The Study of Temporal Expression Profile of Maruca vitrata Multiple Nucleopolyhedrovirus (MaviMNPV)

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ABSTRACT

Recently, a new baculovirus, Maruca vitrata multiple nucleopolyhedrovirus (MaviMNPV), with high potential for biopesticides, was discovered. The in vitro propagation systems have been established that MaviMNPV and NTU-MV cell are conceivable to develop a novel baculovirus expression vector system, BEVS. MaviMNPV and NTU-MV cells are authenticated and established by professor Wang ’ Lab (National Taiwan University). In 2006, the genome of MaviMNPV was sequenced and analyzed. In this study,detection of the gene expression profile of MaviMNPV was performed by DNA microarray technique and real - time quantitative PCR method. All gene expression could be defined clearly by DNA microarray and real-time quantitative PCR. Real-time quantitative PCR could detect the detail expression level more precisely. Defined the MaviMNPV gene expression to be the three group. The gene expression trend detected by DNA microarray was lower and later than detected by real-time quantitative PCR. Both of the two results showed similar tendencies. In summary, we detected approximately 22% (28/126) of the MaviMNPV transcripts from 2 to 4 postinfection, 29% (37/126) of the transcripts from 8 to 12 postinfection, 28% (35/126) of the transcripts from after 12 postinfection, and the remaining 21% (26/126) are unclassification . Some genes started expression at early stage of replication and reached high expression level at late stage (e.g. ORF13 and ORF63), some genes reach great expression level at late stage (e.g.ORF40), when somes with late expression motif started to express at early stage of infection, respectively. These genes with high expression level can apply on developing new BEVS, and this study can further revealed the baculovirus genes expression temporal in Taiwan.

Keywords : Maruca vitrata multiple nucleopolyhedrovirus ; microarray ; temporal gene expression

Table of Contents

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Fauquet et al. Elsevier Academic Press. 2005; 177 – 185. 38. Tweeten, K.A., Bulla, L.A., Consigli, R.A. Characterization of an Extremely Basic Protein Derived from Granulosis Virus Nucleocapsids. J Virol. 1980; 33(2): 866-876. 39. Yeh, S.C., Lee, S.T., Wu, C.Y., Wang, C.H. A cell line (NTU-MV) established from Maruca vitrata (Lepidoptera: Pyralidae): Characterization, viral susceptibility, and polyhedra production. J Invertebr Pathol. 2007; 96(2): 138-46.