Hydrogen Therapy Master Class

The healing power of Molecular Hydrogen

With Dr Eric Gordon and Ben Tammetta



H2BioHacker.com



Ben Tammetta

Electrical Engineer & Biohacker

An electrical engineer and homesteading biohacker who built H2Genesys generators so hydrogen therapy can be sustainable, affordable, and accessible.

Making molecular hydrogen something people can actually use every day.

01

Engineer Built

Designed H2Genesys molecular hydrogen generators after researching anti-aging treatments and building his first machine from off the shelf parts from scratch.

02

Mitochondrial Focus

His research highlighted supporting cell mitochondria, and the advantages of molecular hydrogen for long-term energy, repair, and health. He has collected 7 years of data on protocols and treatments using molecular hydrogen

03

Accessible Therapy

Now dedicated to education more people on the benefits on hydrogen therapies and making hydrogen inhalation more accessible and affordable,

Who else here wants to naturally

- ***Increase energy***
- ***Improve sleep***
- ***Decrease Pain***
- ***& Improve brain function***



What is Hydrogen Therapy?

Introducing molecular hydrogen (H2) into the body for faster healing and improved overall health.

1. Drinking



Hydrogen-infused water. Convenient for daily use and on-the-go.

2. Inhaling



Breathing H2 gas. Effective method for quick, systemic benefits.

3. Diffusing (Topical)



Absorption through the skin. Targets localized injuries, inflammation, and skin conditions.

My Background and Mindset



My Perspective & Goal

Scientist & Engineer, not a doctor. Offering a unique 30-year perspective on natural health. **My goal is to increase HEALTHSPAN and quality of life.**



The Challenge of Aging

Declining energy, cognitive function, and increased susceptibility to illness.



Our Shared Desire

Better sleep, sharper minds, faster healing, and more youthful energy.

> They say a healthy person has 1000s of dreams.
> But a sick one has only one:
> To get healthy.

My Story, Experiments with Anti-Aging & Hydrogen



Early Research & Carbon 60

Involved in private longevity groups.

Discovered Carbon 60 (C60) years before it was mainstream.

Made C60 Oil and observed anti-aging effects.



The Hydrogen Connection

Realized C60's power was as a transport for hydrogen.

The Hydrogen itself was the working mechanism.



Trial & Error with H2

Tried H2 water bottles, generators, and tablets with no results.

Maybe it's the dose?





The Breakthrough: Effective Threshold

Built a custom H2 generator for inhalation.

Getting Results!

Turns out:
Effective Threshold

Significant meaningful dose.



From Self-Experiment to Business

Friends, family, and client referrals pushed us into business.



My Personal Experience

JAAM

Energy & Vitality

- More energy, focus, strength, endurance, recovery from exercise
- No more lethargy and brain fog in the morning
- No more needing naps in the afternoon

Pain & Healing

- Healed swollen sprained foot in 24 hours (Bag)
- Healed shoulder after 2 years of immobility and pain (Sleeve)
- Healed Plantar Fasciitis after 20 years of pain (Bag)
- Neuropathy in leg and sciatic pain now gone
- Burns seem to heal faster



Immunity & Well-being

- Stronger immune system. No more colds and flus
- Better digestion and hydration
- Small warts on hands disappear
- Son quickly recovers from fainting of dehydration

Mental & Sleep

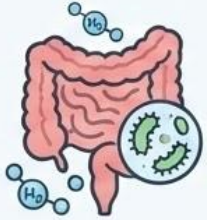
- Mentally sharper and feel smarter
- Better deeper sleep with vivid lucid dreams

Connection between H2 and Health? Characteristics?



1. H2's Natural Interaction

If we get results, then there must be a natural way H2 interacts with the body.



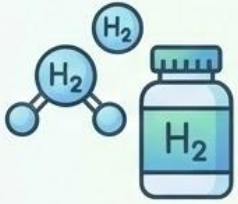
2. Natural Production

Natural to the body. H2 is naturally produced in the body as a result of a healthy gut microbiome. As much as 6–12 liters a day.



3. Common Deficiency

Most people do not have a healthy gut so are at a big disadvantage.

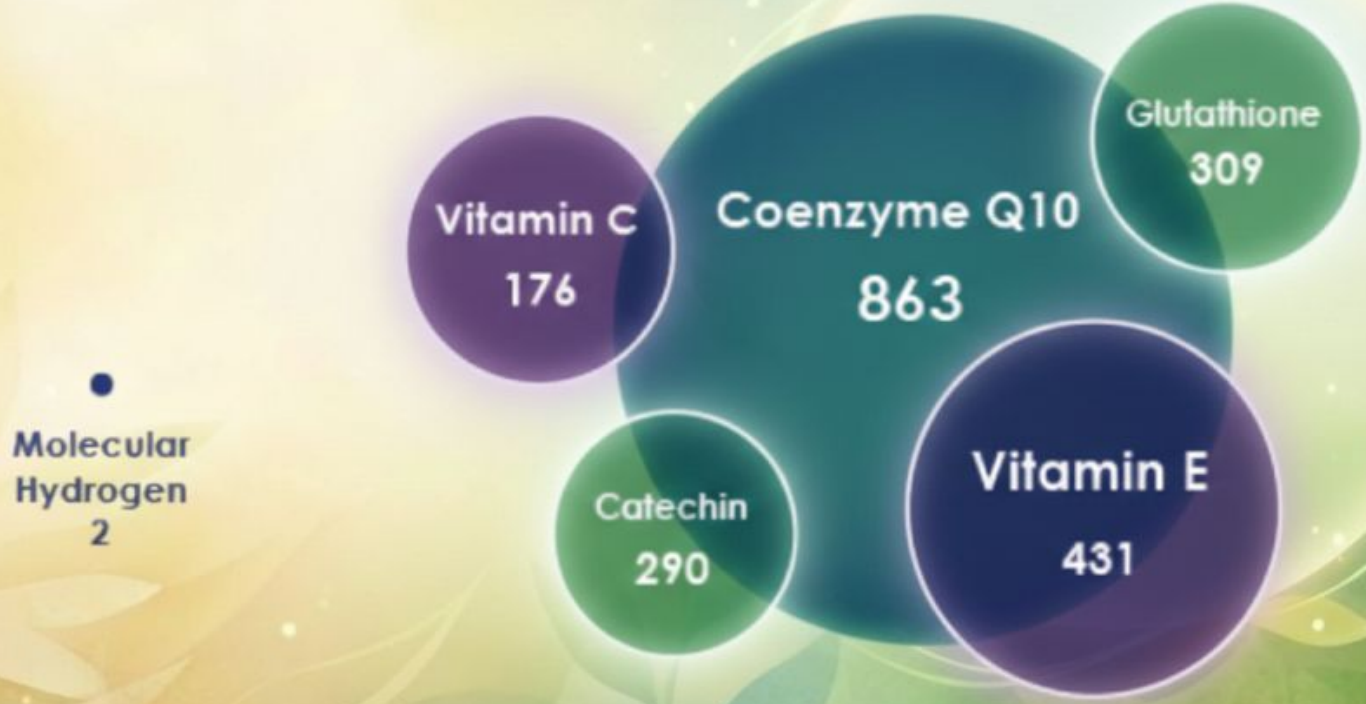


4. H2 as a Supplement

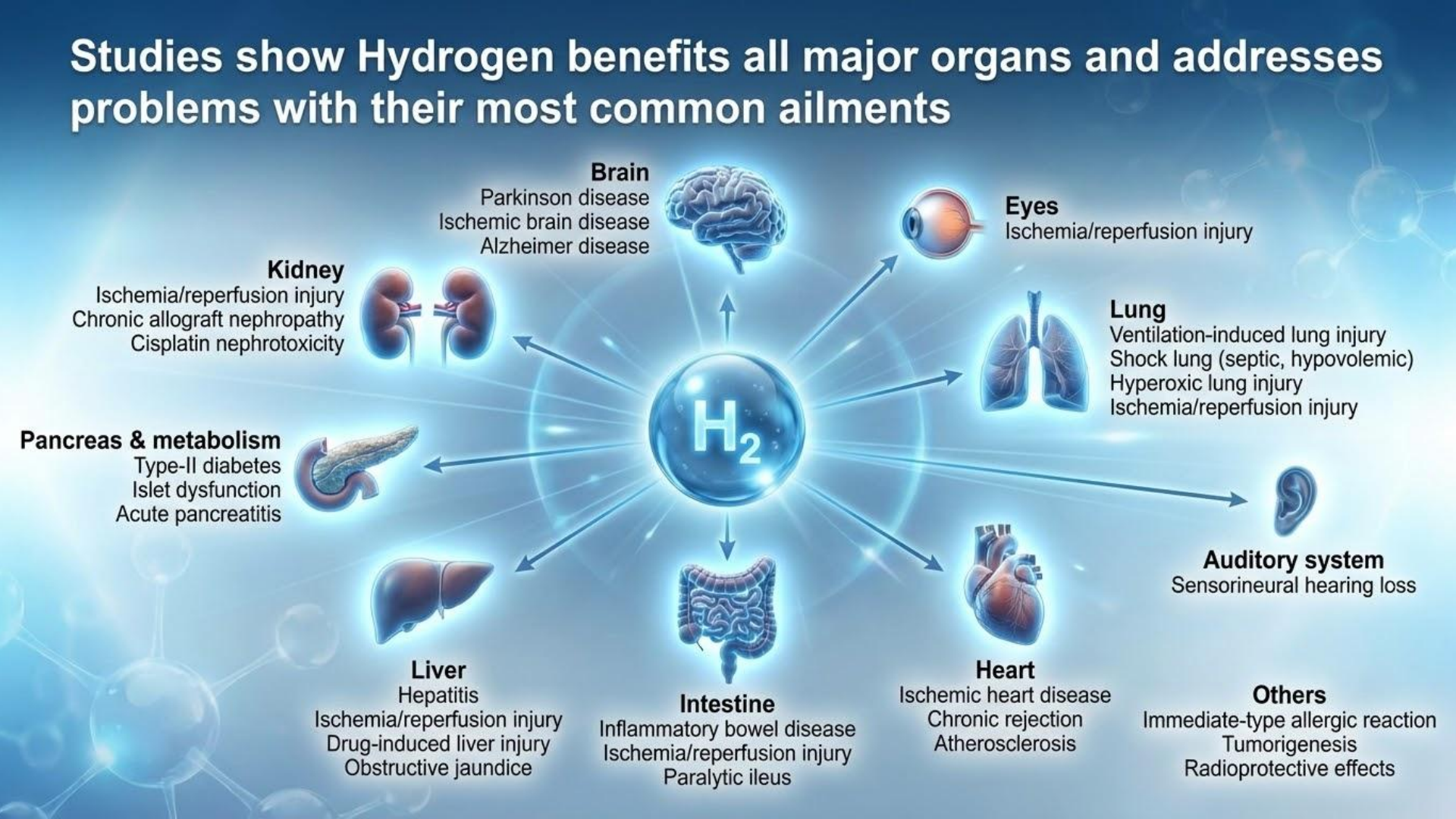
So, if H2 is Natural to the body, correlates with health and longevity... then...

Think of H2 as a supplement or vitamin.

H2 Size & Relative Sizes of other Antioxidants



Studies show Hydrogen benefits all major organs and addresses problems with their most common ailments

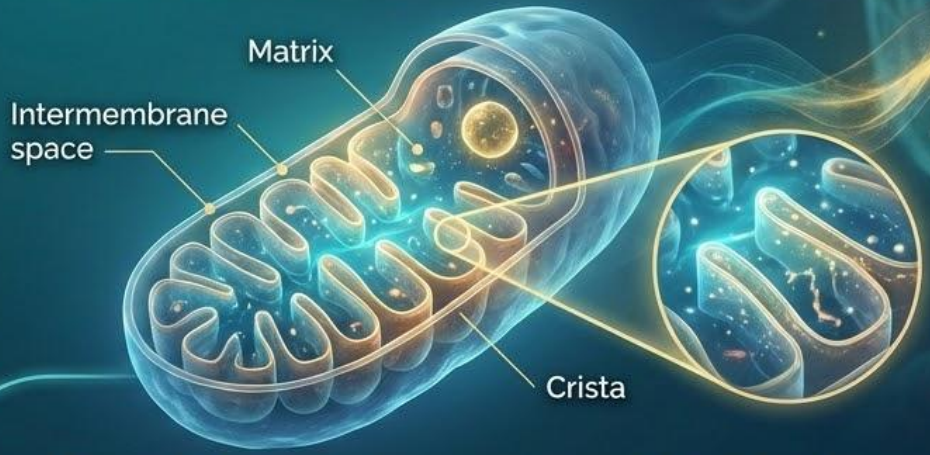


H2 improves Mitochondria ATP Production

Mitochondria: Cellular Powerhouses

- Mitochondria are little organelles inside cells (1000s per cell)
- Produce usable energy for the body as ATP molecules
- H_2 improves the process of ATP production

Inputs: Glucose, Amino Acids, Fatty Acids
O2 and H2
Outputs: ATP, CO2, Water



New Scientific Findings: H2 Mechanisms



H_2 possible consumed in first stage of ATP production (Complex I), serving as both electron & proton donor

(H_2) targets Rieske iron-sulfur protein (RISP) in mitochondrial Complex III, acting as signaling molecule triggering protective cellular response & improved function

New Breakthrough Study Identifies First Molecular Target of Hydrogen in Human Cells

By MHI • December 3, 2025

FOR IMMEDIATE RELEASE

December 2025

ELSEVIER

Redox Biology

Volume 88, December 2025, 103952



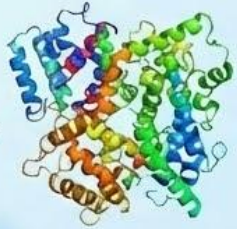
The Rieske iron-sulfur protein is a primary target of molecular hydrogen

Recent 2025 Study Finds…

Hydrogen as a triggering mechanism

Redox Biology
Volume 88, December 2025, 103952

H_2



RISP
(Mitochondria Protein)

Big Discovery & How It Works

- H_2 targets RISP, acts like a messenger
- H_2 attaches to RISP, breaks it down, slows energy-making (~78.5%)
- Creates a small hormetic stressor

Cell's Reaction (UPRmt Repair)

- Kicks off a fix-up process
- Repairs & boosts mitochondria (like a workout)

Solving Puzzles

- Explains initial damage signs leading to long-lasting protection

This Results in:



Stronger and More Mitochondria

by kicking off a repair system that lowers damage from oxidative stress and helps create more resilient mitochondria (mimicking exercise)



Energy Boost

It makes electron movement better which can raise ATP (energy fuel) by up to 50% in some animal tests

Oncotarget
Open Access Impact Journal

▸ Oncotarget. 2017 Sep 21;8(60):102653–102673.

Molecular hydrogen: a preventive and therapeutic medical gas for various diseases

Abstract

Since the 2007 discovery that molecular hydrogen (H_2) has selective antioxidant properties, multiple studies have shown that H_2 has beneficial effects in diverse animal models and human disease. This review discusses H_2 biological effects and potential mechanisms of action in various diseases, including metabolic syndrome, organ injury, and cancer; describes effective H_2 delivery approaches, and summarizes recent progress toward H_2 applications in human medicine. We also discuss remaining questions in H_2 therapy, and conclude with an appeal for a greater role for H_2 in the prevention and treatment of human aliments that are currently major global health burdens. This review makes a case for supporting hydrogen medicine in human disease prevention and therapy.

Summary

- **Selective Anti-Oxidant:** Neutralizes the most harmful free radicals.
- **Anti-Inflammatory:** Lowers body-wide inflammation and oxidative stress.
- **Anti-Apoptosis:** Prevents early cell death, helping revitalize cells.
- **Gene Expression Changes:** Turns on genes for better health.
- **H2 as Gaseous Signal Modulator:** Cuts oxidative stress and inflammation via various pathways.

A Growing Body of Evidence Supporting Hydrogens connection to improvements

Next few slides on studies

Summaries of articles that help make the connection between how hydrogen can potentially improve conditions such as

- **ME/CFS** (Chronic Fatigue Syndrome)
- **Long COVID** & Post-Viral Fatigue
- **Fibromyalgia** & Chronic Pain
- **MCAS** (Mast Cell Activation)

Goal

Demonstrate the sheer quantity and breadth of peer-reviewed papers that exist today.

- Lots of studies noted here but I will only call out **1 or 2** from each slide to keep things moving.
- With the replay, Pause and read more.
- Date & Name: Find full paper.

H2 Studies in Popular Journals - Summaries linking Hydrogen use benefits for Long COVID

1. **2026, All Life (respiratory review).** A review of hydrogen in lung disease summarized that 14 days of hydrogen inhalation in post-COVID rehab improved lung volume capacity and walking distance in both men and women.
2. **2022, International Journal of Environmental Research and Public Health.** In 50 adults still symptomatic 3 to 5 weeks after COVID-19, hydrogen inhalation twice a day for 14 days added about 64 meters to the six-minute walk and improved lung volume capacity compared with placebo.
3. **2023, BMC Infectious Diseases.** In a matched case-control study of ordinary COVID-19, hydrogen and oxygen inhalation raised blood oxygen after five days and shortened hospital stay versus oxygen alone, with higher discharge rates by day 21 and day 28.
4. **2024, Antimicrobial Agents and Chemotherapy.** In the H2 COVID phase I trial, 12 hospitalized patients with moderate COVID-19 inhaled a low-percent hydrogen mix for up to several days; every patient improved clinically and tolerated the gas well.
5. **2020, Journal of Thoracic Disease.** In a multicenter open-label trial, hospitalized COVID-19 patients who inhaled a hydrogen and oxygen mix had faster relief of shortness of breath, chest tightness, cough, and pain within the first two to three days than oxygen alone.
6. **2021 to 2023, Journal of Thoracic Disease and related clinical reports.** Across early hydrogen and oxygen inhalation series in COVID-19 care, patients often reported easier breathing and less chest distress within days, which later rehab trials then tested in people still limited weeks after the infection.
7. **2026, Frontiers in Medicine.** A review of hydrogen-rich water noted that Long COVID shares fatigue, brain fog, and post-effort crashes with ME/CFS, and that the same 14-day hydrogen-water protocol that cut Long COVID fatigue may speak to that shared energy failure.
8. **2026, Terapevticheskii Arkhiv.** In 60 people with post-COVID syndrome, 10 days of inhaled nitric oxide plus molecular hydrogen eased fatigue, cough, and breathlessness and improved quality of life, six-minute walk distance, tiny-vessel blood flow, and oxidative balance better than usual rehab.
9. **2024, Nutrients.** In a randomized trial, 32 people with Long COVID drank hydrogen-rich water for 14 days and had less fatigue, walked farther in six minutes, stood up from a chair more times, and slept better, though shortness of breath did not change.

Summaries linking Hydrogen use to benefits for Myalgic Encephalomyelitis / Chronic Fatigue syndrome (ME/CFS)

1. **2024, Medical Gas Research.** In four people with long-standing ME/CFS who had not improved on other treatments, weeks of hydrogen gas inhalation eased post-exertion crashes, brain fog, headache, body pain, and poor concentration.
2. **2024, Medical Gas Research (same case series).** After 8 to 9 weeks of hydrogen inhalation, three of those patients also reported better sleep, clearer thinking, less sound sensitivity, and less general body pain.
3. **2023 to 2024, Medical Gas Research and related case reports.** In individual ME/CFS patients who inhaled hydrogen for about 90 minutes after activity, intense post-exertion sleepiness that used to last hours resolved faster, and chronic bed-level fatigue eased even when other treatments had failed.
4. **2022, Fatigue: Biomedicine, Health & Behavior.** In a 28-day randomized pilot, 23 people with ME/CFS drank up to five glasses a day of hydrogen-rich water or placebo; the high daily dose did not beat placebo and some hydrogen users stopped because of side effects, pointing later teams toward a lower dose.
5. **2025, Fatigue: Biomedicine, Health & Behavior.** In an 8-week home trial of 39 people with ME/CFS, those drinking hydrogen water improved on fatigue scores and everyday physical function, and they used the water more consistently than the comparison breathing-feedback program.
6. **2026, Frontiers in Medicine.** A mini-review of early ME/CFS trials found that a moderate daily dose of hydrogen-rich water taken for 8 to 16 weeks reduced fatigue and improved physical function, with generally mild side effects.
7. **2026, Frontiers in Medicine.** In a 16-week follow-on comparison, both a steady moderate dose and a later dose increase produced clinically meaningful gains in fatigue and physical function; the steady-dose group also improved on mood scores.
8. **2022, Frontiers in Neuroscience.** A literature review argued that hydrogen may help ME/CFS by protecting cell power plants and mopping up the most damaging oxidative molecules that drive chronic, unrefreshing fatigue.
9. **2022, Frontiers in Neuroscience.** The same review noted that hydrogen water or hydrogen gas had already cut fatigue in animals, racehorses, and healthy people after exercise, which is why researchers then tested it in ME/CFS.
10. **2026, Frontiers in Medicine.** Reviewers highlighted that Long COVID and ME/CFS share leftover oxidative stress, low cellular energy, and post-effort crashes, and that hydrogen-rich water has shown similar early fatigue relief in both groups.

Summaries linking Hydrogen use to benefits for Fibromyalgia

1. **2024, Medical Gas Research (case 4).** An 18-year-old with probable ME/CFS and fibromyalgia who had failed to improve with other care. Proceeded with 8 to 9 weeks of hydrogen inhalation and then saw improvements in headache, body pain, sleep, motivation, and brain fog.
2. **2023–2024, patent US20230158267.** Hydrogen inhalation cases in ME/CFS and/or fibromyalgia reported less fatigue, less body pain, and shorter post-effort crashes, including faster recovery after about 90 minutes of gas.
3. **2024, Medical Gas Research (four-person series).** Hydrogen inhalation also eased post-exertion muscle pain, joint pain, and widespread aches.
   Human, same clinic series, pain that looks like fibromyalgia even when the official label was ME/CFS.
4. **2025, Frontiers in Pain Research.** Review names hydrogen as a candidate for fibromyalgia oxidative stress and weak cell energy, and states human fibromyalgia trials are still missing.
5. **2025, redox / chronic pain scoping review.** Ties fibromyalgia pain to high oxidative-stress markers and lists hydrogen among candidate redox therapies.

Summaries linking Hydrogen use to benefits for Mast Cell Activation Syndrome (MCAS)

MCAS is mast cells dumping histamine and other mediators too easily. Not so many human studies but several papers show hydrogen calming mast-cell firing, cutting allergy signals, or improving related human conditions.

2020, QJM. In 10 asthma and 10 COPD patients, a single 45-minute hydrogen inhalation lowered several airway and blood inflammatory messengers, including ones tied to allergic inflammation.

2023, Pharmaceuticals. A review argued that mast cells are a direct tissue target of molecular hydrogen, which can lower their migration and secretory activity and quiet the inflammatory molecules they release.

2009, Biochemical and Biophysical Research Communications. Hydrogen-rich water stopped an immediate allergic reaction in mice, and in lab mast cells it blocked the allergy-receptor switch that makes those cells dump their contents.

2013, Experimental Neurology. After brain bleeding in mice, hydrogen inhalation reduced mast-cell buildup and degranulation, lowered release of mast-cell tryptase, and protected the blood-brain barrier.

2024, International Journal of Molecular Sciences. In rats with lung injury, inhaled hydrogen reduced the number of tryptase-positive mast cells in the lungs and eased the fibrotic, inflamed tissue environment those cells help create.

2024, Journal of Inflammation Research. People with allergic rhinitis who inhaled hydrogen had better nose-symptom scores and lower blood allergy signals, including eosinophils and IgE, with no reported adverse reactions.

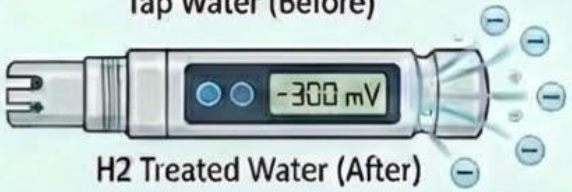
The Power of Negative Ions & Molecular Hydrogen



Oxidation Reduction Potential (ORP)



Tap Water (Before)



H2 Treated Water (After)



Cellular & Systemic Health Benefits

- Reduces Stress & Promotes Mental Well-being
- Boosts Immunity & Strengthens Cell Functions
- Improves Sleep Quality & Cognitive Performance
- Improves blood flow and circulation

Blood Cells under dark field microscope

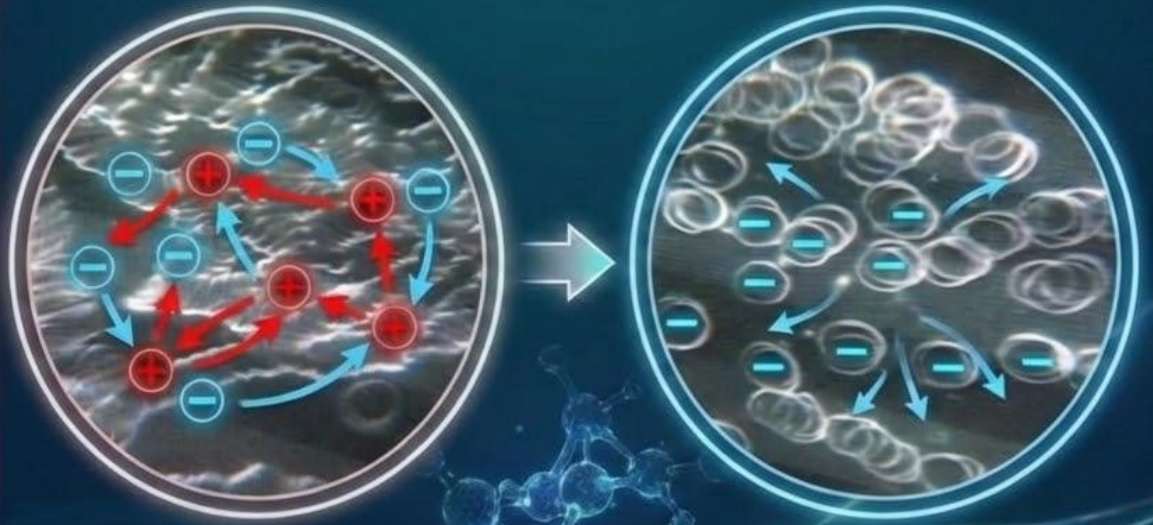
Before breathing Hydrogen

20 Minutes after breathing Hydrogen

Blood cells damaged by toxins in food, environment or due to normal aging lose ability to maintain a normal healthy negative charge. Unhealthy blood cells are positively charged.

Blood Cell are naturally negatively charged.

Like charged blood cells bounce off each other greatly aiding in blood circulation allowing increased nutrient delivery and waste removal.



Opposite charges attract

Like charges repel

H2Biohacker.com

Nailfold Microscope

- Used to monitor real-time effects of hydrogen inhalation
- Noted an increase in velocity in movement of blood cells
- In various persons, we witnessed less clumping of cells and more free individual cells

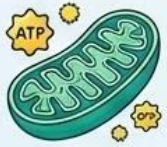


Summarizing: Connecting the science with our experiences

1. More Energy

Notice: Less fatigue, better sleep, increased energy, performance, and recovery.

HOW: H2 interacts with Mitochondria to efficiently produce ATP energy with less Reactive Oxygen Species (ROS).



2. Inflammation Reduction

Notice: Reduction in inflammatory conditions like arthritis and joint pain.

HOW: Reduces many forms of Oxidative Stress (less ROS), which are associated with age-related diseases.



3. Improved Circulation

Notice: Glowing complexion, reduced wrinkles, warmer extremities, and improved blood flow (observed in Live Blood Analysis).

Why: Breathing H2 provides negative ions, restoring natural negative cell charge and improving blood flow.



4. Improved Brain Function

Notice: Mental sharpness, improved memory, clear mind, productivity, better sleep, vivid dreams, and reduced brain fog. Improvements in symptoms of conditions like Alzheimer's and Parkinson's.

Why: Neuroprotective: Protects and improves neural functions; promotes neurogenesis.

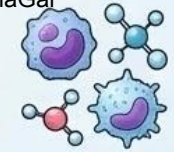


5. Faster Healing

Notice: Less prone to colds/flu and faster recovery.

Why: Immunity: Boosts the body's natural production of glutathione (the master antioxidant).

Modulate Immune System Response. Allergies AlphaGal



Four Healing Secrets of Hydrogen Revealed!

Is hydrogen previously associated with health benefits?



1. Sacred Healing Waters around the world



2. Why High Fiber Diets are healthy



3. Why Alkaline Water has benefits



4. The secret of long lived Japanese Centenarians

H2 Secret #1: Secret healing waters from around the world

THE SECRET: HIGH AMOUNTS OF MOLECULAR HYDROGEN FOUND IN ALL CASES.



LOURDES, FRANCE

Confirmed healing cases, water found rich in molecular hydrogen.



HUNZA, PAKISTAN

Known for longevity, glacial water has some of the highest hydrogen levels.



TLACOTE, MEXICO

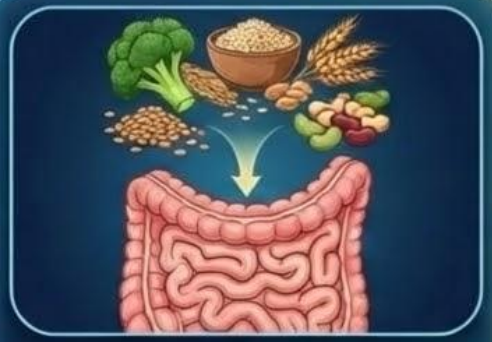
Millions of visitors, medical confirmations, water rich in molecular hydrogen.



NORDENAU, GERMANY

Hundreds of confirmed healing reports, water rich in molecular hydrogen.

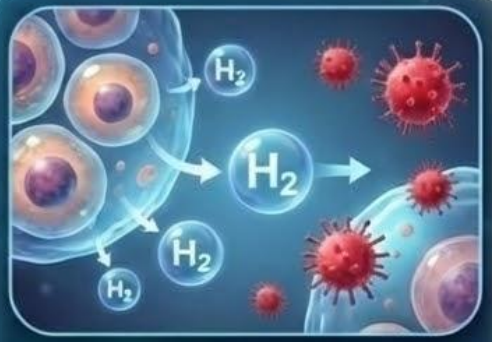
Secret #2: Why a diet rich in fiber reduces the risk of cancer



DIET HIGH IN FIBER:
Reduces risk of some cancers.



GUT BACTERIA & HYDROGEN:
Bacteria eat fiber producing hydrogen as a byproduct.



H_2 REDUCES CANCER RISKS:
It's the abundance of hydrogen, not the fiber itself.

HYDROGEN IS THE WORKING MECHANISM

Secret #3: Why alkaline water treatment systems have benefits.

ALKALINE WATER MACHINES



Uses electrolysis to treat tap water. Claims benefits when used fresh.

THE MYSTERY & THE CLUE

The "Hmm" Factors



Hydrogen dissipates quickly

Remains alkaline for days.

The Electrolysis Link



Electrolysis produces Molecular Hydrogen (H_2).

THE HARM & THE TRUTH

Potential Harm



Very alkaline water can be harmful.

The Real Benefit

Benefits are likely from Hydrogen content.



CONCLUSION: BENEFITS COME FROM HYDROGEN, NOT ALKALINITY.

Secret #4: Long-lived Japanese Centenarians



Hydrogen measured in the breath **4x higher** in persons over **100 years** old.

Japanese centenarians have increased concentrations of hydrogen gas in their breath



CONCLUSION: HYDROGEN IS LINKED TO LIVING LONGER & HEALTHIER LIVES.

Key Takeaways: The Power of Molecular Hydrogen Therapy

Proven Mechanisms



Shown how and why it works, jumpstarting healing by supporting all major body systems holistically.

Safe, Natural & Easy



A gentle, effective therapy that fits easily into your daily routine.

Research-Backed Results



Positive outcomes for our clients are supported by scientific studies.

Next Steps & Exclusive Offer



Our Expert Knowledge Base: Protocols developed from feedback from 1000s of clients.



H2BioHacker.com: Visit for details. Don’t miss the special offer for attendees!

New 2026 Model
H2Genesys HB1000



Performance

1000 ml/min total gas
H_2 660 ml/min, O_2 330 ml/min
Proton Exchange Membrane
Platinum/Titanium electrodes

Near-Zero Maintenance

Add & flush with distilled water

Flexible Usage

2-person inhalation
External treatments
Diffuse H_2 into drinking water

Lifetime Engineering

Designed for decades
Compact & lightweight (10 lbs)

Smart Controls

- Intuitive touch controls
- Voice confirmation
- Adjustable gas output from 200–1000 ml/min
- Continuous or Pulse H2 Mode (senses breathe. Pulses H2 with inhales)
- Sleep Mode that minimizes lighting
- Session timer from 1 to 6 hours

Bag



Sleeve



H2BioHacker Difference

	H2BioHacker
	Personal service. We talk to most clients and recommend protocols based on their unique needs
	Fair pricing
	We don’ t sell lots of products. Only what works.
	Engineering & Science background
	Grown organically: Started by Healing self, than sharing my story
	Service first oriented family business
	Lots of practical experience with applications
	We build and repair in our own workshop
	60 day money back guarantee
	1 year parts and labor
	Quick swap out if can't easily fix over the phone

JUMPSTART YOUR HEALTH WITH MOLECULAR HYDROGEN

SPECIAL PRICE: $2,995 Savings Over $700+

SPECIAL EXCLUSIVE OFFER

- Previous Sales Price: ~~$3,295~~
- Additional $300 off
- Bonus 1: Free USA Shipping (Savings $100)
- Bonus 2: FREE Bag & Sleeve Combo ($50 Savings)
- Value Over: $3700



RISK-FREE GUARANTEE

- **60-Day "Feel the Difference" Guarantee:** If you don't notice the benefits after 2 months, return it for a full refund.
- **1-Year White-Glove Warranty:** Parts and labor included with instant replacement support.

ORDER NOW: H2BioHacker.com

Free 30-minute consultations available from our website.


H2Biohacker
H2Genesys HB1000
TODAY'S SPECIAL
$2,995
$700+ savings
Using Special Coupon
KINFOLK

The End

H2 Studies in Popular Journals - Summary and findings linking …. UPDATING THIS PAGE SHORTLY

1. **2025, Nutrition and Health.** A review of hydrogen as a brain performance aid found reports of better focus, alertness, and memory in healthy adults and in neurodegenerative disease.
2. **2018, Current Alzheimer Research.** In a year-long randomized trial, 73 people with mild memory loss drank hydrogen-rich water daily; those with the common genetic risk factor for Alzheimer's improved on thinking scores and word recall.
3. **2024, CNS Neuroscience & Therapeutics.** Hydrogen inhalation rebuilt the brain's energy machinery — mitochondria fused instead of fragmenting, new mitochondria were also created. and mitochondria energy production increased. Recognition memory improved.
4. **2023, Antioxidants.** In a 4-week inhalation study of 54 everyday adults, hydrogen gas lowered oxidative stress and improved blood markers tied to dementia risk, including Alzheimer's-related proteins, a brain-growth factor, and inflammation signals.
5. **2023, Pharmaceuticals.** In an Alzheimer's pilot, 8 patients inhaled 3% hydrogen gas for one hour twice daily for six months; thinking and memory scores improved by 4.1 points while untreated patients declined. In addition brain scans showed healthier nerve pathways in the memory center.
6. **2025, CNS Neuroscience & Therapeutics.** In a follow-on infection-related brain study, high-concentration hydrogen recycled damaged mitochondria, silenced the inflammation alarm those leaks trigger, and reduced the sticky brain protein linked to Alzheimer's-type damage.
7. **2023, eClinical Medicine.** In the HYBRID II trial, 73 comatose cardiac-arrest patients received 2% hydrogen in oxygen for 18 hours, raising 90-day survival from 61% to 85% and doubling the share who recovered with no lasting brain disability.
8. **2024, Frontiers in Neurology.** In a randomized brain-tumor surgery trial, hydrogen inhalation around the operation left patients with less brain swelling before discharge than oxygen alone.
9. **2025, European Journal of Medical Research.** In a lab model of infection-related brain injury, inhaling 2% hydrogen lifted 7-day survival from 50% to 75% and restored memory by recycling damaged cell power plants and lowering inflammatory messenger chemicals.
10. **2025, International Journal of Molecular Sciences.** In an Alzheimer's lab model, 60 days of 3% hydrogen gas protected memory and cut inflammation and toxic waste chemicals in the memory center.

H2 Studies in Popular Journals - Summarizing findings linking …. UPDATING THIS PAGE SHORTLY

1. **2025, Biomedicines.** In a randomized, double-blind trial, 10 people with ulcerative colitis inhaled hydrogen gas for 4 hours a day for 8 weeks; stool tests showed a clearer shift toward a more diverse gut microbiome than air alone, with no inhalation-related side effects.
2. **2025, International Immunopharmacology.** In a colitis lab model, inhaled hydrogen cut back disease-linked gut bacteria, boosted helpful bacteria, thickened the gut's mucus lining, tightened the gut wall so it leaked less, and quieted inflammatory signaling.
3. **2025, Letters in Drug Design & Discovery.** A systematic review of hydrogen-rich water found repeated reports of richer gut-bacteria variety, more helpful species, fewer trouble-making species, and lower gut inflammation signals in both human and animal studies.
4. **2023, Antioxidants.** In a randomized trial, 73 people with early blood-sugar problems drank 1 liter of hydrogen-rich water daily for 8 weeks and showed a healthier mix of gut bacteria plus modest improvement in metabolic imbalance.
5. **2024, International Journal of Medical Sciences.** In a 4-week pilot of 30 people with chronic illness, oral hydrogen supplements lowered scores in daily inflammation blood tests and eased fatigue and problematic joint conditions
6. **2023, Nutrition.** In overweight adults who drank hydrogen-rich water for 12 weeks, stool levels of propionic acid — a helpful fat made by good gut bacteria that calms inflammation — rose compared with tap water.
7. **2024, Nutrition.** In aging mice on a high-fat diet, molecular hydrogen eased small-intestine injury and shifted the gut community away from a fat-and-age imbalance toward a more favorable bacterial mix.
8. **2021, Medical Gas Research.** In a double-blind randomized trial, drinking hydrogen-containing alkaline water for 2 weeks increased Bifidobacterium — a well-known friendly gut species — and moved stool consistency toward a normal, well-formed pattern.
9. **2026, Life Sciences.** In an artery-disease lab model, hydrogen-rich water remodeled the gut microbiome, raised propionic acid, and those gut changes were required for the anti-inflammatory benefit — when the gut bacteria were wiped out, the protection disappeared.
10. **2024, Advances in Biochemistry in Health and Disease.** A review on hydrogen-rich water in inflammatory bowel disease concluded that hydrogen can calm gut inflammation, support the gut lining, and help manage an unbalanced microbiome, making it a candidate add-on for IBD care.

Clinical & Real-World Studies

Over thousands of studies link molecular hydrogen directly to therapeutic health benefits

Real-World Case:A local physician in Costa Rica successfully utilizes hydrogen inhalation therapy as a supportive treatment for her cancer patients.

2019 • COLORECTAL CANCER

Oncology Reports

Clinical trial combining hydrogen gas inhalation with chemotherapy.

- **Key Outcome:** Significantly enhanced overall and progression-free survival.
- **Mechanism:** Hydrogen reversed imbalances in T-cells to improve prognosis.
- **Protocol:** Self-administered 3 hours daily at home, demonstrating strong real-world feasibility.

2020 • LUNG CANCER

Oncology Letters

Trial evaluating hydrogen inhalation combined with standard care.

- **Survival Boost:** Median survival remarkably extended from **9 months to 28 months**.
- **Mechanism:** Active coenzyme Q10 restoration to restore vital T-cell count.
- **Immunity:** Strongly reinforced the body's natural defense against cancer cells.

2020 • ADVANCED THERAPY

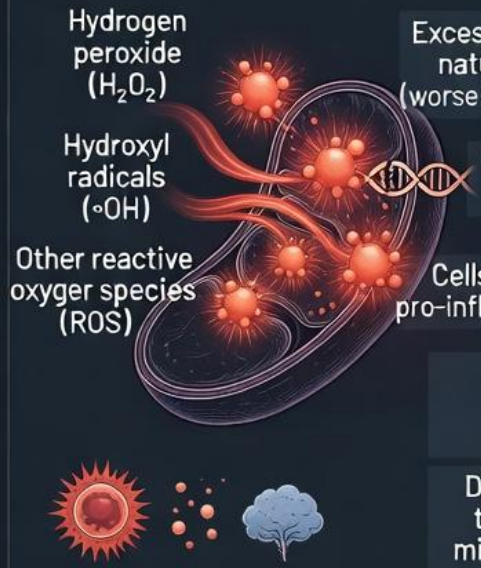
Medical Gas Research

Study on managing progression and mitigating severe treatment side effects.

- **Progression:** Progression-free survival increased from **4.4 to over 8 months**.
- **Relief:** Patients reported heavily reduced disease symptoms.
- **Tolerability:** Highly effective at diminishing severe drug-related side effects.

Molecular Hydrogen vs. the ROS-Inflammation-Cancer Cascade

Without Molecular Hydrogen (H_2)



Excess ROS overwhelms natural antioxidants (worse with aging or stress)

↓

Oxidative DNA damage

↓

Cells age and release pro-inflammatory cytokines

↓

Chronic inflammation cascade

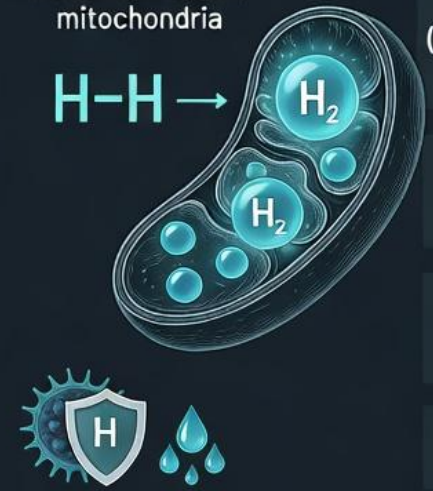
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DNA mutations + tumor-favoring microenvironment

Accelerated tissue breakdown, cancer growth & age-related deterioration

With Molecular Hydrogen (H_2)

H_2 acts as a selective antioxidant inside mitochondria



Neutralizes the most reactive ROS (especially ·OH) into water (H_2O)

↓

Prevents oxidative DNA damage

↓

Stops release of pro-inflammatory cytokines

↓

Reduces chronic inflammation

Potential protection against cancer progression and age-related deterioration

ROS are normal byproducts of ATP production. When excess ROS are not neutralized, they drive the oxidative stress → inflammation → cancer loop. H_2 selectively scavenges the most damaging radicals at the mitochondrial source.

Summary of anti-cancer effects of molecular hydrogen (H2) in 5 human clinical trials.

1. In a study on colorectal cancer, 55 patients with stage 4 cancer inhaled molecular hydrogen gas for three months. This stopped progression of the cancer and improved overall survival, likely by recovering CD8-positive T cells.
2. A lung cancer trial with 42 patients inhaled hydrogen gas for up to 60 months, leading to longer overall survival through increased coenzyme Q10 levels.
3. In a trial covering lung, liver, pancreatic, and other advanced cancers, 82 patients at stage 3 and 4 inhaled hydrogen gas for at least three months, achieving complete or partial remissions with a 57.5 percent disease control rate.
4. Another lung cancer study with 48 patients used hydrogen gas inhalation for five months, either alone or with anticancer drugs, extending progression-free survival.
5. Finally, a short study on 20 people with lung cancer showed that breathing in hydrogen gas for two weeks helped improve their body's immune defenses and how their immune system adapts to fight off cancer threats.

- Bottom line in all these studies. H2 reduces the progression of cancer and extends life and health span