Characterization of *CIb1* Gene Promoter from Silkworm, *Bombyx mori*

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The hemolymph chymotrypsin inhibitor b1 (CIb1) of silkworm, *Bombyx mori*, plays an important role in innate immunity. In order to study its encoding gene *CIb1*, five heterogeneous promoter fragments of 844 bp, 682 bp, 516 bp, 312 bp and 82 bp in length were cloned from genomic DNA of the p50 silkworm strain. Characterization of the *CIb1* promoter was performed *in vitro* using the firefly *luciferase* gene as reporter. The results showed that *CIb1* promoter fragments have transcription activities in the *B. mori* ovary-derived BmN cell line. The 82 bp fragment (−72 to +10 nt) containing the eukaryotic core promoter elements revealed a basic transcription activity. The Bm1 element, upstream the transcription initiation site, showed a positive regulation function to the *CIb1* promoter. *CIb1* promoter-like fragments from the genomic DNA of the tetra hybrid silkworm Suju×Minghu provided a natural deletion model for the study of the *CIb1* promoter. *In vitro* analysis indicated that the 132 bp fragment from −517 nt to −386 nt upstream of the transcription initiation site strongly suppressed the transcription activity of the *CIb1* promoter, suggesting that the 132 bp fragment harbours strong negative *cis*-acting elements. Infection of *Bombyx mori* nucleopolyhedrovirus (BmNPV) increased the activity of the *CIb1* promoter, having provided another evidence to the function of CIb1 in the innate immunity of silkworm.

Key words: Bombyx mori, *CIb1* Gene and Protein, Promoter, Deletion Assay