On the study of lysozyme inhibitor produced by Pseudomonas aeruginosa M-1001

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ABSTRACT

This thesis aims at natural enzyme inhibitor and describes the screening and identification of strains which could produce hen egg white lysozyme inhibitor isolating from the soil. After screening, we isolate four strains. They are Erwinia rhapontici H-55, Pseudomonas aeruginosa M-1001, Enterobacter sakazakii M-1002 and Enterobacter cloacae M-1204 after identi- fication and characterization respectively. Strain M-1001 has the best inhibitory activity. Studying on optimum cultural condition of strain M-1001, maximum inhibitory activity was obtained when the strain was grown aerobically in a medium consisting of 0.25% glucose, 0.25% beef extract, 0.25% polypeptone, 1.0% sodium glutamate and 1.0% soluble starch (pH 7, 37°C, 180rpm, 48 hours). The inhibitors were purified from the culture supernatant of P. aeruginosa M-1001 by ammonium sulfate fractionation, DEAE Sepharose CL-6B chromatography and Sephacryl S-200 gel filtration. We purify two inhibitory active fraction named F-Ⅰ and F-Ⅱ. Their molecular weights are 57000 and 33000 daltons. The pH stability are 6~10 and 6~11. Thermal stability are 50°C and 40°C. Respectively, their specific activities could increase about 20 and 7.5 times. On the test for biological activity of inhibitor produced by strain M-1001. The growth of Gram positive bacteria could be inhibited. The result is good for development of new antibiotic.

Keywords : lysozyme ; inhibitor ; purification ; biological activity.

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