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Hydrogen-rich saline ameliorates the retina against light-induced damage in rats

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Abstract

Oxidative reactions are thought to be a major cause of light-induced retinal degeneration. This study was designed to investigate the effects of hydrogen-rich saline (HRS) on the prevention and treatment of light-induced retinal injury in rats. Male Sprague-Dawley rats were divided randomly into three groups: light damage, HRS prevention (5 ml/kg, 30 min before intensive light exposure), and HRS treatment (5 ml/kg per day for 5 days, after intensive light exposure), respectively. The right eye of each rat was exposed to 5000 lux constant white light-emitting diode (LED) light for 3 h, and the left eye was covered to serve as the blank control. Electroretinograms were recorded 5 days later, and the thickness of the outer nuclear layer (ONL) was measured after hematoxylin and eosin (H&E) staining. The results showed that the electroretinogram b-wave amplitudes and the mean ONL thicknesses of rats were significantly greater in the HRS prevention ($P < 0.001$) and treatment ($P < 0.001$) groups than in the light damage. These results indicated that peritoneal injection of HRS provides protection and treatment against light-induced retinal degeneration in rats.

Figures

Figure 1 Annular illumination box for light-induced...

Figure 2 Responses for the dark-adapted conditions...

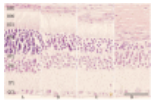

Figure 3 Representative histology of the superior...

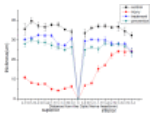

Figure 4 Morphometric analysis across the vertical...

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