



# Influence of cyclophilin D protein expression level on endothelial cell oxidative damage resistance

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**ABSTRACT.** We examined the influence of cyclophilin-D (CypD) protein expression level on endothelial cell oxidative damage resistance. A model of CypD protein expression or high expression in endothelial cells was established through gene silencing or cloning. The comparable groups were normal endothelial cells cultured in phosphate-buffered solution in liquid handling cells containing 500  $\mu\text{M}$   $\text{H}_2\text{O}_2$  for 90 or 120 min, and then the medium was replaced with common nutrient solution and cultured again for 24 h. The apoptosis rate and nitric oxide (NO) levels of each group were tested. The cell apoptosis rate of the CypD low expression group ( $32.51 \pm 6.6\%$ ) was significantly lower than that of the control group ( $52.57 \pm 5.84\%$ ,  $P = 0.001$ ), and total NO production was  $24.06 \pm 3$  and  $13.03 \pm 3.55$   $\mu\text{M}$ . The apoptosis rate of the CypD high expression group ( $24.24 \pm 3.08\%$ ) was significantly higher than that of the control group ( $7.7 \pm 0.68\%$ ,  $P < 0.001$ ); total NO production was  $3.55 \pm 1.53$  and  $8.46 \pm 0.77$   $\mu\text{M}$ , which was significantly different

(P = 0.008). CypD protein could increase oxidative stress and cause endothelial cell injury and apoptosis.

**Key words:** Cyclophilin-D protein; Endothelial cells; Oxidative stress