

P. digitatum ได้ 63% เมื่อนำไปบ่มที่ 25 °C เป็นเวลา 24 ชั่วโมง และน้ำกรองเลี้ยงเชื้อจะหมดประสิทธิภาพในการยับยั้ง *P. digitatum* อย่างสมบูรณ์หลังจากบ่มที่อุณหภูมินี้แช่เย็นเป็นเวลา 10 นาที



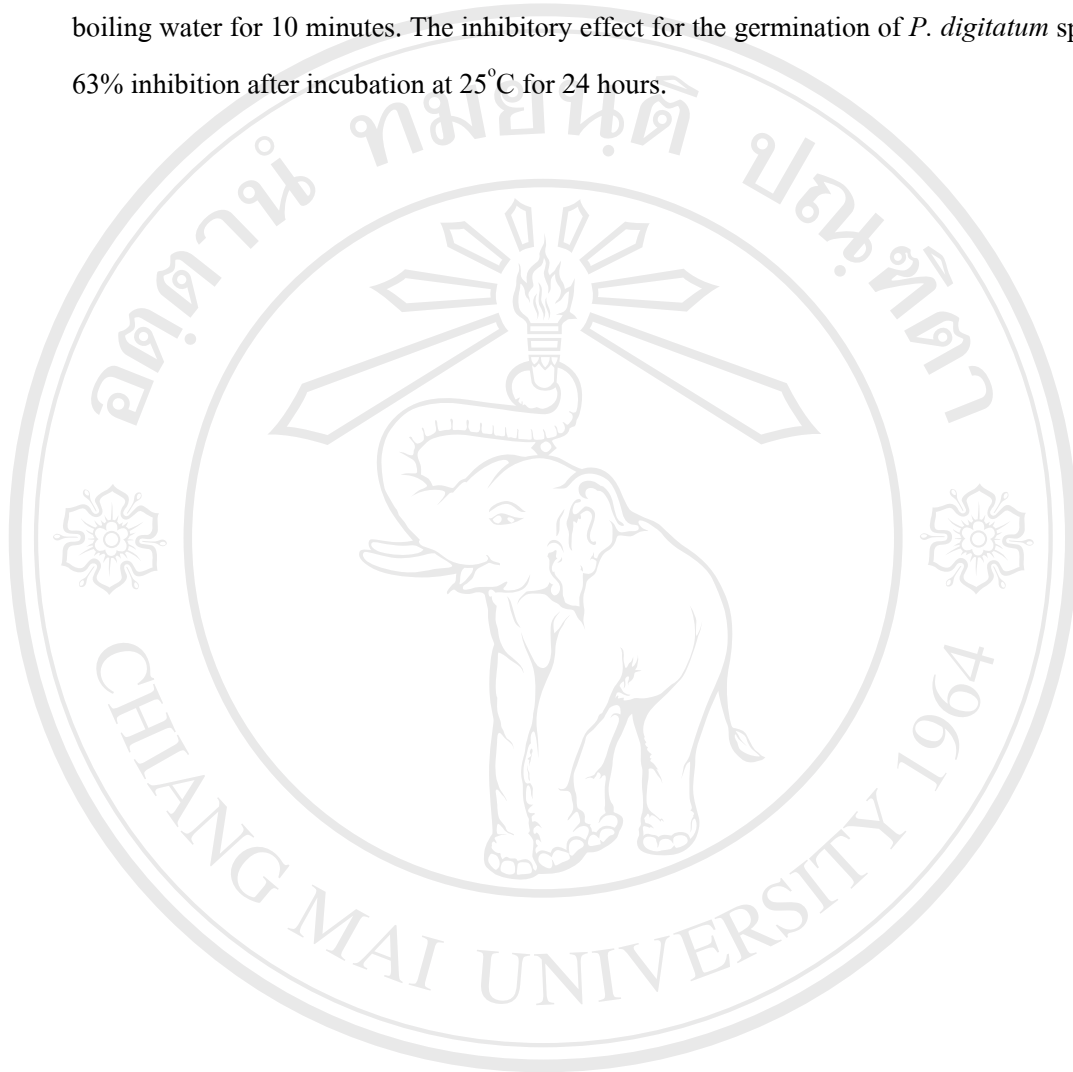
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Thesis Title	Inhibitory Effect of Anti- <i>Penicillium digitatum</i> Substances from Chitin Assimilating Bacteria		
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Abstract

This research was conducted to increase the value of shrimp shell waste and cope with the environmental problem through production of anti-*Penicillium digitatum* substance. Infection by *P. digitatum* is the main problem of orange postharvest. A total seventy microbial isolates were isolated from Japanese natto, Thai fermented soybeans and stock cultures from Microbiology Section, Chiang Mai University culture collection. The seventy isolates were maintained on an agar medium containing shrimp shell waste and examined by the spot test method and cylinder plate method for the inhibitory effect on *P. digitatum*. Bacterial isolate PP-10, the dried Thai fermented soybean, showed the highest inhibitory effect in chitin broth. Its morphological, biochemical and 16S rRNA analysis indicated that this organism is *Bacillus subtilis* and thermotolerant. The most suitable condition was cultivated in chitin broth, pH 7 in 125 ml Erlenmeyer flask supplemented with 10% glucose (w/v). The medium was inoculated with 0.5 ml of the starter inoculum, which had a concentration equal to McFarland No. 3, and was incubated at 37 °C for 2 days. It was found that the filtrate from this condition could inhibit *P. digitatum* 83%. The exochitinase activity was 0.0031 U/ml; specific activity was 0.016 U/mg protein. The endochitinase activity was 0.0107 U/ml; specific activity was 0.055 U/mg

protein and the β -1,3-glucanase activity was 0.079 U/ml; specific activity was 0.41 U/mg protein. The inhibitory activity of the crude enzyme was completely disappeared after incubation in boiling water for 10 minutes. The inhibitory effect for the germination of *P. digitatum* spores was 63% inhibition after incubation at 25°C for 24 hours.



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