Studies on the Antimicrobial Compounds of Pseudomonas aeruginosa M-1001

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ABSTRACT

Pseudomonas aeruginosa M-1001 was isolated from soils collected at central part in Taiwan. The culture supernatant has inhibitory activity to the growth of plant pathogens. Maximum inhibitory activity was obtained when P. aeruginosa M-1001 was grown aerobically at 37 ℃ for 1 day in a medium consisting 1% shrimp and crab shell powder, 0.1% K2HPO4 and 0.05% MgSO4 · 7H2O at pH 7. The fungicide was not thermostable. After concentration of the culture supernatant by precipitation with ammonium sulfate, a fungicide was purified by ion-exchange chromatography. The molecular weight of protein was estimated to be 38 kDa and 5.7 by SDS-PAGE and chromatofocusing, respectively. The optimum pH and temperature were 7 and 37 ℃, respectively. The pH stability was analyzed and exhibited more stable at pH 5~8. Antifungal activity of the culture supernatant was found when using assay based upon inhibition of hyphal extension and spores germination of the fungal Fusarium solani. Make use of the marine wastes to produce antifungal substance was displayed powerfully inhibition on plant pathogens. Expect that the fungicide could apply to the agriculture in the future.

Keywords : Pseudomonas aeruginosa ; fungicide ; protease ; shrimp and crab shell powder

Table of Contents

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