Molecular Hydrogen Introduction

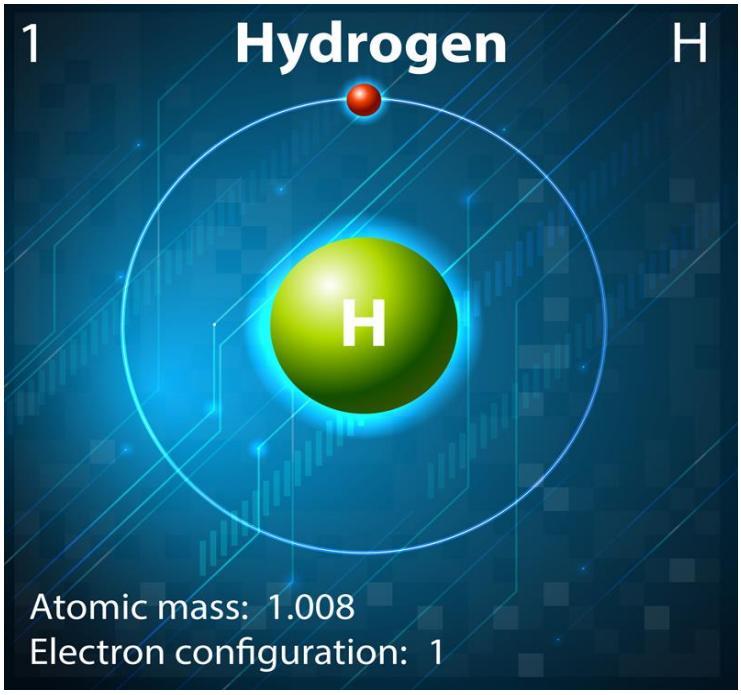
The Actions of Hydrogen in the Body

Molecular Hydrogen has now emerged as a ‘surprising’ molecule with broad therapeutic potential. Over 700 scientific studies (www.molecularhydrogen.com.au/studies) indicate there may be a beneficial effect for over 150 conditions including fatigue, cognitive impairment, pain, inflammation, metabolic syndrome, obesity, and cardiovascular function.

Hydrogen is the simplest, smallest and most abundant element in the universe…

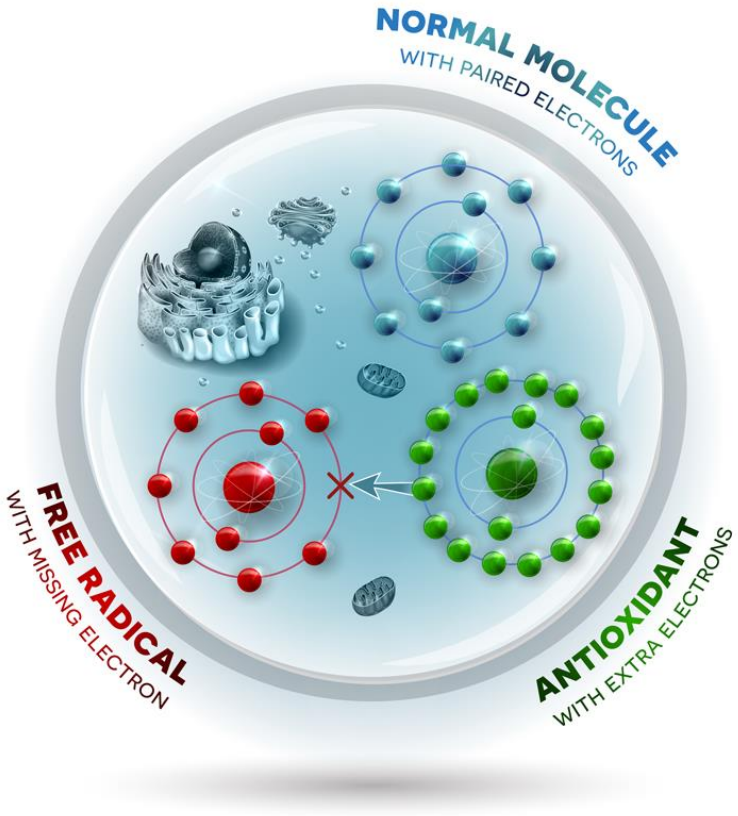
Hydrogen is one of only four elements present in every living organism *(along with carbon, oxygen, and nitrogen).* Its therapeutic uses stem from its actions as an anti-inflammatory, antioxidant mediator, and cell signaling molecule.

What does Hydrogen Look Like?



A hydrogen atom usually has one proton and one electron, but most have no neutrons. Naturally occurring atomic hydrogen is rare due to its tendency to bond with most other elements. Elements bond together by sharing electrons. A hydrogen molecule consists of two bonded hydrogen atoms.Hydrogen in the body is usually bound to carbon and nitrogen. It’s part of almost every molecule in your body: DNA, proteins, sugars, and fats. The hydrogen bond – which forms between atoms that “share” a hydrogen atom, is one of the most important interactions that make biological molecules behave as they do.

Free Radicals and Antioxidants



Quite simply, a free radical *(often referred to as a radical)* is an atom or molecule with an unpaired electron. Free radicals can be positively charged, negatively charged, or neutral.

In a healthy body, there is a balance existing between the generation of radicals and the antioxidant enzymes that neutralize them.

Oxidative stress occurs as a result of an imbalance between the production of ROS/RNS and the body's ability to detoxify the reactive intermediates or to repair the resulting damage. Cells are protected against oxidative stress by an interacting network of antioxidant enzymes. These are:

- Superoxide Dismutase *(SOD) (superoxide radical)*
- Catalase *(CAT) (hydrogen peroxide)* and
- Glutathione Peroxidase *(peroxide).*

Hydrogen's Function

Molecular Hydrogen is an excellent and unique antioxidant. It is specific for the hydroxyl radical and increases the body's natural antioxidant molecules. Also, due to its small size, it easily crosses cell membranes and has access to parts of the cell that other antioxidants are too large to reach.

Molecular hydrogen has been shown to increase the levels of SOD, Catalase and Glutathione peroxidize. It appears to be increasing the body's innate antioxidant mechanisms.

Hydrogen as an Anti-inflammatory

Believe it or not, inflammation is essential to our body's immune system and it is how our body naturally responds to any threatening stimuli. It naturally follows an increased blood flow to an area of infection or injury, and in turn, increases the supply of immune cells and healing nutrients to the area.

Anti-inflammation is essential for immune function and healing.

Chronic inflammation has been linked to a variety of health conditions including obesity, the development of cardiovascular health problems, blood sugar abnormalities, abnormal cellular changes, and arthritic complaints. This inflammation also causes an increase in oxidative species.

Indications for Molecular Hydrogen

Research based on over 700 scientific studies (www.molecularhydrogen.com.au/studies) on the potential health benefits of molecular hydrogen has shown a number of conditions, especially those with a strong oxidative and inflammatory element in their progression, may be improved by the therapeutic use of Molecular Hydrogen.

These conditions include, but are not limited to:

- Metabolic Syndrome
- Cardiovascular health
- Obesity
- Fatigue
- Cognitive function
- Gastrointestinal Function including
- Liver detoxification capacity
- Pancreatitis
- IBD
- Chronic pain and inflammation
- Abnormal cell division
- Immune function

We are indebted to scientist Tyler LeBaron and Naturopath Erica Whisson for this summary.