



Higen e-book by KYK

ON

MOLECULAR HYDROGEN

This E-book is an informative medium with the sole purpose of enlightening the readers on the health benefits of the subject matter and not a substitute for medical checkups. Consult with your doctors and medical practitioners where necessary.

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WHAT IS MOLECULAR HYDROGEN?

First off, when we talk about molecular hydrogen (H_2), most people do not have the slightest idea of what we are talking about. Taking a step back to highlight the relevance of the topic at hand, we would like first talk about hydrogen as this is the best bet to understanding Molecular Hydrogen and its relevance to us today.

Hydrogen is a chemical element on the periodic table with the symbol H with an atomic number 1 and standard atomic weight of 1.008. It is the lightest element on the periodic table as it is. But only when two hydrogen atoms bond together is when we have molecular hydrogen.

In nature, hydrogen atoms will tend to bond with other atoms.

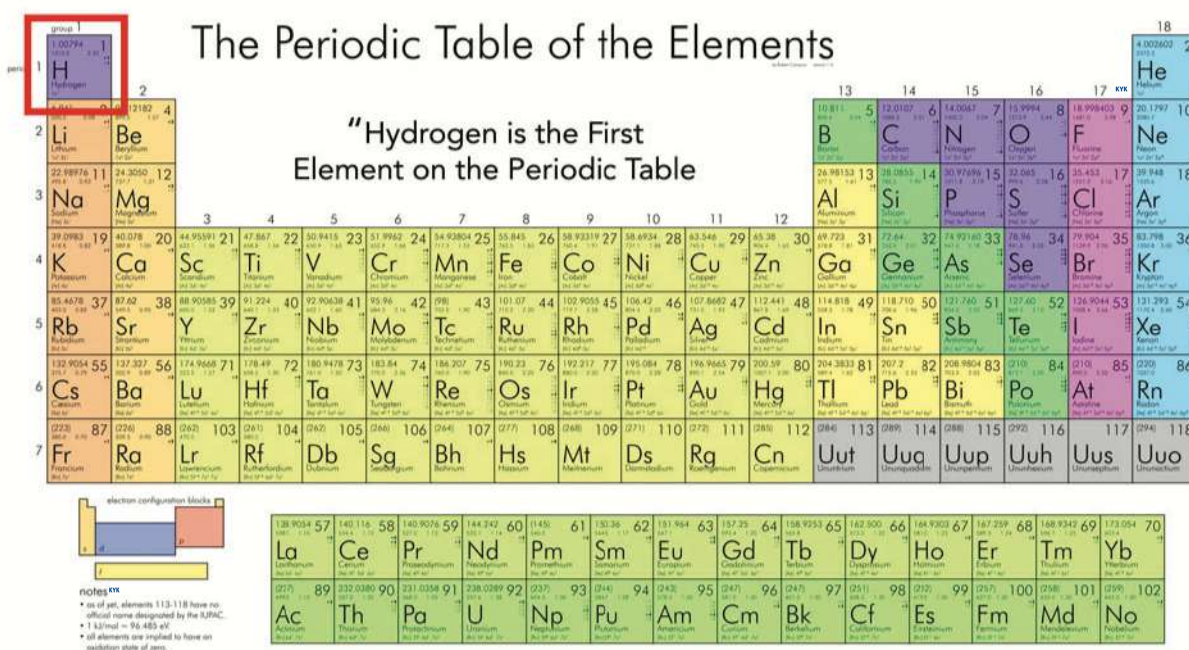
A good example is when two hydrogen atoms bond with a single oxygen atom to form water





Hydrogen can do far more than we give it credit. Beyond our wildest imagination, we never knew that the lightest element on the periodic table could be the next big thing and the most prevalent molecule in the universe

today especially when it come which is the background of the entire study. On scientific basis, hydrogen is very reactive and has a very high tendency to bond with another hydrogen atom almost immediately to form the molecular hydrogen (H₂ gas).



Now as we know, hydrogen has a uniquely small size and mass and a neutral charge. These unique features give it the ability to easily penetrate the cell membrane as well as the blood brain barrier and even the cell nucleus where it repairs and protect DNA,

enhancing mitochondrial health. This breakthrough has been staring us right in the face but with the improvement in the scientific methods and other form of healthcare development we are able adequately use this development to our advantage.

Interesting Facts about Hydrogen

- Hydrogen is odourless, colourless, and tasteless; in this way, it is imperceptible by human senses.

- About 10 percent of the heaviness of living life forms is hydrogen essentially in water, proteins and fats.
- Liquid hydrogen has the most minimal thickness of any fluid.

- Hydrogen is the main component that can exist without neutrons. Hydrogen's most bountiful isotope has no neutrons.
- We owe the greater part of the vitality on our planet to hydrogen. The Sun's atomic flames change over hydrogen to helium discharging a lot of vitality.
- In nature, H₂ is created by microscopic organisms and green growth by means of [anaerobic digestion](#). This may represent a portion of the H₂ that is distinguished in our air despite the fact that it's not at a sufficiently high fixation to have any kind of effect in our lives.
- For people, the microscopic organisms in your digestion tracts produce H₂ as they age unabsorbed sugars. The H₂ created in your digestion tracts is either breathed out by means of your breath or fart. Typically, the measure of Molecular Hydrogen created by the microorganisms in your gut isn't sufficient to give observable restorative advantages.
- Hydrogen is highly flammable but will not ignite unless an oxidizer which is air and ignition source are present. One of the major reasons why it is the fuel of choice used by NASA for space exploration.

MOLECULAR HYDROGEN FOR HEALTH

As highlighted earlier, molecular hydrogen is a very simple molecule, and its simplicity is the reason why it is being overlooked. This molecule has a variety of health benefits which have confirmed ones the course over ten years of study some of which are.

1. Activation power

Molecular hydrogen helps the body's antioxidant system through an activation pattern which is selective, signalling specific cell pathways which in turn contribute to regulation of detoxification, antioxidant and cell small genes.



2. Cell Modulation

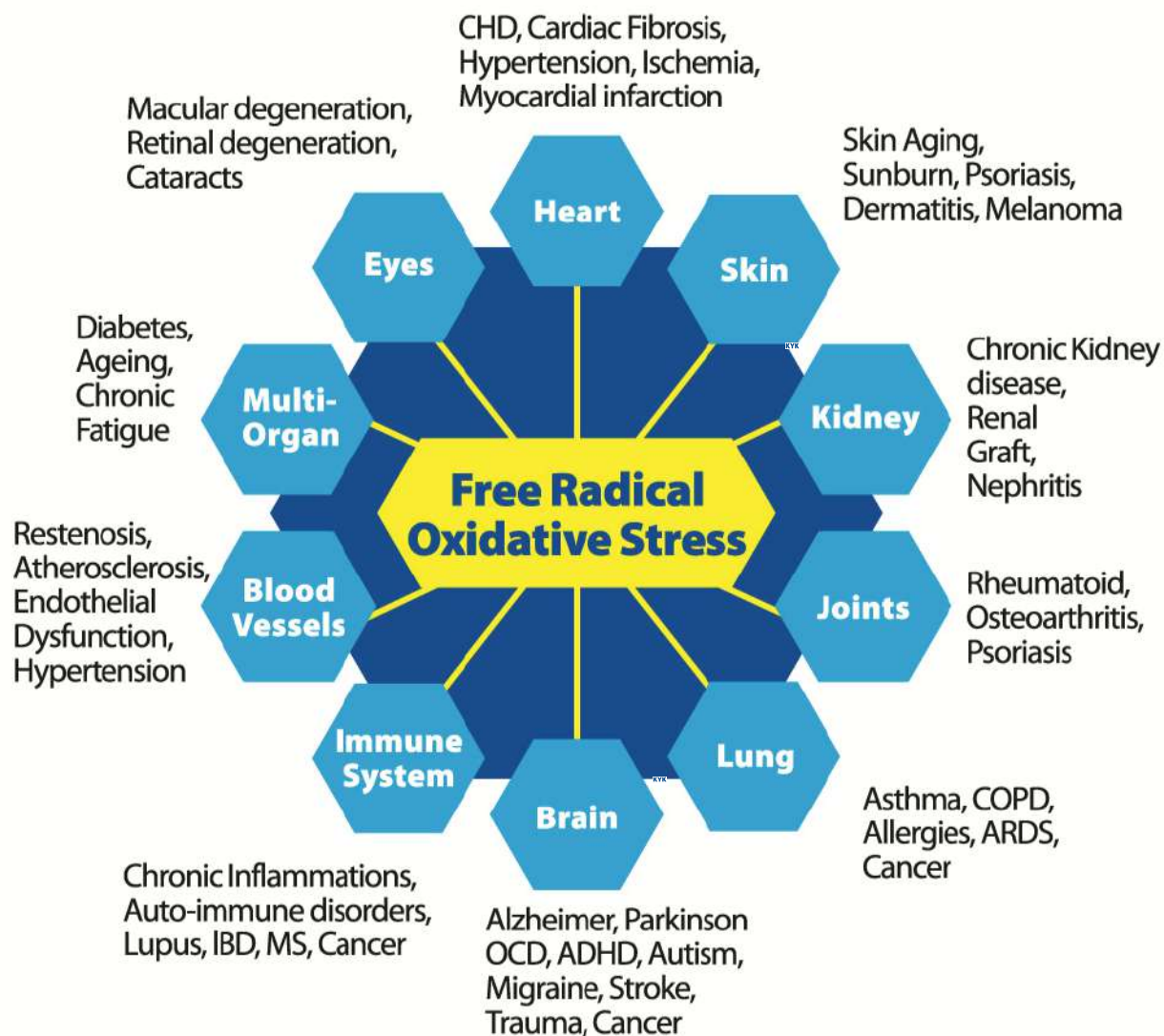
Molecular hydrogen has a greatly known ability to access the nucleus and the mitochondria, producing very **unique cell-modulating** effects which can affect health gene expressions, cell metabolism and cell signalling in a very positive way yielding anti-obesity (a well sought function), anti-inflammatory, anti-allergy and anti-aging effects, things which many individuals today spend a whole lot of money trying to achieve.



3. Anti-oxidant Power

Molecular hydrogen is a very **powerful antioxidant**. It is very powerful in the sense that it targets only the worst of free radicals in the body like hydroxyl free radical (OH). The simplicity attached to the elimination of this free radical when it comes to molecular hydrogen is astonishing and can never be over emphasised.

In the diagram below you will how free radicals a major cause of oxidative stress can affect our bodies health.



Molecular hydrogen converts the most toxic free radicals into water without the slightest sight of any negative effect or by product.

FREE RADICALS AND WHY THEY ARE DANGEROUS TO OUR HEALTH



Free Radicals attacking Healthy Cell

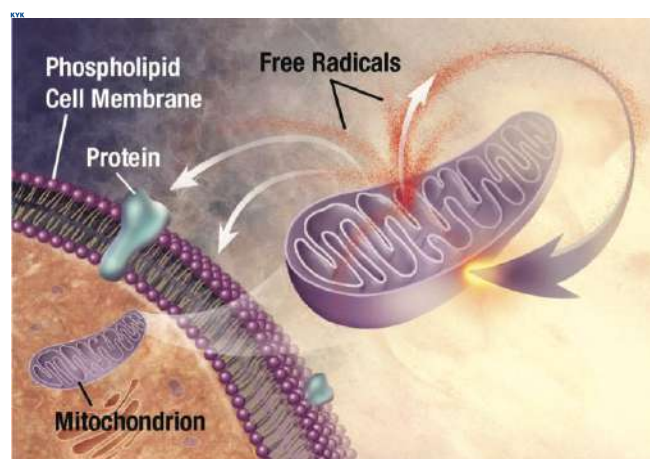


Free Radical Damage to a Healthy Cell

We earlier mentioned free radicals pointing out the fact that they are one of the major dangers to human health today. These free radicals are byproducts of energy production in the mitochondria which is the human cell engine amongst other internally generated sources some of which are:

- Inflammation
- Phagocytosis
- Exercise
- Cigarette smoke
- Environmental pollution
- Radiation
- Drugs and pesticides
- Ozone
- Industrial solvents etc.

Free radicals are unstable short lived and by any means possible, react to other molecules around its immediate environment to achieve stability. By stability we have to highlight the fact that a free radical has an unpaired electron and when looking for stability, it takes electrons from nearby molecules, causing instability to its host environment. Scientifically, free radicals are Reactive Oxygen Species (ROS) and with all we have mentioned about it, we have to understand the extent to which free radicals have caused major damages to the body of many individuals in its quest for stability.



The quest free radicals have for stability can never be underestimated as long-term effects of these free radicals have

been linked to other chronic health issues like aging, cancer, diabetes, cardiovascular and neurodegenerative diseases making the subject matter top

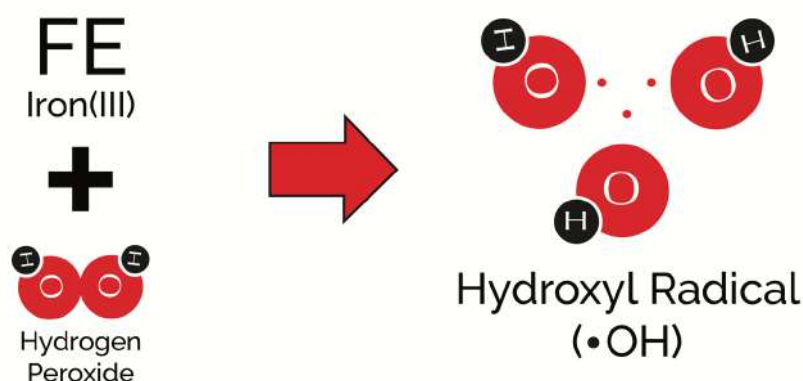
priority in the nutritional supplement industry since findings have made it known.

The Most Dangerous Free Radical

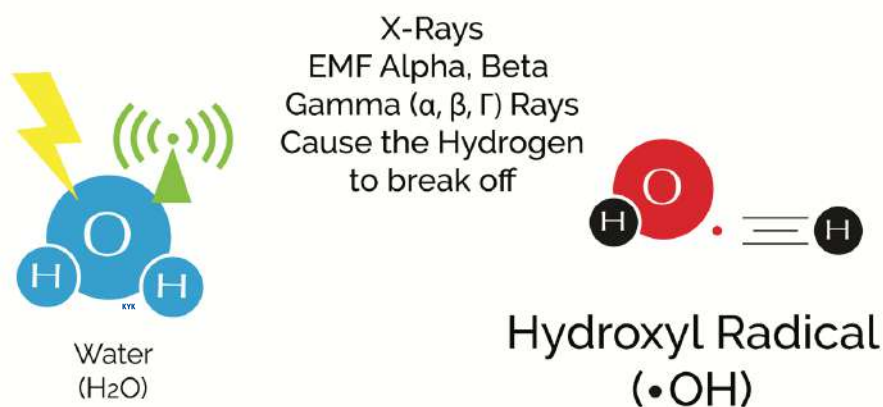
Hydroxyl Radical

At the point when free radicals aren't wiped out rapidly, they change over

into more hazardous free radicals. For instance, Hydrogen Peroxide promptly changes over into the most unsafe Hydroxyl Radicals within the sight of Iron (in platelets) or other progress metals.



Hydroxyl Radicals can likewise be delivered in your cells when you are open to Radiation, UV beams, or Electromagnetic frequencies (EMF). These are exceptionally active waves that enter into your cells and separate water. In some cases, water parts into a Hydroxyl Radical as shown in the figure below



Hydroxyl Radicals are exceptionally receptive free radicals that will take an electron from some other atom, in this manner harming them. Notice how comparative they are in structure to water. All they require is a hydrogen particle and an electron to end up water. Their longing to settle into water is powerful to the point that they can without much of a stretch sham hydrogen particles and electrons from any atom around them to fulfill themselves. Typically, the casualties are DNA, proteins, and lipids that make up the human cells.



Free Radicals
Attacking
Healthy DNA

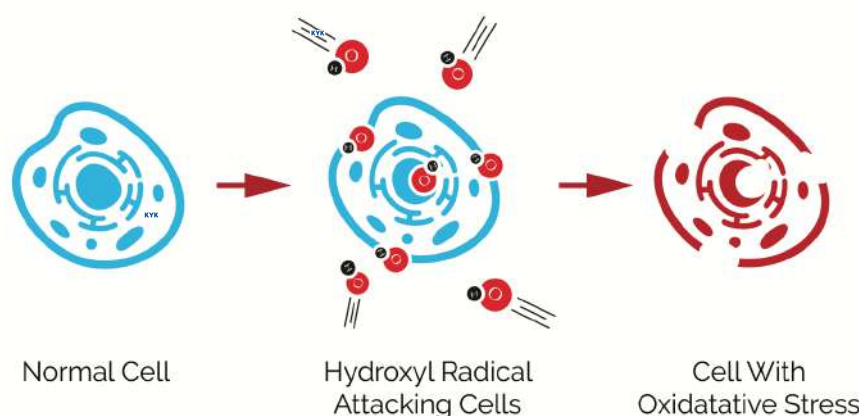


Free Radical
Damage to
our DNA

Free Radical damage in the cells is known as oxidative stress

radicals and antioxidants leading to the formation of Hydroxyl Radicals that cause irreversible damage to cellular molecules. Oxidative Stress is known as the cause of many different health challenges and it affects each individual differently depending on genetics.

Oxidative Stress occurs when there is a disturbance in the balance of free



If you feel that you're not as healthy as you should be, the root cause is most likely Oxidative Stress. You need to boost your antioxidant defense system so that it can neutralize excess free radicals efficiently. You can enhance the antioxidants inside your cells by supplementing your diet with antioxidant-rich foods, following a healthier lifestyle, and utilizing H₂.

HOW ANTIOXIDANTS PROTECT US FROM FREE RADICAL DAMAGE

Antioxidants agents can be found in food or supplements which help limit free-radical damage to the body. Free radicals are exceptionally responsive compounds that are made in the body amid ordinary metabolic capacities and other environmental factors as

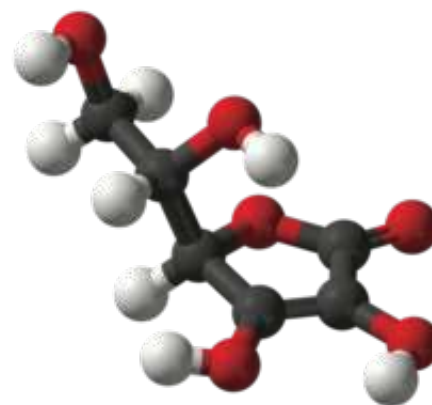
Characteristically precarious, free radicals contain “additional” energy which they endeavour to diminish it by responding with specific chemicals in the body, which meddles with the cells’ capacity to work naturally. Basically, they have the ability to damage our DNA which is a precursor to many diseases and cancer

Cell reinforcements battle free radicals in a few different ways: they may diminish the energy of the free radical, prevent the free radical from developing in any case, or intrude on an oxidising anchor response to limit the harm caused by free radicals.



Antioxidant agents

Using a wide collection of antioxidant enzymes, vitamins, minerals, and herbs might be the most ideal approach to furnish the body's security against free-radical harm.



The body delivers a few antioxidants agent chemicals, including SOD - superoxide dismutase, catalase, and glutathione peroxidase, that kill numerous kinds

of free radicals. Supplements of these compounds are accessible for oral ingestion. In any case, their retention is most likely negligible, best case scenario.

Notwithstanding proteins, numerous vitamins and minerals go about as cell

antioxidants in their own particular right, for example, vitamin C, vitamin E, beta-carotene, lutein, lycopene, vitamin B2, coenzyme Q10, and cysteine (an amino acid). Herbs, for example, bilberry, turmeric (curcumin), grape seed or

pine bark concentrates, and ginkgo can likewise give ground-breaking antioxidants agent protection to the body.



Molecular Hydrogen

The Best Antioxidant for your Health

Antioxidants are a hot thing in the health and supplement universe today. Many of these supplements companies will claim that their antioxidant formulas

are the best for your health, but none can really compare to the amazing properties that Molecular Hydrogen (H₂) as best antioxidant to fight off oxidative stress.

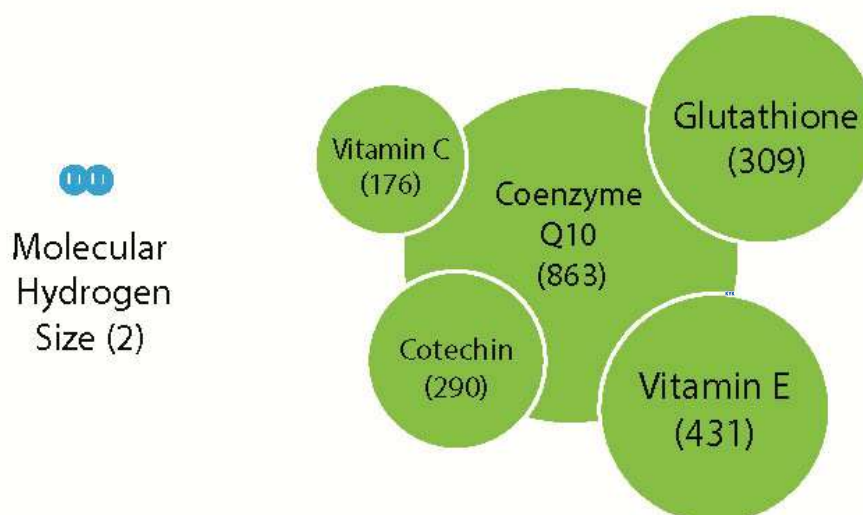
3 Properties that makes Molecular Hydrogen is the Best Antioxidant Ever?

1. Bioavailability (Size)

All together for Antioxidants to be valuable, they have to touch cell areas that are being harmed by dangerous free radicals. Most free radicals are

made inside the mitochondria, which is hard for usual antioxidants to reach. But what makes Molecular Hydrogen (H₂) is its bioavailability.

- H₂ is so small that it can penetrate through cells immediately. Naturally being in a gaseous state it floats through your cells using rapid diffusion and functions as a special antioxidant that is not blocked by normal mechanisms that prevent other antioxidants from moving in our bodies freely.
- Hydrogen gas is the littlest and lightest particle comprising of just two protons and two electrons. H₂ weighs 88 times not as much as Vitamin C which is the most famous antioxidant and 431 times not as much as Coenzyme Q10 which is another prevalent cell reinforcement or antioxidant.



• H₂ is likewise neutral and non-polar, enabling it to effortlessly go through the cell layers and sub-cellular compartments (mitochondria). Molecular hydrogen has the most noteworthy dispersion rate everything being equal enabling it to quickly pervade cells.

2. No unsafe byproducts (Zero Toxicity)

Unlike some antioxidants that can leave unsafe byproducts and in fact create free radicals in the body, molecular hydrogen is considered one of the safest antioxidants for our bodies because it leaves no byproducts.

In fact, when H₂ neutralizes the unsafe hydroxyl radicals it actually will change the form of the free radical to water which is advantageous to the body and doesn't require evacuation. Other antioxidants like Vitamin C for example can create Ascorbyl Radicals which are a natural indicator for oxidative stress.

3. Free Radical Selectivity

There are studies that show that not all free radicals are bad for us. But what makes Molecular hydrogen so special as a selective antioxidant is its selectivity to neutralize the most cytotoxic (cell harming) free radicals, for example, the hydroxyl radical (OH).



Hydroxyl Radical LOCKED!!!

This is important because it allows our bodies to keep the free radicals that may be beneficial to while eliminating

the Free Radicals that truly damage our bodies.

4. Bioavailability

All together for Antioxidants to be valuable, they have to touch cell areas that are being harmed by dangerous free radicals. Most radicals are made inside the mitochondria, which is hard for usual antioxidants to reach. But what

- The fundamental factors in deciding bioavailability are the size (the littler the better and the charge/extremity (non-polar and nonpartisan particles can enter cells generally effectively.
- Hydrogen gas is the littlest and lightest particle comprising of just two protons and two electrons. H₂ weighs 88 times not as much as Vitamin C which is the most famous antioxidant and 431 times not as much as Coenzyme Q10 which is another prevalent cell reinforcement or antioxidant.
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Medical Studies that Backup Molecular Hydrogen (H₂)

Although Molecular hydrogen (H₂) is a new therapy is it backed by hundreds of studies in various backgrounds. As more and more research comes to

light we are seeing that the benefits of Molecular Hydrogen for therapeutic uses is becoming evident. Below are just some of the few studies regarding Molecular Hydrogen that we wanted to share with you.

1. Enhances Skin/Battles Aging

Molecular hydrogen is viewed as the best agent for battling oxidative harm in skin and giving a young appearance. Japanese subjects demonstrated noteworthy changes in neck wrinkles in the wake of washing in molecular hydrogen for 3 months.



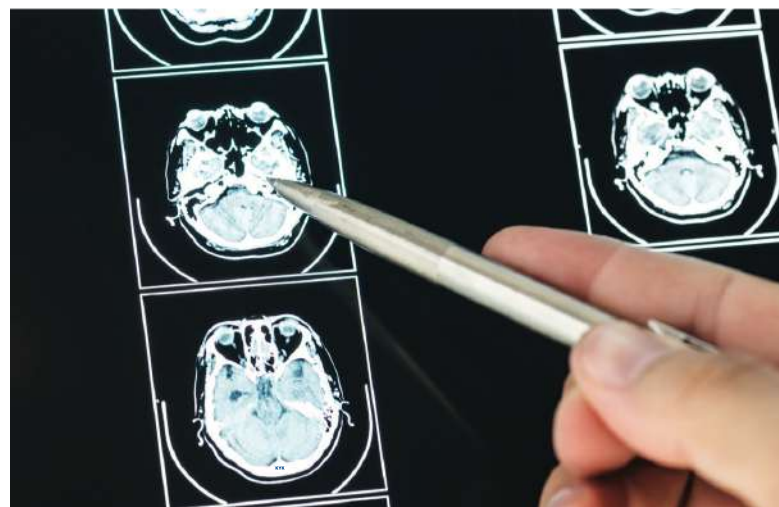
2. Counteracts & Prevents Diabetes

In a recent report, researchers tried the impacts of drinking molecular hydrogen-rich water in 30 patients with Type 2 diabetes. The patients drank some hydrogen water every day for about 60 days. The state of the patients by and large enhanced and a few demonstrated no side effects of the sickness,



3. Fights Malignant Tumors

Hoisted rates of receptive oxygen species (ROS), by and large known as oxidative pressure, have been identified in all malignancies, where they advance numerous parts of tumor improvement and movement. Sub-atomic hydrogen has a tendency to remove the oxidative pressure fusing tumor development.



4. Battles Immune System Illness

In view of its capacity to diminish unnecessary free radicals, H₂ can possibly help fight lupus (SLE) and other auto-immune system infections and diseases.



5. Lessens Pain & Inflammation Related with Rheumatoid joint pain (arthritis)

Rheumatoid joint pain is an interminable provocative infection described by the decimation of bone and ligament.

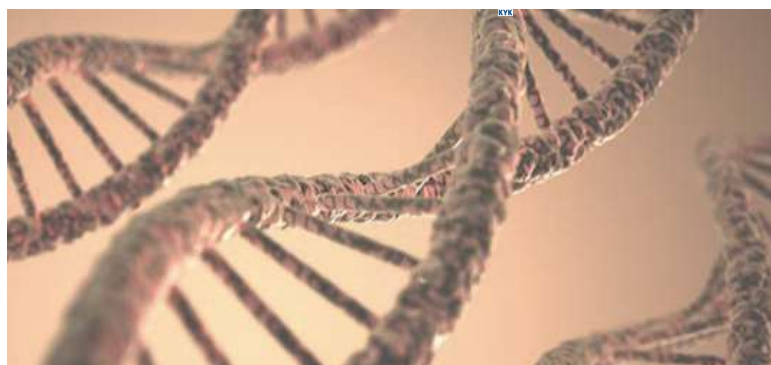
A Japanese report demonstrated that “Utilization of water containing a high amount of molecular hydrogen lessens oxidative pressure and ailment action in patients with rheumatoid joint inflammation.”



6. Rectifies DNA damage

Molecular hydrogen “rectifies DNA damage in the cell’s mitochondria.”

This would give off an impression of being supported up by an examination distributed in the July issue of the International Journal of Radiation Biology that reasoned that “molecular hydrogen applies a huge insurance against radiation-instigated DNA base harm.”



7. Battles sensitivities and allergies

An unfavorably allergic response is an insusceptible response when the immune framework goes overboard to a particle believing it's an infection.



8. Reduces Fat

Drinking molecular hydrogen injected water diminishes levels of plasma glucose, insulin, and triglyceride, like the impact of eating routine confinements.



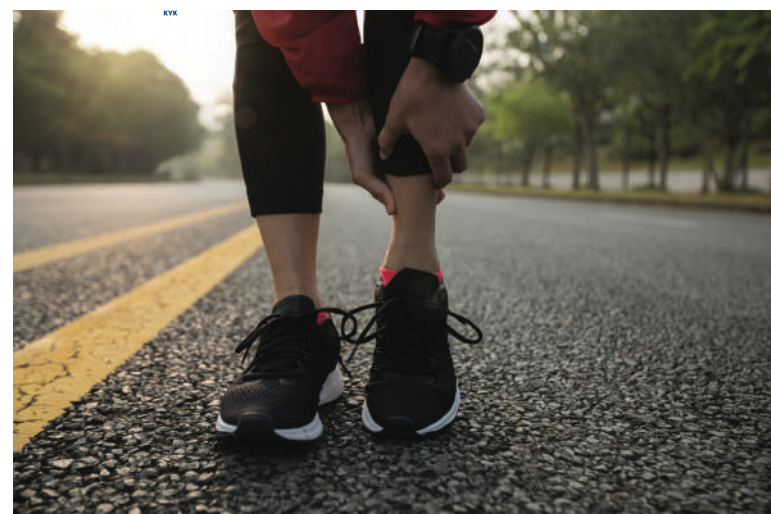
9. Enhances Cognitive Functions

Because of its capacity to effectively cross the blood cerebrum hindrance, sub-atomic hydrogen may help the prosperity of those with Parkinson's infection. In rodent models of Alzheimer's ailment, molecular hydrogen counteracted neuro-irritation and enhanced memory.



10. Quicker sports injury recuperation

Molecular hydrogen may be able to possibly enhance athletic performance and recuperation. A recent report secure, "Sufficient hydration with molecular hydrogen-rich water pre-practice lessened blood lactate levels and enhanced exercise-prompted decrease of muscle work."



4 Methods to Take Molecular Hydrogen

1. Molecular hydrogen Inhalation

H₂ can be breathed in by attaching a facemask or nasal cannula to a molecular hydrogen gas generator gadget. Breathed in molecular hydrogen gas acts more quickly than different techniques for consumption so it's a reasonable protection against intense (sudden) oxidative stress. (I.E. stroke, competitors, aggravation.)

Molecular hydrogen gas inward breath has been utilized in doctor's facility settings under the care of a social insurance specialist in Asia.

In spite of the fact that molecular hydrogen gas inward breath appears to have awesome advantages, it's unrealistic for regular utilize.



2. Molecular hydrogen Saline Injection

Another technique for molecular hydrogen admission utilized in doctor's facility settings is the molecular hydrogen saline infusion. A sack of saline (salt water) is imbued with molecular hydrogen gas which is then infused specifically into the circulation system of patients.



This strategy is the most exact approach to quantify the measure of hydrogen that is directed to a patient. This strategy is famous in Japan where molecular hydrogen industry is the most developed. Molecular hydrogen is broadly perceived as a helpful particle and numerous items and administrations are based around

3. Alkaline Water Ionizers

The most common method of consuming H₂ is drinking H₂ enriched water, simply called Hydrogen Water.

Alkaline ionizer machines were the first sources of hydrogen water (although at a very low concentrations) but at dangerously high unpalatable pH levels. These machines were not designed to produce hydrogen but to increase pH of water thereby infusing some concentration of hydrogen molecules which has zero or very less therapeutic effects.



4. Molecular Hydrogen Water Machines/Hydrogen Water Generators (HWG)

With all the various kinds of hydrogen water machines, molecular hydrogen water generators can produce stronger concentrations of hydrogen water with more quantity of water. They pack more power and can create higher concentration of hydrogen water in larger quantities as compared to conventional alkaline water ionizers where these quantities are at least 10 times lower at palatable pH levels.

Globally, very few companies have been able to successfully create Molecular Hydrogen Machines in the last few years.

Dr. KYK, known for its Alkaline Water Ionizers, created and patented new 9-layered SPE-PEM embedded in honeycombed platinum-plated titanium plates, establishing the real world Hydrogen Water Generator (HWG). A few points to note while checking for a Hydrogen Water Generator are as follows:

- 1,600 PPB of dissolved hydrogen
- Micro-bubble electrolysis water
- 9 layered PEM technology
- Low ohmic losses
- 0.6-0.9 terahertz resonance
- Ozone separation technology
- Tritan chamber for adhesion
- No artificial enhancers
- 7.8 Hz Low-Frequency Vibration
- Extreme Electrode Adhesion



Tips on Selecting the Best Hydrogen Water for You

There are a few things to keep in mind when selecting a Hydrogen Water Generator. Depending on how you want to use it here a few tips so you can enjoy hydrogen with the benefits that it possesses.

1. Research has shown that the hydrogen levels must be at least 1200 ppb (1.2ppm) of hydrogen or more. This will ensure the amount of hydrogen that is generated has high enough concentrations of hydrogen to be therapeutic.
2. Many hydrogen water generator manufacturers still use older hydrogen technology which do not use newest SPE/PEM membrane.

With older membrane technologies, your Hydrogen generator could be producing water that has residual chlorine & ozone which is not healthy water.

So it is important to make sure that the hydrogen water generator that you pick uses the latest SPE/PEM membrane. The SPE/PEM membrane remove any residual chlorine or ozone gases through a waste valve.

3. Some of the low costing versions of hydrogen machines don't even use high grade titanium, which can be harming your health more than helping it. Using high grade titanium with 99.99% at least platinum plating for the electrolysis process is the only way to produce clean & safe hydrogen water.

SHARE THE KNOWLEDGE ABOUT MOLECULAR HYDROGEN

We hope that this E-book has enlightened us far behind what we could imagine as many of us up until now have never known about molecular hydrogen and the associated benefits attached to it and its ingestion.

This E-book alongside other means of enlightenment published by us has brought us much amazement as many individuals are finally starting to understand the benefits of the stated study.

There are numerous associations and analysts out there that are diving into the intensity of Molecular Hydrogen.

There's significantly more to learn with the goal that we can completely comprehend and use the advantages of H₂. We trust that you can wind up one of us. Continually finding out about and showing H₂ so more individuals can exploit this stunning particle. A debt of gratitude is in order for taking out time to read.

Please feel free to write us at: info@kykindia.com for any queries or questions.

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