Somchai Suwongsaksri 2011: Genetic Characteristic, Environmental Effects on Efficiency and Shelf-life of Nucleopolyhedrovirus Bioproduct in Thailand. Master of Science (Bioproducts Science), Major Field: Bioproducts Science, Division of Science. Thesis Advisor: Mr. Kritchaya Issakul, Dr.sci.agr. 91 pages.

The production of nucleopolyhedrovirus in Thailand deals with 3 isolates; namely, *Spodoptera litura* nucleopolyhedrovirus (SlNPV), *Spodoptera exigua* nucleopolyhedrovirus (SlNPV) and *Helicoverpa armigera* nucleopolyhedrovirus (HaNPV). Genetic characteristic study by PCR technique with Polh-NPV-F and Polh-NPV-R primers was employed to identify these 3 isolates by *polh* gene. It showed that the 3 NPVs had 529 bp. Genetic relationship of the 3 NPVs with other strains in GenBank database indicated that SlNPV and SeNPV showed significant similarities with *Spodoptera exigua* isolate, the identity of nucleotide and amino acid sequence were 97 and 100 %, respectively. Furthermore, SlNPV was more closely related to SeNPV than HaNPV with 90 % identity of nucleotide sequence, and 97% identity of amino acid sequence. Although HaNPV was distantly related to SlNPV and SeNPV, it was more closely related to other *Helicoverpa armigera* isolates.

The major environmental factor affected nucleopolyhedrovirus of common cutworm (SlNPV) was UVB persistence that significantly decreasing the efficacy of SlNPV. The study showed that the standard concentration of $1.0x10^9$ PIB/ml yielded the highest efficacy. The virus could persisted UVB exposure for 5 hrs. , after that its efficacy dropped for about 50 % and its original activity remaining percentage decreased to 62.22 %. Others concentration maintained UVB persistence for less than 3 hrs. while decreased their efficacy to less than 50%. In term of temperature, normal temperature, especially between 30-40 ^{o} C, had no effect on the efficacy of SlNPV, though keeping it for 72 hrs. . However, when storing it in the temperature over 45 ^{o} C, after 24 hrs. storage, the efficacy for larvae controlling decreased significantly to 50.88-71.93 % and the average original activity remaining went down to 53.70-75.92%. For shelf-life storage of SlNPV bioproduct, the study showed that storing the virus in low temperature at 5 ^{o} C could prolong its shelf life than storing in room temperature. The finished bioproduct could be kept for 12 months and still showed good efficacy.

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