

Molecular Cloning, Expression and Characterization of *BmIDGF* Gene from *Bombyx mori*

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Imaginal disc growth factors (IDGF) play a key role in insect development, but their mechanism remains unclear. In this study, we cloned a novel IDGF gene in *Bombyx mori* and designated it as *BmIDGF*. We found that the *BmIDGF* gene contains eight exons and seven introns, encoding a peptide of 434 amino-acid residues. The protein was predicted to contain one conserved motif of the glycosyl hydrolases family 18 and fall into group V chitinases. Sequence alignment showed that BmIDGF shares extensive homology with other invertebrate IDGF. RT-PCR analysis showed that BmIDGF is expressed in all developmental stages of silkworm larvae and various larvae tissues, which was further confirmed by Western blot analysis. Subcellular localization analysis indicated that BmIDGF is located in the extracellular space. We also successfully expressed it in *E. coli* and further characterized it by SDS-PAGE and mass spectrometry. Taken together, our data suggests that BmIDGF is a chitinase-like extracellular protein, and provides an excellent platform for subsequent studies on its enzyme activity and role in *B. mori* development.

Key words: IDGF, *Bombyx mori*, Subcellular Localization