KURE H2 Hydrogen Research Library

While the exact cellular pathways of molecular hydrogen are still being explored, its ability to support balance and resilience in human cells, animal systems, and even plant biology is gaining global attention. With over 500 peer-reviewed studies and a growing community of more than 1,600 researchers dedicated to its benefits, molecular hydrogen is emerging as one of the most promising wellness frontiers of our time.

IMMUNE SYSTEM HEALTH:

Scientific Report | 1

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7376192/ Hydrogen-rich water reduces inflammatory responses and prevents apoptosis of peripheral blood cells in healthy adults: a randomized, double-blind, controlled trial

Scientific Report | 2

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6567800/ Recent Advances in Studies of Molecular Hydrogen against

Sepsis

Scientific Report | 3

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3560832/ Hydrogen-rich saline protects immunocytes from radiation- induced apoptosis

Scientific Report | 4

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7495244/ Hydrogen: A Novel Option in Human Disease Treatment

COVID

Scientific Report | 1

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8569706/ (2121) Molecular Hydrogen: A Promising Adjunctive Strategy for the Treatment of the COVID-19

Scientific Report | 2

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8896485/ Hydrogen-oxygen therapy alleviates clinical symptoms in twelve patients hospitalized with

COVID-19

Scientific Report | 3

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8872486/ Molecular Hydrogen Positively Affects Physical and Respiratory Function in Acute Post-COVID-19 Patients: A New Perspective in Rehabilitation

Scientific Report | 4

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7330772/ Hydrogen/oxygen mixed gas inhalation improves disease severity and dyspnea in patients with Coronavirus disease 2019 in a recent multicenter, open-label clinical trial

HORMONE HEALTH:

Scientific Report | 1

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6178641/ Emerging mechanisms and novel applications of hydrogen gas therapy

Scientific Report | 2 https://pubmed.ncbi.nlm.nih.gov/28560519/ Molecular hydrogen affects body composition, metabolic profiles, and mitochondrial function in middle-aged overweight women

Scientific Report | 3

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10141176/ Therapeutic Potential of Molecular Hydrogen in Metabolic Diseases from Bench to Bedside

HEALTHY INFLAMMATORY RESPONSE & ACTING AS AN ANTIOXIDANT:

Scientific Report | 1

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7871940/ Hydrogen-rich water suppresses the reduction in blood total antioxidant capacity induced by 3 consecutive days of severe exercise in physically active males

Scientific Report | 2

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7376192/ Hydrogen-rich water reduces inflammatory responses and prevents apoptosis of peripheral blood cells in healthy adults: a randomized, double-blind, controlled trial

Scientific Report | 3

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6988658/ Application of Molecular Hydrogen as a Novel Antioxidant in

Sports Science

Scientific Report | 4

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6096066/ Anti-inflammatory and antitumor action of hydrogen via reactive oxygen species Scientific Report | 5
https://pubmed.ncbi.nlm.nih.gov/30243702/ Molecular hydrogen reduces acute exercise-induced inflammatory and oxidative stress status

Scientific Report | 6

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10045005/ Molecular Hydrogen: From Molecular Effects to Stem Cells Management and Tissue Regeneration

Scientific Report | 7

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5095341/ (2016) Molecular hydrogen decelerates rheumatoid arthritis progression through inhibition of oxidative stress

Scientific Report | 8

https://www.sciencedirect.com/science/article/pii/S156757691 4002124?ref=pdf_download (2014) Therapeutic efficacy of infused molecular hydrogen in saline on rheumatoid arthritis: A randomized, double-blind, placebo-controlled pilot study

Scientific Report | 9

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3563451/ (2012) Consumption of water containing a high concentration of molecular hydrogen reduces oxidative stress and disease activity in patients with rheumatoid arthritis: an open-label pilot study

Scientific Report | 10

https://www.spandidos- publications.com/10.3892/etm.2018.6880 (2018) Beneficial Effects of Hydrogen Gas Inhalation on a Murine Model of Allergic Rhinitis

ASTHMA-ALLERGIC INFLAMMATION:

Scientific Report | 1

https://www.nature.com/articles/s41598-020-58999-0 (2020) Hydrogen Attenuates Allergic Inflammation by Reversing Energy Metabolic Pathway Switch

Scientific Report | 2

https://www.sciencedirect.com/science/article/abs/pii/S15675 76918313638 Hydrogen gas inhalation enhances alveolar macrophage phagocytosis in an ovalbumin-induced asthma model

COPD:

Scientific Report | 1

Hydrogen/oxygen therapy for the treatment of an acute exacerbation of chronic obstructive pulmonary disease: results of a multicenter, randomized, double-blind, parallel- group controlled trial https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8120708/

Scientific Report | 2

Hydrogen gas (XEN) inhalation ameliorates airway inflammation in asthma and COPD patients https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7785302/

Scientific Report | 3

Hydrogen gas inhalation protects against cigarette smoke- induced COPD development in mice https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6051853/

Scientific Report | 4

Hydrogen Therapy may be a Novel and Effective Treatment for COPD https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3108576/

GUT HEALTH & DIGESTIVE ENZYME PRODUCTION:

Scientific Report | 1

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3231938/ Effects of drinking hydrogen-rich water on the quality of life of patients treated with radiotherapy for liver tumors

Scientific Report | 2

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3679390/ Hydrogen-rich water decreases serum LDL-cholesterol levels and improves HDL function in patients with potential metabolic syndrome

Scientific Report | 3

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5799803/ Hydrogen-water ameliorates radiation-induced gastrointestinal toxicity via MyD88’s effects on the gut microbiota

CARDIOVASCULAR HEALTH & DISEASE TREATMENT:

Scientific Report | 1

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6600250/ A New Approach for the Prevention and Treatment of Cardiovascular Disorders. Molecular Hydrogen Significantly Reduces the Effects of Oxidative Stress

Scientific Report | 2

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8353690/ Application of Molecular Hydrogen in Heart Surgery under Cardiopulmonary Bypass

Scientific Report | 3

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9555031/ Molecular hydrogen exposure improves functional state of red blood cells in the early postoperative period: a randomized clinical study

Scientific Report | 4

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10239052/ Hydrogen therapy as a potential therapeutic intervention in heart disease: from the past evidence to future application

HEART PROTECTION:

In diabetic mice, hydrogen water has shown significant improvements in heart health and the prevention of heart disease, holding promise as a potential intervention for diabetes-related heart issues.

Scientific Report | 1

https://pubmed.ncbi.nlm.nih.gov/25979689%20 Treatment with hydrogen molecule attenuates cardiac dysfunction in streptozotocin-induced diabetic mice

LIVER HEALTH ENHANCEMENT:

Research indicates that hydrogen water also demonstrates significant improvements in liver function and reduced oxidative stress in individuals with chronic hepatitis B.

Scientific Report | 1

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5350887/ Effect of hydrogen-rich water on oxidative stress, liver function, and viral load in patients with chronic hepatitis B

Scientific Report | 2

https://pubmed.ncbi.nlm.nih.gov/23682614/ Effects of oral intake of hydrogen water on liver fibrogenesis in mice

Scientific Report | 3

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5350887/ Effect of hydrogen-rich water on oxidative stress, liver function, and viral load in patients with chronic hepatitis B

Scientific Report | 4

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10196827/ A strategy of local hydrogen capture and catalytic hydrogenation for enhanced therapy of chronic liver diseases

Scientific Report | 5

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8002796/ Hydrogen treatment: a novel option in liver diseases

HEARING LOSS:

Molecular hydrogen has exhibited potential in protecting hearing cells from oxidative damage, providing hope for mitigating hearing loss due to noise or oxidative stress.

Scientific Report | 1

https://pubmed.ncbi.nlm.nih.gov/19339905/ Hydrogen protects auditory hair cells from free radicals

Scientific Report | 2

https://pubmed.ncbi.nlm.nih.gov/22387110/ Hydrogen-rich saline alleviates experimental noise-induced hearing loss in guinea pigs

Scientific Report | 3

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4063935/ Hydrogen-saturated saline protects intensive narrow band noise-induced hearing loss in guinea pigs through an antioxidant effect E

YE PROTECTION:

Research has demonstrated that hydrogen-loaded eye drops can aid in the recovery of eye injuries caused by high eye pressure, suggesting a possible use as a first-aid eye rinse.

Scientific Report | 1

https://pubmed.ncbi.nlm.nih.gov/19834032/ Protection of the retina by rapid diffusion of hydrogen: administration of hydrogen-loaded eye drops in retinal ischemia-reperfusion injury

Scientific Report | 2

https://pubmed.ncbi.nlm.nih.gov/20847117/ Hydrogen and N-acetyl-L-cysteine rescue oxidative stress- induced angiogenesis in a mouse corneal alkali-burn model

Scientific Report | 3

https://pubmed.ncbi.nlm.nih.gov/25801048/ Protective effect of molecular hydrogen against oxidative stress caused by peroxynitrite derived from nitric oxide in rat retina

ALLERGIES:

Hydrogen water exhibits potential in alleviating allergies through its antioxidant properties, showing promise in immune response balance and symptom improvement.

Scientific Report | 1

https://pubmed.ncbi.nlm.nih.gov/19766097/ Molecular hydrogen suppresses FcepsilonRI-mediated signal transduction and prevents degranulation of mast cells

Scientific Report | 2

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3852999/ The Drinking Effect of Hydrogen Water on Atopic Dermatitis Induced by Dermatophagoides farinae Allergen in NC/Nga Mice

DIABETES:

Research suggests that hydrogen water consumption may lead to improvements in cholesterol, glucose tolerance, and insulin resistance in individuals with type 2 diabetes or prediabetes.

Scientific Report | 1

https://pubmed.ncbi.nlm.nih.gov/19083400/ Supplementation of hydrogen-rich water improves lipid and glucose metabolism in patients with type 2 diabetes or impaired glucose tolerance

Scientific Report | 2

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3542317/ (2013) Hydrogen Improves Glycemic Control in Type1 Diabetic Animal Model by Promoting Glucose Uptake into Skeletal Muscle

Scientific Report | 3

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3542317/ (2020) Hydrogen improves glycemic control in type1 diabetic animal model by promoting glucose uptake into skeletal muscle

Scientific Report | 4

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9889559/ (2023) Effectiveness and safety of hydrogen inhalation as an adjunct treatment in Chinese type 2 diabetes patients: A retrospective, observational, double-arm, real-life clinical study Scientific Report | 5

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9515190/ Photocatalytic glucose depletion and hydrogen generation for diabetic wound healing

WEIGHT MANAGEMENT METABOLIC:

Long-term consumption of hydrogen water has been associated with fat and weight loss, resembling the effects of calorie restriction.

Scientific Report | 1

https://onlinelibrary.wiley.com/doi/10.1038/oby.2011.6 Molecular hydrogen improves obesity and diabetes by inducing hepatic FGF21 and stimulating energy metabolism in db/db mice

Scientific Report | 2

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9967957/ The Effects of Hydrogen-Rich Water on Blood Lipid Profiles in Clinical Populations: A Systematic Review and Meta-Analysis

Scientific Report | 3

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3679390/ Hydrogen-rich water decreases serum LDL-cholesterol levels and improves HDL function in patients with potential metabolic syndrome

CANCER:

Scientific Report | 1

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC812381 3/ Molecular Hydrogen as a Potential Clinically Applicable Radioprotective Agent

Scientific Report | 2

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC38058 96/ Hydrogen as a New Class of Radioprotective Agent

Scientific Report | 3

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC71893 62/ Hydrogen gas represses the progression of lung cancer via down-regulating CD47

Scientific Report | 4

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7885710/ Hydrogen therapy can be used to control tumor progression and alleviate the adverse events of medications in patients with advanced non-small cell lung cancer

Scientific Report | 5

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8092147/ Two weeks of hydrogen inhalation can significantly reverse adaptive and innate immune system senescence patients with advanced non-small cell lung cancer: a self-controlled study

Scientific Report | 6

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7448556/ Suppression of autophagy facilitates hydrogen gas-mediated lung cancer cell apoptosis

Scientific Report | 7

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6691140/ Hydrogen Gas in Cancer Treatment

HYPERTENSION:

Scientific Report | 1

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9585236/ (2022) The effect of a low dose hydrogen-oxygen mixture inhalation in midlife/older adults with hypertension: A randomized, placebo-controlled trial

Scientific Report | 2

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7692487/ Daily inhalation of hydrogen gas has a blood pressure- lowering effect in a rat model of hypertension

Scientific Report | 3

https://pubmed.ncbi.nlm.nih.gov/30259991/ Hydrogen gas reduces chronic intermittent hypoxia-induced hypertension by inhibiting sympathetic nerve activity and increasing vasodilator responses via the antioxidation

ATHLETIC & MUSCLE PERFORMANCE:

Hydrogen water has exhibited potential in reducing lactic acid build-up, decreasing muscle fatigue during exercise, and potentially aiding muscle-wasting diseases.

Scientific Report | 1

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3395574/ Pilot study: Effects of drinking hydrogen-rich water on muscle fatigue caused by acute exercise in elite athletes

Scientific Report | 2

https://pubmed.ncbi.nlm.nih.gov/28474871/ Effects of hydrogen rich water on prolonged intermittent exercise

Scientific Report | 3

https://pubmed.ncbi.nlm.nih.gov/25295663/ Effectiveness of oral and topical hydrogen for sports-related soft tissue injuries

Scientific Report | 4

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6837388/ Molecular hydrogen alleviates motor deficits and muscle degeneration in mdx mice

ANTI-INFLAMMATORY PROPERTIES:

Hydrogen water has shown promise in alleviating inflammation in rheumatoid arthritis and other conditions.

Scientific Report | 1

https://pubmed.ncbi.nlm.nih.gov/23031079/ Consumption of water containing a high concentration of molecular hydrogen reduces oxidative stress and disease activity in patients with rheumatoid arthritis: an open-label pilot study

Scientific Report | 2

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3788323/ Molecular hydrogen: new antioxidant and anti-inflammatory therapy for rheumatoid arthritis and related diseases

Scientific Report | 3

https://pubmed.ncbi.nlm.nih.gov/11510417/ Anti-inflammatory properties of molecular hydrogen: investigation on parasite-induced liver inflammation

MOOD DISORDERS:

Research suggests that hydrogen water may promote the growth of brain cells, potentially offering benefits for mood disorders such as depression.

Scientific Report | 1

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4812321/ Effects of hydrogen-rich water on depressive-like behavior in mice

Scientific Report | 2

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3409143/ Molecular Hydrogen Reduces LPS-Induced Neuroinflammation and Promotes Recovery from Sickness Behaviour in Mice

Scientific Report | 3

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5575246/ Molecular hydrogen increases resilience to stress in mice

ANTIOXIDANT & BRAIN PROTECTION:

Hydrogen-infused water has demonstrated antioxidant properties, potentially protecting cells from damage, including in stroke patients.

Scientific Report | 1

https://pubmed.ncbi.nlm.nih.gov/17486089/ Hydrogen acts as a therapeutic antioxidant by selectively reducing cytotoxic oxygen radicals

Scientific Report | 2

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3694409/ Safety of intravenous administration of hydrogen-enriched fluid in patients with acute cerebral ischemia: initial clinical studies

Scientific Report | 3

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4865993/ A randomized double-blind multi-center trial of hydrogen water for Parkinson's disease: protocol and baseline characteristics

Scientific Report | 4

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10057981/ Therapeutic Inhalation of Hydrogen Gas for Alzheimer's Disease Patients and Subsequent Long-Term Follow-Up as a Disease-Modifying Treatment: An Open Label Pilot Study

Scientific Report | 5

https://pubmed.ncbi.nlm.nih.gov/28669654/ Hydrogen Gas Inhalation Treatment in Acute Cerebral Infarction: A Randomized Controlled Clinical Study on Safety and Neuroprotection

Scientific Report | 6

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6664236/ Effects of Molecular Hydrogen on Methamphetamine- Induced Neurotoxicity and Spatial Memory Impairment

Scientific Report | 7

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6087877/ Hydrogen-Rich Water Ameliorates Autistic-Like Behavioral Abnormalities in Valproic Acid-Treated Adolescent Mice Offspring