

Insecticidal Activities of Proteinaceous Toxins Secreted from a New Entomopathogenic Bacterium, *Enterococcus faecalis* SY1

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We have isolated a new entomopathogenic bacterium, *Enterococcus faecalis* SY1, from the larval cadaver of *Galleria mellonella*. The bacterium secreted several extracellular proteins showing a potent insecticidal activity against *G. mellonella* larvae. Since we were first interested in proteases as putative toxins in secretions from *E. faecalis* SY1, a serine protease was purified from concentrated culture broth of the bacteria. It was confirmed by N-terminal amino acid sequence analysis and partial gene cloning via PCR amplification that the purified protease is quite similar to a serine protease, sprE, from *E. faecalis* V583. However the bio-assay revealed that the serine protease was not related to the insecticidal activity of proteins secreted from *E. faecalis* SY1. In contrast, an activity of acidic protease that is inhibited by pepstatin, appeared to play a critical role in killing insects by *E. faecalis* SY1. Finally we observed that at least three hemolymph proteins were disappeared on tricine SDS-PAGE gel following injection of concentrated culture broth of *E. faecalis* SY1 into hemolymph.