

**Isolation and Characterization of a Strain of
Bacillus thuringiensis subsp. *kenyae*
Containing Two Novel *cryI*-type Toxin Genes**

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To identify novel crystal proteins, *Bacillus thuringiensis* 2385-1 was isolated from Korean soil sample and characterized. The H-serotype of 2385-1 was identical to that of subsp. *kenyae* (H4a4c), and its crystal toxin was bipyramidal-shaped. However, 2385-1 showed much higher toxicity against *Plutella xylostella* and *Spodoptera exigua* larvae than subsp. *kenyae*. In addition, crystal protein profile and plasmid DNA pattern of 2385-1 were different from those of subsp. *kenyae*. To verify the crystal protein gene types of 2385-1, PCR-RFLP analysis was performed. This result revealed that 2385-1 contains two novel *cryI*-type crystal protein genes, *cryI-5* and *cryI-12* in addition to *cryIJa1* gene. Deduced amino acid sequences of *cryI-5* and *cryI-12* showed 97.9% and 75.7% of maximum similarities with Cry1Ab and Cry1Ja crystal proteins, respectively. Among these novel crystal proteins, Cry1-5 showed high toxicity against *P. xylostella* and *S. exigua* larvae. In conclusion, *B. thuringiensis* 2385-1 was a new isolate from the view of gene type, and this isolate should be a promising source of insecticide for the control of lepidopteran larvae.