Hydrogen Water
the Ultimate Guide

H2CAP

HYDROGEN WATER IS NOW

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What is Hydrogen Water?

Hydrogen Water is a clean drinking water enriched with a therapeutic concentration of molecular Hydrogen.

This means that the smallest molecules in the Universe - Hydrogen molecules - are added into the water by different means of processing it.

Hydrogen molecules have extreme health benefits when they enter the body, due to their unique anti-oxidative and anti-inflammatory chemical properties.

It no longer surprises scientist and the medical community that Hydrogen Water users experience seemingly unbelievable health benefits.

The main reason behind the benefits is that oxidation and inflammation processes in the body, being the root causes of around 85% of diseases, are greatly reduced when consuming Hydrogen in its molecular form.

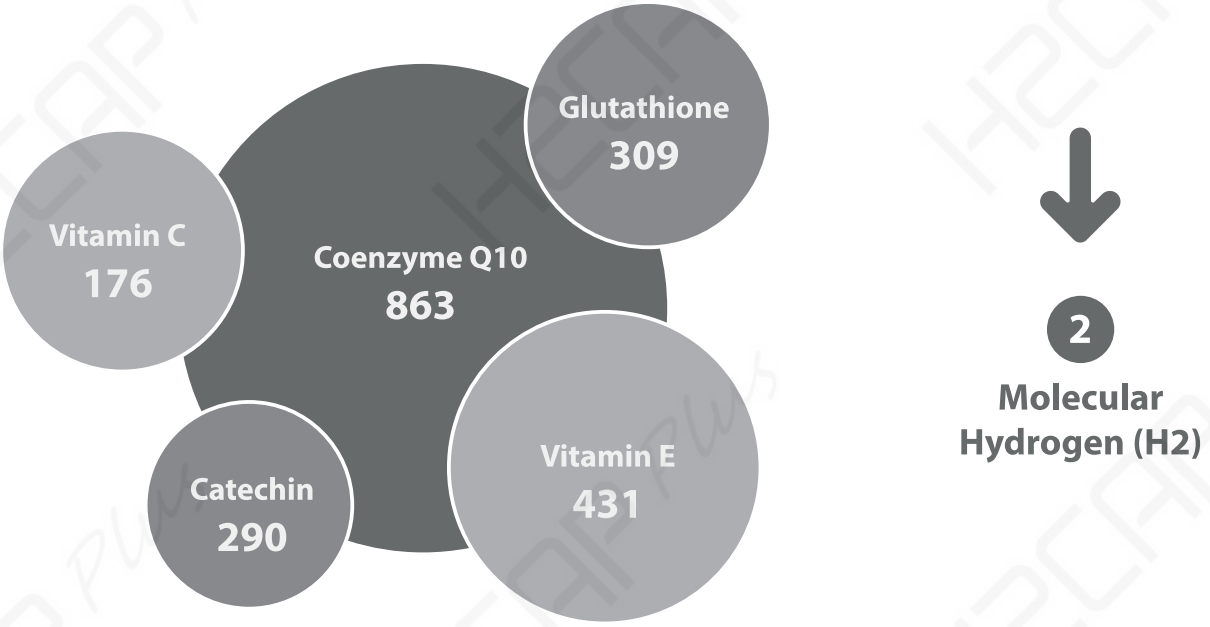
Over 700 medical research have been conducted throughout the US, Japan, China, Russia and Europe on this topic and scientists keep discovering more and more evidence of the positive effects of Hydrogen Water on the body.

Even though the first studies of the therapeutic effects of molecular Hydrogen began in the mid 70s, the researchers have been becoming increasingly interested in the topic. Now it's only a matter of time when the knowledge becomes widespread and we might see large changes in the daily usage of drinking water in the future, as long as pharmacy giants do not suppress the knowledge.

The molecular hydrogen found in the Hydrogen Water is the greatest antioxidant due to its unique physical and chemical properties. Here's why:

1. Small size

Molecular Hydrogen water(H2) is the smallest antioxidant in existence. Other antioxidants such as Vitamin C or Vitamin E are very large molecules compared to Hydrogen and need to go through your digestive tract, absorbed in your intestines, travel through your blood, and enter into your cells before they can eliminate free radicals.



H2 is so small that it can penetrate through your stomach lining to begin acting inside your cells immediately. H2 is also in a gaseous state, so it basically floats through your cells (rapid diffusion) and performs its function as an antioxidant undeterred by the normal mechanisms that prevent other antioxidants from moving freely through the body. H2 can also cross the Blood-Brain-Barrier easily due to it's small size whereas other antioxidants have a difficult time getting through or can't get through at all.

The brain is highly susceptible to oxidative stress because it consumes 20% of the oxygen you breathe despite only being 2% of your body's weight. So it's very important to protect your brain with antioxidants since it's especially vulnerable.

2. Selectivity

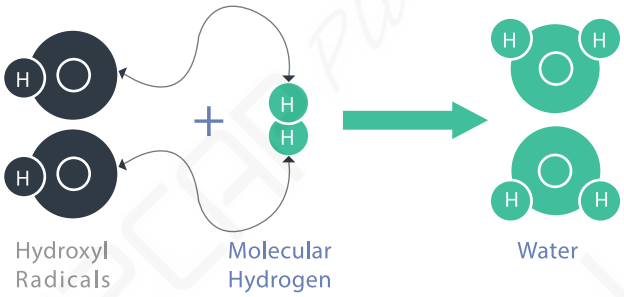
H2 is selective and targets only harmful radicals. This is a key benefit because H2 only eliminates the harmful free radicals but does not directly affect useful free radicals such as hydrogen peroxide or nitric oxide. Hydrogen peroxide is used by the immune cells to kill bacteria, and nitric oxide is a signaling molecule that helps open and close blood vessels that divert blood to different areas of the body.

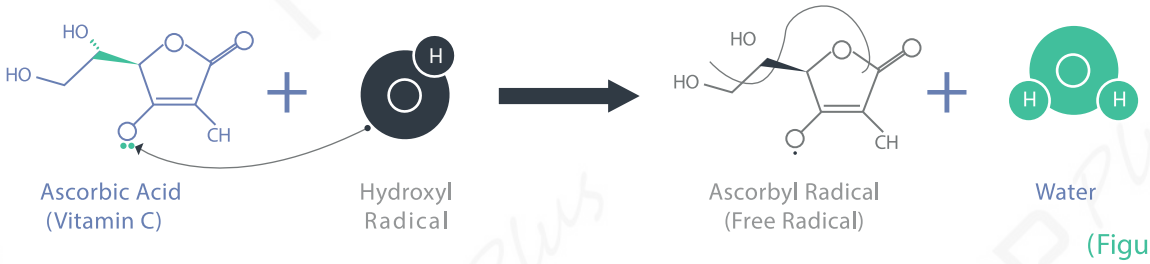
Other antioxidants are not selective but rather neutralize any free radical in their vicinity. Non-selective free radical elimination may disrupt the balance of free radicals to antioxidants inside the cells leading to a negative effect on your body.

3. Zero Toxicity

Each molecule of H2 can convert two hydroxyl radicals into water, hydrating your cells in the process (Figure 1). Therefore, even at high concentrations, Hydrogen has zero toxicity. Any excess H2 simply gets released from the body.

(Figure 1)





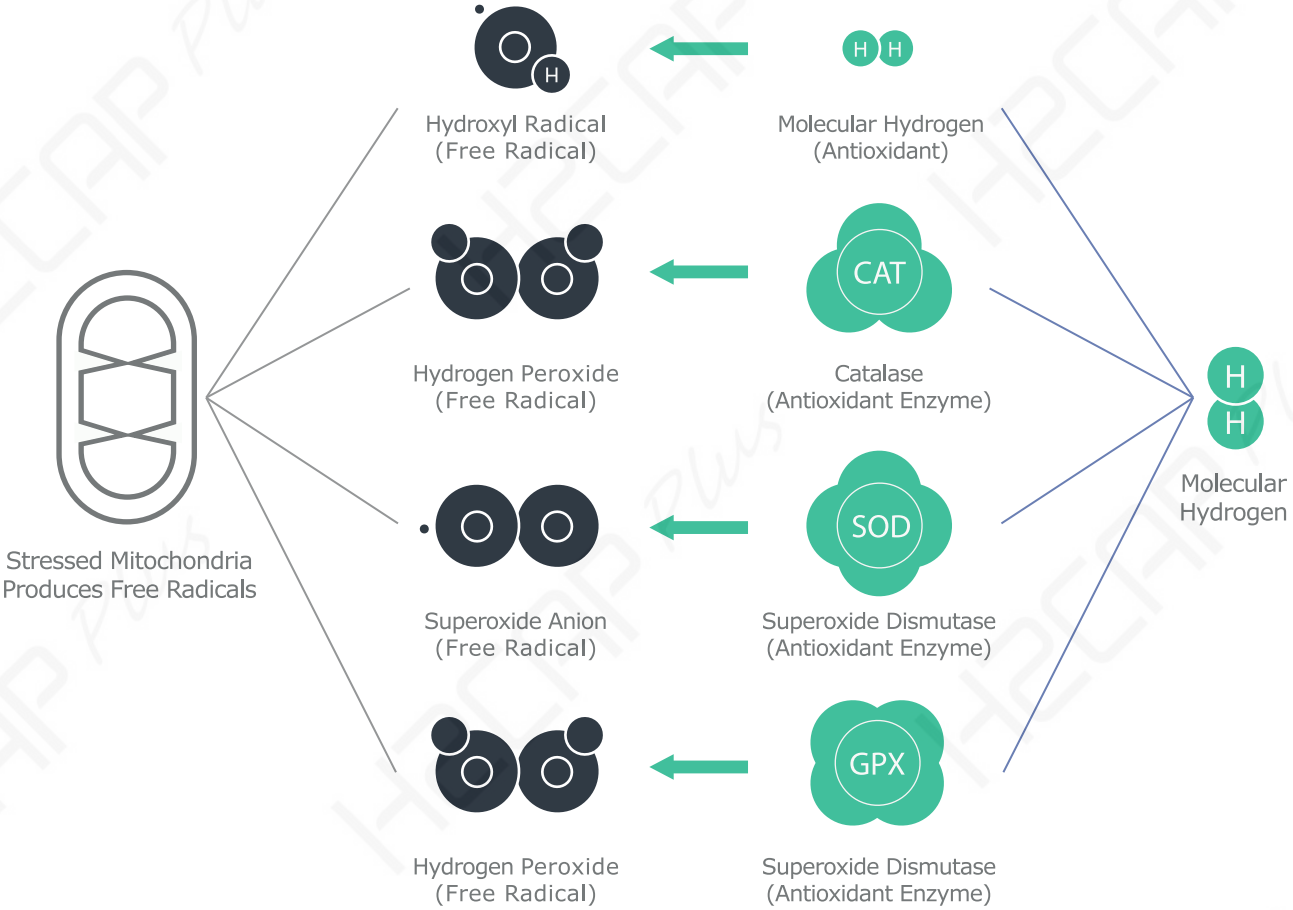
(Figure 2)

Other antioxidants become weak free radicals themselves after neutralizing free radicals. For example, Ascorbic Acid (Vitamin C) becomes an Ascorbyl Radical (Figure 2).

4. Synergy

H2 not only neutralizes hydroxyl radicals directly, it helps enhance your antioxidant enzymes such as glutathione peroxidase, superoxide dismutase, and catalase.

Each specific antioxidant enzyme and molecular hydrogen itself take care of different types of free radicals. All of these antioxidants work together to ensure there are no excess free radicals that can cause oxidative stress damage inside your cells.



As shown in the figure above, H2 is able to support your antioxidant enzymes and directly eliminate the most dangerous hydroxyl radicals. H2 offers full protection against free radicals without disrupting the balance of free radicals and antioxidants inside your cells.

Molecular Hydrogen is clearly superior to all other antioxidant supplements due to these four reasons.

Science Backed

Hydrogen Water Benefits

Let's get to the point, how does Hydrogen Water actually can benefit You?
Let's start from the general benefits that apply to all, no matter in what state your health is or what lifestyle you lead. This list will be interesting to you, as long as you take your health seriously. Each benefit is backed by scientific research, links to which you will find after each statement.

Hydrogen Water Benefits For Everyone

1. Hydrogen Water Improves Mood Disorders

In healthy individuals, aging, job stress, and cognitive load over several hours induce increases in oxidative stress, suggesting that preventing the accumulation of oxidative stress caused by daily stress and daily work contributes to maintaining quality of life (QOL) and ameliorating the effects of aging.

Hydrogen has antioxidant activity and can prevent inflammation, and may thus contribute to improving quality of life. A study aimed to investigate the effects of drinking hydrogen water on the QOL of adult volunteers using psychophysiological tests, including questionnaires and tests of autonomic nerve function and cognitive function.

The results suggest that Hydrogen Water may reinforce quality of life through effects that increase central nervous system functions involving mood, anxiety, and autonomic nerve function.

2. Hydrogen Water Suppresses Inflammation

A research on patients with rheumatoid arthritis, the main cause of which is inflammation in joints, drinking Hydrogen Water showed great results in hydrogen water acting as an inflammation suppressor. H2 is an inert gas present within the human body and is not classified as a medicine, but it has been shown to have therapeutic and diagnostic potential for rheumatoid arthritis as discussed in the research. The preventive effect of H2 may be shown by those populations who drink the high hydrogen water daily. H2 therapy has tremendous potential, but is currently under-utilized and its benefits are not thoroughly explored.

3. Hydrogen Water is an Antioxidant and Prevents Brain Damage

Traumatic brain injury (TBI) in its various forms has emerged as a major problem for modern society. Acute TBI can transform into a chronic condition and be a risk factor for neurodegenerative diseases such as Alzheimer's and Parkinson's diseases, through induction of oxidative stress and neuro-inflammation.

4. Hydrogen Water Suppresses the Growth of Cancer Cells

The properties and effects of neutral pH hydrogen water (NHE water) on tumor cells were examined. Hydrogen water diminished hydroxyl radicals, caused cancer tumor growth inhibition, and cancer cell degeneration. Hydrogen Water was shown to achieve tumor-preferential growth inhibition and tumor invasion together with scavenging of intracellular oxidants, and is expected as a preventive material against tumor progression and invasion.

5. Hydrogen Water Reduces Side Effects of Cancer Treatments

The consumption of Hydrogen Water for 6 weeks reduced reactive oxygen metabolites in the blood and maintained blood oxidation potential. Quality of life scores during radiotherapy were significantly improved in patients treated with Hydrogen Water compared to patients receiving placebo water. Consumption of Hydrogen Water reduces the biological reaction to radiation-induced oxidative stress without compromising anti-tumor effects.

6. Hydrogen Water Protects the Eye

Immediate antioxidant therapy with H2-enriched irrigation solution is a new potent treatment of angiogenesis in cornea to prevent blindness caused by alkali burn.

7. Hydrogen Water Promotes Gut Health

Hydrogen is able to prevent aspirin-induced injury to the gastric mucosa through a mechanism, which is in part contributed by the anti-oxidant and anti-inflammatory activities. Therefore, hydrogen therapy might be safe and effective in the prevention of the stomach injury.

8. Hydrogen Water is Radio-protective

It is suggested that Hydrogen has a potential as an effective and safe radio-protective agent. Hydrogen can protect gastrointestinal endotelium from radiation-induced injury. Different chemicals inducing the damage of radiation has been shown to be suppressed via usage of Hydrogen Water.

9. Hydrogen Water is Antibacterial and Promotes Oral Health

There are estimated to be about 700 species of bacteria in the oral cavity. Some of these strains have been proposed as the pathogens responsible for oral diseases such as dental caries, gingivitis and periodontitis. Hydrogen water showed antibacterial activity against all four health-damaging bacterial strains in comparison with tap-water. A conclusion from this was made that hydrogen water may have a positive impact on oral hygiene by helping to remove cariogenic bacteria and periodontopathogens.

Also, drinking Hydrogen Water was shown to improve gum disease condition. An increased serum level of total antioxidant capacity at four weeks was noticed. Drinking Hydrogen Water enhanced the effects of non-surgical periodontal treatment, thus improving periodontitis.

10. Hydrogen Water Protects the Liver

It was concluded that Hydrogen Water protects liver cells from injury by scavenging hydroxyl radicals (OH) and thereby suppresses the damage made by the free radicals.

11. Hydrogen Water Protects the Lungs

Hydrogen water consumption has a protective effect against lung tissue injury by suppressing inflammation and oxidative stress. Hydrogen water consumption ameliorated one lung ventilation induced lung injury, and it may exert its protective role by its anti-inflammation, antioxidation.

12. Hydrogen Water Protects The Heart

Treatment with hydrogen molecule attenuated cardiac dysfunction in streptozotocininduced type 1 diabetic organism. Molecular hydrogen could thus be envisaged as a nutritional countermeasure for diabetic cardiomyopathy.

13. Hydrogen Water Reduces Muscle Fatigue, Motor Deficits, and Muscle Degeneration

In an experiment with young athletes, drinking Hydrogen water reduced lactic acid build-up during heavy exercise and decreased muscle fatigue.
It was also found that Hydrogen water can potentially improve muscular dystrophy and help gain muscle mass.

Hydrogen Water Benefits For People Who Are Into Healthy And Active Living As Well As Sports

14. Hydrogen Water Helps with Weight Loss

A Long-term research concluded that drinking Hydrogen water controlled body fat and weight, despite no change in food and water intake.
Another research found that consuming Hydrogen water suppressed body-weight gain and reduced plasma glucose and triglyceride levels.

15. Hydrogen Water Enhances Mitochondrial Function = More Energy

Clinical studies have shown that drinking hydrogen water directly protects the mitochondria and improves the outcome of mitochondrial disorders. Drinking hydrogen water also stimulates energy metabolism (as measured by oxygen consumption and CO2 production).
Active and people into sports experience better recovery after workouts and higher energy levels in their daily life.

16. Hydrogen-Rich Water Improves Fat and Glucose Metabolism

Intake of hydrogen-rich water was associated with significant decrease in the levels of modified low-density lipoprotein (LDL) cholesterol.
Hydrogen water intake was also associated with a trend of decreased serum concentrations of oxidized LDL and free fatty acids, and increased plasma levels of adiponectin and extracellular-superoxide dismutase which regulate the metabolism.

17. Hydrogen Water Treats Metabolic Acidosis

Metabolic acidosis is a condition characterized by an increase in blood acidity, which can be exacerbated with exercise.
A study in healthy physically active males found that a daily intake of hydrogen water for 14 days increased the pH of the blood before and after exercise with no side effects.
The study concluded that drinking hydrogen water is safe and may have an alkalizing effect in the blood.

Hydrogen Water Benefits For People Who Are Suffering From Health Problems

18. Hydrogen Water Treats Diabetes

A clinical trial in patients with type 2 diabetes and impaired glucose tolerance showed that drinking hydrogen water (900 mL) for 8 weeks decreased cholesterol, normalized glucose tolerance and improved insulin resistance in a majority of the treated patients.

19. Hydrogen Water Prevents Metabolic Syndrome

Metabolic syndrome is characterized by cardiometabolic risk factors that include obesity, insulin resistance, hypertension and dyslipidemia. Oxidative stress is known to play a major role in the pathogenesis of metabolic syndrome.

Metabolic syndrome contributes to Cardiovascular Disease, High Blood Pressure, Blurred Vision, Diabetes and other health problems.

Consumption of Hydrogen Water demonstrated improvement in the levels of oxidative stress markers associated with metabolic syndrome and boosted the body's antioxidant activity. Hydrogen water represents a potentially novel therapeutic and preventive strategy for the treatment of metabolic syndrome.

20. Hydrogen Water Enhances Wound Healing

A research conducted shows Hydrogen water intake reduced the wound size of pressure ulcers and enhanced recovery in elderly patients.

Author's comment: From my experience, I've seen reduction in scars and redness of them fading. Our customers have reported that their wounds would heal very quickly compared to when they didn't drink Hydrogen water.

21. Hydrogen Water Limits Damage of Transplant Organs

For those had undergone transplantation surgeries: Hydrogen water reduces the damage of a variety of organs during transplantation.

22. Hydrogen Water Improves Bladder Dysfunctions

In a study with a bladder obstruction, drinking hydrogen water significantly suppressed bladder weight increase due to damage and oxidative stress. Also, hydrogen water reversed the decreased responses to muscles and electric field stimulation.
These results suggest that hydrogen water could help patients with a bladder obstruction by decreasing oxidative stress.

23. Hydrogen Water Prevents Hearing Loss

Molecular hydrogen protects auditory hair cells from oxidative damage.
Another study found that Hydrogen-rich saline and water prevented the death of cochlear hair cells after noise exposure, indicating that hydrogen water may protect against noise-induced hearing loss.

24. Hydrogen Water Combats Allergy

Drinking hydrogen water eliminated an immediate-type allergic reaction.
Atopic dermatitis (AD) is an allergic inflammatory skin disorder characterized by red, scaly rashes on the skin. Hydrogen water was able to improve symptoms by suppressing inflammation.

25. Hydrogen Water Ameliorates Kidney Disease

A study found that Hydrogen water was able to improve kidney dysfunction from toxic damage by reducing oxidative stress and chemical waste products.
Drinking hydrogen water also reduced inflammation and blood pressure in hemodialysis patients (patients with kidney problems).

26. Hydrogen Water Relieves Pain

The ability of molecular hydrogen to protect nuclear DNA and the mitochondria from oxidative damage is thought to have beneficial effects on chronic diseases like cancer and the aging process. H2 treatment delayed the replicative lifespan of bone marrow stem cells by reducing oxidative stress. When human umbilical vein endothelial cells (HUVECs) were grown in a hydrogen medium, both oxidative stress and cellular aging were suppressed. The study concluded that drinking hydrogen water may increase longevity in humans.

27. Hydrogen Water Boosts Skin Health

Hydrogen water administered intravenously (into the vein) to patients with acute erythematous skin diseases caused the erythema (redness) and associated symptoms to significantly improve.

Hydrogen Water Anti-Aging Effects

28. Hydrogen Water Fights Oxidative Stress

Protecting against Oxidative Stress is the most important part when we talk about how Hydrogen Water improves quality of life when aging. Hydrogen Water protects the body against free radical attacks, which cause oxidative stress, thus age-related diseases are very unlikely to occur to a person drinking Hydrogen Water daily.

Oxidative stress is involved in age-related inflammatory reactions throughout the body and cause a huge variety of aging problems.
Molecular hydrogen is a novel antioxidant that can reduce oxidative stress. Therefore, drinking hydrogen water suppresses age-related oxidative stress and inflammatory reactions as a research on the Hydrogen Water impact on aging of periodontal tissues shows.

29. Hydrogen Water Prolongs Lifespan

The study concluded that drinking Hydrogen Water may increase longevity in humans. Hydrogen Water has long-lasting antioxidant and anti-aging effects on vascular endothelial cells, even after a short exposure to H2.
Hydrogen water may thus be a functional drink that increases longevity.

30. Hydrogen Water Fights Damage to the Skin

Hydrogen water reduces human skin cell damage from ultraviolet (UV) rays, which come from the sunlight, in large quantities promotes skin cancer and the death of the skin cells.

31. Hydrogen Water Reduces Wrinkles

Bathing in Hydrogen water for 3 months significantly improved wrinkles in the skin in a human study. Thus, Hydrogen water may serve as daily skin care to repress skin damages by scavenging reactive oxygen species and promotion of type-I collagen synthesis in the skin.

The 3 Methods Of Transporting

Molecular Hydrogen To Your Body

So, now that you are aware of the benefits the Molecular Hydrogen can bring to your body, you're probably asking yourself: "How can I get the Molecular Hydrogen into my body and reap the benefits of it?".
Here you'll find all the methods of getting Hydrogen to your cells there are and learn why drinking hydrogen water is the best one.

1. Inhaling Hydrogen Gas

The application of molecular hydrogen via inhalation has shown great benefit in the scientific literature, as it allows larger amounts of H2 gas to enter the bloodstream to be readily distributed throughout the body.

How Hydrogen Gas For Inhalation Is Produced

Hydrogen inhalation uses the process of water electrolysis to produce molecular hydrogen and then mixes the hydrogen gas (H2) with oxygen (O2).

Most of these devices keep the hydrogen concentration under 4 percent. This ensures the safety of the person receiving treatment, as molecular hydrogen is noncombustible under 4 percent.

Pros of inhaling Hydrogen gas:

- Safe and works well with professional machinery.
- H2 is quickly absorbed via lungs.

Cons of inhaling Hydrogen gas:

- Very expensive. Inhalation machinery starts from ~$2,500 and requires costly maintenance.
- Takes a lot of time: 30-60 minutes a day staying in one place at home and breathing to receive the molecular hydrogen dosage.
- Not portable - only home or hospital usage.
- Impractical and inconvenient for a regular, active person.

2. Injecting Hydrogen Saline (or putting into the eyes) for getting Molecular Hydrogen into the body

Putting Hydrogen Saline Into The Eyes

Molecular hydrogen appears to be therapeutic for multiple eye diseases (cataract, glaucoma, etc). This method enhances saline solution for the eye with molecular hydrogen. This method is simple and practical for researching molecular hydrogen's therapeutic effect for the eye.

Injecting Hydrogen Saline Intravenously

This method showed great results within the scientific literature and is seen used in a clinical and medical setting, such as hospitals.
However, it requires medical supervision and the major set-back is the "intravenous" part. Anyways, who likes needles being put into their body?

Intraperitoneal Injection

This is yet another way of getting the Molecular Hydrogen into your body via a NEEDLE. In this case the needle is put not into your vein but into your abdominal cavity and the hydrogen enriched saline is injected.

How Hydrogen Saline Is Produced

The results suggest that Hydrogen Water may reinforce quality of life through effects that increase central nervous system functions involving mood, anxiety, and autonomic nerve function.

Pros of using Hydrogen Saline:

- Showed great results in clinical studies.
- Quick H2 absorption through the bloodstream or the eye.
- Can be used locally for better effect in a specific part of the body.

Cons of using Hydrogen Saline:

- Requires medical supervision.
- Requires hospital setting.
- Injected via NEEDLES.
- Inconvenient and uncomfortable for regular life.

3. Using Hydrogen Water to transport Molecular Hydrogen into the body

Drinking Hydrogen Water

Hydrogen water is water infused with molecular hydrogen. In research studies, it has been demonstrated that hydrogen infused water containing a dissolved hydrogen concentration of 500-1600 ppb is therapeutic for human consumption.

This method requires infusing water with Hydrogen gas by various means such as using electrical or chemical reactions with the water after which simply drinking the water.

Water that's infused with Hydrogen feels lighter and smoother to drink. It's the most practical, natural and convenient method of getting H2 into your body.

Taking A Hydrogen Water Bath

Hydrogen baths are used mainly for topical purposes to administer molecular hydrogen to the body via the skin. Since molecular hydrogen has the highest diffusion rate out of any molecule it is perfect for topical application. Research studies have demonstrated this method to be therapeutic for multiple skin disorders.

Pros of using Hydrogen Water:

- Non-invasive method.
- The most affordable method.
- Drinking hydrogen water is simple.
- The most researched of the methods.
- Can be used for skin disorders topically.
- Convenient and practical method of getting Molecular Hydrogen to the body.
- Zero toxicity

Cons of using Hydrogen Water:
Many low quality / false claim products on the market.

Conclusion: Which Method Of Transporting Hydrogen To The Body Is The Best?
Even quick evaluation of Pros and Cons of each method clearly shows that Drinking and Bathing in Hydrogen Water is the winning method.
It's with the therapeutic concentration Hydrogen Water that majority of studies were conducted to prove the positive effects on the body. The main reason behind it being the affordability and convenience.
Drinking Hydrogen water is the most cost-effective and easiest method. In the end, who likes needles being inserted into their bodies or overpaying $2500?

The 6 Types Of

Hydrogen Water Products Compared

Now that we know the best method for getting Molecular Hydrogen to the body is via Hydrogen Water, let's look at products on the market that can actually produce the Hydrogen Water. There are 6 main types of hydrogen water producing products each of which we will evaluate and compare.

Introduction

The Hydrogen Water market has been growing steadily for the last few years. Even though you may find many products on the market claiming they'd provide all the benefits of hydrogen water, be cautious.

Firstly, there are many false claim products on the market. As the market is in its early stages, many things are still misunderstood even by resellers and some products can actually harm you.

Secondly, you should know that some options are more cost effective than others.

On the following pages we will compare the products on the market and help you understand each of them. On later pages you will find out what PEM/SPE technology is and why it is important. Let's get started.

1. Hydrogen Infusion Machines (with PEM)

These stationary home units use a special membrane called a Nafion membrane or PEM (proton exchange membrane).
The units are specifically designed for producing and dissolving molecular hydrogen into highlyfiltered water.

★★★

Pricing	Pros	Cons
$1,500 - $2,500+	Designed specifically for making pure Hydrogen Water	Large initial cost
	Have PEM technology: removes Ozone, Chlorine and other contaminants	Expensive maintenance
	High H2 PPB concentration	Requires regular electrolysis plate replacement
	Great for sharing and using at home	Not portable (can't be used at work, while traveling etc.)
	Neutral pH	Require installation at home
	Negative ORP values	Require regular filter replacement
	Makes therapeutic concentration hydrogen water	
	Have filters that clean the water	

Please note: Do not confuse these units with Alkaline water ionizers. These units are new generation and made specifically to producing Hydrogen Water and do not alter the pH of the water unlike the water ionizers. In general, alkaline water ionizers do infuse water with Hydrogen, however, they were not designed for this function, thus their effectiveness and concentration (PPB) of Hydrogen is much lower. Think of Hydrogen Water devices as upgraded ionizers. Water ionizers were the reason benefits of Hydrogen Water are understood.

2. H2CAP: Portable Hydrogen Water Generator (with Platinum PEM)

H2CAP, the smallest and most long-lasting hydrogen generator, produces and dissolves H2 into drinking water. H2CAP can generate neutral pH hydrogen-rich water via electrolysis. They are convenient and can produce hydrogen water within 3 mins and 30 seconds.

The world's 1st 9-layered cross-mesh Platinum Titanium Plates and Platinum PEM (both patented) of H2CAP makes water of high hydrogen concentration from 1,000-1,500 PPB in the shortest period of time for up to 24 hours. This water has strong reducing power with ORP(oxidation reduction potential) of -400~-800mV. Unlike other hydrogen generators/devices, H2CAP doesn't have batteries because it runs via USB port. More efficient and higher quality than other generators even with or without PEM technology.

★★★★★

Pricing	Pros	Cons
$250	Negative ORP values, -400~800mV	Many low quality products on the market
	Easy to use at work, while traveling and doing sports	
	Runs via USB port	
	Compatible with any bottle with the bottleneck size of 28 and 30mm.	
	Makes powerful and long-lasting concentration hydrogen water for up to 24 hours with patented PEM and plates	
	No O3 (ozone) emission	
	High H2 PPB(1,000~1,500ppb) concentration	
	With PEM technology 100% complete separation of H2 from water	
	Only safe materials used: Stainless steel, Non-toxic elastomer and Tritan	
	Easy to maintain - clean with the Descaler when it automatically alarms after using 30 times. (Depends on the water quality.)	
	Provide DH test-kit for customers to test hydrogen value	
	Certified by JHPA for generating rich hydrogen in water.	
	53 grams - The smallest and most compact size	

Low quality bottles without PEM/SPE Technology

3. Portable Hydrogen Water Bottles (without PEM) a.k.a Portable water ionizers

Simpler and less advanced than bottles with PEM technology. Portable water bottles without PEM technology produce and dissolve H2 (and other byproducts present in the water) into drinking water via electrolysis. Work like ionizers, not specifically designed H2 generators. These devices generate alkaline or acidic pH hydrogen water depending on the water. They are convenient and can produce hydrogen water within 5 to 10 mins.

The main disadvantage is the lack of PEM technology which removes Chlorine, Ozone, and Oxygen from water as well as lower molecular hydrogen concentration and oxidation reduction potential (ORP). Less efficient than bottles with PEM.

Pricing	Pros	Cons
$100 - $150+	Negative ORP Values	Create altered pH water depending on the water
	Makes hydrogen rich water	Requires filtered water to be used (no PEM)
	Portable	Many fake claims products on the market
		Many low quality products on the market
		Charge every 7-8 times
		Lower hydrogen concentration
		May leave contaminants in the water
		Cheap and low quality products are dangerous to health

4. Hydrogen Water Tablets

These supplements use elemental magnesium to produce molecular hydrogen. These metals are called alkali metals; they naturally react with water to produce molecular hydrogen. These tablets can be ingested or dropped into water to produce hydrogen rich water.

They are a great way of producing higher concentrations of dissolved hydrogen in water, or to drink hydrogen water on the go. However, there are downsides such as costs – one bottle of tablets costs around $80, and contains around 60 tablets.

If you want to truly experience benefits of hydrogen water, you must drink it consistently around 6 times a day. This is comes down to around $240/month. While you could purchase PEM Hydrogen water bottle that would last for 5 years for the same price as tablets cost per month!

Pricing	Pros	Cons
$80 - $60 tablets.	Create hydrogen rich water	More expensive than hydrogen water bottles for the regular use
	Makes hydrogen rich water	Recurring purchase needed
	Portable	Many false claim products on the market
		May leave contaminants in the water

5. Hydrogen Water Sticks

These are like hydrogen tablets, they utilize elemental magnesium to produce molecular hydrogen in drinking water.
However, hydrogen magnesium sticks need consistent maintenance to ensure its ability to produce the therapeutic concentration of dissolved molecular hydrogen in water.
They claim to produce hydrogen in water by simply putting them in. The chemicals (alkali metals) inside then react with water and bubble the Hydrogen gas into the water. They really are the cheapest and worth products on the market.

Majority of them simply don't work, and those that do work, are very low quality and are quickly thrown off. It's a waste of money, really.

Pricing	Pros	Cons
From $70	Portable	Many false claim products on the market
	Small size	Short life span
		Alters pH of water
		May leave contaminants in the water
		Low hydrogen concentration
		Low quality products can harm you

Why Choose H2CAP Hydrogen Water Generator

Thank you for getting this far, you're the champ!
Now you're familiar not only with benefits, methods of getting hydrogen to your body, but also what products there are on the market. In this section we will explain to you why Hydrogen Water bottles are the most cost-effective and convenient option if you need Hydrogen Water in your life and why you should choose H2CAP.

Firstly, let's do some math

Now, that you are familiar with options of producing hydrogen water, which one is the most efficient and logical product to buy for everyday use?

Through researching many products on the market, combining cons and pros and experiencing them firsthandedly, we've come to the conclusion: the most convenient, efficient and easy to use product is portable Hydrogen Water unit with PEM/SPE technology.

The portable unit is the best option for everyday use due to its mobility and long lifespan. That's the reason why we concentrate and sell only this product- it's simply the best. H2CAP Plus - Hydrogen Water Generator - is also the smartest investment of all the products. Let's do the math to prove the point.

Let's compare Hydrogen Water Tablets at the first glance being on the "cheaper side" of the product spectrum to Hydrogen Water Bottles.

Hydrogen Tablets math:
Let's say you drink hydrogen water 6 times a day. (recommended)
This results in consuming 6 tablets a day.
The lifespan of a tablets is 10 days in this case (60 tabs / 6 times a day = 10 days).
Tablets price on the market: ~ $80 / 60 tabs
A price of 1 tablet is $80 / 60 = $1.34
That's $1.34 per one use of the product.
And here's the cost of using tablets by day, month and year.
6 x $1.34 = $8 / day = $240/ month = **$2880/year!**

Now, let's do the same math for H2CAP with PEM:
In this case let's assume you also drink hydrogen water 6 times a day.
This results in 6 uses of the bottle a day.
The lifespan of H2CAP is 10 years.
* Note that the life expectancy of 10 years of the Platinum PEM is when it is assumed that the generator is used 10 times a day.
The life span of Platinum PEM is two times longer than that of normal PEM.
The price of the generator is $250
This means the generator will cost you around $250/10 years = $25 / year.
Now here's how many times you would use the generator in a year if you drank everyday 6 times a day.
6 uses / day x 30 days x 12 months = 2160 uses / year
And here's the price of one use
$25 / 2160 uses = $0.011. That's less than 2 cents / glass of H2CAP hydrogen water compared to $1.34 of hydrogen water tablets! (continues on the next page)

And here's the cost of using H2CAP by day, month and year if you use it 6 times a day:

0.011 / use = $0.07 / day = $2 / month = **$25/year !**

Let's put the results in the table for a clear understanding:

Product	Cost	Daily uses (recommended)	Lifespan	Cost per year	Cost per month	Cost per day	Cost per use
H2CAP	$250	6	10 Years Ionfarm's Platinum PEM	$25	$2	$0.07	$0.011
Tablets	$80	6	10 days	$2,880	$240	$8	$1.34

Conclusion:

H2CAP - Hydrogen Water Generator with Platinum PEM technology is cheaper than Hydrogen Tablets in the long term by 115 times!

Try doing similar math with other products and you'll have no doubts H2CAP is the best investment of them all.

Part 1

What is PEM/SPE Technology?

Hydrogen water products that use SPE technology and electrolysis plate, have PEM (proton exchange membrane), so they produce pure and safe hydrogen rich water, without by products such as Ozone, Chlorine and other Oxides.

In fact, hydrogen water products that do not have PEM technology may result in a reverse effect than you expect. It may not produce antioxidant water with negative ORP values, but even more oxidative water than regular tap water. Low quality products often do exactly opposite than what they claim and can harm your health.

Look at the image below and you'll understand why PEM/SPE Technology is a must in your Hydrogen water bottle.

The difference between bottles with PEM/SPE Technology and ordinary bottles and how the electrodes look

PEM / SPE technology with proton-exchange membrane

1. Water Enrichment with pure H2 with out by-products (O2, O3, Cl2), regardless of water quality.
2. Removal of oxygen (O2) from the water.
3. Production of H2 does not depend on the amount of minerals in the water.
4. It is possible to use distilled water or water obtained by reverse osmosis.
5. High concentration of H2 (More than 1,000ppb)
6. Long service life of electrode.

Ordinary electrolysis

1. Water Enrichment not only with H2, but also with possible by-products of electrolysis (O2, O3, Cl2), if not 100% pure water is used.
2. There is no oxygen removal.
3. Production of H2 depends on thepres ence of minerals in the water.
4. It is necessary to use drinking water with a high concentration of minerals.
5. A small concentration of H2 (less than 800ppb)
6. Short service life of the electrode.

Part 2

What is PEM/SPE Technology?

Proton Exchange Membrane Diagram is the heart of the H2CAP electrolytic cell is the proton exchange membrane (PEM) with solid polymer electrolyte (SPE), a very different type of membrane from that used in a standard alkaline ionizer. Here is a description of the components, and an overview of the chemistry involved in the production of H2 gas:

- Water at the anode provides source of H+ ions.
- PEM permits migration of H+ ions from anolyte to cathode.
- At cathode, H+ ions combine with electrons from the power supply (reduction reaction) to form H atoms which pair-up to form H2 gas.
- Oxygen gas produced at the anode (through oxidation of hydroxide) must be vented (alternatively, chlorine gas may be produced instead of oxygen, depending on source water chloride levels).

PEM contains an electrolyte (SPE, solid polymer electrolyte, an electrical conductor), and therefore electrolysis is not dependent on source water minerals.

Lower electrical resistance between anode & cathode results in less voltage drop and more efficient electrolytic production of H2.

Because pH of the drinking water is not raised, this design does not encourage the precipitation of calcium which greatly reduces the degree of limescale buildup within the system.

As a result, devices with PEM technology create pure, safe and highly potent Hydrogen Rich Water, last longer and in general are better quality products, unlike products without PEM technology.

Why H2CAP Plus again?

The H2CAP is very simple to use:

Step 1 Pour in water
Step 2 Connect it to any electronic devices via a USB port (3 mins and 30 seconds)
Step 3 Drink the healthiest water and feel the immense health benefits of Hydrogen Water!

Health, Style and Effectiveness Combined

Latest technology, sophisticated design, smart investment and immense long term health benefits is what you get ordering H2CAP, a hydrogen water generator.

The H2CAP combines the patented platinum PEM technology and cross-mesh type of platinum titanium electrolysis plates for the best PPB results and longevity of the product. We offer this generator having a firm belief it is the #1 product on the market.

Additionally:

- Long life span (About 10 years)
- High Hydrogen concentration PPB 1,000-1,500
- Strongest oxidation reduction potential (ORP): -400 ~ -800mV!
- Includes 1 year warranty!
- Descalers, DH test-kit and other accessories are provided

Hydrogen Water is NOW

Dear reader,

Hydrogen Water is the innovation we've all waited for too long, and this time has come. The seemingly unbelievable health benefits is what hydrogen-rich water users are experiencing TODAY.

Whether you have health problems, want to step up your active lifestyle, or would like to feel and be younger, you need this.

At Ionfarms we aspire to form long lasting relationship with you, thus we go great lengths to satisfy you and be as helpful as we can.

Should you have any questions at all, we will be more than happy to answer them, just contact us on our website **h2cap.com**

We hope you have a pleasurable experience with H2CAP!

Visit h2cap.com
For more than 1000 scientific researches and clinical trials related to molecular hydrogen water.