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# Hydrogen saline is protective for acute lung ischaemia/reperfusion injuries in rats

Jianxin Shi <sup>1</sup>, Feng Yao, Chenxi Zhong, Xufeng Pan, Yu Yang, Qiang Lin

Affiliations

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## Abstract

**Background:** Protective effects of saturated hydrogen (H<sub>2</sub>) saline on cardiac ischaemia-reperfusion (I/R) injury have been demonstrated previously. This study was designed to show that hydrogen-rich saline is protective in preventing lung I/R injury in rats.

**Methods:** Adult male Sprague-Dawley rats underwent 45 min occlusion of the right lung roots and 120 min reperfusion. Rats were divided randomly into three groups: sham-operated control group, I/R plus saline treatment, and I/R plus hydrogen-rich saline treatment (0.6 mmol/L, 0.5 ml/kg/d). Three days of intraperitoneal injection of hydrogen-rich saline before the reperfusion combined with immediate administration of hydrogen-rich saline after the reperfusion were performed. Following reperfusion, the lung tissue and the pulmonary artery was immediately obtained and the W/D ratio, pulmonary artery contraction and relaxation ability, H-E staining, TUNEL staining, caspase-3, MDA, 8-OHdG content and measurement of such biomarkers as WBC, CRP were measured or carried out.

**Results:** Hydrogen saline significantly protected vasoactivity of the pulmonary artery, reduced pulmonary oedema, decreased lung malondialdehyde (MDA), 8-OHdG concentration, alleviated lung epithelial cell apoptosis and lowered the level of such biomarkers as WBC, CRP, ALT and TBiL.

**Conclusions:** It is concluded that hydrogen-rich saline is a novel, simple, safe and effective method to attenuate pulmonary I/R injury.

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