

# “Molecular Hydrogen” The New Nutrient

## A Breakthrough Water Additive Tablet

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### Hydrogen: Origin of Life and Importance to Health

Nearly 14 billion years ago hydrogen was produced by the “Big Bang”, and from hydrogen spawned all the elements of the Periodic Table. Hydrogen reacted with oxygen to produce the life giving solvent, water, which was deposited on the young Earth by comets over millions of years. About 3.6 billion years ago hydrogen played multiple roles in the genesis of cellular life. Now, billions of years later, hydrogen is once again at the forefront of biomedical and anti-aging research. More than 400 scientific publications including 30+ human studies have shown molecular hydrogen to be therapeutic in essentially every organ of the human body, and in over 140 different human disease models.

### What is Molecular Hydrogen?

Hydrogen gas (H<sub>2</sub>) is the smallest molecule in the universe, about half the size of oxygen, which gives it the higher cellular bioavailability above any other nutrient, supplement or drug. Hydrogen can rapidly diffuse deep into cells and mitochondria, as well as easily pass through the blood brain barrier. We are talking about *molecular* hydrogen that is not bound to any other compound, but is free and available. Water has bound hydrogen that is connected to oxygen (H<sub>2</sub>O or H-O-H). Available molecular hydrogen is hydrogen gas (H<sub>2</sub> or H-H), which can be dissolved into the water in its gaseous form.

### Importance of Molecular Hydrogen

The rates of cardiovascular disease, diabetes, obesity and many neurological disorders, such as, autism, ADD, depression, Alzheimer’s, etc. are disturbingly high. The need for a natural and safe anti-aging remedy that brings the body back to homeostasis has never been greater. Scientific research on molecular hydrogen suggests that this long forgotten molecule may be the key to the revolution of health and wellness.

### How Molecular Hydrogen Works

Human, animal, and cell studies show that hydrogen exerts its beneficial effects via three primary methods.

- H<sub>2</sub> instantantly converts toxic oxygen radicals to water (H<sub>2</sub> + 2•OH → 2H<sub>2</sub>O).
- H<sub>2</sub> maintains the homeostatic levels of our body’s antioxidants (e.g. glutathione)
- H<sub>2</sub> has a beneficial effect on cell signaling, cell metabolism, and gene expression, which gives it anti-inflammatory, anti-obesity, and anti-aging effects.

## Molecular Hydrogen is Natural and Safe

Hydrogen gas is not a foreign substance like a drug or pharmaceutical that is alien to the body. After a fiber rich meal, our gut bacteria actually produce hydrogen gas which diffuses into the blood and exerts many beneficial effects. According to the research, drinking water that contains solubilized hydrogen gas is the most effective method to deliver hydrogen to the body. Interestingly, it is also the oldest method. Since the dawn of time, there has been talk of natural spring waters and the mythical fountains of youth with stories of miraculous healing and outstanding longevity. These stories seem to be but fables and legends, however recent investigations of some of these healing waters in Japan; Tlacote, Mexico; Nadone, India; Lourdes, France, etc. all show that these waters are therapeutic and that they contain available dissolved molecular hydrogen gas.

It makes sense that since hydrogen has been so intimately involved in the origins and sustenance of life, it would still benefit us today. Perhaps this is why we developed a symbiotic relationship with the H<sub>2</sub> producing bacteria in our guts and also why Nature produced springs rich in hydrogen gas, to benefit its creations. Hydrogen appears to benefit all forms of life including plants.

## Molecular Hydrogen in Ionized Water

The biomedical field was caught by surprise in 2007 when an article, published in the prestigious journal of *Nature Medicine*, demonstrated that something so natural and simple as molecular hydrogen could have significant biological benefits. With the new understanding of the active role of hydrogen gas, we are now able to understand why many people benefited from so-called “ionized water”.

Ionized water is produced via electrolysis, which decomposes water to available oxygen gas and hydrogen gas ( $2\text{H}_2\text{O} \rightarrow \text{O}_2 + 2\text{H}_2$ ), which dissolves into the water. In 1965, the Japanese Ministry of Health Labor and Welfare approved ionized water as a medical substance to help with various gastrointestinal symptoms. The numerous clinical reports and evidence of therapeutic benefits clearly demonstrated that this water contained an active therapeutic agent. To explain the benefits, promoters of ionized water first assumed it was the alkaline pH and small water clusters – but this was debunked. Then they assumed it was the availability of free electrons (-ORP) – but this is only a small part of the answer. However, it is now well recognized that molecular hydrogen gas is the great secret. Research has shown that removal of the hydrogen gas in ionized water eliminates the benefits and addition of extra hydrogen gas to the water increases the therapeutic benefits.

## Molecular Hydrogen Products

Now that researchers finally understand that it is the hydrogen gas responsible for health and wellness benefits, it is now possible to optimize and specifically design products that produce supersaturated levels of available molecular hydrogen gas. Currently, there are a couple of convenient, consumer-friendly products that do just that.

One of the first products on the market (early 1990's) that *appeared* to produce hydrogen gas was Patrick Flanagan's oral "silica hydride" powder or capsule. As with ionized water, numerous people have reported significant health benefits from this product. However, as with water ionizers, many have been disappointed with the results.

The inconsistency of health benefits may be due to the inadequate amount of molecular hydrogen gas produced by these products. According to published articles, silica hydride "demonstrates no overt or violent reaction with water", which suggests that the amount of hydrogen is very low. This was also confirmed by our laboratory tests that both the rate of H<sub>2</sub> production and the concentration is very low. There are many claims about the "silica hydride" product that seem to be unfounded (e.g. stable hydride or negative hydrogen ions, microclustering, reduced surface tension, etc.).

Other hydrogen products such as "7.2", "PrimoH<sub>2</sub>", and "NOAH<sub>2</sub>" (which are the same products, branded differently) are also oral-use products. They have very low solubility and reactivity - even when placed in vinegar to mimic gastric acid. This slow reaction produces hydrogen over an extended period of time so it is not nearly as effective as drinking a saturated hydrogen-rich water.

## **Introducing the Revolutionary Molecular Hydrogen Tablet**

Until recently, all the products we tested had low solubility, low hydrogen concentration, low effectiveness, and when added to water produced unaesthetic and unpalatable drinking water. Nevertheless, numerous people experienced welcome health benefits from using these products. But, a new development was badly needed.

Finally in mid-2014, an industry expert in manufacturing and product development, joined hands with a recognized authority on molecular hydrogen and together through months of tests, measurements, chemistry calculations and headaches, they created the ultimate molecular hydrogen generating tablet. The tablet is designed to be added to 1/2 to 1 liter of water and left to react for 10-15 minutes as millions of hydrogen molecules are generated and dissolve. You can consume the water all at once or over several hours. A single tablet can produce a 2-4 ppm super-saturated hydrogen solution, which is 100 - 400% greater than any other hydrogen-generating supplement, and 600- 800% more than expensive alkaline water ionizers.

## **Simple & Natural Ingredients**

The tablet contains only natural ingredients in a proprietary formula that includes magnesium, malic acid, fumaric acid, and mannitol, all of which work synergistically in the reaction and also in the body.

Magnesium is an essential mineral for the body and is required by over 300 enzymes as a metal ion cofactor. Many people have poor diets and are slightly deficient in this vital mineral. Mannitol is capable of increasing activity of the enzyme catalase, which protects the cell from oxidative damage.

Malic acid and fumaric acid are natural organic molecules produced in the mitochondria during the citric acid cycle. Malic acid can improve the function of the mitochondria and has potential ergogenic benefits. Fumaric acid has some medicinal properties including an ability to activate the Nrf2 pathway, which helps in detoxification and antioxidation.

## Reported Benefits of the Molecular Hydrogen Tablet

Numerous people have experienced the benefits of these new tablets and can attest to its profound ability to help the body do what it was designed to do – achieve an optimal state of health. Many people with persistent pain from injuries and the effects of aging have been alleviated; athletes are training harder and breaking more records than ever before. Others are sleeping deeper and can function better with less sleep. Most users find that they have more energy throughout the day and are able to stay mentally alert and focused for longer periods of time.

## Overview of the Benefits of Molecular Hydrogen

- Addresses systemic oxidative stress better than all other nutrients
  - Smallest, most bioavailable antioxidant molecule
  - Scavenges ONLY most destructive radicals, hydroxyl and peroxynitrite
  - Converts radicals to water—no toxic byproduct
- Regulates the body's antioxidant system (Glutathione, catalase, SOD, etc.)
- Essential magnesium supplementation benefits
- Improves cellular hydration
- Decreases lactate (lactic acid) formation in muscle during exercise
- Stimulates ATP production outside of mitochondrial electron transport chain
- Neuroprotective – may be the simple answer to the risks of impact sports
- Neurotherapeutic – promotes post-injury neuroregeneration
- Anti-inflammatory
- Anti-allergy
- Stimulates energy metabolism to help prevent weight gain
- Supports glucose homeostasis
- Stabilize cholesterol levels
- Supports cognitive function
- Prevents age related decline in cognitive capacity
- Protects against radiation damage
- Extremely safe, no toxic affects
- Alkaline pH
- Water tastes smooth and light

For references and more information/studies/testimonials/articles/etc. visit:  
<http://www.molecularhydrogeninstitute.com/>