

Sarinna Umrung 2006: Studies on Bacterial Wilt of Gold Curcuma (*Curcuma roscoeana* Wall).
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Gold Curcuma (*Curcuma roscoeana* Wall) is a herbaceous plant in the family Zingiberaceae. Presently, it is a new tropical cut flower with a high demand in the market as Patumma (*Curcuma alismatifolia* Gagnep.). Bacterial wilt disease (BW) of Gold Curcuma caused yellow color of stem and lower leaves then progressed upward to young leaves and finally induced yellowing and browning of entire shoot. The infected basal stem showing yellow color usually associated with a water-soaked symptom and easily broke off from the underground rhizome. A sign of bacterial exudate normally found on cut surface of infected stem and rhizome. Six strains of BW namely Co1, Co2, Co3, Co4, Co5 and Co6 were isolated from infected Gold Curcuma collected from growing areas in Tak Province and the Sunday market in Bangkok. Biological characterization using biochemical and physiological properties, host range and sugar utilization, five strains (Co1, Co2, Co3, Co5 and Co6) demonstrated characteristic of *Ralstonia solanacearum* (RS) race 1, biovar 3 (utilized both 3 disaccharides and 3 sugar alcohols) and one strain (Co4) was RS race 1, biovar 4 (utilized only 3 sugar alcohols). Host range study of six strains of RS on *in vitro* plantlets and seedling plants found severe wilt symptom and death within 10 days and 15 days after inoculation (dai), respectively. However, the symptom was delayed until 21 dai on red ginger and Krachaidam (*Kaempferia parviflora*). All tested plants showed typical wilt symptom except eggplant and tobacco were symptomless with vascular colonization whereas sesame, peanut, mulberry and banana were no infection. Testing of nine bactericides for growth inhibition of RS found that streptomycin was the most effective and the descending inhibitions were PHYTOMYCIN[®], tetracycline, Cef-3[®] and ORTHOCIDE[®] whereas the rest was no inhibition. Each bactericides inhibited each RS strain differently. Surfaces sterilization for *in vitro* propagation with 1000 ppm tetracycline for 1 hr +10% Clorox[®] 15 min+5% Clorox[®] 10 min increased clean culture of shoot from 70% to 90% whereas treated with 10% Clorox[®] 15 min alone provided 100% clean culture of seeds and inflorescences. Maximum germination rate and time for plantlet induction from seeds were 2.9% and 90-120 days whereas from inflorescences were 8.3% and 120-150 days of culture, respectively. *In vitro* multiplication of Gold Curcuma in MS+15% coconut water (CW) provided maximum of 10 roots and plant height of 9.5 cm whereas in MS+5 mg BA+15% CW gave maximum of 4 shoots. Survival rate of transplanting plantlets into pot in the greenhouse was 98.7%, which was higher than previous report.

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Student's signature

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