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Protective Role of Peroxiredoxin V against Ischemia/Reperfusion-Induced Acute Kidney Injury in Mice

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Abstract : Reactive oxygen species (ROS) production is involved in ischemia/reperfusion (I/R) injury in kidney of mice. Oxidative stress develops from an imbalance between ROS production and reduced antioxidant defenses. Many enzymatic and nonenzymatic antioxidant systems including peroxiredoxins (Prxs) are present in kidney to maintain an appropriate level of ROS and prevent oxidative damage. Prxs are a family of peroxidases that reduce peroxides, with a conserved cysteine residue serving as the site of oxidation by peroxides. In this study, we examined the protective role of Prx V against I/R-induced acute kidney injury (AKI) using Prx V wild type (WT) and knockout (KO) mice. We compared the response of Prx V WT and KO mice in mice model of I/R injury. Renal structure, functions, oxidative stress markers, protein levels of oxidative damage marker were worse in Prx V KO mice. Ablation of Prx V enhanced susceptibility to I/R-induced oxidative stress. Prx V KO mice were seen to have more severe renal damage than Prx V WT mice in mice model of I/R injury. Our results demonstrate that Prx V is protective against I/R-induced AKI.

Keywords : peroxiredoxin, ischemia/reperfusion, kidney, oxidative stress
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