Protective effect of a hydrogen-rich preservation solution during cold ischemia in rat lung transplantation.

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Molecular hydrogen has been reported to alleviate oxidative stress on ischemia-reperfusion injury in various organs without adverse effects.

Solubilized hydrogen is safety, simple and practical method to deliver hydrogen in target organ.

In this study, we evaluated the efficacy of a hydrogen-rich preservation solution during cold ischemia in a lung transplantation.

**Background**

- Anesthesia: pentobarbital 120mg/kg i.p.
- Ventilation setting: (O2 100%, Tidal volume (VT) 7ml/kg, RR 70/minutes, PEEP 2cmH2O)
- Preservation solution (perfadex®) flushed through the main pulmonary artery with 20 mL
- In the hydrogen group, hydrogen added to the preservation solution more than 1 ppm using hydrogen generation agent “水素水 7.0 aquela”.
- Orthotopic left lung transplantation using cuff technic.

**Methods**

**Lewis rat 290-310g**

**Left orthotopic lung transplantation**

**Result**

1. **Assessment after cold preservation**

   - Hydrogen concentration in the lung graft
   - Gene expression in the lung graft

2. **Assessment after reperfusion**

   - Lung function
   - Histology (Hematoxylin eosin staining)
   - Wet to dry weight ratio

**Conclusion**

Hydrogen-rich preservation solution used for lung graft during cold ischemia attenuated ischemia-reperfusion injury through anti-oxidant and anti-inflammatory effects in a rat lung transplantation model.