* effects of chitosan, methyl jasmonate, salicylic acid and their combination on inhibition of post-harvest fungal pathogens of tropical fruits. Undergraduate thesis, Bachelor of Science in Agrotechnology (Post-Harvest Technology), Faculty of Agrotechnology and Food Science, Universiti Malaysia Terengganu, Terengganu. 39p.

No part of this project report may be reproduced by any mechanical, photographic, or electronic process, or in the form of phonographic recording, nor may it be stored in a retrieval system, transmitted, or otherwise copied for public or private use, without written permission from the author and the supervisor of the project.

**1100066811**

## ACKNOWLEDGEMENTS

First of all, I would like to express my deepest gratitude to my final year project supervisor, Dr. Chuah Tse Seng in assisting me throughout this project. This thankfulness is gratefully extended to him for his endless supervision, assistance, comments and guidance that enable this project run smoothly.

Besides, my heartfelt gratitude goes to all the lab assistants for their cooperation and permission to use the facilities in the laboratory.

Appreciation is extended to my housemate, Tan Yeong Yeong who has greatly helped me a lot in accomplishing the experiment.

Last but not least, I would like to thank my fellow friends especially my housemates, Elaine Pui Tze Munn and Chong Chee Kean for helping me in this project and my family for giving me spiritual and mental support in completing this study.

## ABSTRACT

Three natural compounds, namely methyl jasmonate (MeJA), salicylic acid (SA) and chitosan and the combination of SA and chitosan was examined on three types of fungus *Fusarium oxysporum* (Fo), *Fusarium oxysporum* (Fo2) and *Glomerella cingulata* (Gc) isolated from snake fruit, papaya and wax apple, respectively in order to determine the most suitable compound and its concentration that inhibit the fungus under laboratory condition. The best single natural compound to inhibit the three types of fungus is found to be MeJA. It could inhibit the fungus fungistatically or fungicidally at 11469 ppm. Chitosan is also found to be a very good treatment to inhibit Fo2 fungicidally at concentration as high as 40000 ppm. The growth of Gc could be inhibited by SA by 88.8% when the concentration of SA was increased to 800 ppm. Fo was inhibited by 81% when combining SA at 600 ppm with chitosan at 30000ppm compared with 40% and 73% when using single treatment of SA at 600ppm and chitosan at 30000ppm, respectively. Thus, this result suggests that a combination of SA and chitosan can enhance the growth inhibition of the fungus.