

Molecular hydrogen (H₂)-enriched dialysis solution improves prognosis of chronic dialysis patients

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

Haemodialysis (HD) remains an important form of Renal Replacement Therapy (RRT) in End Stage Renal Disease (ESRD) patients. Though, it is traditionally considered to be a bridging therapy for renal transplantation, in developing countries like India, it still remains a primary modality of treatment due to growing numbers of ESRD patients and lack of adequate donors and transplantation centers.



Though accelerated hypertension, atherosclerosis, lipid abnormality, inflammation and oxidative stress have been found to play a major role in progression of vascular events and potentially increase the cardiovascular risk, there are untouched trace element levels which may also play a vital role in their overall survival. A deficiency of essential trace elements or an excess of toxic trace elements can affect health. The combination of enhanced oxidative stress and inflammation in patients on chronic haemodialysis (HD) treatment plays a crucial role in the occurrence of excessive cardiovascular events and death. HD may exaggerate leukocyte activation and injury, which enhance oxidative stress and inflammation.

Hydrogen, the most abundant and lightest chemical element in nature, has anti-apoptotic, antioxidant, anti-inflammatory, and anti-allergy effects, and thus can be used to treat various diseases. Molecular hydrogen diffuses rapidly into cells and tissues, and selectively reduces •OH and peroxynitrite anions, which are the most cytotoxic ROS species. The effects of hydrogen occur without affecting normal ROS signaling or disrupting normal metabolic redox reactions that influence cell signaling. In water, hydrogen is a stable gas that can only react with oxide radical ions (•O⁻) and •OH at low reaction rates.

Molecular hydrogen (H₂) is an inert gas with no known side effects. Studies have shown that H₂ acts as an antioxidant and an anti-inflammatory agent, and ameliorates cellular and organ damage. The technique of water electrolysis has made it possible to apply H₂ very safe to generate H₂ dissolved water for real HD therapy. H₂ levels of inflow blood and HD solution reached an equivalent state in the dialyzer, and the H₂ level of outflow blood from dialyzer shows approximately the same as that of inflow H₂-HD solution. In conclusion, HD applying an H₂-dissolved HD solution could improve the prognosis of chronic HD patients.

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