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Construction of a Transgenic Silkworm, *Bombyx mori*, That Sustained Fifth Instar Larval Period

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We have constructed and characterized a transgenic silkworm, *Bombyx mori*, that sustained fifth instar larval period. The ecdysteroid UDP-glucosyltransferase (*egt*) gene from *B. mori* nuclear polyhedrosis virus Korean strain (BmNPV-K1) was inserted under the control of immediate early 1 (*ie1*) promoter from *Autographa californica* NPV (AcNPV) to produce transfer vector. The transfer vector was directly introduced into silkworm (NB18) larvae by liposome-mediated gene transfer. One-day-old fifth instar female silkworm larvae were injected with the transfer vector containing *egt* gene and then mated with normal male moths. Genomic DNA from their progenies was individually extracted and screened the *egt* gene for the desired transgenesis by using PCR and Southern blot analysis. From F_3 larvae mated between the screened F_2 female and F_2 male, we show that the F_3 larvae carrying the *egt* gene are approximately 17.9%. The F_3 larvae carrying the *egt* gene were sustained approximately 26 hours during the 5th instar larval stage, suggesting that expression of *egt* was prevented larval-pupal ecdysis. The pupa and cocoon weights of the silkworm sustained 5th instar larval period were increased approximately 13.15% and 12.33% compared to control, respectively, indicating that arrest of 5th instar larval period was prolonged the feeding time, with a resultant increase in the weight gain of the pupa and cocoon. These results suggest that the transgenesis by use of *egt* gene will be possible for the production of giant silkworm.