

1-9. Assay of the *Bombyx mori* Recombinant Protein Disulfide Isomerase (bPDI) Activity

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Protein disulfide isomerase (PDI) is an essential protein which is localized to the endoplasmic reticulum (ER) of eukaryotic cells. It catalyses the formation and isomerization of disulfide bonds during the folding of secretory proteins. We have isolated a cDNA encoding PDI from Bombyx mori (bPDI), in which an open reading frame of 494 amino acid (55.6kDa) is shown. Although bPDI shows a relatively low amino acid homology with other PDIs, the bPDI protein has PDI-typical two thioredoxin active sites of CGHC and an ER retention signal of KDEL motif at its C-terminal, which is similar to the other PDIs. A recombinant bPDI protein expressed from the bPDI cDNA effectively catalyzed the oxidative renaturation of denatured (reduced and scrambled) RNase A, an enzyme with 4 disulfide bridges. These results suggest that bPDI catalyzes the oxidation of disulfides and isomerizes incorrect disulfides on nascent poly peptides undergoing folding in the oxidizing environment of the ER, as do other protein disulfide isomerase family proteins.