Characterization of the *Autographa californica* Nucleopolyhedrovirus *Ubiquitin* Gene Promoter

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Autographa californica multicapsid nucleopolyhedrovirus (AcMNPV) encodes an ubiquitin protein, which may be involved in virus infection. Functional analysis of the AcMNPV *ubiquitin* promoter was performed by progressive deletion of sequence or mutation of putative *cis*-activating motifs in the promoter region. In the presence of viral factors, a transient expression assay demonstrated that the active regions responsive to promoter transcription are mainly located within the range of −595 to −382 bp upstream of ATG. A 196-bp fragment (−383 to −187 bp), consisting of the distal TAAG, CAAT motif and TATA box, could also drive the expression of a reporter gene. Site-directed mutagenesis analyses indicated that mutations of TATA boxes and TAAG motifs reduce the promoter activity remarkably, while CAAT mutations enhance the promoter activity by about 3- or 4-fold as compared to the native promoter. All the results suggested that two continuous promoter regions are involved in the transcription of the *ubiquitin* gene and the *cis*-activating motifs corresponding to viral factors are mainly present within the 5′ region of the promoter. In addition, CAAT motifs in the promoter region function as negative regulator(s) binding sites.

Key words: Baculovirus, *Ubiquitin* Promoter, Transient Expression