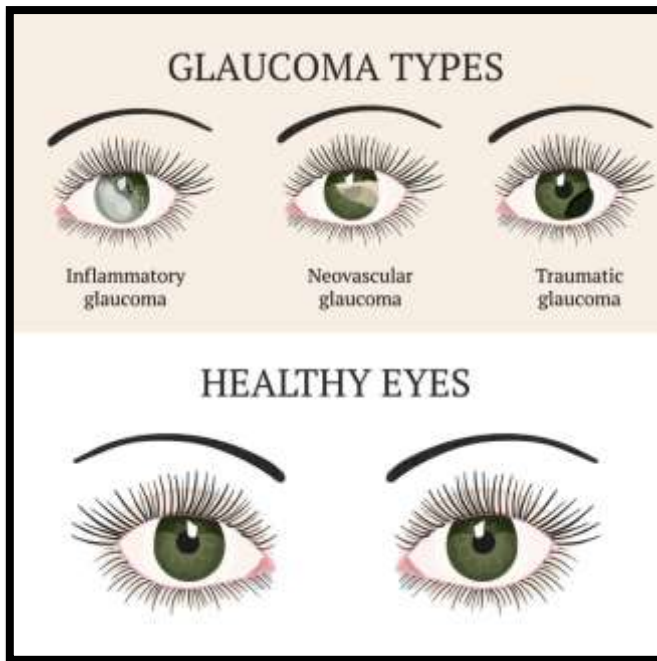


## H2 therapeutic effects against glaucoma

KYK Hydrogen Water | 1,500 PPB of DH | KYK Co., Ltd. (South Korea)



Transient elevation of intraocular pressure is known to induce retinal I/R injury and result in the necrosis and apoptosis of retinal neurons.<sup>22,23</sup> These pathological features closely resemble those of acute angle-closure glaucoma. The underlying mechanisms of I/R injury are closely related to the formation of ROS, which has been recognized as a contributor to the pathogenesis of glaucomatous neurodegeneration. In a recent study, continuous administration of hydrogen-loaded eye drops immediately increased the hydrogen concentration in the vitreous body and suppressed the I/R-induced oxidative stress, leading to a decrease in retinal neuron apoptosis. Moreover, it has been

verified that hydrogen treatment inhibits the activation of microglia, which could give rise to ongoing neurodegeneration in the injured retinas. Another study explore the anti-apoptosis mechanism of HRS therapy found that HRS alleviated retinal I/R injury through the inhibition of poly ADP-ribose polymerase 1, a nuclear enzyme involved in the regulation of multiple pathophysiological cellular procedures, including DNA oxidation and caspase-3-mediated apoptosis. Glutamate-induced excitotoxicity is another intraocular pressure-independent factor contributing to the apoptosis of RGCs in glaucoma. Hydrogen reduces glutamate excitotoxic injury and enhanced retinal recovery. These beneficial results could be ascribed to the suppression of the glial cells and the promotion of glutamate clearance. These studies shows, hydrogen has a novel therapeutic element in treating glaucoma.

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