

Sirinda Khumnoi 2007: Vertical Transmission of Nucleopolyhedrovirus in Thai Mulberry Silkmoth, *Bombyx mori* L. (Lepidoptera: Bombycidae). Master of Science (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Tipvadee Attathom, Ph.D. 61 pages.

Grassery disease of silkworm, *Bombyx mori* L. (Lepidoptera: Bombycidae) caused by *Bombyx mori* nucleopolyhedrovirus (BmNPV), is considered one of the most destructive disease affecting in Thai sericulture. Infected silkworms expressed disease symptom during the final stage of larval growth and died without cocoon production. Vertical transmission of grassery disease in Thai variety of silkworm was studied. Fifth instar larvae of Nang noi variety were inoculated with 10^8 PIBs/ml of BmNPV and disease infection was observed in all further developmental stages and their F1 offspring. Egg hatching was 97.99% in the parent healthy silkmoth and 59.30% in BmNPV-infected parent silkmoths. In F1 offspring of the healthy silkmoths, mortalities of the first to fifth instar larvae were 0.37, 0.19, 0.11, 0.00 and 0.00%, respectively. In F1 offspring of the BmNPV-infected silkmoths, mortalities of the first to fifth instar larvae were 11.31, 6.81, 5.21, 5.82 and 5.12%, respectively. This study suggests the possibility of BmNPV infection in the gonadal tissues of the silkmoth resulting in reduction of silkmoth's fecundity.

Transmission electron microscopic observation of BmNPV-inoculated silkworms revealed BmNPV infection in fat tissues of the larva, pupa and adult moth, in testes and ovary tissues of the adult moths. No virus particles or polyhedra of BmNPV were observed in eggs and all larval instars of their F1 offspring. However, using PCR with primers complementary to BmNPV *polh* gene, PCR amplified *polh* regions of 424 bp were obtained from some of the fifth instar larvae, pupae and adult moths. The *polh* gene PCR amplified products were also obtained from all of the observed eggs and larval instars of the F1 offspring. Results indicated the existence of BmNPV in the F1 offspring of the infected silkworms which confirmed vertical transmission of grassery disease in Thai silkworm variety. The knowledge of BmNPV transmission not only helps to establish proper preventive control strategy for grassery disease, but also helps to prevent outbreak of grassery disease and finally to eliminate this viral disease within silkworm population.

Student's signature

Thesis Advisor's signature

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