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Molecular Characterization of Novel Insecticidal *Cry1*-Type Genes from *Bacillus thuringiensis* K1 Strain

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A new *Bacillus thuringiensis* strain (Bt K1), having high toxicities to *Plutella xylostella* and *Spodoptera exigua* was isolated from Korean soil sample. It was determined to belong to subsp. *kurstaki* (H3a3b3c) and produced bipyramidal inclusion. PCR-RFLP analysis revealed that Bt K1 contains three novel *cry1*-type protein genes, *cry1-1*, *cry1-7* and *cry1-44* in addition to *cry1Aa1* and *cry1Ea1* genes. Deduced amino acid sequences of *cry1-1*, *cry1-7* and *cry1-44* showed 78.0%, 99.7% and 91.0% maximum similarities with Cry1Ha1, Cry1Be1 and Cry1Ac2 crystal proteins, respectively. For cloning of the c-terminal and flanking DNA of these genes (*cry1Ea1*, *cry1-7*, *cry1Aa1* and *cry1-44*), inverse PCR (IPCR) was performed using Bt K1 plasmid DNA. About 3 kb, 2.5 kb, 2 kb and 4 kb of IPCR products were obtained and cloned into pGemT-Easy vector. For further characterization of these, sequence analysis base on the IPCR fragments will be performed.