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Efficient Expression of a Cellulase in Silkworm Larvae Using a Recombinant *Bombyx mori* Nucleopolyhedrovirus Lacking the Virus-encoded Chitinase and Cathepsin Genes

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We examined the efficiency of the *Bombyx mori* nucleopolyhedrovirus (BmNPV)-encoded chitinase and/or cathepsin (*cath*) in foreign protein expression in silkworm *B. mori* larvae. The expression efficiency was assayed in the 5th instar silkworm larvae infected with occlusion-positive BmNPV mutants lacking the virus-encoded chitinase (*chiA*) and/or cathepsin (*v-cath*) genes, which express an insect-derived cellulase under polyhedrin promoter. Expression level by cellulase activity was increased approximately 10% in a mutant lacking *chiA*, 11% in a mutant lacking *cath*, and 17% in a mutant lacking both *chiA* and *cath* than that of the unmodified recombinant BmNPV. The recombinant BmNPV lacking the virus-encoded *chiA* and *cath* can therefore be used for the mass production of foreign proteins in silkworm.