

## Differential structure of the intronic promoter of the *Bombyx mori* A3 actin gene correlated with silkworm sensitivity/resistance to nucleopolyhedrovirus

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Genet. Mol. Res. 10 (1): 471-481 (2011)

Received July 19, 2010

Accepted October 26, 2010

Published March 22, 2011

DOI 10.4238/vol10-1gmr978

**ABSTRACT.** Previous reports demonstrated that actin is necessary for nucleocapsid transport and viral gene expression during nucleopolyhedrovirus infection of *Bombyx mori*. The first intron of *B. mori* A3 actin contains a cryptic promoter that drives expression of a rare isoform. We detected differences in the size and nucleotide composition of the first intron of the A3 actin gene from *B. mori* strain C24A, which is more resistant to nucleopolyhedrovirus than the M11A strain (22 and 95% lethality, respectively). We sought to determine if resistance to BmMNPV infection and the A3 actin promoter structure are correlated. Intrinsically bent DNA sites in these sequences, which determine curved structures, were analyzed by electrophoretic mobility assays and the helical parameters ENDS ratio, roll and twist. We found both fragments to have

non-centralized bent DNA sites with distinct ENDS ratio values, nucleotide positions and two-dimensional structures. Additionally, a conformational-sensitive gel electrophoresis assay identified an allelic variation found in strain M11A that is absent in strain C24A. These data suggest that A3 actin intronic sequence variations impair virus propagation and are markers of BmMNPV-resistant populations.

**Key words:** Actin; Bent DNA; *Bombyx mori*; Nucleopolyhedrovirus; Resistance