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## Intake of water with high levels of dissolved hydrogen produced by electrolysis suppresses ischemia-induced cardio-renal injury in Dahl salt sensitive rats

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**Background:** H<sub>2</sub> reportedly produces an antioxidative effect by quenching cytotoxic oxygen radicals. We studied the biological effects of water with dissolved H<sub>2</sub> (DH) on ischemia-induced cardiorenal injury in a rat model of chronic kidney disease (CKD).

**Methods:** Dahl salt-sensitive rats (7 weeks old) were allowed *ad libitum* drinking of filtered water (FW: DH, 0.00±0.00 mg/l) or water with dissolved H<sub>2</sub> produced by electrolysis (EW: DH, 0.35±0.03 mg/l) for up to 6 weeks on a 0.5% salt diet. Then, rats underwent ischemic reperfusion (I/R) of one kidney and were killed a week later for investigation of the contralateral kidney and the heart.

**Results:** In the rats given FW, unilateral kidney I/R induced significant increases in plasma monocyte chemoattractant protein-1, methylglyoxal, and blood urea nitrogen. Histologically, significant increases were found in glomerular adhesion, cardiac fibrosis, number of ED1-positive cells, and nitrotyrosine staining in the contralateral kidney and the heart. In rats given EW, those findings were significantly ameliorated and there were significant histological differences between rats given FW and those given EW.

**Conclusion:** Consumption of EW by *ad libitum* drinking has the potential to ameliorate ischemia-induced cardiorenal injury in CKD model rats. This indicates a novel strategy of applying H<sub>2</sub> produced by water electrolysis technology for the prevention of CKD cardiorenal syndrome.

### Related Information

#### Nephrology Dialysis Transplantation (2010)

Abstract of paper published online in December, 2010