

# **cDNA Cloning, Expression and Characterization of a Digestive $\beta$ -Glucosidase from the Midgut of the Silkworm, *Bombyx mori***

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A cDNA encoding the digestive  $\beta$ -glucosidase from the midgut of the silkworm, *Bombyx mori*, was cloned and characterized. The *B. mori*  $\beta$ -glucosidase (EC. 3.2.1.21) cDNA contains an open reading frame of 1,473 bp encoding 491 amino acid residues. The *B. mori*  $\beta$ -glucosidase belongs to the insect  $\beta$ -glucosidase group and possesses the amino acid residues involved in catalysis and substrate binding common to insect  $\beta$ -glucosidase. Southern blot analysis of genomic DNA suggested the presence of *B. mori*  $\beta$ -glucosidase gene as a single copy and Northern blot analysis confirmed midgut-and larval stage-specific expression. The *B. mori*  $\beta$ -glucosidase synthesis in midgut was decreased during the starvation. The *B. mori*  $\beta$ -glucosidase cDNA was expressed as a 55-kDa polypeptide in the baculovirus-infected insect Sf9 cells and the recombinant  $\beta$ -glucosidase showed  $\beta$ -glucosidase enzyme activity.