

Sasivimol Laksanaphisut 2010: Control of Green Mold Rot on Citrus Fruits cv. Sai-Numphaung Caused by *Penicillium digitatum* Sacc., With Crude Extracts of Turmeric (*Curcuma longa* Linn.). Master of Science (Plant Pathology), Major Field: Plant Pathology, Department of Plant Pathology. Thesis Advisor: Associate Professor Somsiri Sangchote, Ph.D. 133 pages.

Crude extracts of turmeric powder obtained from four extract solvents including metanol, ethanol, hexane and methanol:ethanol:hexane at 1:1:1 (v/v/v) showed the minimum inhibitory concentration (MIC) at 6250, 97.7, 1562.5 and 12500 ppm respectively. ED<sub>50</sub> was 52.53, 51.14, 52.03 and 51.23 ppm respectively. ED<sub>90</sub> was 92.53, 1.14, 92.03 and 91.23 ppm respectively.

Crude extracts of turmeric powder in 20% ethanol at 30000 ppm showed disease incidence of green mold rot on treated citrus fruits by 25%. The combination of crude extract of turmeric powder in 20% ethanol at 30000 ppm with the fungicide imazalil at 250 ppm was completely control. These treatments were delayed disease development for 4 days. These were examined for fruit firmness and total soluble solids after storage for 6 days. It showed that firmness of treated citrus fruits was 0.76 g/mm<sup>2</sup> and total soluble solids at 13 °Brix whereas untreated citrus fruits were 0.42 g/mm<sup>2</sup> and 15.7 °Brix respectively.

Crude extracts of turmeric powder stored at -20 °C for 13 months, at 4 °C and 25 °C for 4 months still showed a good growth inhibition of *P. digitatum*. Futhermore, these crude extracts of turmeric were showed 54.83% antioxidant activity, IC<sub>50</sub> = 77.89 µg/mL and 95.71% anticancer activity of lung human, IC<sub>50</sub> = 2.97 µg/mL.

The crude extract and fractions of turmeric powder were analyzed by HPLC and GC-MS. The major antifungal compounds of turmeric were *ar* – turmerone, cf. demethoxycurcumin, terpenoids and sesquiterpene.

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Thesis Advisor's signature