The Ecdysteroid UDP-Glucosyltransferase Gene Promoter from *Autographa californica* Multicapsid Nucleopolyhedrovirus

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The ecdysteroid UDP-glucosyltransferase (*egt*) gene promoter fragments of different lengths were generated from the genomic DNA of the *Autographa californica* multicapsid nucleopolyhedrovirus (AcMNPV) by PCR. After being purified and enzymatic digestion, they were cloned into the pGEM-3Z vector for construction of reporter plasmids pAc*egt*542-*luc*, pAc*egt*309-*luc* and pAc*egt*159-*luc* with the luciferase gene driven by the AcMNPV *egt* promoter. The results of transient expression in the *Spodoptera frugiperda* cell line-21 (Sf21) showed that the transcriptional activity of the AcMNPV *egt* promoter required the transactivation of viral factor(s). The expression of luciferase gene driven by the AcMNPV *egt* promoter was first detected at 24 h post infection. The *egt* promoter from the *Bombyx mori* nucleopolyhedrovirus (BmNPV), closely related to AcMNPV, revealed similar properties to that of the AcMNPV *egt* promoter. When BmNPV homologous region 3 was subcloned downstream the luciferase gene, the luciferase activity of the reporter plasmid was enhanced by over 1000-fold, but the property of the promoter was not changed. As a substrate of ecdysteroid UDP-glucosyltransferase (EGT), foreign insect ecdysone showed negative effects on *egt* promoter transcriptional activity. Ecdysone of 1.0–2.0 μg/ml significantly down-regulated the promoter activity. Promoter activities of different lengths showed that an AcMNPV *egt* promoter fragment of 159 bp has the basal transcriptional activity but it was almost abolished only about 0.2% of that of 309 bp and 542 bp, respectively, and the nucleotide sequence from – 159 to – 309 nt upstream the translation initiation site includes the main *cis*-acting elements interacting with viral factors.

Key words: Baculovirus, Ecdysteroid UDP-Glucosyltransferase Gene, Promoter