

Cloning and characterization of a gene encoding a protein disulfide isomerase from *Neospora caninum*

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A gene encoding a protein disulfide isomerase (PDI) was isolated from a *Neospora caninum* cDNA expression library. The nucleotide sequence of the cDNA clone revealed the presence of an ORF of 1,416 bp, which encoded 461 amino acids, showing a high degree of homology to *Toxoplasma gondii* PDI. The gene was cloned into a pGEX vector and expressed in *E. coli* as a GST fusion protein. The NcPDI was detected in *N. caninum* tachyzoite lysate and ES products with a molecular weight of 50 kDa. IgA antibody in 58.0% of individual cattle tear samples recognized both the recombinant and native NcPDI, which suggests that the PDI-specific antibody may be involved in defense against parasites. In addition, PDI-specific inhibitors showed significant inhibitory effect on the growth of *N. caninum* tachyzoites. The purified recombinant NcPDI demonstrated biological activity in vitro by catalysis and refolding of reduced RNase, and assisted in the recovery of native from denatured lysozyme. These findings indicate that the NcPDI possesses specific-PDI enzymatic activity and it offers a putative target for prevention and chemotherapy of neosporosis.