

Henik Sukorini 2013: Integrated Control of *Penicillium digitatum* (Pers.:Fr.) Sacc., a Green Mold Citrus Disease, Using Yeasts and Medicinal Plants. Doctor of Philosophy (Tropical Agriculture), Major Field: Tropical Agriculture, Faculty of Agriculture. Thesis Advisor: Associate Professor Somsiri Sangchote, Ph.D. 133 pages.

Green mold caused by *Penicillium digitatum* (Pers.:Fr.) Sacc. is responsible for 90% of losses during post-harvest handling. Currently, control of post harvest diseases is mainly dependent on the use of chemical fungicides, that is becoming increasingly restricted because of environment and health concern.

Biological control and biofungicide are investigated and use as an alternative to chemical. Seven yeasts and seven crude extracts of medicinal plants were tested against *P. digitatum*. *In vitro* and *in vivo* test was done for screening of yeasts and plant crude extracts.

A combination of *Candida utilis* TISTR 5001 and *Eugenia caryophyllata* crude extract was the best combination to attain a reduction to the disease incidence and the disease severity. Combination of *E. caryophyllata* crude extract and *C. utilis* TISTR 5001 significantly reduced the natural development of green mold of citrus fruits. The combination had no effect to fruits quality. Based on HPLC and NMR ( $^1\text{H}$  and  $^{13}\text{C}$ ) confirmed that the active compound of *E. caryophyllata* was eugenol. Hence, the results indicate a combination of the plant extracts and yeasts possess antifungal activity that can be exploited as an ideal treatment for future plant disease management.

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