

27 SURPRISING HYDROGEN WATER HEALTH BENEFITS:

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Hydrogen water contains hydrogen molecules that can act as powerful antioxidants.

These molecules may help neutralize oxygen free radicals that contribute to disease development, inflammation, and aging.

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What Is Hydrogen Water?

Hydrogen (H₂) is the most abundant molecule in the Universe. It's an odorless, colorless, and tasteless gas. But only in 2007 did a team in Japan discover that inhaled hydrogen gas could act as an antioxidant and protect the brain from free radicals. This sparked the interest in its potential health benefits worldwide and led to some breakthrough research [R, R].

Hydrogen water is loaded with hydrogen molecules. It was formulated as the most practical and easy way to get hydrogen into the whole body. But it's not the only way — hydrogen can also be inhaled, injected, or absorbed through a bath [R]. It's less known that hydrogen was therapeutically used for the first time in humans in the early 90s. It was given to 3 divers to successfully help them overcome the effects of high pressure on the brain in deep-sea diving [R, R].

Hydrogen is the smallest existent gas molecule. Because of this unique property, molecular hydrogen could penetrate into virtually every organ and cell in the body (including the brain) where it may have antioxidant, anti-inflammatory, weight-loss, and anti-allergy activity.

Molecular hydrogen seems like the perfect therapeutic the world has been eagerly searching for —with very few known side effects and such wide-ranging action [R, R].

Many studies, however, are still in the early stages. It will take more clinical research to uncover all the effects of molecular hydrogen in humans.

Hydrogen Water Snapshot

Pros

- Neuroprotective
- Excellent antioxidant
- Anti-inflammatory
- Protects organs
- Lowers cholesterol and blood sugar
- Improves a wide variety of diseases • Is not toxic even at high concentrations

Cons

- Although it has no known side effects, more research is needed to understand the long term effects
- Health Benefits of Hydrogen Water

- 1) **Hydrogen Water is an Antioxidant and Protects the Brain** It was first shown that molecular hydrogen (H₂) could protect from damage by reducing the most toxic reactive oxygen species (ROS) in cells. Inhaled hydrogen also easily reached the brain to reduce injury in rats with stroke [R]. In the first pilot study of 38 stroke patients, a hydrogen solution (IV) was safe and had a mild antioxidant effect [R].

In a small study (DB-RCT) of 17 patients with Parkinson's disease, those who drank hydrogen water had improved symptoms. Those who drank regular "placebo" water, however, experienced a worsening. There were also no adverse effects to drinking 1L of hydrogen water daily for almost one year [R]. No study so far has looked at the effect of hydrogen water alone on Parkinson's Disease, though. In the completed studies, patients drank hydrogen water as an add-on to regular medications (L-Dopa) [R+].

In rats, hydrogen water reduced oxidative stress and prevented Parkinson's Disease. Curiously, hydrogen seems to achieve better results with lower doses. Rats who drank hydrogen water did better than those who constantly received higher amounts of hydrogen intravenously [R].

Hydrogen water prevented cognitive, learning, and memory problems in mice under stress by acting as an antioxidant. It also protected cells in the brain's memory hub — the hippocampus — from the detrimental effects of stress [R]. Hydrogen water could potentially be used to prevent cognitive and stress-induced disorders with more research.

- 2) **Hydrogen Water May Improve Mood Disorders** Hydrogen water restored the natural growth of brain cells in mice. Since this also happens in people who overcome depression (with antidepressants or otherwise), hydrogen water has potential for improving depression and other mood disorders [R,R].
- 3) **Hydrogen Water Suppresses Inflammation** In one pilot study, 20 patients with rheumatoid arthritis drank 0.5 L/day of hydrogen water for 4 weeks. By the end of the study, all patients with early rheumatoid arthritis achieved remission and 20% became symptom-free [R,R]. Molecular hydrogen (H₂) also had anti-inflammatory effects in many animal studies [R,R].
- 4) **Hydrogen Water Reduces Muscle Fatigue and Weakness** In an experiment with 10 young athletes (DB-CT), drinking hydrogen water reduced lactic acid build-up during heavy exercise and decreased muscle fatigue [R]. Drinking 2 L of hydrogen water daily helped 8 cyclists power through sprints with more energy and less exhaustion in one small 2-week study [R]. In a study on mice with a serious muscle-wasting disease (Duchenne muscular dystrophy), hydrogen water prevented abnormal body mass gain and increased the production of the antioxidant glutathione peroxidase. Hydrogen water could potentially improve muscular dystrophy in DMD patients [R].
- 5) **Hydrogen Water May Prevent Metabolic Syndrome.** Hydrogen water reduced fatty liver in mice with type 2 diabetes, obesity, and those fed a high-fat diet. It also boosted energy use and reduced levels of glucose, insulin, and triglycerides [R]. In rats, hydrogen water could prevent hardening of the arteries, atherosclerosis [R]. In a pilot study on patients prone to metabolic syndrome, drinking hydrogen water (1.5 – 2 L/day) for 8 weeks increased in HDL-cholesterol and decreased total cholesterol [R].

- 6) **Hydrogen Water May Boost Weight Loss.** Long-term drinking of hydrogen water helped lose body fat and weight in rats. It boosted burning fats and sugars for energy, without any change in diet. In fact, drinking hydrogen water had similar effects in the body as calorie restriction [R].
- 7) **Hydrogen Water Enhances Energy Metabolism.** Drinking hydrogen water protected the body's energy powerhouse, the mitochondria, in several studies of 41 people with muscle diseases. They drank 0.5-1 L of hydrogen water per day [R]. Drinking hydrogen water also stimulated energy metabolism in mice [R].
- 8) **Hydrogen Water Helps Diabetes.** Drinking hydrogen water decreased cholesterol, improved glucose tolerance and insulin resistance in a study (DB-RCT) of 36 patients with type 2 diabetes or prediabetes (impaired glucose tolerance). The patients drank 900 mL of hydrogen water daily for 8 weeks. This may be a safe and simple way to reduce the risk of type 2 diabetes in those at risk [R].
- 9) **Hydrogen Water May Alkalize the Body.** Metabolic acidosis is when the blood drops and becomes more acidic, which can happen from intense exercise. Drinking 2 L of hydrogen water daily increased the blood pH before and after exercise after 2 weeks with no side effects in a study of 52 healthy, active men (DB-RCT). Hydrogen water was safe and had an alkalizing effect on the blood that can neutralize the post-exercise pH dip [R].
- 10) **Hydrogen Water May Fight Cancer.** So far, only cellular studies point to the potential of hydrogen water for fighting cancer. Hydrogen water combined with increased temperature (hyperthermia) had a strong cancer killing effect in cells [R]. In human cancer cells, hydrogen water suppressed tumor growth by reducing oxidative stress [R]. Hydrogen water also blocked the creation of new blood vessels in human lung cancer cells, preventing cancer spreading and growth [R].
- 11) **Hydrogen Water May Reduce Side Effects of Chemotherapy and Radiation** In one study (RCT) of 49 patients on radiation therapy for liver cancer, drinking hydrogen water (1.5 – 2 L/day) improved the patients' quality of life and appetite. Hydrogen water could reduce oxidative stress and damage from radiation without compromising its cancer killing effects [R]. In mice, drinking hydrogen water increased survival, reduced kidney damage and weight loss from a chemotherapy drug (cisplatin) [R].
- 12) **Hydrogen Water Boosts Skin Health.** Hydrogen water given through an IV solution safely improved skin health in 4 patients with skin redness and inflammation, and pain. The skin redness went away after a couple of days of treatment and did not come back [R]. Bathing in hydrogen water for 3 months noticeably reduced skin wrinkles in 6 people. Hydrogen water could also boost collagen production, reduce UV damage and act as an antioxidant in skin cells. Warm hydrogeninfused baths could be a pleasant, safe way to reverse skin aging
- 13) **Hydrogen Water Enhances Wound Healing** Hydrogen water intake via tube feeding in elderly patients reduced the wound size of pressure ulcers and enhanced recovery [R].
- 14) **Hydrogen Water May Improve Bladder Health** In rats with a blockage in the bladder, drinking hydrogen water reduced bladder volume by neutralizing oxidative stress. It also improved the responsiveness of bladder muscles. As a strong antioxidant, hydrogen water could potentially help those with a bladder obstruction [R].
- 15) **Hydrogen Water May Protect The Heart.** In diabetic mice, hydrogen water significantly improved heart health and prevented heart disease. It could become a nutritional intervention for preventing heart problems in people with diabetes [R].
- 16) **Hydrogen Water May Protect the Eyes.** Hydrogen-loaded eye drops aided the recovery of eye injuries caused by high eye pressure in rats. It protected the nerves in the eye by its antioxidant action [R]. A hydrogen solution reduced detrimental blood vessel growth in mice with eye injuries from chemicals. Hydrogen solutions could be used as a first-aid eye rinse to prevent blindness from chemical burns [R].
- 17) **Hydrogen Water May Prevent Hearing Loss.** Hearing loss often results from oxidative damage (due to aging, noise, or drugs). Molecular hydrogen protected the cells responsible for hearing

from this damage and increased their survival [R]. In guinea pigs, hydrogen water prevented the death of cells responsible for hearing after noise exposure. Hydrogen water could potentially protect against hearing loss caused by noise or other types of oxidative stress [R,R,R].

- 18) **Hydrogen Water May Combat Allergies** Drinking hydrogen water stopped immediate-type allergic reactions in mice. These occur within a couple of minutes and are more characteristic of Th2 dominance. Hydrogen stopped the allergies not only by its antioxidant action, but also by blocking the whole allergic pathway [R]. Hydrogen water is a promising potential remedy for people with allergic, inflammatory conditions like eczema as it seems to balance the immune response.

In mice with eczema, hydrogen water improved symptoms by suppressing inflammation and balancing both Th1 and Th2 responses [R].

- 19) **Hydrogen Water May Protect the Kidneys.** Hydrogen-rich water protected the kidneys from damage in rats. It could reduce oxidative stress, improve kidney blood flow and function (lowering creatinine and BUN) [R+]. Hydrogen added to the dialysis solution reduced inflammation and high blood pressure in 21 patients on dialysis because of kidney failure [R].
- 20) **Hydrogen Water May Protect the Liver.** In 60 patients with Hepatitis B (RCT), drinking hydrogen water as an add-on to regular treatment was safe and reduced oxidative stress [R]. Drinking hydrogen water suppressed liver scarring in mice by protecting liver cells from free-radical damage [R]. Hydrogen water also significantly improved liver function and reduced oxidative stress in patients with chronic hepatitis B [R].
- 21) **Hydrogen Water Could Promote Gut Health.** Hydrogen-rich water prevented damage to the stomach lining in rats by its antioxidant and anti-inflammatory effects. Hydrogen water could potentially protect healthy individuals from gut damage [R,R].
- 22) **Hydrogen Water Could Protect the Lungs.** Rats who drank hydrogen water were protected against lung tissue injury. Hydrogen water reduced inflammation and oxidative stress (by reducing NF- κ B) [R].
- 23) **Hydrogen Water May Protect Against Radiation.** Molecular hydrogen has the potential to be used as a safe radioprotective remedy. Giving mice hydrogen water before radiation increased their survival rates and protected the heart from damage [R]. Hydrogen also increased the survival of white blood cells exposed to radiation [R].
- 24) **Hydrogen Water May Relieve Pain.** Hydrogen water was not better than the placebo in one study (DB-RCT) of 30 patients with painful, inflamed bladder (cystitis). It did help reduce pain in 11% of the patients [R]. Drinking hydrogen water could reduce neuropathic pain in mice due to its well-known anti-inflammatory and antioxidant effects. Clinical trials would need to confirm this success, but hydrogen water holds promise for safely improving otherwise hard-to-treat neuropathic pain [R].
- 25) **Hydrogen Water May Increase Longevity.** The ability of molecular hydrogen to protect the DNA and the mitochondria from oxidative damage may have beneficial effects on chronic diseases and cancer. But perhaps it could help slow down or reverse the aging process itself. A couple of cellular studies give us some interesting clues [R,R]. It was already discovered that hydrogen can prolong the life of stem cells by reducing oxidative stress [R]. A hydrogen-rich environment reduced both oxidative stress and aging in cells. Some scientists think that drinking hydrogen water could increase longevity in humans [R].
- 26) **Hydrogen Water May Kill Bacteria and Improve Oral Health.** Drinking hydrogen water 4-5 X daily improved gum health in 13 patients with inflamed gums after 8 weeks. It also boosted blood antioxidants and enhanced the effects of other gum disease treatments [R]. Hydrogen water could kill the bacteria that most commonly cause gum disease and cavities. It could be used to improve overall oral health [R].
- 27) **Hydrogen Preserves Transplant Organs.** Hydrogen water could help preserve and reduce damage to transplant organs without any toxic effects. It reduced the inflammation and injury that usually happens when donated organs are stored, which could help save more lives [R].

Mechanism of Action and Genetics Hydrogen has the unique capability of entering cells & even tiny structures within The cells (organelles), such as the mitochondria and nucleus (where DNA is stored). Other molecules cannot penetrate this deep into cells [R, R].

Hydrogen water affects various pathways, such as:

- Decreasing inflammatory cytokines (TNF alpha and gamma, IL-6, IL-1 beta, IL-10, IL-12, NF-κB) [R].
- Weakening cancer-causing genes (reducing caspase 3, caspase 12, caspase 8, Bcl-2, BAX) [R, R].
- Increasing the activity of cancer-fighting genes (bFGF, HGF, IFNγ)
- Reducing the activity of inflammation-related genes (i-NOS, VEGF, CCL2, ICAM-1, PGE2) [R].
- Boosting energy metabolism (increasing FGF21) [R].
- Increasing ghrelin, which can also lower inflammation [R].
- Activating detox genes (Nrf2 and heme oxygenase-1) [R]. Where to Get Hydrogen Water As hydrogen water is becoming more popular, you can now find:
 - Hydrogen water in a bottle (around \$3 per bottle)
 - Hydrogen to dissolve in water yourself
 - Small portable hydrogen water makers
 - More sophisticated hydrogen water generators and machines you can use to add hydrogen gas to water in your home

Taking lactulose is another way to naturally increase hydrogen in the body. Although humans can't produce molecular hydrogen, our gut bacteria can. When we take in lactulose, our gut bacteria create large amount of hydrogen. Lactulose increased hydrogen in the body similarly to hydrogen water in a study on 65 healthy people and those with Parkinson's Disease [R].

Safety, Dosage, Side effects

Molecular hydrogen (H₂) has no known side effects. It's not toxic even at high concentrations. In fact, it seems that smaller amounts of molecular hydrogen have a stronger, more beneficial effect than very high amounts [R]. In most clinical studies, people drank 0.5-2 L of hydrogen water daily. After drinking hydrogen water, about 40% of the H₂ is absorbed by the body [R+].

FDA Compliance

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