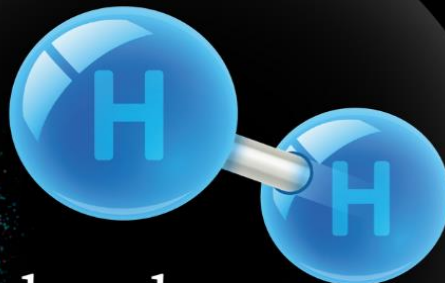


The *Miracle* You Make In Your Kitchen



Molecular
Hydrogen
 H_2

The Secret to Cellular Health
Ageing & Longevity

VINCENT D. SCULLY

The Miracle You Make In Your Kitchen

THE MIRACLE YOU MAKE IN YOUR KITCHEN

*The Secret to Cellular Health Ageing &
Longevity*

Vincent D. Scully

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Formatting & Editing by Kasia Dore

Illustrations by Jamie Malone

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The Miracle You Make In Your Kitchen

*We sacrifice our health in order to make wealth,
then we sacrifice our wealth in order to get back our health*

Dalai Lama

This book is dedicated to my mum and my late dad,
for all the love, kindness and support they have given me and our entire family,
and to my good friends Declan and Kasia for opening my eyes
to the power of Molecular Hydrogen Water.

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Areas where Molecular Hydrogen (H₂) shows health benefits

The subject matter of this book is Molecular Hydrogen (H₂) and its health benefits. So that you can appreciate the potential of what I am about to share with you, below is a sample of 52 health areas where this amazing molecule has been shown to exert beneficial effects on health generally and chronic diseases specifically. The numbers in brackets represent the number of research papers referenced, totalling over 1,000. If you are sceptical, a Google Scholar search for “Molecular Hydrogen” will show you over 600,000 articles on the use of Molecular Hydrogen (H₂) in a wide variety of applications, health is but one.

Each of the references are from sources that are completely independent of me. At the back of this book there are links to each of the individual references and their sources.

Ageing (10)	Alzheimer's Disease (14)
Athletic Performance (22)	Autism Spectrum Disorder (11)
Autoimmune Disorders (7)	Blood/Blood Vessels (18)
Blood Pressure/Hypertension (9)	Bones and Joints (17)
Brain Disorders/Brain Injury (88)	Cancer (43)
Cardiovascular Diseases (27)	Cholesterol (7)
Dementia (8)	Diabetes (26)
Dialysis (21)	Ears (12)
Eyes (25)	Fatigue (8)
Genetics (7)	Heart (37)
Human Studies (56)	Inflammation/Allergies (21)
Intestines (30)	Intoxication – Poisoning (9)
Ischemia/Reperfusion Injuries (32)	Kidneys (36)
Liver (50)	Lung and Respiratory (58)
Mental Health (18)	Metabolic Conditions (41)
Mouth/Oral Cavity (9)	Multiple Sclerosis (3)
Muscles and Skeleton (7)	Neurological/Neurodegenerative (22)
Non-Communicable Diseases (1)	Obesity (9)

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Pain (8)	Pancreatic (12)
Parkinson's Disease (15)	Peritoneum (1)
Post Surgery (3)	Pregnancy (12)
Radiation (18)	Reproductive System (13)
Resuscitation (5)	Sepsis (21)
Skeletal, Muscle and Soft Tissue (7)	Skin (34)
Stroke (7)	Transplantation (16)
Additional References (29)	Peer Reviewed Studies (80)

Table 1: 52 Health areas where Molecular Hydrogen has shown benefits, with the number of references.

What can you do with this information?

The research above serves as proof of the positive effect of Molecular Hydrogen (H₂) in the major systems of your body. Therefore, ask yourself the following question.

If Molecular Hydrogen (H₂) has been proven to be beneficial to health, could it help you to stay healthy and possibly fight the development of chronic disease?

In the pages of this book, you will find your answer.

How to get the most from this book

In Chinese medicine the concept of Ben (Root/Cause) and Biao (Branch/Symptom) is used to guide treatment. It is essential to address the root of the condition to get the best therapeutic result. This concept is embodied within this book. It is my aim to provide you with scientifically proven information that can help you to understand the root cause of many chronic conditions. The scientific studies I have provided look at expressions of disease, and many can be looked at as the branches or symptoms. As you read them, you will see that they all point back to the root. To kill a weed, we don't chop off the top, we pull out the root!

What you will learn is as follows.

- How energy is produced in your body.
- How this process produces waste products in the form of free radicals.
- That free radicals are needed to initiate biological processes within your body.
- Why some free radicals are dangerous and cause devastating cellular damage.
- The fact that external antioxidants cannot neutralise all free radicals and cannot reach certain places in your body.
- How oxidative stress leads to cellular damage.
- Why inflammation is a primary cause of chronic health conditions.

For a very specific reason I have provided an index of over 1,000 research papers covering many health areas and my intention for this is two-fold and I will explain both.

Doing your own research.

When you understand the underlying processes that are happening in your body, I want you to find an area of health that is relevant to you. Then I want you to open each paper and look for the common denominators. Look for the term's oxidation, oxidative stress, free radical, reactive oxygen species, inflammation, antioxidant, anti-inflammatory and hydroxyl. I didn't write this book so that I could delve into specific diseases, rather I wanted to educate you on the underlying processes that are the genesis of these conditions.

Separating fact from opinion

Beliefs are based on what an individual thinks is true, but it may not be. Opinions are formed from beliefs but can be influenced by facts. Facts are verifiable and true and should be the basis for decisions.

The Internet is an amazing platform for people to express their views on any subject. You may see people who don't understand Molecular Hydrogen (H₂) express an "opinion", but their expression cannot be mistaken for fact, unless it is backed up by something that has been proven by science.

If any medical professional expresses their opinion that they disagree with Molecular Hydrogen's actions or benefits, then it is likely they simply don't understand it. That is why the over 1,000 studies I have provided serve as the scientific evidence that Molecular Hydrogen (H₂) has shown many health benefits across a diverse range of health conditions. It is my suggestion that they research these and then revisit their view. This information I provide is not my opinion; it is not a placebo effect; it is a proven fact.

My plea to the medical community

Whether you are a medical doctor, specialist, consultant, complementary medical practitioner, or any other person in the health field from whom people seek advice related to their health, I have a plea to you. As you are reading this book, please consider the potential impact of adopting the incredible molecule, Molecular Hydrogen (H₂), into your health strategy and the advice you provide. It is effective in reducing oxidative stress, reducing inflammation, is non-toxic and is a cost-effective addition to any health regimen.

When I realised the true potential of Molecular Hydrogen (H₂), and its deep action at a cellular level, and when I experienced the results myself, I was blown away. As I looked for scientific and clinical evidence to explain its effectiveness, I was astounded to find a vast amount of research into the action of Molecular Hydrogen (H₂) with many applications that go beyond the field of health.

Molecular Hydrogen (H₂), is a simple paired molecule that exerts powerful action at a cellular level, supporting the gut microbiome, supporting the body's endogenous antioxidant enzymes, and selectively targeting the highly unstable Hydroxyl free radical and converting it to water. Due to its miniscule size and gaseous nature, it has the ability to penetrate all tissues, down to the nucleolus of cells where it exerts a protective action on DNA and RNA, regulating various signal transduction pathways and the expression of many genes.

Many of the chronic health conditions that effect society have their origin in oxidative stress and inflammation, therefore if we can utilise Molecular Hydrogen (H₂) to reduce these clinical markers, we have the potential to provide relief to sufferers of many conditions. Since free radical damage is a constant issue, even in the absence of these markers, Molecular Hydrogen (H₂) may be utilised long before symptoms present. It is more important to look at the underlying cause of the disease than the disease itself. Understanding the cellular mechanisms will help guide treatment more than a diagnosis. If there is mitochondrial dysfunction or oxidative stress, this needs to be treated. It does not matter if the disease is Autism or Alzheimer's, the underlying cause should be the target for treatment.

If you have doubts about Molecular Hydrogen (H₂), its application and therapeutic potential, the answer is very simple. At the back of this book, I have included over 1,000 research papers with links to their sites, broken down into 52 health areas for your convenience. You can also go to the following reference websites and search for "Molecular Hydrogen":

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<https://europepmc.org/> (10,739 results)

<https://pubmed.ncbi.nlm.nih.gov/> (3,759 results)

<https://scholar.google.com/> (Over 600,000 results)

Begin your research into this incredible molecule and make your decision not based on the content of this book, but on your research and that of the global scientific community. As you read the papers you will see the underlying principles of Molecular Hydrogens action.

A tale of two medical systems

Here in the West, we have a medical system that is more focused on disease management than disease prevention. A quote from the Cleveland Clinic sums up the approach nicely, “*Western medicine focuses on scientifically proven methods for diagnosing and treating illnesses.*”

The primary approach is that of management of disease using a pharmaceutical intervention. Some screening services are available to the public, such as breast checks. However, there is little by way of general health screening in a proactive manner as in the West health and disease are treated separately. To demonstrate this, the US ranks 47th in life expectancy (<https://www.worldometers.info/demographics/life-expectancy/>).

In stark contrast, Japan's comprehensive health checkup - Ningen Dock - is a unique system for early detection of disease that has developed over the years along with the country's universal health insurance system. "Ningen" means human in Japanese, "Dock" is derived from the dockyard for inspecting and repairing ships. Ningen Dock is currently offered at 1,727 facilities nationwide, involving about 3.7 million people annually. The development of the comprehensive health checkup system may be one reason for Japan's long-life expectancy, which is ranked as number 3 in the world. Ningen Dock was created at the National Tokyo Daiichi Hospital - now the National Center for Global Health and Medicine (NCGM) - on July 12, 1954. At the time, the examination was called "a detailed physical examination involving short-term hospitalization", and a full-scale medical examination was conducted over 6 days. This has since been improved with the service offered in one day for most examinations.

The difference is that this is a legally mandated service by the Japanese government. The major purpose of the comprehensive health checkup system is to maintain health in three main ways: early detection of cancer, detection of lifestyle-related diseases, and confirmation of health status. By adopting this proactive approach to health care many conditions are detected early and can be treated quickly.

Japan leads the world in the consumption of Electrolyzed Reduced Water, which contains Molecular Hydrogen (H₂). Several hospitals use it as part of their treatment regimen. Japan is at the forefront of research into the effects of Molecular Hydrogen (H₂) in the treatment of many diseases.

The production of Electrolyzed Reduced Water is based on the creation of acidic and alkaline water that is measured in pH (potential of hydrogen). In the clinical setting, acidic water has

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been proven to be extremely effective in sterilisation and wound care, as it can inactivate most pathogenic bacteria. Alkaline water has been shown to exert many beneficial effects and has been used in the washing of surgical materials. Later in this book, I will share with you some of the historical uses of Electrolyzed Reduced Water, dating back many hundreds of years.

Medical devices that are used to produce Electrolyzed Reduced Water are issued certification by the Ministry of Health, Labour and Welfare of Japan. Although you may not have heard of its benefits, societies such as Japan, have been using it for many decades.

Welcome

What you will read in the coming pages could change your life and the lives of your family members? Sounds like a big claim and it is! In this book, I am going to share with you what I believe is the way you can address the root cause of many health conditions that plague our society and the underlying cause of degenerative disease. I am going to provide you with information that initially may seem hard to believe, that looks so simple that it could not be true, but I promise you that it is.

The root causes of most health conditions share one common denominator, namely that they have their origin at a cellular level, and this starts long before symptoms present. It is this understanding that will help if you are concerned with or are struggling with your health.

I am going to show you how you can take control of your health and I am going to back up everything you will read with clinical references. There are over 600,000 published studies on the topic of Molecular Hydrogen (H₂) and its wide array of benefits.

Hydrogen was the first thing to come forth when the universe was created. It is believed to be the foundation of all other things in the universe and is central to life, yet it remained hidden in plain sight for many centuries, thought of as an inert atom that had little health benefits. As you read this book you will come to the realisation that this couldn't be further from the truth.

When two Hydrogen atoms form a covalent bond, they create what is called *Molecular Hydrogen (H₂)* which has been shown to have incredible therapeutic potential and is my inspiration for writing this book.

The best way I can share with you the incredible benefits of H₂ is to tell you my personal story as well as the story of the person who introduced me to Molecular Hydrogen (H₂) Water and I will do just that a little later in this book.

This book is designed to demystify the science and break down what is complex, into easier-to-understand pieces of information. Each section builds upon the last, so please stick with me as we work through the information.

At the back is an index of conditions for which this molecule has demonstrated beneficial effects, with links to their sources, and I invite you to do your research on any that are relevant

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to you or your family. Rather than dedicate this book to dealing with specific conditions and their symptoms, I am focused on the underlying cause and how you can potentially address these health issues by reducing a major contributor to disease.

I want to make one simple invitation, read this book with an open mind, and do the research later. Put some trust in me because the research will be there for you as soon as you are done reading this. What you are about to read may change your and your family's health and future.

What is Hydrogen?

If you are not of a medical or scientific mind, you can skip this part as I will explain it later in more straight forward language, but it is important that this is here for members of the medical or scientific community who may read this book.

As the subject matter of this book is Molecular Hydrogen (H₂), it is important at this point that you understand what it is we are going to discuss. There are many misunderstandings and confusion around this where people make false assumptions around the science and make ridiculous claims around the ineffectiveness of Molecular Hydrogen (H₂). Therefore, what I have done is taken this description from The Molecular Hydrogen Institute website as it explains it far better than I could by simply regurgitating their information. All the clinical references to support this information are included in the references sections at the end of this book.

Hydrogen gas has been shown to have a therapeutic effect on over 150 human diseases, but what is Hydrogen? Hydrogen is the lightest and simplest element with the symbol H. It consists of only one electron and one proton and, under normal conditions, it exists primarily in its diatomic form as molecular hydrogen (H₂ gas). It is what powers the sun by fusion to produce helium. Hydrogen is the centre of the prevailing cosmological model that describes the early development of the Universe as well as the origin of life itself.

Forms of Hydrogen

Atomic Hydrogen

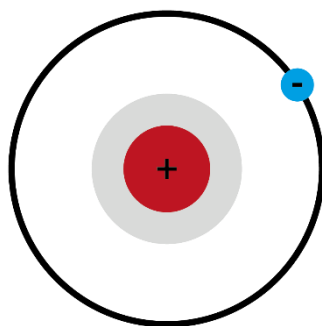


Figure 1: Hydrogen Atom

A single hydrogen atom (H•) is neutral and has an unpaired electron (as represented by the small dot “•”). It is, thus, a reactive free radical, which is why atomic hydrogen is rare. When atomic hydrogen is produced via electrolysis, it readily reacts with another hydrogen atom to form stable molecular hydrogen (H•+ H•=> H₂). In the 1990’s it was suggested that atomic

hydrogen was responsible for the therapeutic effects of Electrolysed Reduced Water (ERW). This reactive atomic hydrogen was likely mistranslated from Japanese to English as “active hydrogen”; however, the term “active hydrogen” is not a scientific term and is frequently used in pseudo-scientific marketing hype. Moreover, the stable existence of atomic hydrogen in aqueous solutions remains unproven, and from a physical chemistry viewpoint, impossible. Atomic hydrogen was the first element in existence and is the first element on the Periodic Table; it can be considered the father of all the elements.

What is Molecular Hydrogen?

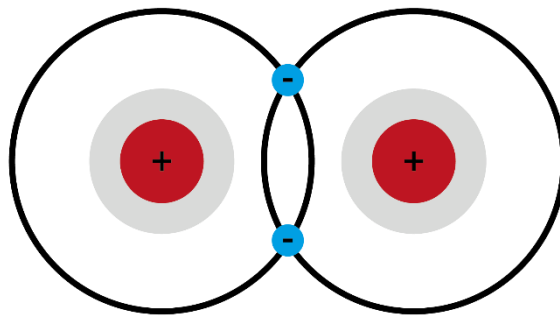


Figure 2: Molecular Hydrogen

Molecular hydrogen gas, or H₂, is the primary form in which hydrogen is found. In other words, two hydrogen atoms (H) are covalently bonded (a type of chemical bond) together as H-H. Because there are two hydrogen atoms, we call this diatomic hydrogen (“di” meaning two). Because the hydrogen atoms are covalently bonded together, they form a molecule; so, H₂ is also referred to as molecular hydrogen. We can also refer to it as dihydrogen. The hydrogen molecule contains two protons and two electrons making it a neutrally charged molecule. It is a colourless, odourless, tasteless, non-metallic, highly flammable gas, and very explosive above a 4.6% concentration by volume. It is this form of hydrogen that has been shown to exert the wide range of therapeutic effects. Some articles refer to this as “hydrogen-rich water”. It is the smallest molecule in the universe, and this extremely small size and its high lipid solubility allows it to easily diffuse into the subcellular compartments of the mitochondria and other locations.

Hydride: The negative Hydrogen Anion

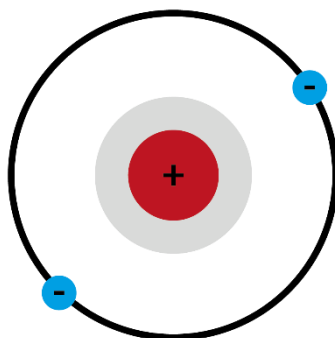


Figure 3: Hydrogen Anion

Hydride is one hydrogen atom that has an extra electron. It has one proton and two electrons, which makes it a negative ion written as H^- . Because the hydrogen atom received an additional electron, it does not have an unpaired electron and thus is no longer a free radical. However, it is still not stable because, in this form, it is a very strong base. As such, it will react with water to produce molecular hydrogen ($\text{H}^- + \text{H}_2\text{O} \Rightarrow \text{H}_2 + \text{OH}^-$). Most hydrides are chemical compounds (e.g. sodium borohydride, lithium aluminium hydride, etc.) used as reducing agents in chemical synthesis.

Positively-charged Hydrogen Cation: The 'H' in pH

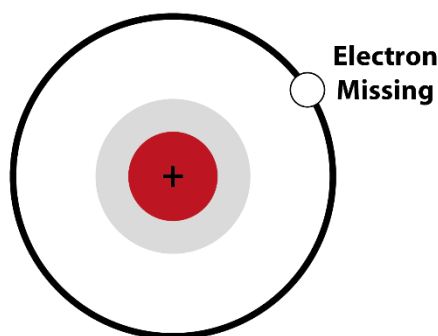


Figure 4: Hydrogen Cation

A positively charged hydrogen ion (H^+ cation) is also known as just a proton. Because a hydrogen atom only has one electron and one proton, if the atom loses its electron, it's only a proton. It is this form of hydrogen that drives the enzyme ATP synthase in the mitochondria. The mitochondria is considered the “powerhouse” of the cell as it produces the majority of the ATP (adenosine triphosphate), which is the energy currency of our cells.

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The hydrogen ion (H^+) is what is responsible for the pH of the water (i.e. acidic or alkaline). Water dissociates to form protons (H^+) and hydroxides (OH^-). That is: $H_2O \Rightarrow H^+ + OH^-$. This is called the “self-ionization” of water.

pH is the $-\log$ of the hydrogen ion (H^+) concentration. So, the more H^+ ions the lower the pH, or the more acidic the solution is.

Dissolved Hydrogen and pH

When talking about hydrogen and pH, some will fail to make the important distinction as to which species of hydrogen is being discussed. The positive hydrogen ion (H^+) is often referred to as “hydrogen”. But this form of hydrogen is responsible for the “acid” level (pH) of water. If one assumes that the “hydrogen ion” is the species being discussed, they may think that adding hydrogen gas (H_2) to water will change the pH of the water. But molecular hydrogen (H_2) is a neutral molecule which, when dissolved in water, has no influence on the water’s pH. Alkaline ionizers raise the pH of the water not as a direct result of adding H_2 but because in order to produce H_2 , they must consume the H^+ ions in the water, thus making the water more alkaline. Methods of producing hydrogen water such as bubbling or infusing, which simply add pure hydrogen gas to water, do so without changing the original pH of the water.

About the author

I am Vincent Scully, and I was born in Dublin, Ireland, in 1971 to a loving, caring and supportive family. I am the eldest of four, with two brothers and a sister. Growing up I always had an interest in the human body and at one time I thought I would like to become a medical doctor.



Figure 5: Vincent D. Scully

When I was young, my mum got acupuncture for migraine headaches and it worked wonders, so I was captivated by the potential of how needles stuck in somebody might work. Some years went by, and The Karate Kid movie was released, and after watching it, I immediately signed up to a local class. This was to be the beginning of a 35-year journey in Martial Arts that would see me achieve the grade of 11th Dan Shihan (Master Teacher) and numerous trips to Japan to study with inspirational Shihan and the Soke (Grand Master).

As part of my journey, I began to study Eastern Philosophy and read many books on Daoism and the way that eastern practitioners viewed the universe, our world, our bodies, minds, and spirit. I was hooked on this mindset as it resonated with me at a deep level. In Daoist philosophy, it is said that the Dao is within everything. Little did I know that many years after commencing my studies that the answer to all my lingering questions about the true source of health would be provided by one little molecule that is within everything.

What captivated me about Martial Arts was how a specific location can be used to inflict pain, while the same point if used in Acupuncture, would induce a therapeutic response. From there I would embark on a learning journey that would see me become qualified in Oriental Body Balance (physical therapies), Acupuncture, Chinese Herbal Medicine and Digital Meridian Analysis, while cultivating a strong interest in Medical Qi Gong, Nutrition and Cardiovascular Health. I ran a thriving Complementary Medical Practice for several years and saw thousands of clients (I don't like the term patient).

I was a trainer of nutritionists and health store assistants for a national nutritional supplement manufacturer, and I created a Cardiovascular Health Recovery program, supported by 72 clinical studies that was based around diet and nutritional supplementation. This was reviewed and verified by medical doctors as being effective in reducing Central Aortic and Peripheral Blood Pressure, as well as restoring normal arterial function.

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When performing cardiovascular health screenings, I used a cardiology grade medical technology; Uscom BP+, that measured the blood pressures mentioned above as well as arterial stiffness. I found a pattern among athletes and personal trainers who were all externally healthy, that there was a high incidence of arterial stiffness. From my research into the causes of cardiovascular disease and atherosclerosis (hardening of the arteries), I knew that exercise caused the excess production of free radicals (more on these later) and I also knew that these were a contributor towards cellular damage, including the cells of the arteries.

We have all heard of the apparently healthy footballer or marathon runner who suddenly drops dead from a heart attack or aneurysm, so the theory on cellular damage of the arteries and blood vessel damage answered this question for me. Thankfully my diet and nutritional supplementation program helped many who were open to adopting it in their lives.

The reason I tell you all this is to share with you the fact that I am a self-confessed geek. My education over many years saw me study anatomy and physiology, pathology, Traditional Chinese Medicine, physical therapies and more while reading many textbooks, attending training courses and reading hundreds of clinical studies and research papers on nutrition and cardiovascular health, cancer, neurological diseases.

At a deep level I truly believe that nature holds the answer to most if not all the chronic diseases that we as humans suffer from. Soon I was to learn that my instinct was right and what I will share with you in the coming pages I hope will be a turning point in your journey towards good or better health. For those who are reading this and think that this couldn't be real, not only will I explain the mechanisms of the principles of action, but I have also backed up everything I write with clinical scientific evidence! So, stick with me as I know this will be worth it for you!

It is this journey that has inspired me to write this book, as my experience led me to realise that some things are made far too complicated! Night after night I would read medical papers and clinical studies, scratching my head trying to decipher the language that was used. Endless Google searches and realising that the medical community uses language that discourages the ordinary person from reading the papers and as such the potential health benefits of the research are rarely understood by the general public! There had to be an easier way for people like my mum and late dad to understand what was happening inside their bodies on a daily basis, without all the scientific jargon and medical speak.

If you choose to read the studies I have linked to from this book, what you will see is the same things repeated time and time again, free radicals, reactive oxygen species, oxidative stress, inflammation, hydroxyl etc. These are the common denominators in chronic diseases in which Molecular Hydrogen (H₂) has been shown to exert beneficial effects. Rather than explain each condition, my goal is to educate you on the underlying processes that are at the root of many conditions.

What has frustrated me is the fact that I have seen so many family and friends die of both cancer and cardiovascular diseases. I have had a deep-seated desire to help. Hence my clinical

practice and cardiovascular recovery program and cancer have been an area of strong interest for me, even more so since my father passed from a rapid onset and aggressive lung cancer.

My motivation in all this is to share with you something that was life-changing for me, and that I feel will be life-changing for you, your family and your community. I want to take something complex and make it simple. Because what I am about to share with you is the “*Missing Piece*” of all my years of study and practical experience in helping people.

If we are to understand the route towards good health, firstly we must appreciate how we arrive at a state of *dis-ease*. Chronic degenerative diseases do not occur overnight, rather they are the manifestation of a sequence of events that may have started many years before. Some of them are caused by us through the choices we make, some are external environmental, but others are a by-product of processes that happen every second within our body.

What this book isn't, is a book designed to make you feel bad or to make you feel that you must change. Life is about choices, for me I feel that when we make choices without knowledge of the consequences, we tread a perilous path. I want to educate you so that once you have read this book, you can make your choices from a place of knowledge. I will open the door and whether you choose to enter is totally up to you and I am cool with that! But if you do take the information I will share with you in the coming pages and apply it to your life, and your family, you may not only make a significant change today, but you may initiate a very positive change for future generations.

This book is designed to break down what is a complex subject into simple language that most people will understand. It is a combination of anatomy, physiology, biology, and chemistry, with a bit of physics thrown in for good measure. My goal is to get YOU beyond “*White Coat Syndrome*” and into a place where you can take control of your health, in whatever way works best for you.

Let me make this 100% clear; I am not a doctor or scientist, but I am educated, trained, and qualified in my chosen disciplines and I have been prepared to immerse myself in the very medical literature that drives medicine forward, which is usually only the domain of the academic boffins who like to use complicated language to explain their theories and findings.

My personal view on our current medical model is that it has its place and I know I wouldn't call an Acupuncturist to a car crash! In acute medical care, our modern medical model is incredible. My concern is in chronic medical health care, as we are seeing year-on-year increases in diseases such as autism, cancer, diabetes, and cardiovascular disease, to name but a few. I just wish that the current model would open its eyes to the many beneficial approaches that can be used in a proactive manner long before the chronic disease takes hold and in this book I will be sharing one approach that is backed by scientific and clinical evidence.

The overreliance on synthetic pharmaceuticals and over-prescription of antibiotics has led to many health crises around the world. In the early 1900's medicine split from an all-encompassing approach to health care to a model that is predominantly synthetic

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pharmaceutical-based, with little regard to nutrition and the other beneficial technologies such as the subject matter of this book. Life expectancy in nations that have adopted the approach of reactive pharmaceutical-based disease management is decreasing, whereas the life expectancy in nations that have adopted a proactive approach to health care is increasing. I know which one I prefer!

As you read this book and the information I will share with you, I want you to ask yourself a few simple questions:

- Why haven't I been told about Molecular Hydrogen (H₂) before?
- If I had known about this X number of years ago, would my current health be different?
- What's in it for those in control of the healthcare system, to not share this with me?
- If I were to adopt this easy-to-use method of self-health care, would my quality of life improve?

Sometimes we are not ready to HEAR the information that is shared with us and that was my personal experience which I am about to share with you. Some years ago, my close friend Declan introduced me to Molecular Hydrogen (H₂), but I was not ready! As a direct result of my personal experience, I am now, and I truly hope that this is your time or that at least you will hear me out with what I am about to share with you.

New ideas pass through three periods:

- 1) It can't be done.
- 2) It probably can be done, but it's not worth doing.
- 3) I knew it was a good idea all along!

Arthur C. Clarke

Let's begin....

Two personal experiences of Molecular Hydrogen (H₂)

Science tells us that personal testimonials are the least reliable source of scientific information, as they are generally based upon emotion, and I agree. However, in my view there is immense value in sharing our experiences when they can be explained by clinical evidence. So, this is exactly what I will do now. I will share with you the incredible effect that Molecular H₂ had on me, which is my WHY, and throughout this book I will explain the mechanisms at play, backed up by scientific evidence which will cover the HOW. From there you can draw your own conclusions. Firstly, I will share my personal experience of Molecular Hydrogen (H₂) and I will follow this by giving you some insight into my background. I will then share Declan Dore's story of how he overcame a Traumatic Brain Injury using Molecular Hydrogen (H₂) Water.

Vincent Scully's story of Molecular Hydrogen (H₂) Water

Coming from a 35-year background in martial arts I sustained several "war wounds" along the way. The cartilage in my big toes is worn down and I was checked for gout, osteo and rheumatoid arthritis which were all clear. I was in a lot of pain and would limp regularly and this was all put down to wear and tear that was causing the bones in each of my big toes to rub together, hence the excruciating pain. Martial arts also took its toll on my knees which crunched and cracked and made it difficult to squat down. There was a lot of discomfort when I tried to stand back up. They would make a clicking sound as I walked up flights of stairs and if I sat for 10 minutes or more there would be a noticeable cracking sound and clicking sensation when I tried to move them.

I would attend my GP 3-4 times per year to get a steroid and hyaluronic acid injection into the joints of my big toes, an unpleasant experience that would at least offer some temporary relief.

Coastal rowing was a passion of mine after giving up martial arts and I raced competitively for my local club for several years completing The Celtic Challenge in 2017 and 2019. It is a race from Arklow on the east coast of Ireland to Aberystwyth on the west coast of Wales, the longest true rowing race in the world. It's a 24-hour endurance race through the night across the Irish Sea. In preparation for this we would attend indoor training on ERGs (rowing machines), and I remember in one class, I got this strange feeling in my knee and as I moved forward on the machine. I could see my kneecap was out of place. As I walked my right kneecap would rise, move forward and then out to the side. I drove to my brother's home, held

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on to the leg of a heavy sofa and got him to pull my knee back into place. It happened on another occasion in a gym, so I don't use rowing machines anymore. As you can see my knees and toes have taken quite a beating over the years.

I broke my neck in a diving accident while on holiday in the Canary Islands in 1996. I dived into the deep end of a swimming pool and unfortunately I misjudged the location of a shelf from the medium to deep end and instead of meeting 2 metres of water I was met with less than a metre. I remember doing a high pike-style dive and my hands crashing into the bottom of the pool, followed immediately by my head slamming directly on the crown into the tiled floor and the flash of light upon impact. As I hit the bottom the pain in my head and neck was severe. I could feel my back arching in the direction it was not supposed to go, almost like the crab exercise, and it felt like my back would snap. I remember pushing with my hands against the bottom of the pool trying to get to the surface, however, my legs were not working, and I struggled to get my head out of the water. I went under, and when I came back up, I had managed to get to the side of the pool.



Figure 6: Titanium plate in my spine

A little while later my legs started to work, and I climbed up the pool ladder and lay on a sun lounger. I could feel the blood coming from the top of my head, which would later require 15 staples, and it was only when I tried to lift my head that I felt the vertebrae move in my neck. I told a friend to support my neck, not to let it drop or to raise it, and I told him I couldn't be moved, and he had to shout until we got an ambulance.

I was rushed to a hospital, where after an MRI, I was put into intensive care and eventually traction and given morphine to manage the pain. I had fractured C5 and had a subluxation (vertebrae out of place) in C6 and I had some paralysis in my left arm.

After some days, the traction came off and I was put into a room. Unfortunately, I wasn't in a neck brace and when I foolishly turned my head my vertebrae popped out again. This meant that I would need an operation and a surgeon was flown in from Barcelona to perform a procedure that took a bone from my hip and placed it between C5 and C6. He then put a titanium plate on top with 4 screws to hold it in place.

When I broke my neck, I was 24, as I write this, I am 52 and what I have felt is that as the years have gone by, I have developed chronic lower back pain which has gotten progressively worse. Exercise was always a huge part of my life, and it helped me to manage my pain. However, there were times when the pain got so bad that to get out of bed. I would need to drag my legs out and then use the mattress to pull myself up. I remember attending a funeral

with my brother where we needed to stand for the entire service because the church was so packed, and afterwards when I sat in my car, I couldn't lift my legs and I had to use my hands to pull my legs into the car. Driving long distances was a nightmare as the pain would start in my lower back and then go down the side of my left leg and into my calf muscle, all the signs of sciatica or degeneration of the spine, causing a pinching of the sciatic nerve.

As an Acupuncturist and physical therapist, I thought I knew what was going on but couldn't fix myself, so I went to some of the best people in Ireland and had numerous different therapies on my back. However, like the steroid injections the best I would get was temporary relief.

While on a trip to Florida I purchased a rechargeable portable tens machine and I would wear this constantly, when socialising, walking or in the playground with my son and wife. When bad if I were to score my back pain out of 10, it would be a 9.5. I tell you all this so that you can appreciate my history and I am sure you can see that I put my body through the ringer and age was paying me back!

One other thing was my skin. From my teenage years I was prone to spots around my moustache area. Over the years I have grown many goatees to hide the spots and give my skin a rest. I tried lots of creams and lotions and at one point read that fresh garlic juice would clear my skin. So, I took to cracking open cloves and rubbing them on the affected area but all it did was burn my skin and make me stink, so that is possibly best avoided.

Fast forward to the present day and I am basically pain free and the only change I made was drinking Molecular Hydrogen Water! I still get a slight niggle in my back that I would score as less than 1 out of 10, and when I feel some pain coming, I know that it is a sign from my body that it is dehydrated and needs water, so I listen and give it what it is crying for. My skin has cleared up and I now only get the occasional spot because of ingrown hairs from shaving. My knees are not cracking any more, the crunching sound is gone, and the clicking doesn't happen, which I have since learned is a sign that the bursa (a fluid-filled structure between the tendon and bone that reduces friction in joints) are now properly hydrated. My toes are no longer sore, and I can walk pain-free for the first time in many years.

So how did this “*miracle*” happen? A close friend, Declan, introduced me to Molecular Hydrogen, in the form of a medical-grade water ioniser. He came to my home to fit my new device 6 days before we went on holiday. I drank the water in the days coming up to the trip and thought nothing more. It was only when we were a few days into our holiday that the pain started again. I would lie on the floor and click my back, stretch my lower back, wear my tens device, sit with cushions behind me and do all the usual things I had done to manage my pain.

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My water ioniser along with making Molecular Hydrogen Water also makes water with different pH values, so when I got home, I started to drink the 9.5pH Molecular Hydrogen Water and within a few weeks, I was free from back pain. I then started to make anti-inflammatory 11.5pH water and soak my feet in it while watching TV or even while working at my desk. What I noticed was that after 30 minutes of soaking my feet in the basin of water, my pain was gone. Now whenever I feel the ache coming into my toes, I simply fill the basin and soak my feet. I can honestly tell you that I feel I will never need another injection into my toes. What I was soon to learn is that Molecular Hydrogen (H₂) is so small it can pass through tissues, including skin and soaking my feet in high concentration H₂ allows its healing properties to pass through my skin and to enter my toes and relieve my pain by reducing inflammation and neutralising cellular damage while at the same time hydrating my cells.

All of this blew my mind and set me on the path of finding out how something as simple as water had gotten rid of 28 years of back pain, stopped my toe pain, cleared my skin and made my knees better, where the best in the Complementary Medical field had not succeeded and my GP told me that there was wear and tear on my spine and that back pain was something I would have to accept!

***“Pain equals stagnation and stagnation is the lack of flow of blood,
body fluids or energy”***

From my training in Traditional Chinese Medicine, I was familiar with the principle that *“Pain equals stagnation and stagnation is the lack of flow of blood, body fluids or energy”*. When I realised what I was experiencing could be explained by that principle I was hooked. I needed to delve deep into the medical literature to find out more and to discover the potential of Molecular Hydrogen Water and how it could help people.

I found that the published research papers into Molecular Hydrogen (H₂) were written in a way that would deter most people from ever looking at them, so I decided that I would create this book for the ordinary man and woman, who will never read those papers but would love to take control of their health.

Since my personal experience, I have heard many more stories of people experiencing incredible results with this not-so-ordinary water and my research into its actions at a cellular level has been the catalyst to my writing this book.

I truly hope that you will embrace Molecular Hydrogen Water (H₂) into your life and that you and your family will enjoy the many health benefits it may bring to you.

Declan's story of Molecular Hydrogen (H₂) Water

The 17th of March 2004 is a day I will never forget. I fractured my skull, shattered my temporal bone, and was told I would never again walk properly, talk or get the use of the right side of my face back. Luckily for me, I am driven by someone telling me that something can't be done. It motivates me to prove it can be done and I will show them how. I spent the next few months learning how to do everything again and when I did learn how to walk and get the use of my face back, I did not know it was just the beginning of my recovery. In the coming years, I had to learn how to handle the aftermath of a traumatic brain injury.

I will never forget the day I walked out the front door of the hospital with my mom holding me by my side. I was still very unstable on my feet, and it was more of a shuffle than walk as it was hard for me to focus while everything was spinning as if I had just come off a rollercoaster.

For anyone who has not had a concussion or suffered a traumatic brain injury (TBI) it can be difficult to understand what goes on as there are so many side effects not just from the medication but physically, emotionally, and also mentally. Here is a quick overview of those three areas so you can gain a bit of an understanding just in case you, your family or friend ever go through something like this. Hopefully, this will help you to understand them better and possibly support them while they go through the recovery process.

Physically

You would have looked at me back in 2004 after my brain injury and think to yourself, "Declan looks fine" yet for me Declan was all over the place. If you were to stand in front of me, I would see three to four of you at any one time. When I walked, I would have to look at everything around me so I could hold onto something in case I got dizzy and fell over. The pain in my brain or my skull was so bad I would cry myself to sleep most nights. The best way to describe this pain was as if I had my head in a vice grip being constantly squeezed where the pressure and pain would very rarely release, only when I was able to asleep. Most nights I would wake up in pain and try to fall back to sleep with the aid of medication. As you can imagine I had been on a list of meds as I was so sick afterwards from all the morphine and other drugs I was prescribed. My body blew out from the medication which was hard for me to take as I was a competitive athlete and super fit before my brain injury. My before and after pictures I find hard to look at, as I can't believe I looked like that.

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Figure 7: Declan Dore's journey from Trauma to Triumph.

Emotionally

Now here is something I am very passionate about when it comes to helping people understand TBI. When I left the hospital no one ever told me the crazy emotional rollercoaster ride I was about to embark on. I was super happy to overcome the odds and walk (more like shuffle) out the hospital door. In my mind I thought great, give me a few weeks and I will be back with my close friends training and playing sports again. Little did I know retirement from sport kicked in on 17th March 2004 at 21 years of age and that huge part of my life and identity was gone. This was something I had to battle with internally for years. Another HUGE part was, I had no idea that from a brain injury, depending on where the damage takes place, emotional changes can occur, and it can be hard to control emotions. I know for me I became very angry and aggressive without what seemed like any reason. My family were unable to handle my outbursts, especially between the years of 2004 to 2008. I was a completely different person and neither I nor my family had any idea how to handle this. Every week my mother, bless her, would have a nurse friend of hers call to our home late at night as she would hear me in my bed crying and hoped the nurse would be able to help me. Yes, the pain was one thing but the uncontrollable crying and outbursts I was unable to explain were another issue. At that time the only solution anyone from the medical field would suggest was to give me more medication which I knew was not working. I felt lost with no future to look forward to.

Mentally

From a mental standpoint, the moment I realised I had to do something was in March 2008, four years after my injury. I remember standing looking into the River Shannon, about to end my life. I was unable to handle the pain I was in, on all these three areas of my life, physically, emotionally and mentally. I have no idea what it was, but something stopped me from jumping in and I made a decision to take this situation into my own hands and look for help. I started

to research and study all things brain related and from there I was introduced to some incredible alternative health practitioners and medical doctors who prescribed supplements, herbs and therapy instead of medications and scans. I moved doctors and the lady who looked after me had a medical practice in the city center of Limerick, Ireland. Thankfully, this was where my health started to improve as this new approach was completely different to what I had been through for the previous 4 years. Now I had hope and hope is a powerful thing to have when you are going through tough times.

Before I continue, I would like to make it very clear I am a huge believer in the medical model as I would not be here today if it was not for the amazing treatment they provided to me while I was in hospital. The drugs they prescribed I know saved my life to start with. However, the aftercare treatment I was directed towards almost cost me my life. Not one time did I get told how to look after my brain, and what foods I should eat to protect it. What supplements I should consider for my brain and gut health. What type of water to drink to fully hydrate my brain. It was one way and one way only in my experience. Take this drug and if that does not work, come back to me and we will try another one.

Having overcome all this I was open to trying all types of alternative methods with some having positive effects and others not so much. I can see why some people might be turned off by this method as in my experience, there are people out there trying to sell you their therapy or supplement as the only thing that can cure or help your issue. If anyone tells you this, walk away as that for me is crazy talk. I do not believe there is one thing that can cure anything. There are many therapies and I always encourage people going through anything to try methods that are backed up by science or have a proven track record not just testimonials from people claiming it works. I love testimonials and do keep an open mind to everything, yet I will always get those around me I trust and who are also open-minded to investigate things so we can have different perspectives.

For me, I always like to go to the source of anything I am researching or looking into and on my journey I was fascinated by who the healthiest people in the world are and what they are doing to achieve this. In 2009 I made my first of two trips to Japan, and it was there I learned so much about health. For the purpose of this book, I will share the one thing that made the biggest difference to my health and that is Molecular Hydrogen water. It was in Japan I was first introduced to this type of water which had been used there in hospitals since 1974. It blew my mind and I felt somewhat angry as to WHY I was only hearing about it now and why we did not know about this in Ireland. As I dug deeper, I realised very quickly that when it comes to health, Japan is focused on prevention whereas the western world is focused on treating the symptoms by way of medication. Having experienced this firsthand it made total sense to me. We manage sickness and the Japanese do their best to prevent it!

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I came back from Japan feeling very empowered from what I have learned, yet the Hydrogen water was not something I took very seriously at the time. I thought water was just water and I knew we have really good water where I live. However, something kept pulling me back to look into this deeper as I was still in so much pain, especially in my head and everything I tried did not ease that pain. The more I looked into this water technology with the help of my medical doctor, I knew I had to invest in a water ionizer and go back to Japan to fully focus and learn more about it. I learned this technology is a licensed medical device endorsed by the largest medical organisation in Japan and has many benefits.

After speaking with a brain specialist who guided me on how to use this water technology specifically for the brain and the benefits I might expect to experience, I followed her protocol. I was somewhat excited yet still skeptical due to others promising me the same thing trying other therapies before. Anyhow I was open to following this through.

The first protocol was to remove any energy or sports drinks and start drinking the 8.5pH hydrogen water and use it for my tea and coffee. The second was to wash my fruits and vegetables with a specific pH water to remove the herbicides and pesticides which I now know play a huge role in improving our overall health. The third and most important one the doctor advised me to do was to soak my feet and wrap my entire head in 11.5pH hydrogen water for 30 minutes and every few minutes spray my head with the same water to keep the towel wet. This works as a powerful anti-inflammatory to reduce inflammation and pain as a result. I know you might be thinking come on how can water work this way? So many studies explain how if you want to dive deeper into it.

The best way for me to describe what happened after the 30 minutes is as if the pressure in my head released and I was no longer foggy and dizzy. I truly did not believe this was happening and was waiting for it to reverse straight away. That night I slept through the night for the first time in years. The following day I woke up feeling refreshed and was able to shake my head which I had been unable to do since my brain injury. My mother could not believe what she was seeing, and we both thought this was impossible. Later that day I could feel the pain slowly returning and I went straight back to repeating the same protocol and within 30 minutes it relived the pain. I did this for 5 days straight and even now to this day over 10 years later, if I ever feel any slight pain returning, I first drink more of the hydrogen water and then simply spray the 11.5pH water on the top and base of my head and within minutes I feel the pain melt away.

As you can imagine this technology became a huge passion for me and when I started to share it with others most people thought I was crazy. However, when the weight started to fall off me and people saw me back walking properly this is where those same people started to take

me more seriously. To date, I have helped thousands of people with this water technology, and I am very proud to say I am an agent for this Japanese company. It is my mission to help those who are open to being helped as it has so many benefits with the 7 different pH waters it produces.

I have created many different documents with the help and guidance of medical and alternative doctors I have worked closely with over the years and also produced a water therapies booklet to educate those who have invested in this technology to help them maximise its many benefits and uses.

On a final note, I am so grateful my close friend Vincent finally listened to me and now fully understands why I have been raving about this for years and that he took the time to write this book to back up How and Why this works with clinical studies.

I have presented you with two personal experiences of the benefits of drinking Molecular Hydrogen (H₂) water, and I could dedicate this entire book to personal testimonies. These may seem difficult to comprehend because we are led to believe that these possibilities are simply impossible. As I said at the beginning of this section, personal testimonials are the least credible from a scientific perspective, but it doesn't mean that they are not real!

The 5 But, I... - assumption traps!

Before we get into the core subject matter of this book I want to address some assumptions that I have heard so many times in my clinical practice and I still encounter regularly when trying to educate people on the incredible power of Molecular Hydrogen (H₂) Water. These assumptions are so dangerous that I want you to consider each of them as you read the following paragraphs. Assumptions are something that I have always hated, because in my experience, they were always wrong!

Trap #1 But, I have a good diet...

Let's face it most people think that they have a good diet but if you were to look closely you are likely to find that it is less than sufficient to provide all the nutrients that your body needs, so this is a very dangerous assumption to make. The processing of foods reduces their nutritional value significantly and they are often missing the essential nutrients nature provides. The solution is to *fortify* the food with *synthetic nutrients* to restore its nutritional value. Heavily processed foods may contain many preservatives and chemicals added to increase flavour and extend shelf-life, as well as the herbicides and pesticides sprayed on them, and the synthetic fertilisers used in the soil. So, we must be very careful in the foods we choose.

Recently here in Europe, policy makers have approved the use of glyphosate for another 10 years, despite the many health concerns surrounding this chemical weedkiller. A piece in Berkley Health stated: *"New research from the UC Berkeley School of Public Health shows that childhood exposure to the world's most widely used weed killer, glyphosate, is linked to liver inflammation and metabolic disorder in early adulthood, which could lead to liver cancer, diabetes, and cardiovascular disease later in life."*

I know you can come back with the counterargument that if it is allowed by the government and health authorities in Europe then it must be safe as they would not allow us to consume something harmful. All that I ask is that you consider this as you read this book because, in the coming pages, I will show you how external toxins can start a cascade of health issues, including the ones above.

The soil used to grow vegetables is not what it was. Historically agriculture used rotational farming to fertilise soil. Animals would graze in a field for one year, eat the vegetation and

then excrete their waste which would then be broken down by bacteria in the soil becoming a natural fertiliser, rich in nutrients and most importantly, micronutrients. The next year, the same field would grow crops using the fertile soil. Sadly, this is no longer the case as the same field is used year after year and the fertiliser is now a synthetic version lacking many of the nutrients our bodies desperately need.

When it comes to meats, in Europe we have a ban on hormones, but this is not the case in the US and other countries.

I am not a vegetarian and I have no objection to those who make this life choice. I like meat and fish and like many who read this I do my weekly grocery shop in a supermarket. So, this is not intended to make me look as though I am *as pure as the driven snow*, far from it. I am just an ordinary man with an ordinary family who is very much aware that the world we live in is not helping our health and longevity and it frustrates me to see so many around me prematurely succumb to chronic disease. Therefore, I make some choices to try to mitigate the damage that our environment and the food choices we make cause, and you can make these same choices should you wish.

What is the purpose of the food you eat?

1. To provide your cells with glucose to produce energy (remember this).
2. To provide us with nutrients, vitamins, minerals, metals, trace elements, oils, micronutrients and more, which are all used for growth, repair, maintenance, and regulation of essential processes in our body. For example, our muscles use calcium to contract and magnesium to relax.

If your diet is “*normal*” and you are not eating a healthy balanced diet that includes all the food groups, using organic vegetables, eliminating processed foods, and have had your nutrient levels assessed, you are likely somewhat deficient in many of the nutrients that your body desperately needs, which brings us to the next dangerous assumption.

Trap #2 But, I take supplements...

Many people take nutritional supplements, and it is somewhat of a divided argument as to which is better, synthetic or plant based. I fall within the plant-based camp that says that synthetic vitamins, meaning made from chemicals, are less effective than natural ones. The reason I say this is that in natural supplements you get co-factors that come with natural

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production, whereas with synthetic vitamins, you only get the isolated compound that has a molecular structure that resembles the nutrient, usually made from petrochemicals which are alien to your body.

No matter which side of the fence you stand on, supplementing your diet can have a role in fighting disease. However, it is not as simple as taking a multivitamin and you will be fine. If you are looking to fight disease you must give your body an abundance of what it needs. From my background and research, the recommended daily intake of nutrients is simply at survival level and is not sufficient to initiate repair within the body. When you get ill, rarely, will your doctor look at your nutritional status and recommend assessing your nutrient levels as a first course of action, which is something that happens in countries, such as Japan, where proactive healthcare is the priority. Western doctors are simply not trained in this way; they are taught that the *solution* to addressing the *symptoms of disease* lies in a synthetic pharmaceutical. Let me make it clear, I am not against this approach, as sometimes it is needed in an acute situation, but when it comes to chronic degenerative conditions, we need to look deep into our body and give it what it needs to repair.

There are specific nutrients that exert very specific actions within the body, so we must be aware of these. For example, if you have high blood pressure, then the amino acid L-Arginine is useful as it helps the body to produce a *free radical* called Nitric Oxide, which is a vasodilator, meaning it helps your arteries to relax.

The key messages here when it comes to supplementation are:

1. We need a broad spectrum of high-quality nutrients to address deficiencies we may have in our diet.
2. If we are looking to address a specific health issue, we must take specific nutrients that have been shown to have the desired effect on the condition and they must be at a therapeutic level if we are to initiate repair.

Vitamins are organic compounds that are traditionally assigned into two groups, fat-soluble (hydrophobic) and water-soluble (hydrophilic). The condition of your *internal climate* will determine how much vitamins are processed and absorbed within your body, depending upon your level of inflammation, gut microbiome, and as we will soon see they may have very little effect at a cellular level.

“H2 has the compatibility to penetrate biomembranes (fats) and diffuse into cytosol (water), mitochondria and nuclei due to its distribution characteristics, including being able to rapidly penetrate vessel walls and being able to dissolve in water or saline. By contrast, the

majority of hydrophilic antioxidants cannot penetrate biomembranes and remain on the surface”

Anti-inflammatory and antitumor action of hydrogen via reactive oxygen species. Yang et al. 2018

“Most hydrophilic antioxidants cannot penetrate biomembranes but remain on the membrane surface, whereas H₂ can be distributed rapidly into lipids (fats) and cytosol (water) and has no cytotoxicity, even at high concentrations.”

Hydrogen-rich water reduced oxidative stress and renal fibrosis in rats with unilateral ureteral obstruction. Mizutani et al. 2021

This book is not about nutrition, so I am intentionally skimming this subject, but I want to educate you about the false assumptions that people make. I will now look at the next dangerous assumption, which relates to this section, but in the context of this book, it deserves to have its own section as it is so important.

Trap #3 But, I take antioxidants...

Antioxidants reduce oxidation which is in essence the damage to our cells from free radicals, which we will cover in more detail later, and this is the cornerstone of this book, but for now, I just want you to be familiar with what they are, what they do and the potential benefits they afford us for health and longevity. The simple way to look at oxidation is when something reacts with oxygen it can break down, think of it as rusting but deep within our bodies.

The primary antioxidants you may be familiar with are:

- | | | |
|-----------------|-------------|---------------|
| ● Beta-carotene | ● Selenium | ● Vitamin E |
| ● Lutein | ● Vitamin A | ● Glutathione |
| ● Lycopene | ● Vitamin C | |

What benefits do antioxidants provide?

- | | |
|------------------------------|--|
| ● Reduce oxidative stress | ● Can contribute to mental health improvements |
| ● Support disease prevention | ● Can reduce inflammation |
| ● Support eye health | ● Support healthy ageing processes |
| ● Aid in brain function | |

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- Can keep the skin healthy
- Participate in a healthy gut microbiome

When you take an antioxidant, it must go through your digestive process and only when processed does it become available in your body. Then it must travel through your entire body, which is made up of around 36 trillion cells, and 96,560 km of veins and arteries, where it must find free radicals to neutralise before they cause damage. Molecular Hydrogen (H₂) once it enters the body diffuses quickly through all body tissues.

Why do I say that this is a dangerous assumption? Firstly, I am 100% behind you taking antioxidants as well as plant-based supplements! The issue is that deep within your body there is a battle going on and simply taking antioxidants may not be enough for you to fight disease, as many of them cannot get deep enough into your cells to make a real difference.

Many antioxidants simply cannot penetrate the cell walls and remain attached to the outside of the cell.

“Most hydrophilic compounds retain at membranes and cannot reach the cytosol, whereas most hydrophobic ones cannot penetrate the biomembranes in the absence of specific carriers. In contrast, H₂ can rapidly distribute into cytosol and organelles.”

Molecular hydrogen is a novel antioxidant to efficiently reduce oxidative stress with potential for the improvement of mitochondrial diseases. Ohta. 2012

But herein lies another problem, we need free radicals as they signal processes within our bodies, which are essential for health, so even if we have enough antioxidants in our bodies to visit the many trillions of cells, we don't want them wreaking havoc!

Next is the blood-brain barrier, which is designed to protect our brain and central nervous system. Many neurological diseases have their origin in the oxidation of cells and neurons, so it is essential that we have antioxidants in our brain. However, some antioxidants cannot pass through the blood brain barrier and those that do, may not be in sufficient quantity to make the difference we need and as noted above, many of them cannot penetrate the cell membranes. Conditions such as Alzheimer's and Parkinson's Disease as well as Dementia and Strokes have all been associated with cellular damage caused by free radicals and oxidation and what you will soon learn is that Molecular Hydrogen (H₂) has been shown to have a neuroprotective effect in these conditions.

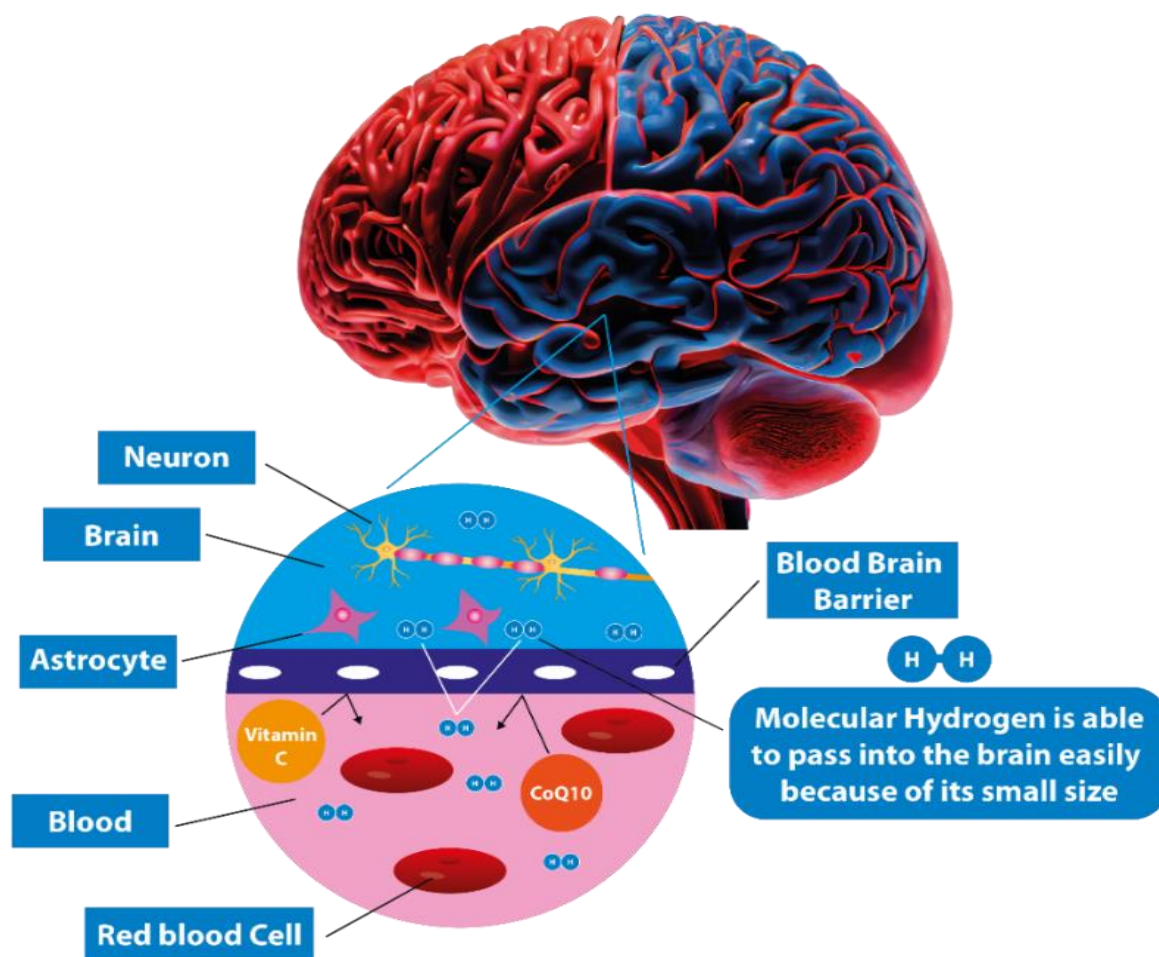


Figure 8: The blood brain barrier

Trap #4 But, I am slim, and I exercise regularly therefore I am healthy...

There is an attitude that slim equals healthy and this couldn't be further from the truth. All it really means is that your basal metabolic rate (the rate at which the body uses energy while at rest to maintain vital functions such as breathing and keeping warm) is efficiently handling the amount of food you consume, or that you are exercising and burning calories etc. It is not an indication of complete health whatsoever and I will qualify that now.

Earlier I mentioned my cardiovascular health service where I assessed arterial stiffness (a great indicator of your overall cardiovascular health status) and the fact that many “*slim*” athletes and fitness instructors had elevated arterial stiffness levels. I mentioned the fact that there are cases every year where these *fit and healthy* people suddenly drop dead from heart attacks and aneurysms. I have included 15 clinical studies that are seeking to address the issues that exercise causes at a cellular level (more on this later, for now, I am just dealing with assumptions). The reason for this is that when you exercise your body produces more free

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radicals and if these are not eliminated by your inbuilt antioxidant enzymes (endogenous) or external antioxidant supplements (exogenous), they are potentially causing damage to your cells, which can include cells of your arteries, brain, heart and any other organ. But even if you are taking antioxidants it may not be enough as there is a nasty free radical called *Hydroxyl* (more on this later) that is produced in your cells, where the majority of antioxidant supplements cannot reach, resulting in damage to the cells, DNA etc. This is compounded by the fact that as we age our inbuilt enzymes, which can limit the production of Hydroxyl, start to decline and this is where age-related conditions start to develop. Molecular Hydrogen (H₂) effectively neutralises Hydroxyl.

I mentioned my 35 years in martial arts, rowing two 24-hour endurance races across the Irish Sea, so I am not against exercise, quite the opposite. I am simply trying to address common misconceptions so that you can act and initiate the small changes you can make a big difference to your health. Molecular Hydrogen (H₂) Water when consumed can penetrate deep into the cells and neutralise Hydroxyl, turning it into water. I will cover this in more detail a little later, for now all I want you to know is that there is hope!

Combine this with the information I have shared in Assumptions 1-3, and you can see how you can appear outwardly healthy, have a *normal* diet, and take vitamins and antioxidants, while internally a vast amount of cellular damage is taking place 24x7 leading you toward dis-ease.

Trap #5 But, I have been diagnosed with X =, it's too late for me...

Next, we have the person who has resigned themselves to their mortality and are simply marking X's on the calendar till their time is up. These are the people who have been diagnosed with a condition, such as Alzheimer's Disease (13), high blood pressure (5), blood vessel issues (11), bone and joint issues (9), brain disorders (35), cancer (19), cardiovascular diseases (24), diabetes (11), heart issues (7), inflammation/allergies (12), intestinal issues (7), kidney diseases (17), liver issues (24), lung diseases (32), metabolic issues (13), nerve pain (7), neurological/neurodegenerative diseases (22), Parkinson's Disease (12), who have just given up hope and resigned themselves to existing for whatever time they have left. In case you are wondering, each of the numbers in brackets represents the number of clinical studies that I have included in this book that discuss the potential health benefits Molecular Hydrogen (H₂) has demonstrated in addressing a primary cause of these conditions.

The references I have provided are not an exhaustive list of all the research that is available into the benefits of Molecular Hydrogen (H₂) for specific conditions, rather I have provided

them as signposts for you to follow should you want to give yourself a better quality of life by reducing the cellular damage that is at the root of many of these conditions.

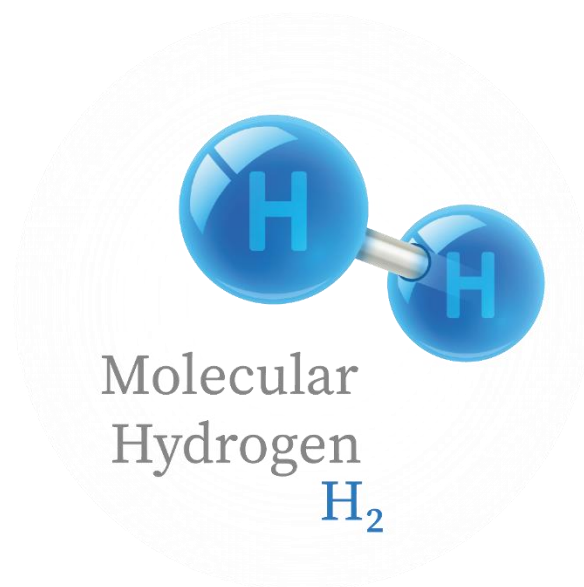
Read them if you wish at a later point, but not now, because what I am about to share with you is a potential way for you to give your body a constant supply of exactly what it needs to eradicate a primary cause of dis-ease. Molecular Hydrogen (H₂) has the power to penetrate every tissue in your body, all the way to the nucleolus of your cells, and is essential for health and possibly recovery. So even if you have a condition, please don't give up hope as there may be a solution in the pages of this book.

Have you fallen foul of any of these assumptions?

If you have fallen victim to any of these assumptions, the following pages will enlighten you and show you how you can become an active participant in your own health and recovery from *dis-ease*. You will learn how you can give your body an abundance of what it needs to help fight the very cellular damage that is at the root of many, if not all the conditions we succumb to as we age.

I implore you to have a healthy diet, take high-quality nutritional supplements (vitamins, minerals, antioxidants, essential oils, amino acids etc.), take regular exercise, sleep better, relax more and most importantly, please include Molecular Hydrogen (H₂) into your health strategy.

Next, we will pull back the veil on this *miraculous* molecule.



What if the *Fountain of Youth* was within your grasp?

The quest for eternal youth

Since the 16th century humanity has been captivated by the elusive promise of the "*Fountain of Youth*." This mythical source, rumoured to bestow eternal youth upon those who partake of its waters, has fuelled the imaginations of explorers and seekers throughout history. The legend's longevity owes much to the existence of "Miracle Waters" discovered in diverse corners of the globe.

From the hallowed grounds of Lourdes in France to the pristine landscapes of Nordenau in Germany, the enchanting narratives of Tlactoe in Mexico and the mystical waters of Nadana in India, these "Miracle Waters" have drawn millions, each carrying tales of transformative health benefits and miraculous healing. The pilgrimage to these sacred sites has become a global phenomenon, leaving in its wake a trail of testimonies attesting to the extraordinary properties of these revered waters.

Intrigued by the profound effects reported by those who partook in these "Miracle Waters" researchers embarked on a scientific journey to unravel the mysteries concealed within. The meticulous analysis of water samples from these revered locations revealed a common denominator - the presence of a unique molecule: Molecular Hydrogen (H₂). This unassuming molecule, found in very few places, emerged as an unexpected revelation, providing a crucial link to the perceived miraculous properties of the legendary waters.

In the pursuit of unravelling the enigma of "Miracle Waters" researchers undertook a crucial analysis measuring the Molecular Hydrogen content within these revered sources. Astonishingly, the findings revealed concentrations of Molecular Hydrogen reaching up to 0.08 parts per million (PPM), igniting a paradigm shift in our understanding of this seemingly inert gas.

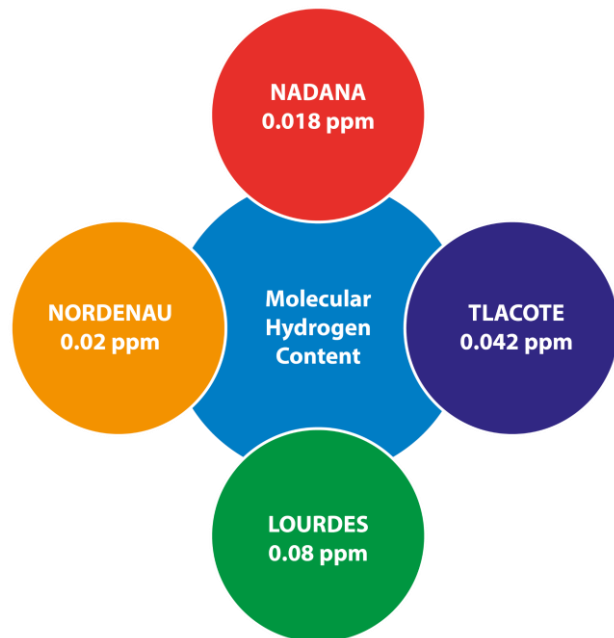


Figure 9: Sacred sources of Molecular Hydrogen (H₂)

The uncommon presence of Molecular Hydrogen (H₂)

Unlike common molecules found in nature in abundance, Molecular Hydrogen (H₂) is a rarity. Its occurrence in the analysed "Miracle Waters" added a layer of intrigue to the ongoing quest for understanding. Researchers delved into the distinctive properties of Molecular Hydrogen (H₂), recognising its potential significance in the reported health benefits attributed to these legendary waters.

As our exploration unfolds, we will walk the intersection of myth and science, peeling back the layers of the Fountain of Youth legend to reveal the unsuspected role played by Molecular Hydrogen in the enduring narrative of rejuvenation and vitality.

Hydrogen makes up 75% of our universe! It is the smallest molecule on the periodic table as it has just one proton, yet this tiny molecule is a powerhouse of possibilities, from the creation of the hydrogen bomb, to fuelling cars, this molecule has incredible potential.

But what if this molecule held the answer to your health and longevity? Japan enjoys the longest lifespan on our planet and there is a reason for this. The United States of America ranks number 41 in the world for longevity, and there too is a reason for this, which we will cover later.

To understand Molecular Hydrogen, we must first learn about this amazing molecule and how it could be the key to unlocking your true health potential.

The Fishbowl - An Explanation of the Human Cell Environment

For us to understand what I call our *Internal Climate*, we must start to appreciate the hidden processes that go on in our bodies every day. Our cells are working 24/7 producing energy, exchanging oxygen for carbon dioxide and performing so many more processes, it truly is a miracle of nature.



Think of your internal climate as a fishbowl. If the water is not changed or filtered regularly, waste builds up and can eventually extinguish the life within. One of the first functions that our cells put on hold when water is lacking is detoxification - the ongoing removal of cellular waste and environmental toxins.

All the detoxification pathways in the body (liver-colon, kidney-bladder, skin-sweat, lung-breath, and lymphatic system) require water. When water is not supplied in abundance, wastes build up in the fluid that surrounds each cell and each of the detoxification pathways become sluggish.

However, the body is ingenious. It always adapts. Under the stress of dehydration your body will find places to store toxins where they will not immediately interfere with life processes. Toxins and wastes can end up as fatty tissues, in joints and as deposits in arteries. In the short-term life is preserved but in the long-term the consequences are obvious.

Drinking plenty of good water every day is like changing the water in your fishbowl. Since we need to drink water anyway, you might as well get the best water possible. But what if there was a way for you to get an abundance of Miracle Water (H₂) into your body every day?

I would like to use the table below to demonstrate how much pressure our bodies are under constantly. When we are young our waste management systems work effectively, however as we age, this process can become overburdened, and illness prevails.

A Fishbowl - 100% Water

The Human Body - About 70% Water

Fish swimming in a fish bowl

Human body cells

Surrounded by water

Surrounded by interstitial “water” fluids

Fish food dropped into the water

Nutrition brought in by blood

Fish eat the food

Cells absorb the food

Fish metabolise the food and turn it into energy

Cells metabolise the food and turn it into energy

Fish excrete the waste back to the water

Cells excrete the waste back into fluid

If we don’t remove the waste, what happens?

If we don’t remove the waste, what happens?

If the fish get sick, what “*drug*” would you recommend we give them?

If a person gets sick, what “*drug*” would you recommend we give them?

Does administering a drug address the real issue?

It seems that in countries and communities where allopathic medicine and the prescription of medications are the dominant methods of health care, the functional benefits of electrolysed water are largely ignored.

Taken from Electrolyzed Water: Its History and Relevance to Modern Health Management.

Authors: N.L Darnell, M.D Trow.

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In the simple example above, you can clearly see that addressing the pollution in the fishbowl by adding chemicals does not address the actual issue, it simply masks it. How is your body any different?

If we look at the treatment of symptoms of many chronic conditions with pharmaceuticals it presents the exact same issue. Only when the underlying cause of the symptom is addressed will we see improvement. If the underlying cause is not addressed, then the cycle of multiple medications or polypharmacy begins. Although essential at times, this is a dangerous route to take as the interactions of multiple medications can wreak havoc and have been noted as one of the primary causes of death, ranking up there with cancer, cardiovascular disease, stroke, and diabetes.

If we can change the water in our internal climate, support our natural antioxidant system and help our detoxification pathways work more efficiently, then we have the potential to change our life.

Common symptoms of dehydration

Fatigue - Dehydration causes the function of enzymes to slow down and some of these enzymes are essential to protect our cells, more on that later.

Constipation - During dehydration, the colon removes more water than normal to provide fluid for other parts of the body. Your body will do all that it can to preserve life, so in this last part of the elimination process, your colon will desperately scavenge any water it can. Many common medications cause dehydration in the body that is manifested by constipation.

Digestive Disorders - Dehydration reduces the secretion of digestive juices. This can be the root cause of heartburn, gastritis, and ulcers.

High blood pressure - The body's blood volume is mostly water. Dehydration causes the blood to thicken which is more difficult to pump.

Cholesterol - Dehydration causes cellular water loss. The body produces more cholesterol in an attempt to seal off water loss.

Respiratory issues - A large amount of water is exhaled during the normal breathing process. Dehydration results in restricted airways to reduce water loss.

Acid-alkaline imbalance -

Dehydration significantly reduces the body's ability to remove acidic wastes.

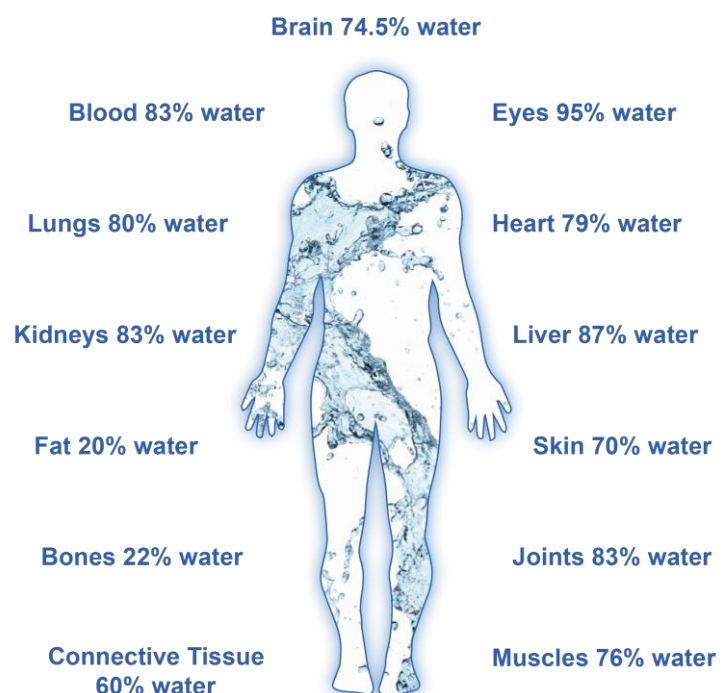


Figure 10: The human body water composition

Weight gain - The human brain cannot distinguish hunger from thirst and often we mistake our body's need for water as hunger. This leads to overeating when in fact we should be drinking water and weight is gained as a result. As mentioned earlier, if the detoxification systems of our bodies are not working toxic waste products will be deposited as fat or within our joints.

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Skin disorders - Skin is the largest organ in your body but it is also your body's largest detoxification pathway. Lack of water restricts the movement of toxins through the skin and can result in premature wrinkling. A point to note here is that your skin can also absorb chemicals from the water we use to shower and bathe. So, if you suffer with skin problems, as well as hydrating with good quality water, you should do all that you can to make sure that the water your skin comes into contact with is as chemical free as possible.

Liver, kidney and bladder problems - The liver, kidneys and bladder all require large amounts of water for detoxification. Dehydration increases the concentration of the toxins these organs must eliminate.

Joint problems - Cartilage is mainly water. Dehydration increases abrasive damage and delays repair. The bursa in your joints are like protective sacs that when hydrated help to lubricate your joints. I mentioned earlier that this was my direct experience of my knees and the improvement since starting to drink Molecular H₂ Water.

Premature ageing - The body of a newborn baby is over 90% water. The amount of water declines with age to nearly 50% in older people.

The foundations of life

Two things are fundamental to life, O₂ (Air) and H₂O (Water). If your body is deprived of air for 5-10 minutes you will most likely die, and it can take just a few days to die without water. When we are conceived, we are cells containing water that divide which are housed within a protective sac that contains a fluid that is made up of water. From the moment we start our journey into this world to the moment we leave, water is essential.

Our body is over 70% water, but when we think of water many think of the liquid that comes from our tap or from a bottle. When I say water, I mean all the fluids within our body. Our blood, the fluid within our cells, outside our cells and in every organ within our bodies.

Making sure we have enough water is essential if we are to enjoy good health as even mild dehydration, as we have seen, will initiate a sequence of events that will ultimately lead to ill health and *dis-ease*. In a few chapters, I will explain O₂ and its role in health and dis-ease, but for now I will focus on water as this is going to be your key to unlocking your good health and potentially longevity!

Is all water the same?

The simple answer is NO! Many people, including me for a long time, simply thought water is just water but this could not be further from the truth. As do many others, every week we would stock up on bottled water in the local supermarket as it tasted so much better than our tap water *and we thought we were doing the right thing*. It was only when I experienced *true* water would I appreciate the difference and its impact on my own and my family's health.

Many doctors and practitioners suggest that you just need to consume fluids, tea, coffee, juice, or any other type of *fluid* to remain hydrated. This is simply wrong and a very well-intentioned mistake on their part.

The quality and quantity of water that we drink has a direct impact on our health and a recent study stated: *“There is growing evidence that even mild dehydration (determined to be 1–2% body mass loss due to fluid deficit) may lead to various age-related diseases, including arthritis, cataracts, osteoporosis, type 2 diabetes (T2D), hypertension and Alzheimer’s disease (AD)”* - Redox-Mechanisms of Molecular Hydrogen Promote Healthful Longevity

If I asked you to drink from a pool that contained dirt and motor oil you most likely would tell me no, yet many do the equivalent of this every day, with overconsumption of carbonated drinks that are laden with chemicals and highly acidic. Many have fallen for the sugar-free trap in the hope that reducing sugar will be of some benefit to their health, but this couldn’t be further from the truth.

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For example, many of the popular soft drinks use phosphorus acid to provide its sharp flavour and to extend shelf life. A recent study showed the impact of this chemical and early-onset osteoporosis, so we really should treat these drinks with some level of caution.

Even when it comes to our municipal water supply, although arguably better than most bottled water and better than commercial drinks, comes with some additional chemicals designed to sanitise the water or to regulate its pH level, so along with our H₂O, we can get additional chemicals.

Chemicals used in water treatment*

Chlorine	Calcium Dioxide	Aluminium Sulphate
Calcium Hypochlorite	Fluoride	Sodium Hydroxide
Chloramine	Iron (III) Chloride	Calcium Hydroxide
Phosphoric Acid	Sodium Hypochlorite	Calcium Chloride
Citric Acid	Ferric Sulphate	Ferrous Chloride
Aluminium Chloride	Acetic Acid	Alum

**These may vary depending upon your location*

Table 2: Common chemicals added to water.

I think we can all agree that drinking water that is (a) clean and (b) chemical-free, makes a lot of sense.

Our body - Nature's amazing gift

The human body is a wonder of whatever your belief is and for the purpose of this book, I will refer to it as nature. Our bodies abilities are incredible and every year we learn more and more about this wonderful gift we get to call our home. In the case of healthy humans, we are born with an array of tools that are designed to maintain homeostasis (keep us healthy) and to fight against the vast array of bacteria, viruses, parasites, and other pathogens that try to invade our bodies to make themselves a new home.

But there is a more insidious enemy that lives within us and is growing in number day by day, and this is what the vast majority of people don't know or are blissfully unaware of. What many people do not understand is the fact that as oxygen breathing (aerobic) creatures, the very air we breathe contributes to damaging our bodies, as it effectively rusts our cells when it pairs up with some other nasty little molecules. Many think that we simply breathe out carbon dioxide, but the problem is happening at a far deeper level.

Once in the lungs, oxygen is moved into the bloodstream and carried throughout your entire body. At every cell in your body, oxygen is exchanged for a waste gas called carbon dioxide. Your bloodstream then carries this waste gas back to the lungs where it is removed from the bloodstream and then exhaled. As we can see oxygen is essential for our life and it is everywhere within our body, it truly is incredible. But this is where the trouble starts.

To understand why the trouble starts with the very air that we breathe, we need to start to look at how we produce energy at a cellular level within our bodies. Oxygen is used at a cellular level in the production of energy called Adenosine triphosphate (ATP) and this process is called Cellular Respiration.

Cellular respiration:

1. It is a metabolic process that takes place in cells of organisms by which they use oxygen to break down glucose to produce ATP.
2. It provides the chemical energy required for the functioning of cells.

It is the process of the production of energy that leads to the creation of free radicals and when these cause damage to our cells we have the genesis of disease.

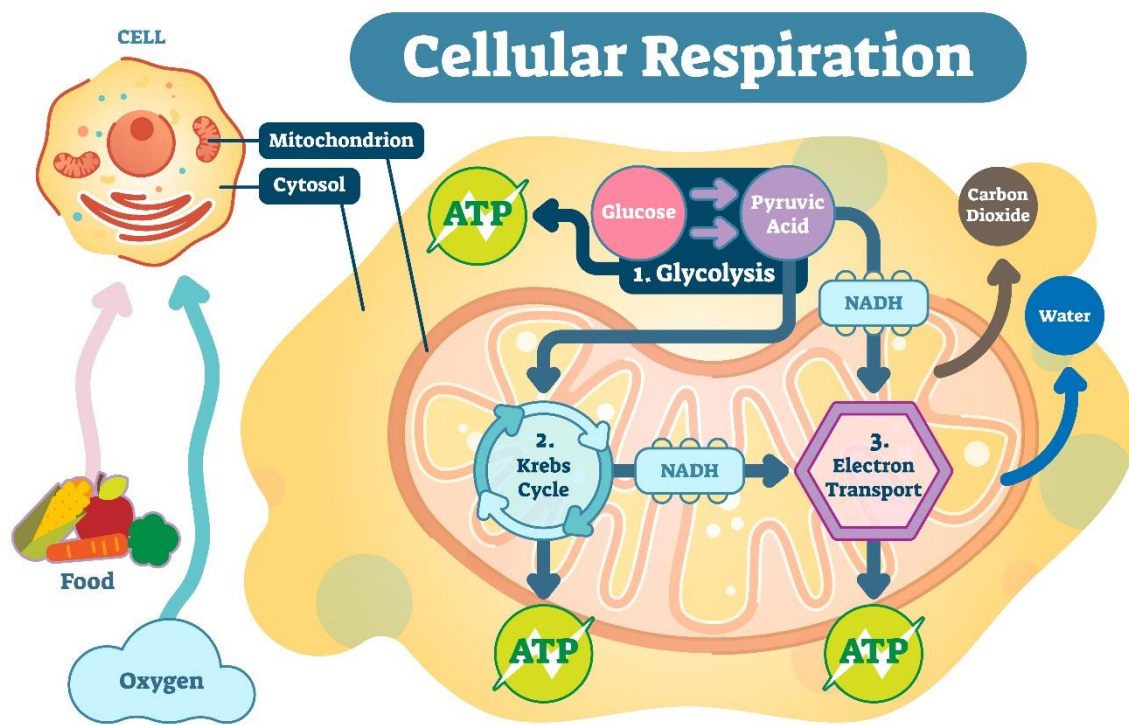


Figure 11: The production of energy in cells

Understanding how energy is produced in our body

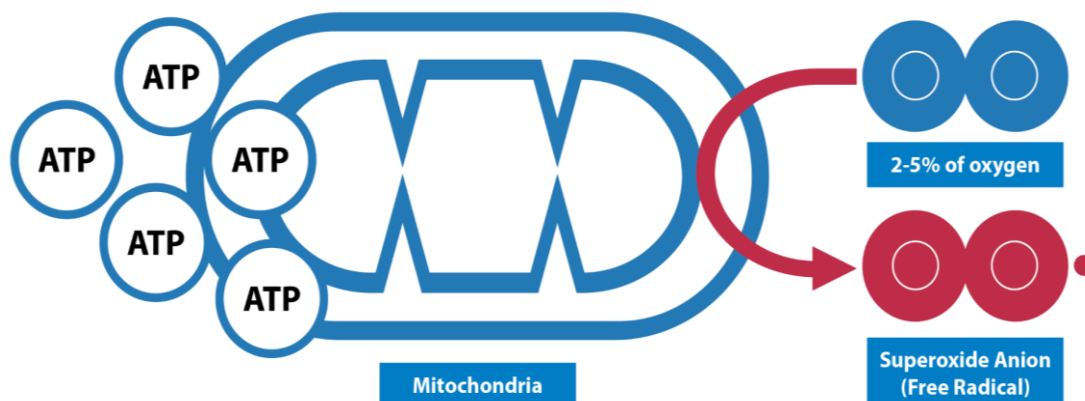


Figure 12: Cellular production of ATP leading to creation of free radicals

Within our cells, there are many tiny factories for energy production (mitochondria) and as they break down the food you eat to create energy (ATP), they produce free radicals as waste products.

If we drive a car that uses petrol, we know that the fuel in our tank is burned to create the power that propels us forward, this is the energy needed to make the car move. The petrol combustion process this leads to by-products of carbon dioxide and water vapour, both of which are not harmful. However, 5-10% of the time the combustion is incomplete, and the process produces a harmful substance called carbon monoxide which is highly toxic and dangerous to our health.

What I would like you to do is think of carbon dioxide and water vapour as harmless free radicals and carbon monoxide as a very dangerous free radical.



Figure 13: Human cell and mitochondria

Similarly, the mitochondria in your cells break down glucose (from food) to produce ATP (energy currency of cells). In this process, 2-5% of all the oxygen you breathe is converted into free radicals.

The number of free radicals formed inside the cells is influenced by your lifestyle and your environment. Just like how an older car that is not well maintained produces more pollution

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(Smog), as you age and live without taking good care of your body, you are prone to increased free radical production, which as I will soon show you leads to a state of dis-ease.

Your body produces more than 18 litres of free radicals per day

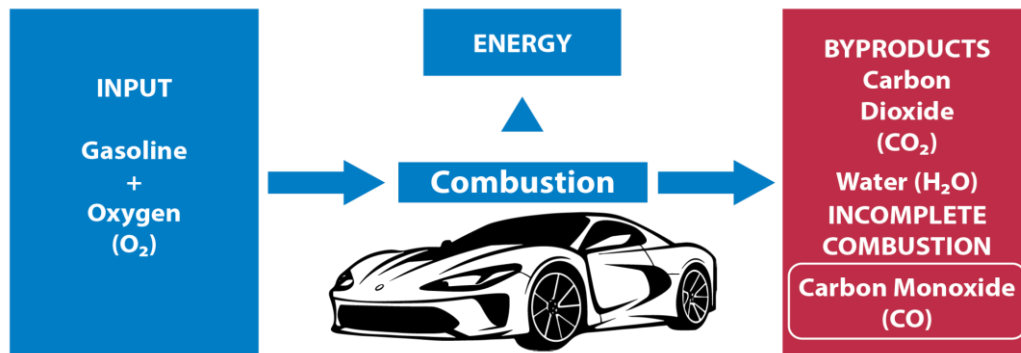


Figure 14: Internal combustion engine producing Carbon Monoxide

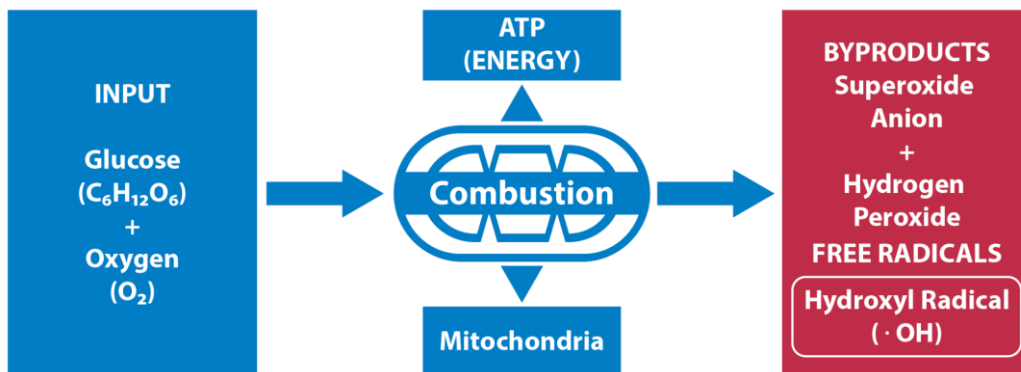


Figure 15: Cellular respiration to produce energy, produces free radicals

Causes of free radical production

Regardless of your overall health, free radicals are produced within your cells every second of every day. The squares below illustrate the most prevalent contributors to additional free radicals within your cells. Check to see how many of these factors you are exposed to on a daily basis.



Figure 16: Sources of free radicals

What is a free radical?

Next, we will explore the term *Reactive Oxygen Species*, otherwise known as *Free Radicals*. These are molecules that are missing one electron, and they are always trying to get that missing electron which they will steal from anywhere they can. The stealing of the electron makes the molecule where the electron was stolen from unstable. Free radicals can steal an electron from cellular biomolecules which includes proteins, lipids (fats) and nucleic acids (DNA and RNA).

A technical definition is “*Reactive oxygen species (ROS) are molecules capable of independent existence, containing at least one oxygen atom and one or more unpaired electrons. This group includes oxygen free radicals, e.g. Superoxide Anion radical, Hydroxyl radical, Hydroperoxyl radical, Singlet Oxygen, as well as free Nitrogen radicals.*”

In the intricate dance of molecular interactions within our cells, free radicals emerge as elusive players, characterised by their inherent instability due to the absence of an electron. This peculiar feature sends them on a relentless quest for equilibrium, often leading to interactions with neighbouring molecules.

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The pursuit of stability propels free radicals into a dangerous role - they attack nearby molecules, seeking to satisfy their electron deficiency. The ensuing skirmish, known as oxidation, unfolds when a free radical successfully seizes an electron from another molecule. This exchange, though seemingly innocuous, marks a pivotal moment, as the stolen electron leaves its host molecule damaged.

In the intricate tapestry of cellular processes, the concept of oxidation takes centre stage - a molecular theft where electrons become the currency of exchange. Unravelling the dynamics of these molecular encounters unveils the intricate mechanisms at play, underscoring the significance of free radicals in shaping the delicate balance within our cellular realm.

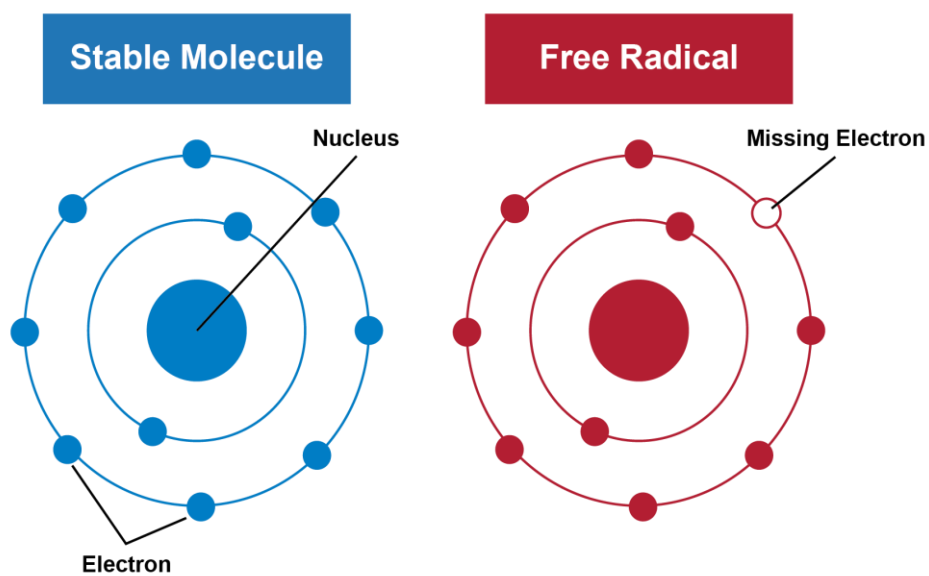


Figure 17: Stable molecule and unstable free radical

Are all free radicals bad?

Contrary to their notorious reputation, not all free radicals are agents of chaos within the intricate landscape of cellular processes. Some, such as Hydrogen Peroxide (H_2O_2) and Nitric Oxide ($\text{NO}\bullet$), have essential roles in maintaining the delicate equilibrium within our cells.

Hydrogen Peroxide, often associated with household antiseptic solutions, transforms into a biological weapon within our immune cells. Here it serves as a potent tool, enlisted in the mission to combat bacteria. The immune system strategically wields Hydrogen Peroxide to eliminate microbial threats, showcasing a nuanced and beneficial facet of this free radical.

In a parallel narrative, Nitric Oxide emerges as a signalling maestro orchestrating a myriad of processes within the human body. Among its many responsibilities, Nitric Oxide takes centre stage in the art of vascular relaxation. As a vasodilator, it plays a crucial role in regulating blood vessel tone, contributing to the overall balance and well-being of the cardiovascular system.

In 1998, Louis Ignarro, Robert F. Furchgott, and Ferid Murad won the Nobel Prize in medicine. Their research showed how Nitric Oxide supports cardiovascular health. Nitric Oxide production can be helped with the supplementation of the amino acids L-Arginine and L-Citrulline.

This intricate duality challenges the conventional perception of free radicals as mere troublemakers, inviting us to explore the nuanced roles they play in sculpting the symphony of cellular functions.

There's a war waging within your cells

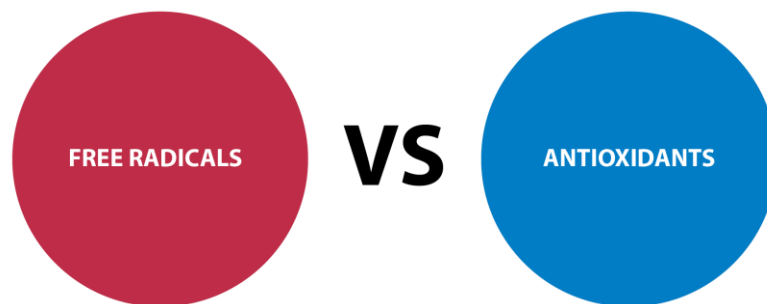


Figure 18: Free Radicals vs Antioxidants

Your cells face continuous assaults from free radicals, which as we now know, are byproducts of energy production occurring in your mitochondria. These free radicals are short-lived, unstable entities that engage in reactions with other molecules in their pursuit of stability.

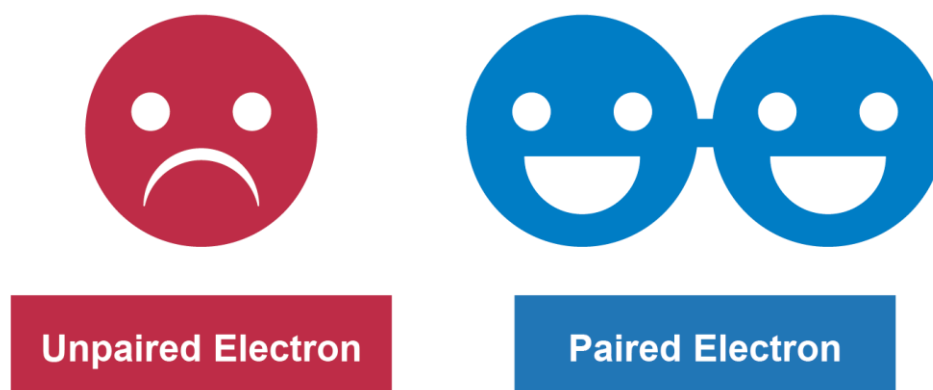


Figure 19: Unpaired electrons (free radicals) and paired electrons

Ordinarily, your antioxidant defence system can effectively manage and neutralise free radicals before they cause harm. However, as you age and toxins accumulate in your system, the efficiency of your antioxidant system diminishes, allowing free radicals to wreak havoc inside your cells.

What we must remember here is that as our inbuilt antioxidant defences diminish every cell is at risk of damage by free radicals, there is literally no escaping this and it is just a matter of when will the symptoms of disease appear. This is why we must do everything in our power to support our bodies if we want to live a life that is healthy and disease free.

We cannot fight mortality and that is a fact, but we do have choices! We can choose to give our bodies what it needs to defend us at a cellular level, we can slow the progression of disease and we can improve our quality of life by implementing a health strategy that supports us as we age, or we can do nothing.

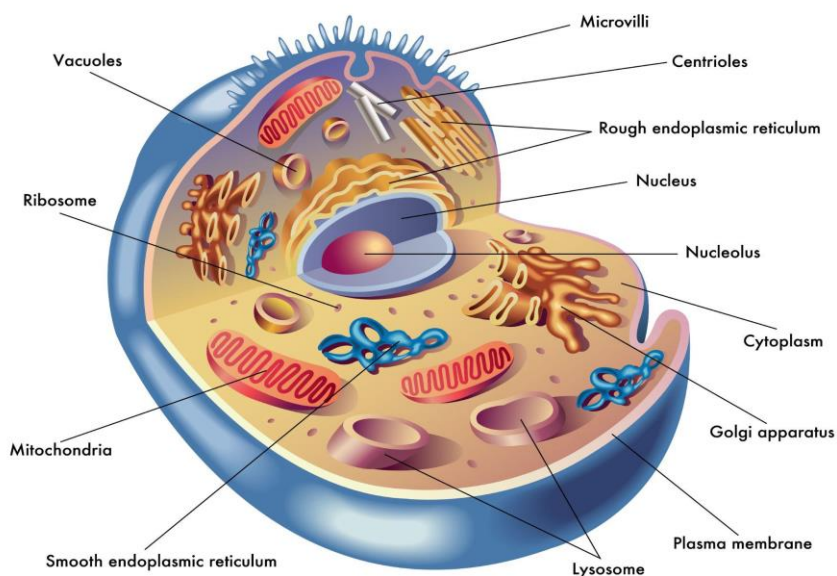


Figure 20: Human cell structure and organelle

As you can see in the image above, your cells contain many organelles, all of which are susceptible to damage by free radicals. If the damage is the nucleolus which contains your DNA and RNA, it can lead to cellular mutation which has been linked to cancer. If it is the mitochondria it can lead to the production of more free radicals and if it is the cell membrane it can lead to Lipid Peroxidation. All of these are bad for your health and ultimately lead to many serious health conditions.

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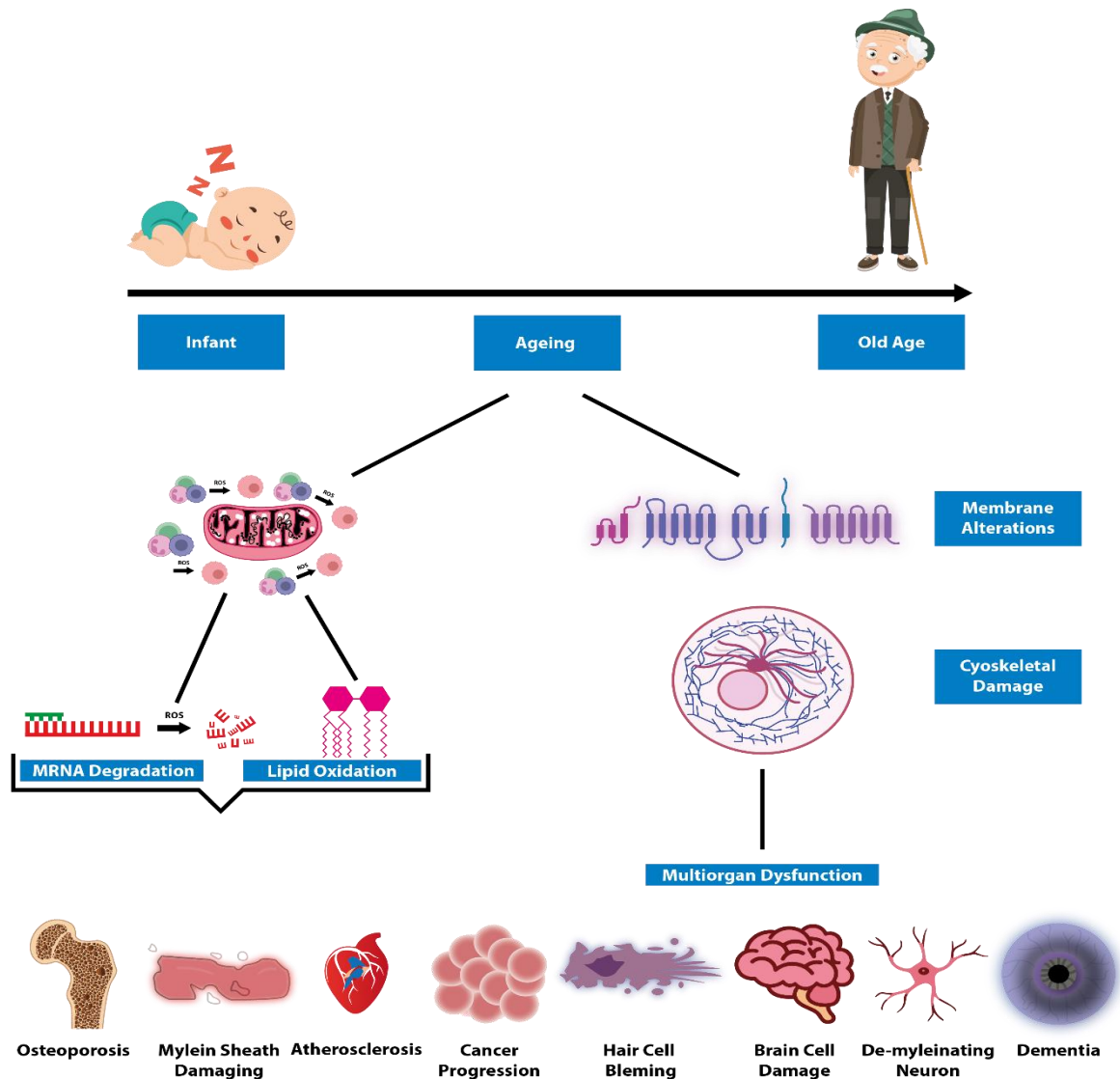


Figure 21: Cellular ageing and damage diseases caused by free radical damage

The enduring damage caused by free radicals, known as oxidative stress, has been linked to the ageing process and numerous chronic diseases such as cancer, diabetes, neurodegenerative conditions such as Parkinson's Disease, Alzheimer's Disease, Dementia, cardiovascular disease, and more. This is why antioxidants have remained a central focus and keyword in the nutritional supplement industry since its inception.

Your antioxidant defence system

Mitochondria play a vital role in generating energy in the form of ATP. However, this energy production process also results in the production of free radicals as a toxic byproduct. Oxygen is essential for driving energy production, yet a downside is that 2-5% of the oxygen involved in this process transforms into free radicals known as Superoxide Anions.

Antioxidants protect your cells from free radical damage - Step 1

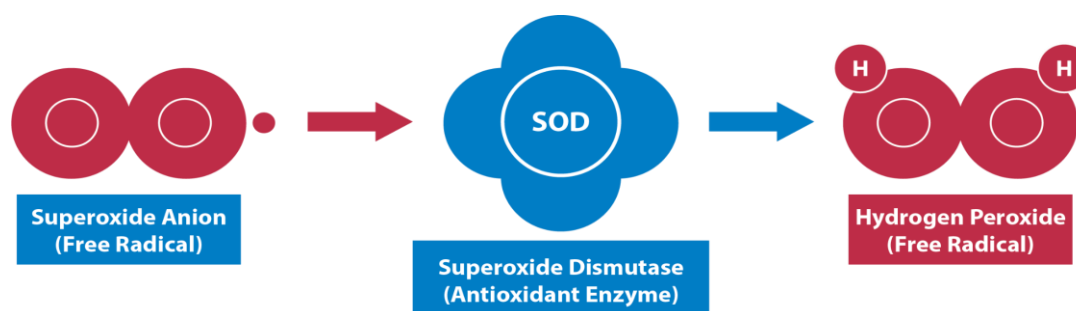


Figure 22: Superoxide Dismutase converts Superoxide Anion to Hydrogen Peroxide

Inside your cells, there are antioxidant enzymes like Superoxide Dismutase (SOD), which play a crucial role in neutralising Superoxide Anions. These enzymes convert Superoxide Anions into Hydrogen Peroxide. Hydrogen Peroxide, although a weak free radical, serves important functions within your cells. As mentioned earlier, your immune system utilises Hydrogen Peroxide to eliminate bacteria and to communicate signals to the rest of your immune system in the event of tissue injury. For instance, when you get a cut, the generation of Hydrogen Peroxide signals your white blood cells to mobilise and respond to the injury so it is not all bad. Another crucial antioxidant enzyme is Glutathione Peroxidase (GPX).

Antioxidants protect your cells from free radical damage - Step 2

In a two-step process, two GPXs convert one Hydrogen Peroxide into two water molecules. Is this not a truly incredible part of what nature has provided us with?

During this reaction, the two GPXs bond together, forming Glutathione Disulfide (GDS). GDS needs to be recycled by another enzyme to convert back into two GPXs, ready to address more Hydrogen Peroxide molecules.

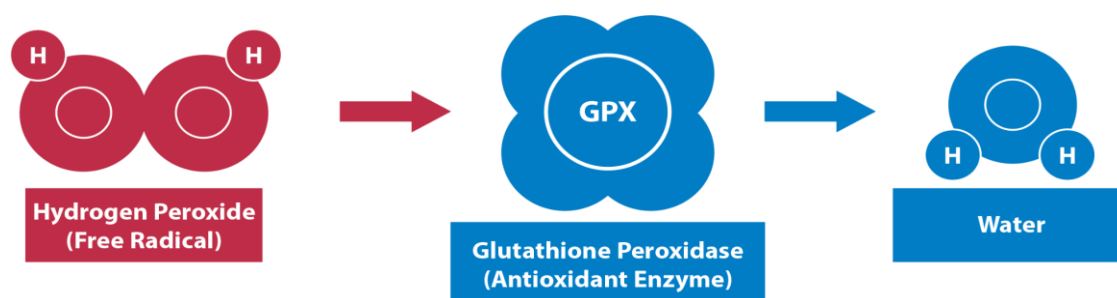


Figure 23: Glutathione Peroxidase converts Hydrogen Peroxide to water

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This indicates that GPX is not always readily available and there is a limit to its function as an antioxidant. This is a really important point to note because if we don't have enough GPX it leaves Hydrogen Peroxide available to convert into a really nasty free radical!

The two-step process of eliminating free radicals within your cells is pivotal for cellular health. If there is insufficient Superoxide Dismutase (SOD) and Glutathione Peroxidase (GPX) available, Superoxide Anion and Hydrogen Peroxide can accumulate in your cells. Although these free radicals may not be inherently harmful, they can react with each other to form a highly destructive free radical - the Hydroxyl Radical.

Depending on your diet, lifestyle and environment, your cells may end up generating more free radicals than your antioxidant enzymes can effectively manage. Moreover, the natural decline of antioxidant enzymes with age exacerbates this challenge and this is a major contributor to the deterioration of our health as we age. Excessive formation of free radicals inside your cells can lead to serious consequences for your health, so please do not ignore this if you want to take control of your health!

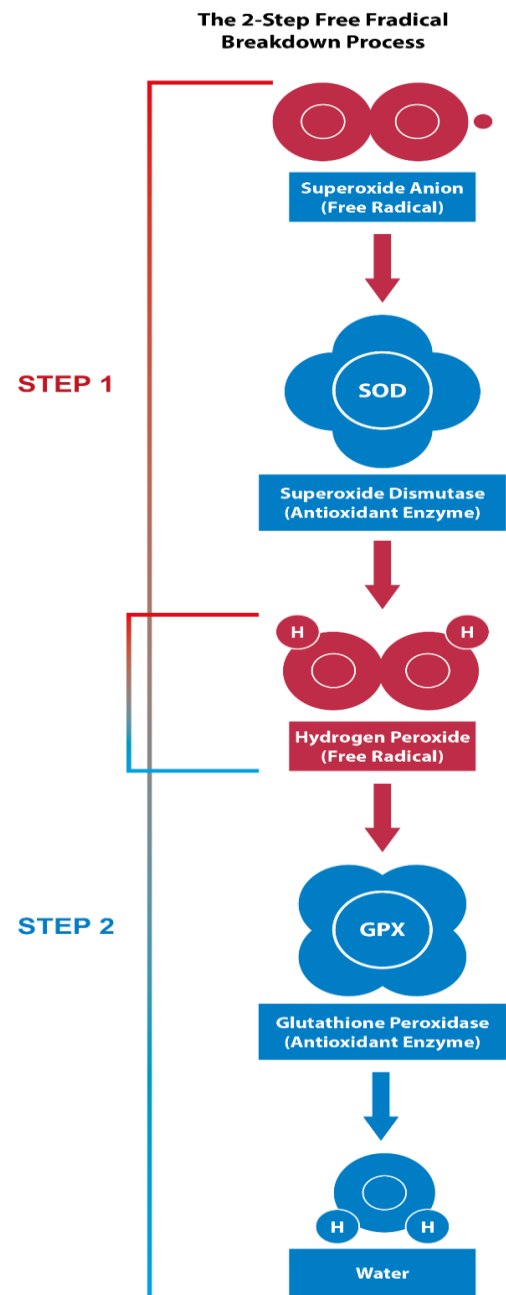


Figure 24: Two Step Process

Hydroxyl - the most dangerous free radical!

The essential task of energy production comes at a cost, but as with all things in the human body it is not black and white. The cost comes in the form of Free Radicals but these free radicals, serve both good and bad purposes as we have discussed earlier.

When free radicals linger without prompt elimination, they transform into more hazardous forms. For instance, Hydrogen Peroxide easily converts into the extremely dangerous

Hydroxyl Radicals, particularly when in the presence of iron (found in blood cells) or other transition metals.

If we bring this into the context of our arteries, these are made up of cells and these cells are producing Hydrogen Peroxide. As the cells in your arteries have a constant supply of blood flowing past them, could we theorise that potentially some of the iron in blood could mix with the Hydrogen Peroxide to produce Hydroxyl? If it did, what do you think could happen to the cell in the artery wall? Could it become damaged when Hydroxyl steals an electron and causes irreversible damage to the cell wall? The same can be applied to the small arteries in your brain, could these become damaged too and contribute to stroke risk?

Please note: Arterial wall cells are among the most vulnerable to mitochondrial dysfunction due to their barrier and metabolic functions. In atherosclerosis, mitochondria cause alteration of cellular metabolism and respiration and are known to produce excessive amounts of reactive oxygen species (ROS) resulting in oxidative stress.

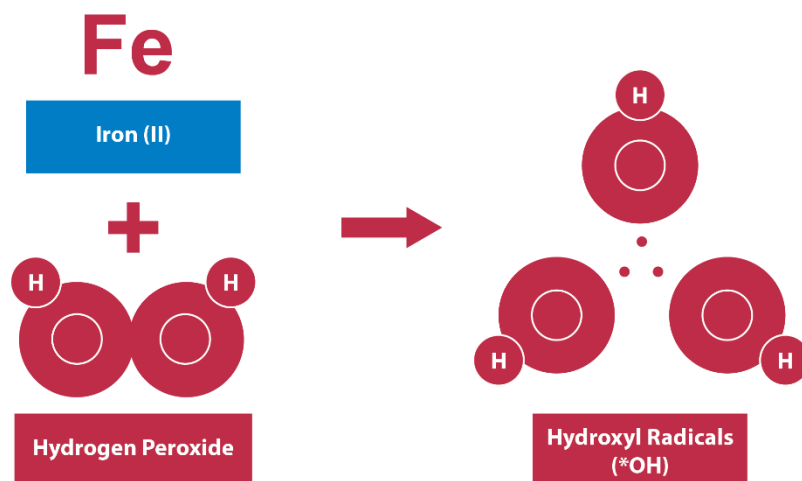


Figure 25: Hydrogen Peroxide when in contact with iron converts into Hydroxyl

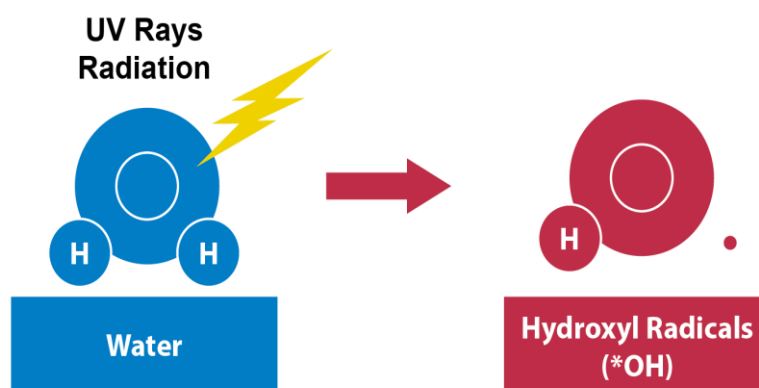


Figure 26: UV rays cause water to convert into Hydroxyl

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Hydroxyl radicals are highly reactive, meaning they will steal an electron from just about any molecule including DNA, protein, lipids etc. Continuous free radical damage caused by Hydroxyl radicals can lead to health challenges. As we age the availability of our own antioxidants depletes and our ability to neutralise Hydroxyl reduces which has been linked to many age-related conditions. This is why we see health deterioration as we age.

Since Hydroxyl radicals react with almost anything, typical antioxidants don't even have a chance to neutralise them before these free radicals damage the molecules in your cells. Hydroxyl radicals can damage DNA, which may lead to mutations, linked to some forms of cancer as well as other conditions. Hydroxyl radicals can damage mitochondria, which makes the mitochondria less efficient at producing energy. This also leads to increased free radical production. Hydroxyl radicals can damage cells, which may lead to some health challenges if the damage is sustained continuously.

Hydroxyl Radicals can also be generated within your cells when exposed to radiation, UV rays or electromagnetic frequencies (EMF). These are highly energetic waves that penetrate into your cells and disrupt water molecules. In some instances, water splits into a Hydroxyl Radical causing further damage.

Hydroxyl Radicals are immensely reactive free radicals that avidly snatch an electron from any nearby molecule, causing damage. Notably, their structural resemblance to water makes them particularly efficient in stabilising into water. Their powerful drive to achieve stability prompts them to readily extract hydrogen atoms and electrons from any surrounding molecule. Typically, the primary targets are DNA, proteins, and lipids constituting your cells.

The good news is that Molecular Hydrogen (H₂) actively seeks out and neutralises Hydroxyl, which we will cover in the coming section.

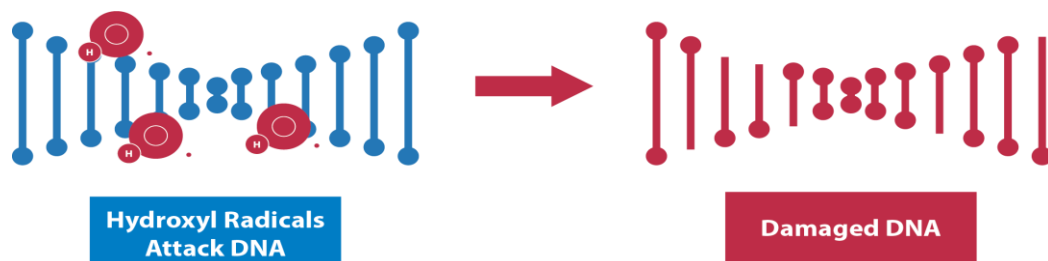


Figure 27: Hydroxyl damages DNA

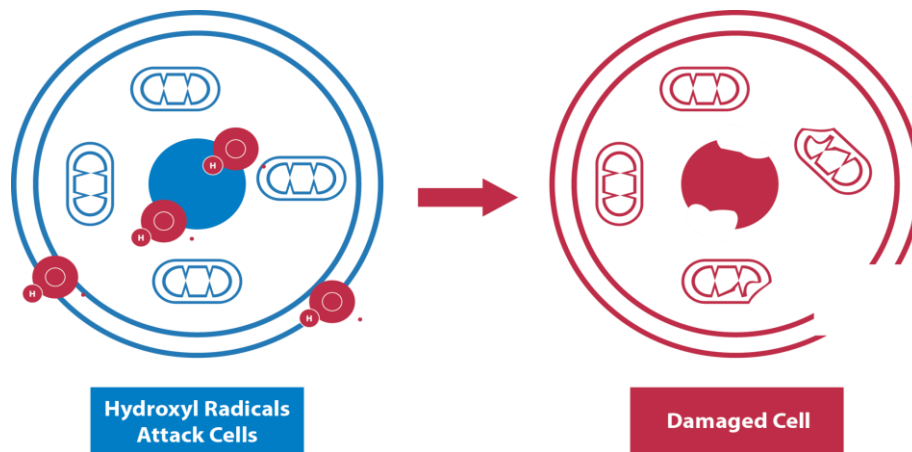


Figure 28: Hydroxyl can damage cell membranes, called Lipid Peroxidation

Note: Research into the action of H₂ is advancing and in this section, we have focused on Hydroxyl as a primary contributor towards cellular damage. The full action of H₂ is still being researched and more information on its powerful actions is coming into the public domain. Therefore, treat the information provided in this section as a guide to H₂'s action in the body and don't think that it is limited to this action alone.

Antioxidants and the fight against free radicals

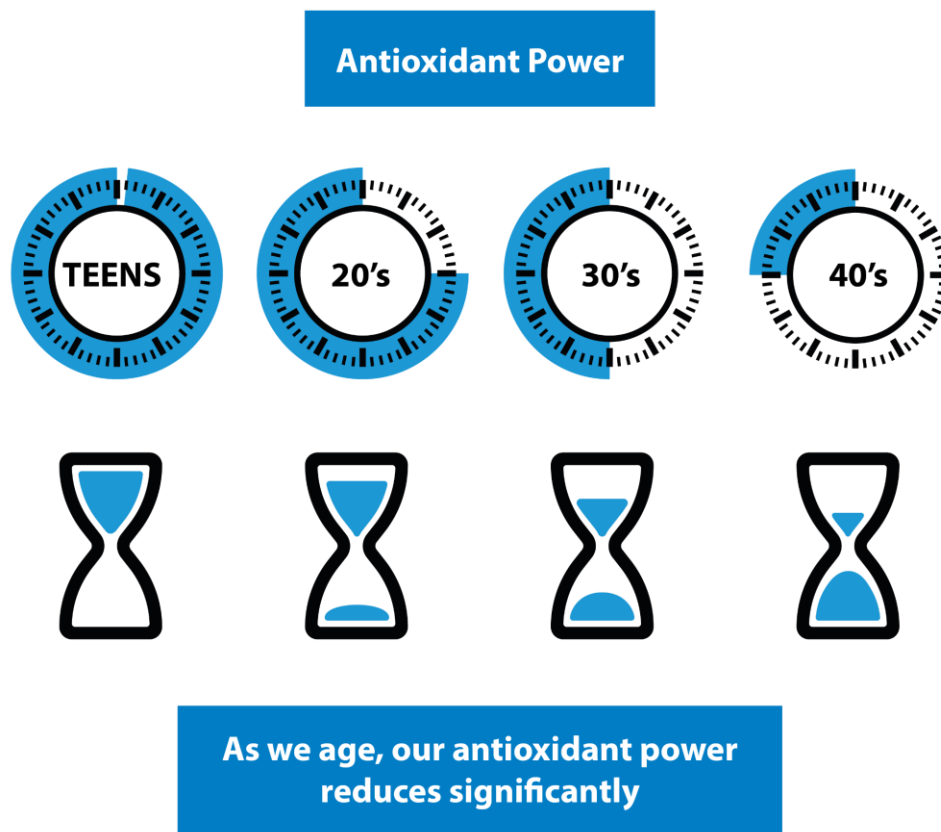


Figure 29: As we age our internal antioxidant enzymes decline

You have most likely heard of the term antioxidant, but if you haven't, these are substances (enzymes or molecules) that neutralise oxidants, hence the use of the word anti, and these are internal to the body (endogenous).

We have in-built antioxidants, one of which is called Glutathione Peroxidase (GPX) (remember Hydrogen Peroxide from a little earlier) which neutralises Hydrogen Peroxide. However, our inbuilt antioxidant supply diminishes with age so supplementing seems like the natural choice to support our health.

When we take supplements like Vitamins A, C, or E, these have an antioxidant effect in the body and they neutralise free radicals, But they neutralise all of them, so while being good, it is not ideal. As we read earlier, the vast majority of antioxidants cannot penetrate the cell membrane, so if we depend upon them, we run the risk of cellular oxidation. As they are not produced in the body, they are called exogenous. We need an army of snipers and not an army with shotguns if we are going to really stand a chance in the war with free radicals, because

if you remember a little earlier, I mentioned Nitric Oxide, which is a free radical that we need to dilate our arteries, so we need it to maintain our heart health.

Nature has provided us with a number of tools, but the thing is that our internal resources are limited and these decline as we age. Have you ever wondered why we all start to suffer with health problems as we age? I know I did, but when I was studying, I was told that we are born with a hormone called Human Growth Hormone and that it starts to decline at around the age of 35 and that was the cause. At the time this seemed reasonable, and I accepted this as something that could make sense but it seemed a little too simplistic for me. Later, I would learn the truth.

Though many diseases manifest in the latter part of our lives, the start of these conditions began many years before. Systemic dysfunction caused by cellular damage as a result of free radical damage has been shown to be a primary contributor in many of the conditions I listed in the introduction, and I show them here again for your convenience:

Ageing (10)	Alzheimer's Disease (14)
Athletic Performance (22)	Autism Spectrum Disorder (11)
Autoimmune Disorders (7)	Blood/Blood Vessels (18)
Blood Pressure/Hypertension (9)	Bones and Joints (17)
Brain Disorders/Brain Injury (88)	Cancer (43)
Cardiovascular Diseases (27)	Cholesterol (7)
Dementia (8)	Diabetes (26)
Dialysis (21)	Ears (12)
Eyes (25)	Fatigue (8)
Genetics (7)	Heart (37)
Human Studies (56)	Inflammation/Allergies (21)
Intestines (30)	Intoxication – Poisoning (9)
Ischemia/Reperfusion Injuries (32)	Kidneys (36)
Liver (50)	Lung and Respiratory (58)
Mental Health (18)	Metabolic Conditions (41)
Mouth/Oral Cavity (9)	Multiple Sclerosis (3)
Muscles and Skeleton (7)	Neurological/Neurodegenerative (22)
Non-Communicable Diseases (1)	Obesity (9)

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Pain (8)	Pancreatic (12)
Parkinson's Disease (15)	Peritoneum (1)
Post Surgery (3)	Pregnancy (12)
Radiation (18)	Reproductive System (13)
Resuscitation (5)	Sepsis (21)
Skeletal, Muscle and Soft Tissue (7)	Skin (34)
Stroke (7)	Transplantation (16)
Additional References (29)	Peer Reviewed Studies (80)

Table 3: 52 Health areas where Molecular Hydrogen has shown benefits, with the number of references.

Water, vital for human life, is linked to age-related diseases and even mild dehydration can lead to many of the conditions listed above.

Antioxidants and neurological defence

It is worthwhile noting that there is significant evidence to show that oxidation and cellular damage of our brain cells, neurons, synapses, and more are contributing to conditions such as Alzheimer's Disease, Multiple Sclerosis and Parkinson's Disease. If you have encountered these in your life, you appreciate just how devastating they are upon the sufferer and their loved ones.

Giving our bodies a fighting chance

Let's face it, none of us know for sure what is happening at a cellular level within our bodies. We don't know what is developing at the deepest levels, but what we do know is that chronic diseases don't just happen overnight, they are progressive and usually by the time of diagnosis, the condition has been developing unseen for a considerable amount of time. They call many diseases "the silent killer" for this very reason.

We can rest assured that we are producing free radicals! Whether it's from the air we breathe, the chemicals in our water, toxins in our food, air quality and pollutants, chemicals in our homes, alcohol, smoking, stress, lack of sleep, bacteria and viruses, excessive exercise, mould and even sunshine, we are guaranteed that our bodies are under pressure constantly and we run the risk of free radicals taking over.

I purposefully and intentionally added over 1,000 clinical studies and articles to this book to provide you with irrefutable proof that a major contributor to dis-ease are free radicals,

oxidative stress and inflammation, in the hope that the penny would drop for you, and I truly hope that it has or is beginning to.

Now that you know how free radicals are produced, how some of them are beneficial, how some of them are really nasty and dangerous and how some antioxidants cannot enter your cells, the next step for me is to provide you with some hope and a possible solution that has the potential to stop or slow the development of many diseases, may reverse some conditions and may simply offer relief. They say that the only things guaranteed in life are death and taxes, but I would like to add free radicals to this expression.

Oxidation - Rusting us from the inside out!

As we progress through this book you will read the word Oxidation, so what is it and what does it mean? In simple terms, oxidation is like rusting in your body but it is happening deep within you at a cellular level. I am sure you have seen how metals rust over time and it is the reaction between the metal and oxygen that causes this.

A more technical explanation is *“Oxidation is a chemical change that involves the transfer of electrons or oxygen among atoms. Oxidation can be defined as the process when an atom or an ion loses electrons. The object of the process of oxidation is for the atom to get a stable electron configuration”, another definition is “Oxidation is the process in which the loss of electrons takes place. Oxidation is the process of gain of oxygen or loss of hydrogen. In the process of oxidation, the oxidation state of an atom or ion increases.”*

What I want you to take away from this section is that there is a constant battle in our body to fight the damage caused by oxidation initiated by free radicals and that we must do all that we can to reduce its impact on the very cells we need to survive.

Many chronic diseases have their origin in the process of oxidation called Oxidative Stress. In the over 1,000 research papers I include in this book, you will see the term oxidative stress mentioned time and time again, so this is a really important concept to understand.

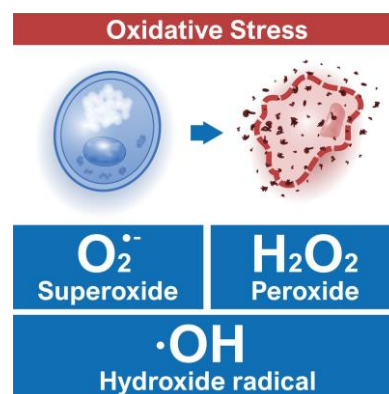


Figure 30: Creation of the Hydroxyl free radical

Oxidative Stress

Free radical damage to your cells is called *Oxidative Stress*

Oxidative stress arises when there is an imbalance between free radicals and antioxidants, leading to the formation of Hydroxyl and other free radicals, that inflict irreversible damage on cellular molecules. Recognised as the culprit behind various health challenges, oxidative stress impacts individuals differently based on their genetic makeup.

If you sense that your health is not at its optimal level, the root cause is likely oxidative stress. It is imperative to reinforce your antioxidant defence system to efficiently neutralise excess free radicals. This can be achieved by incorporating antioxidant-rich foods into your diet, taking antioxidant supplements Vitamins A, C, E etc, adopting a healthier lifestyle and considering the use of Molecular Hydrogen (H₂) Water. But please remember, as I have covered earlier, not all antioxidants can penetrate the cell membranes. However you will soon learn that Molecular Hydrogen (H₂) does this with ease.

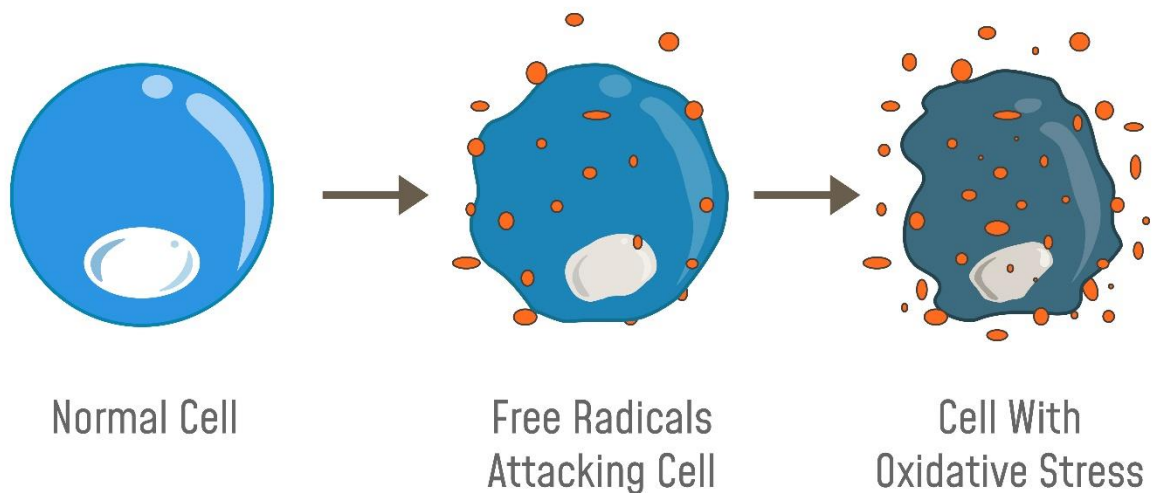


Figure 31: Free radical damage leading to oxidative stress

Inflammation

In our bodies, inflammation is a powerful response controlled by the immune system. Understanding this physiological process of inflammation is important when discerning between the timely intervention of acute inflammation and the long-term effects of chronic inflammation.

Acute Inflammation

If you cut your finger - the body's immediate reaction is acute inflammation. In response to damage or injury, the immune system sends inflammatory cells and cytokines to the scene, initiating the healing process. This rapid deployment leads to visible signs: flushed skin, pain, swelling and heat. Acute inflammation acts as a swift, protective mechanism, aiming to trap bacteria or mend injured tissue. One of the components of an immune response is a free radical called Hydrogen Peroxide, which helps to kill bacteria and trigger your immune response. As you can see, in an acute inflammatory response, this particular free radical has a very beneficial effect, so neutralising it with antioxidants isn't ideal as it

Chronic Inflammation

On the other hand, chronic inflammation extends its presence beyond the realm of immediate threats. In conditions like rheumatoid arthritis, inflammatory cells persistently attack joint tissues, causing recurrent inflammation that can inflict severe damage. Unlike the evident signals of acute inflammation, chronic inflammation symptoms may be more subtle - manifesting as abdominal or chest pain, fatigue, fever, joint stiffness, mouth sores or skin rash.

Spotting the Signs

Detecting acute inflammation is relatively straightforward, with observable indicators at the injury site. Chronic inflammation, however, operates insidiously and may manifest in varied, elusive symptoms such as fatigue, joint pain or skin issues.

Associated Conditions

Chronic inflammation, a silent accomplice in numerous ailments, intertwines with conditions like Alzheimer's disease, asthma, cancer, heart disease, rheumatoid arthritis, ankylosing

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spondylitis, Type 2 diabetes and many more. It is the unseen contributor to the progression of these and many other diseases.

Root Causes

Understanding the triggers of chronic inflammation unveils a spectrum ranging from autoimmune disorders like lupus to exposure to environmental toxins. Unchecked acute inflammation, arising from untreated infections or injuries, also nudges the body towards chronic inflammation. Lifestyle factors, from excessive alcohol consumption to chronic stress, form additional contributors, highlighting the intricate balance needed to avert its persistence.

Inflammation and Oxidative Stress

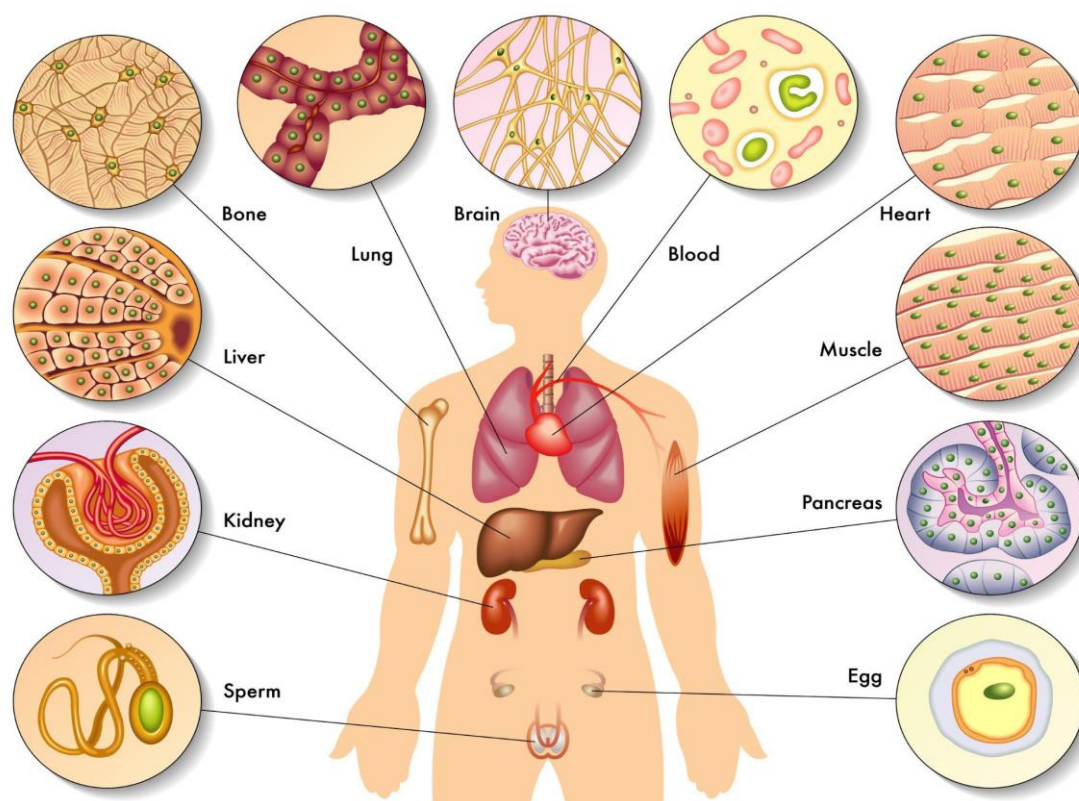


Figure 32: Oxidative Stress and Chronic Inflammation can affect every cell type

Chronic inflammation, an intricate interplay of immune responses and tissue deterioration, stands at the crossroads of various health challenges. In this section, we look at the multifaceted connections between chronic inflammation, oxidative stress, and their profound implications for cancer, ageing and a spectrum of age-related diseases.

At the heart of chronic inflammation lie immune cells - macrophages, neutrophils and more, all actively contributing to the inflammatory environment. This sustained immune activity, marked by the production of inflammatory cytokines, sets the stage for prolonged inflammation and eventual tissue damage.

Chronic Inflammation and Aging

A prevailing theme in scientific literature links chronic inflammation to the ageing process. The cumulative impact of persistent inflammation is believed to exacerbate ageing-related disorders. The intricate dance between inflammatory processes and cellular ageing unfolds as a critical factor in conditions ranging from diabetes and cardiovascular diseases to autoimmune disorders.

Chronic Inflammation and Cancer

The association between chronic inflammation and cancer is important to understand. Inflammatory processes induce oxidative stress, generating an excess of free radicals that, in turn, diminish cellular antioxidant capacity. The repercussions of this imbalance extend beyond immediate cellular damage, paving the way for mutations and DNA damage - a potential catalyst for cancer development.

Oxidative Stress Unveiled

As chronic inflammation induces oxidative stress, the delicate equilibrium between free radicals and antioxidants becomes disrupted. Free radicals, overproduced during inflammatory processes, embark on a dangerous journey, impairing the function of cell membrane components and proteins. This onslaught not only permanently alters cellular function but also poses a predisposing risk for the emergence of cancer and age-related disorders.

Antioxidant Defence

In navigating this complex landscape, understanding the role of antioxidant defence systems becomes paramount. The delicate interplay between free radicals and antioxidants unveils a potential avenue for preventive medicine. Antioxidants emerge as crucial agents, poised to counteract the detrimental effects of free radicals and mitigate the risk of cancer and ageing-related processes.

The next part of our journey will introduce you to the incredible Molecular H₂ molecule and I will explain what it is, how it could be the heavy hitter in your battle against free radicals and how it may help address many of the health conditions that plague our society.

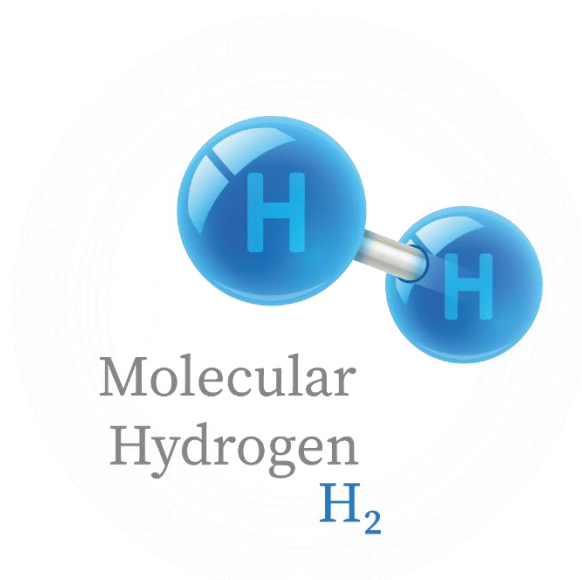
Molecular Hydrogen H₂

Traditionally regarded as an inert gas with minimal impact on the human body, Molecular Hydrogen (H₂) was primarily acknowledged for its production by gut bacteria. However, the revelation that "Miracle Water" harboured significant levels of this unassuming molecule sparked a revolutionary wave of research into the potential health benefits of Molecular Hydrogen (H₂).

Historically dismissed as a neutral component, the newfound association of Molecular Hydrogen (H₂) with health marks a turning point. The medical community, intrigued by the unexpected correlation, initiated an extensive exploration of the positive impacts this humble gas might exert on human well-being. The surge in interest spurred a prolific decade of research, witnessing the publication of many hundreds of studies dedicated to unravelling the mysteries of Molecular Hydrogen.

Over the past ten years, the landscape of Molecular Hydrogen research has transformed dramatically. What was once considered an inert gas has emerged as a focal point of scientific inquiry. Through meticulous observation of Molecular Hydrogen's interactions within cells, researchers have embarked on a journey to unveil the diverse ways through which this unassuming molecule may enhance our well-being.

As we delve into the depths of Molecular Hydrogen research, a burgeoning understanding emerges – a narrative of discovery that transcends conventional wisdom and challenges preconceived notions. The journey unfolds, presenting a tapestry of insights that redefine our comprehension of health and the potential roles that Molecular Hydrogen may play in optimising the human experience.



What is Molecular Hydrogen (H₂)?

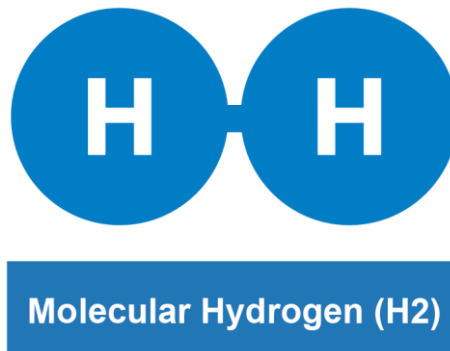


Figure 33: Two Hydrogen molecules bonded together to form Molecular Hydrogen (H₂)

Molecular Hydrogen (H₂) is a compound consisting of two hydrogen atoms chemically bonded to each other. This molecule is not prevalent in nature as hydrogen atoms typically form bonds with other atoms. For instance, the combination of two hydrogen atoms with a single oxygen atom results in the formation of a water molecule.

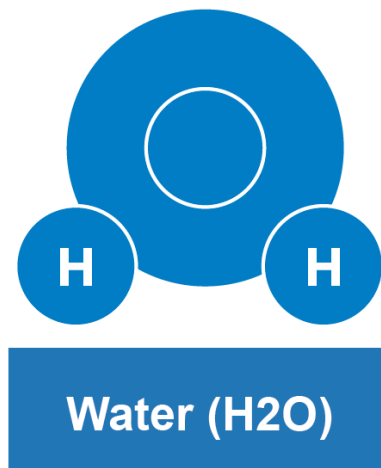
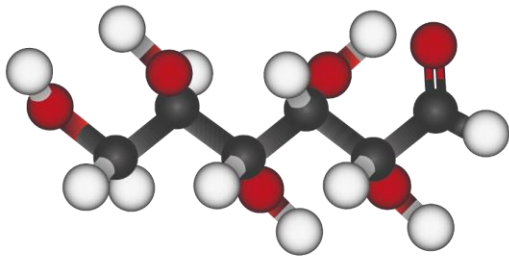
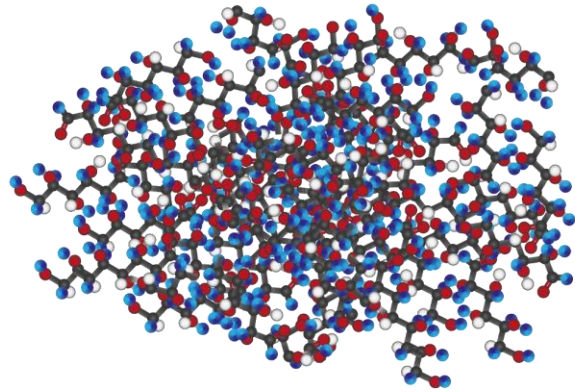


Figure 34: Molecular composition of water

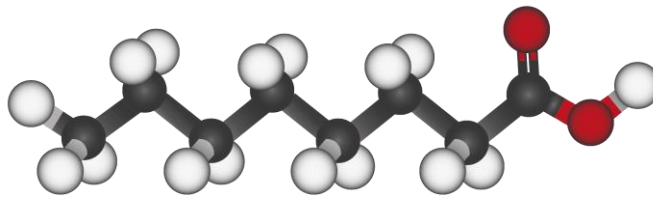
Water plays a crucial role in our daily lives and its unique properties, facilitated by the presence of two hydrogen atoms, are attributed to hydrogen bonding. Hydrogen atoms are fundamental components, not only in water but also in a myriad of other organic molecules such as carbohydrates, proteins, lipids and DNA.



Glucose (Carbohydrate)
Hydrogen is White



Actin (Protein)
Hydrogen is Red



Caprylic Acid (Lipid)
Hydrogen is White

Figure 35: Hydrogen, found in many molecules

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The Periodic Table is a systematic arrangement of chemical elements based on their atomic numbers, representing the number of protons in each atom. Positioned in the top left corner of the table is Hydrogen (H). Generally, the sizes of atoms tend to increase as you move from left to right and from top to bottom on the table. This implies that elements located toward the bottom right are larger, whereas those near the top left are smaller. To put this in perspective Hydrogen has an atomic weight of 1 u whereas Oxygen has a weight of 19.99 u

Question: *I often ponder, was nature telling us something when it signposted us to the smallest molecule known? Is it a coincidence of science that Hydrogen (H) was going to be number 1 on the periodic table? Did nature leave us clues to follow when it created the miraculous healing sites such as Lourdes whose water contains Molecular Hydrogen (H₂)? Was nature signposting us to something that would work at such a deep level within our bodies, that could potentially help combat the true underlying cause of all the degenerative diseases that plague us as a society? I will never know, but it's worth a ponder!*

Periodic Table of the Elements

1 H Hydrogen 1.008																		2 He Helium 4.0026			
3 Li Lithium 6.938	4 Be Beryllium 9.012															5 B Boron 10.808	6 C Carbon 12.0096	7 N Nitrogen 14.0064	8 O Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.1797
11 Na Sodium 22.989	12 Mg Magnesium 24.304															13 Al Aluminum 26.9815	14 Si Silicon 28.086	15 P Phosphorus 30.974	16 S Sulfur 32.059	17 Cl Chlorine 35.446	18 Ar Argon 39.948
19 K Potassium 39.0983	20 Ca Calcium 40.078	21 Sc Scandium 44.9559	22 Ti Titanium 47.867	23 V Vanadium 50.9415	24 Cr Chromium 51.9961	25 Mn Manganese 54.938	26 Fe Iron 55.845	27 Co Cobalt 58.933	28 Ni Nickel 58.6934	29 Cu Copper 63.546	30 Zn Zinc 65.38	31 Ga Gallium 69.723	32 Ge Germanium 72.63	33 As Arsenic 74.922	34 Se Selenium 78.971	35 Br Bromine 79.901	36 Kr Krypton 83.798				
37 Rb Rubidium 85.4678	38 Sr Strontium 87.62	39 Y Yttrium 88.9058	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molybdenum 95.94	43 Tc Technetium 98	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.9055	46 Pd Palladium 106.42	47 Ag Silver 107.8682	48 Cd Cadmium 112.414	49 In Indium 114.818	50 Sn Tin 118.710	51 Sb Antimony 121.757	52 Te Tellurium 127.6	53 I Iodine 126.904	54 Xe Xenon 131.29				
55 Cs Cesium 132.905	56 Ba Barium 137.327	57-71 Lanthanoids*	72 Hf Hafnium 178.49	73 Ta Tantalum 180.948	74 W Tungsten 183.84	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.222	78 Pt Platinum 195.084	79 Au Gold 196.967	80 Hg Mercury 200.592	81 Tl Thallium 204.383	82 Pb Lead 207.2	83 Bi Bismuth 208.980	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)				
87 Fr Francium (223)	88 Ra Radium (226)	89-103 Actinoids**	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (266)	107 Bh Bohrium (264)	108 Hs Hassium (277)	109 Mt Meitnerium (268)	110 Ds Darmstadtium (281)	111 Rg Roentgenium (282)	112 Cn Copernicium (285)	113 Nh Nihonium (286)	114 Fl Flerovium (289)	115 Mc Moscovium (290)	116 Lv Livermorium (293)	117 Ts Tennessine (294)	118 Og Oganesson (294)				

Molecular Hydrogen (H₂)The Perfect Antioxidant

Numerous supplement companies assert that their antioxidant formulas are the most effective. While some of these formulas may indeed be beneficial, none of them match the multifaceted protective abilities of Molecular Hydrogen against oxidative stress. H₂ stands out as the perfect antioxidant.

I am a firm believer in nutritional supplementation and from my own personal experience I feel they are beneficial, but they had little impact on my main problems. My back was still sore, my knees were still crunching, and my toes were still painful. So, they had little effect on these issues but may have been benefiting me in other ways. I still take nutritional supplements daily but for me the miracle happened with Molecular Hydrogen (H₂) as the magic happened within a few weeks of consistently drinking the water.

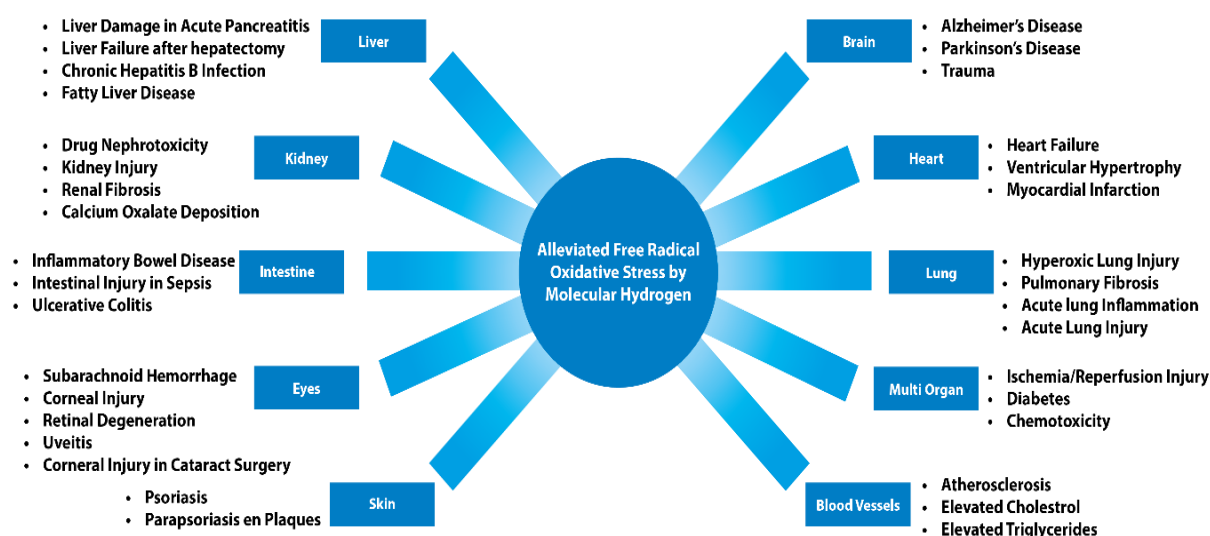


Figure 37: Molecular H₂ can have an antioxidant effect in all tissues and organs

Why is Molecular Hydrogen (H₂) the Perfect Antioxidant

Size

H₂ holds the title of the smallest antioxidant in existence. In comparison, other antioxidants like Vitamin C or Vitamin E are significantly larger molecules than H₂. They must undergo the process of travelling through your digestive system, being absorbed in your intestines, circulating in your blood and entering your cellular fluid before they can effectively eliminate free radicals. However, if you have inflammation in your digestive system, it will impact both

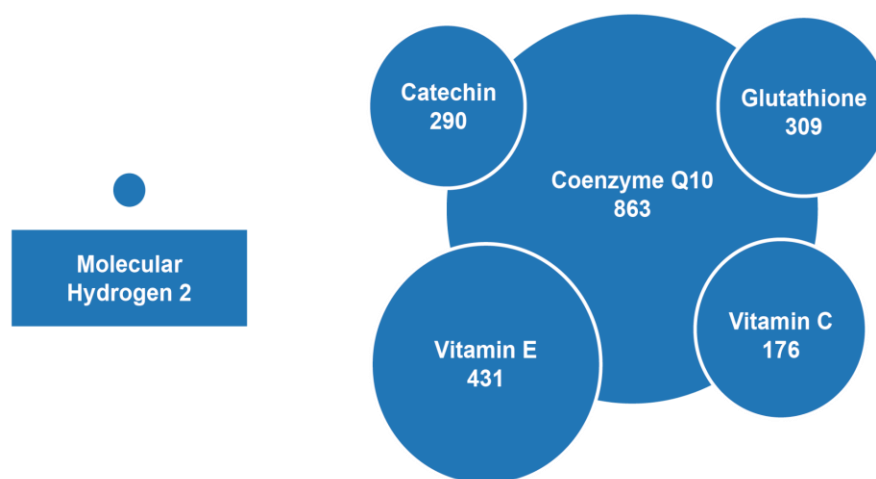


Figure 38: Size comparison of Molecular to other antioxidants

your large and small intestines ability to absorb nutrients ingested.

Note: *The normal uptake of nutrients, vitamins and minerals by the gastrointestinal tract (GI) requires several steps, each of which can be compromised in disease.*

Small and Large Intestine: Malabsorption of Nutrients. Montoro-Huguet et al. 2021

H₂ is so minuscule that it can effortlessly penetrate through your stomach lining, initiating its antioxidant actions inside your cells immediately. Being in a gaseous state, H₂ essentially floats through your cells, exhibiting rapid diffusion and carries out its antioxidant function unhindered by the typical mechanisms that impede the free movement of other antioxidants throughout the body.

Moreover, due to its small size, H₂ can easily traverse the Blood-Brain Barrier, a feat challenging for other antioxidants, and some may not succeed at all. The brain is particularly prone to oxidative stress as it consumes 20% of the oxygen you breathe despite constituting only 2% of your body's weight. Therefore, safeguarding your brain with antioxidants,

especially one as effective as H₂, is of paramount importance. There is a growing body of evidence that shows oxidative stress is a contributor to many neurological diseases such as Alzheimer's Disease and Parkinson's Disease.

***Note:** There are nine water-soluble vitamins: the B vitamins - folate, thiamine, riboflavin, niacin, pantothenic acid, biotin, vitamin B6 and vitamin B12 - and vitamin C. Deficiency of any of these water-soluble vitamins results in a clinical syndrome that may result in severe morbidity and mortality.*

I think you can see just how small and light H₂ is, so why is this so important? Simply put, it means that there is no area of the human body that H₂ cannot reach. Remember we have 36 trillion cells in our bodies. H₂ is the most bioavailable molecule that exists. Not only because it is so small, but also because it is neutral in its charge and because of this H₂ has the highest and fastest diffusion rate of any molecule.

“Non-polar, neutral H₂ is assumed to have health benefits facilitated by its passive diffusion across the human body immediately after administration and is considered a safe therapeutic inert gas that does not interfere with physiological enzymatic reactions”

Therapeutic Efficacy of Molecular Hydrogen: A New Mechanistic Insight, Toru Ishibashi

Because of these properties H₂ can cross all human barriers, like the intestinal barrier, the skin barrier, the blood-brain barrier, the placental barrier, the testes barrier and the alveolar barrier in the lungs.

“Molecular hydrogen has superior distribution properties due to it being small, electrically neutral and nonpolar. This H₂ can easily penetrate biomembranes such as the blood-brain barrier, placental and testis barrier, and reach target organs (e.g. brain) or organelles (e.g. mitochondria, nucleus, etc.).”

Molecular hydrogen increases resilience to stress in mice. Gao et al. 2017

Molecular H₂ can also diffuse into even the smallest compartments in our cells, like the organelles, mitochondria, and the cell nucleus.

“Since molecular hydrogen can penetrate cell membranes due to its electrical neutrality and low molecular weight, many studies have suggested that hydrogen gas can diffuse into organs immediately after supply”

Hydrogen gas distribution after inhalation: Real-time monitoring of tissue hydrogen concentration in rat: Yamamoto et al. 2019

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“Molecular hydrogen’s high biomembrane penetration and intracellular diffusion capability enable it to reach subcellular compartments like mitochondria”

Molecular hydrogen: a therapeutic antioxidant and beyond. Huang, Lei. 2016

H₂ can easily diffuse through our intestines and enter the systemic circulation via the portal vein faster than any other molecule. This is important because H₂ can go where other vitamins and antioxidants cannot. Our brains are very susceptible to oxidative stress and things like sodium, glucose, nicotine, alcohol and some drugs pass through the blood-brain barrier and enter the brain, but many vitamins and antioxidants can’t.

“Moreover, H₂ passed through the blood-brain barrier although most antioxidant compounds cannot”

Hydrogen, a novel therapeutic molecule, regulates oxidative stress, inflammation and apoptosis. Tian et al. 2021

Selectivity

H₂ exhibits selectivity by specifically targeting Hydroxyl radicals, a distinctive advantage. This selectivity ensures that H₂ solely eliminates harmful free radicals, leaving useful ones such as Hydrogen Peroxide and Nitric Oxide untouched. As mentioned earlier, Hydrogen Peroxide is crucial for immune cells to combat bacteria and Nitric Oxide functions as a signalling molecule, regulating the relaxation and contraction of blood vessels, directing blood flow to different areas of the body.

Each molecule of H₂ possesses the ability to convert two Hydroxyl radicals into water, simultaneously hydrating your cells in the process.

In contrast, other antioxidants lack this selectivity and neutralise any free radicals in their proximity. Non-selective free radical elimination may disrupt the delicate balance of free radicals to antioxidants within cells, potentially causing adverse effects on your body.



Figure 39: Molecular Hydrogen specifically targets the Hydroxyl free radical

At this point, let me make something 100% clear, I am not making a health claim whatsoever. What I am doing is highlighting scientific research that has shown that Molecular Hydrogen exerts very specific actions at a cellular level in the body and that there is a significant body of clinical evidence that shows that many conditions have their origin in free radicals, DNA damage, oxidative stress and inflammation, and that Molecular Hydrogen H₂ has been proven to neutralise Hydroxyl, possibly the most dangerous of the free radicals.

Let this sink in for a moment, Molecular H₂ neutralises Hydroxyl and turns it back to water! Effectively stopping cellular damage, protecting the cells, preserving the beneficial free radicals and supporting your entire body. Now, can you see why I am so passionate about this?

Zero Toxicity

Even at elevated concentrations, H₂ remains non-toxic. Any surplus H₂ is simply released from the body. If you think about this, a molecule that helps your cells stay healthy, that can flood every cell with antioxidants, specifically targets the most dangerous free radical, yet is completely harmless to your health. This is in stark contrast to many other health strategies, which can contribute towards oxidative stress and further cell damage.

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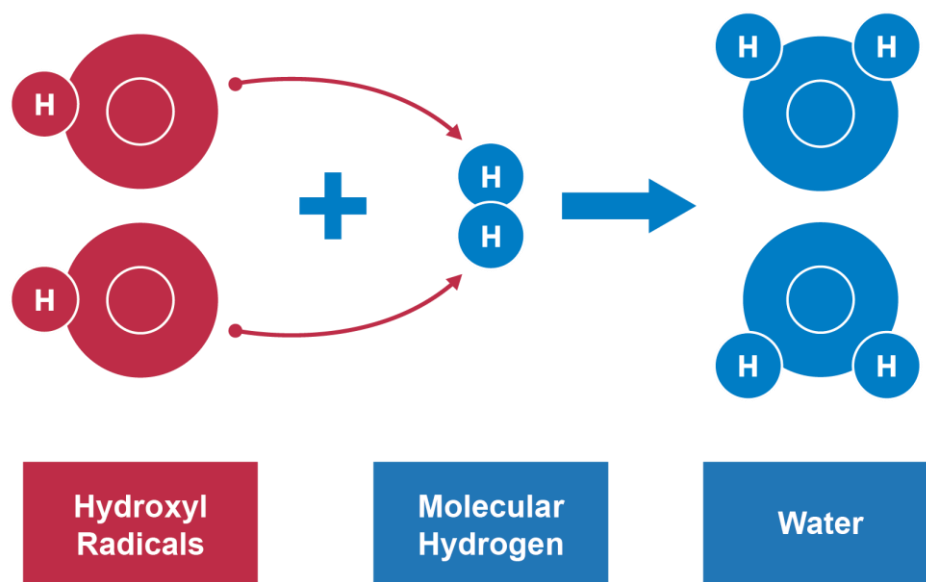


Figure 40: Molecular Hydrogen (H₂) converts Hydroxyl to water

In contrast, other antioxidants transform into weak free radicals themselves after neutralising free radicals. For instance, Ascorbic Acid (Vitamin C) metamorphoses into an Ascorbyl Radical.

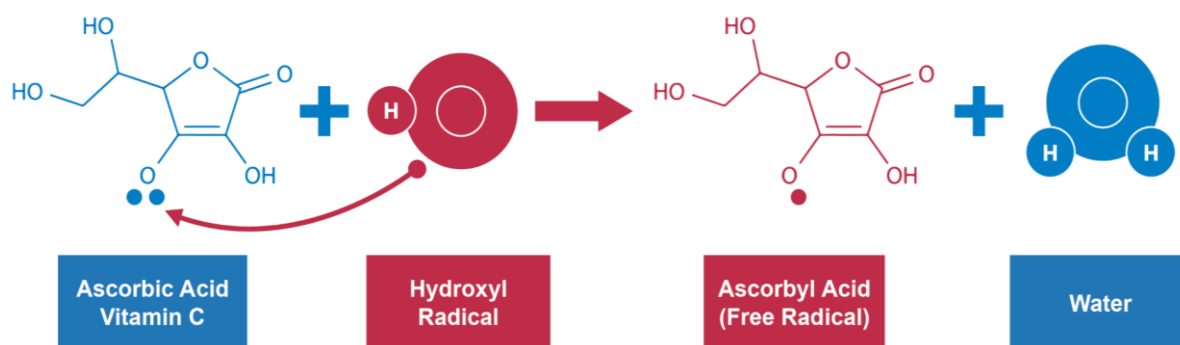


Figure 41: Vitamin C, when it neutralises a free radical it becomes a weak free radical

Synergy

H₂ not only directly neutralises Hydroxyl radicals but also enhances your antioxidant enzymes, including Glutathione Peroxidase (GPX), Superoxide Dismutase (SOD) and Catalase (CAT). Each specific antioxidant enzyme, along with Molecular Hydrogen itself addresses different types of free radicals.

All these antioxidants collaborate to ensure that there are no excessive free radicals causing oxidative stress damage inside your cells.

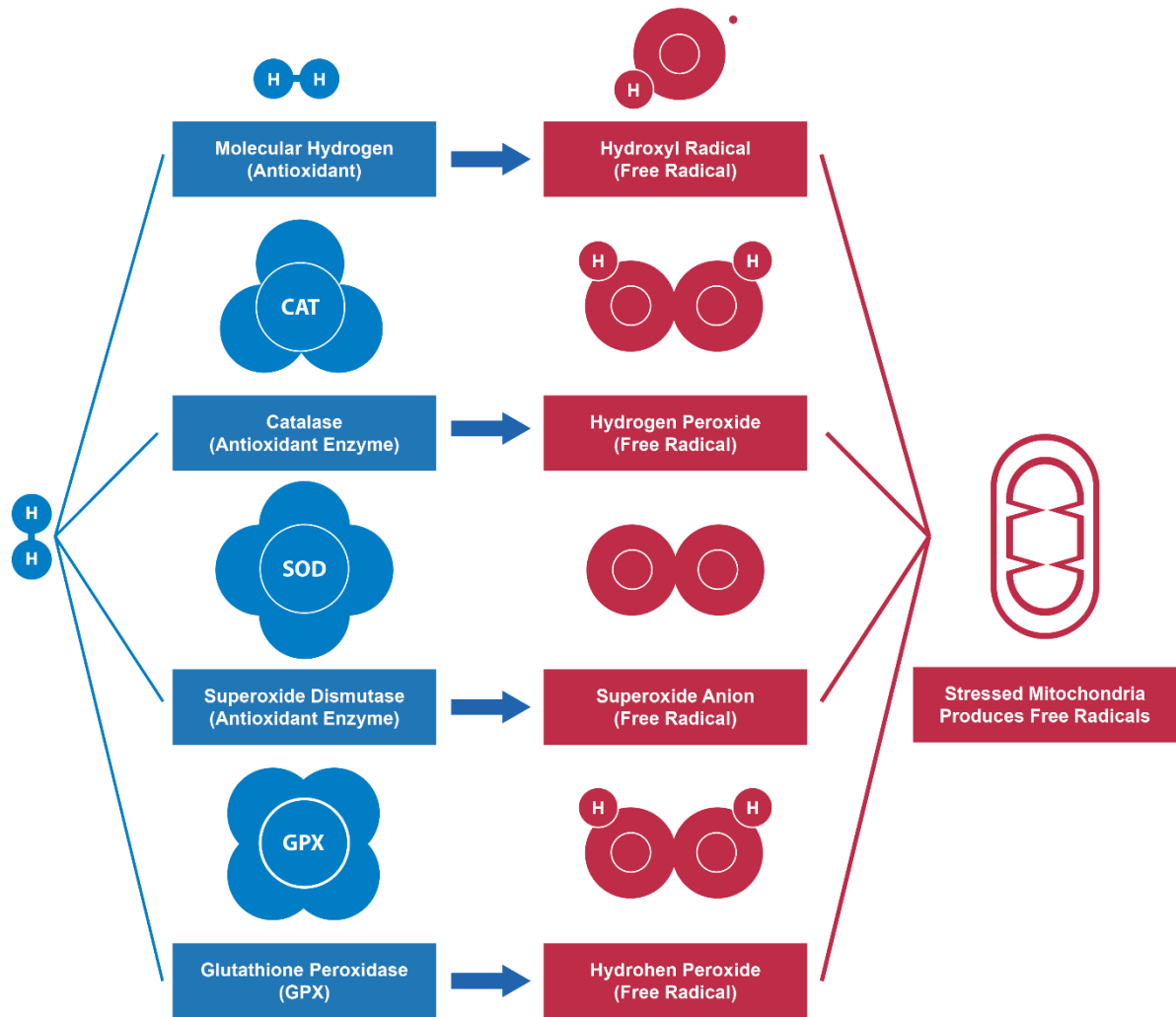


Figure 42: Molecular Hydrogen (H_2) supports the bodies natural enzyme antioxidants

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As illustrated in the figure above, H₂ supports your antioxidant enzymes and directly eliminates the most dangerous Hydroxyl radicals. H₂ provides comprehensive protection against free radicals without disrupting the delicate balance between free radicals and antioxidants inside your cells.

As you can see, when we are young and healthy our in-built antioxidant enzymes can convert Superoxide Anion and Hydrogen Peroxide back to water with the two-step process. However, when these systems fail and create Hydroxyl, this is when the power of Molecular Hydrogen (H₂) comes into force and converts this dangerous free radical back to water, a true miracle of nature.

Molecular Hydrogen stands out as clearly superior to all other antioxidants due to these four reasons.

Hydrogen, the smallest element in existence

You now know just how small H₂ is, and its individual molecule Hydrogen (H) occupies the top left corner of the periodic table, designated as 1 due to its single proton. It consists of one proton and one electron, with no neutrons, making hydrogen the smallest, simplest and most fundamental element. Consequently, Molecular Hydrogen (H₂) stands out as the simplest molecule formed by the bonding of two of the smallest atoms.

Due to its diminutive size, H₂ exists in a gaseous state under normal temperatures and pressures. Often referred to as hydrogen gas, H₂ has garnered attention in the realm of clean energy. Burning hydrogen gas and oxygen gas as fuel produces water vapour, offering an efficient energy source while avoiding the toxic pollution associated with burning petrol. Its high efficiency as a fuel positions hydrogen as a primary candidate for the future of automotive energy.

Hydrogen is everywhere

Did you know that hydrogen constitutes 75% of the visible universe? It is the most prevalent element, yet Molecular Hydrogen (H₂) makes up only 1 part per million (ppm) of earth's atmosphere.

When considering hydrogen, you might associate it with positive hydrogen ions (H⁺), also known as protons. The pH scale measures the quantity of H⁺ ions present in a liquid. A lower pH indicates a higher concentration of H⁺ ions, resulting in greater acidity. This concept differs from the hydrogen we are discussing, which is Molecular Hydrogen (H₂).

Currently, NASA employs liquid hydrogen as its fuel of choice for space exploration because it is the lightest fuel and remarkably energy dense. Liquid hydrogen has the highest energy content per unit of weight, making it an optimal choice despite being different from the Molecular Hydrogen (H₂) under consideration.

Is Molecular Hydrogen (H₂) produced anywhere naturally?

In nature, Molecular Hydrogen (H₂) is generated by bacteria and algae through anaerobic metabolism. This process may contribute to the presence of H₂ detected in our atmosphere, although it's not at a concentration significant enough to impact our daily lives.

In the context of humans, the bacteria in our intestines produce H₂ through the fermentation of unabsorbed carbohydrates. The H₂ generated in the intestines is expelled either through breath or flatulence. Typically, the amount of Molecular Hydrogen produced by gut bacteria is not substantial enough to yield noticeable therapeutic benefits.

Interesting Fact: *A study conducted on Japanese centenarians, individuals who are more than 100 years old, revealed that their levels of Molecular Hydrogen (H₂) in breath were up to four times higher than the average population which is not surprising as Japan is the world's biggest consumer of Molecular Hydrogen (H₂).*

Molecular Hydrogen (H₂) for Health

Despite its apparent simplicity, Molecular Hydrogen (H₂) offers a diverse range of health benefits that we continue to uncover today. These benefits have been consistently confirmed over the past few decades, even though H₂ was overlooked for an extended period. There are numerous research studies which demonstrate the positive effects of H₂ in various disease models and I have included over 1,000 for you to review. If you search for “Molecular Hydrogen” on <https://scholar.google.com/> you will find 668,000 published articles which reference it, but please note that not all of these will pertain to health as H₂ has many additional benefits.

Why haven't I heard that H₂ is good for my health before?

The reason you may not have heard that Molecular Hydrogen (H₂) is beneficial for your health is its perceived simplicity. **H₂ cannot be patented, making it less lucrative as a pharmaceutical drug and leading to a lack of promotion in mainstream media.**

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Furthermore, H₂ appears to have broad-ranging benefits at first glance affecting the antioxidant defence system within cells. Since its effects vary from person to person and free radicals impact individuals differently, some may find it challenging to believe in its comprehensive benefits.

Despite these factors, an increasing number of academics and researchers have provided undeniable evidence supporting the health benefits of H₂. The research on Molecular Hydrogen has experienced significant growth in recent years.

As mentioned earlier, the primary mechanism through which Molecular Hydrogen (H₂) promotes optimal health is by boosting your antioxidant defence system and directly neutralising harmful free radicals. This book serves as a mini course on the crucial significance of maintaining a robust antioxidant defence system and explores how H₂ can actively support your cells and contribute to your overall health.

Four ways to get Molecular Hydrogen into your cells

Currently, there are four main methods of H₂ intake being used globally. Two methods are in hospital or clinical settings, while the remaining two are more practical and commonly employed.

H₂ Inhalation

H₂ can be inhaled by connecting a face mask or nasal cannula to an H₂ gas generator device. Inhaled H₂ gas acts more rapidly than other methods, making it suitable for acute (sudden) oxidative stress defence such as in cases of stroke, athletic activities, or inflammation. Although H₂ gas inhalation has demonstrated great benefits in hospital settings in Asia, it is impractical for everyday use.

H₂ Saline Injection

Another hospital-based method is H₂ saline injection. A bag of saline (salt water) is infused with H₂ gas and then injected directly into the bloodstream of patients. This method is accurate for measuring the administered hydrogen. While popular in Japan, where the H₂ industry is advanced, it is only viable in clinical settings. In many countries, this method is unlikely to be available soon due to regulatory restrictions.

H2 Supplements

There are some companies that promote H2 supplements as an easy way to take H2 in pill form. I cannot comment on the quality of this approach as I haven't reviewed the products.

A possible strategy might be to combine H2 supplementation with the consumption of Molecular Hydrogen (H2) Water from a medical grade ioniser. My research into some of these supplements is that they may provide you with up to 0.8 parts per million per 500ml of water. In contrast my medical grade ioniser produces the same amount of Molecular Hydrogen (H2), but I drink up to 3 litres per day of the water.

For example, a supplement costing you €50 per month for a 90-day supply, would be used within 15 days to get the daily equivalent of Molecular H2 Water to what I consume, so that would cost me €1200 per year just for my supply of this supplement. As my wife and son drink Molecular Hydrogen (H2) water every day, the cost of this route might work out very expensive in the long run if my entire family were to take these pills.

The beauty of having your own Molecular Hydrogen (H2) Water Ioniser is that you have an unlimited supply for many years once you have the right technology. It is essential that the device holds medical grade certification because I read a study recently showing that some inferior devices degrade over time and metals from the plates used can end up in the water. That certainly is not ideal, and you need to be careful when choosing your device! I cover this more in the Making Molecular H2 Water at home section.

H2 Water

The most common method for consuming H2 is by drinking H2-enriched water, known as Molecular Hydrogen (H2) Water or Electrolysed Reduced Water. When researching devices, ensure they consistently produce at least 0.50 ppm (parts per million) of H2 in the water, as this concentration has shown signs of health benefits. The device I personally use generates Molecular Hydrogen (H2) Water with up to 1.60 ppm of H2.

Later I will explore making Molecular Hydrogen Water at home and the things you must watch out for, if you are choosing this route.

How much Molecular H₂ Water do you need to drink per day?

Unfortunately, there is no hard and fast answer to this yet because there is still research going on in this area and the recommendations seem to vary from 3-10mg per day. What it really comes down to is the parts per million (ppm) concentration of H₂ in the water. With the device I use and recommend the ppm is 1.6. This means that in 1 litre of water there is 1.6 mg of Molecular H₂. If I need to get 3mg into my body, I need to consume 1.87 litres of water per day ($3/1.6=1.87$), 1ppm = 1mg in 1 litre of water.

When it comes to hydration, it is not as clear cut as above, as each person and each body is different. If you are a larger person, you may need to consume more, as your body needs more water than a smaller person. A simple guide is that a healthy adult needs around 35 ml of water each day per kilogram of body weight. A person weighing 50 kg requires 1.6 litres, 60kg - 2.1 litres, 70kg - 2.4 litres and 80kg - 2.8 litres. Simply divide your weight in kilograms by 35, $100/35= 2.85$ litres of water needed to stay properly hydrated.

If you are suffering from a chronic disease, to see a therapeutic response you may need to provide more H₂ to your body. This is why it is really important that you use a technology that can provide a high ppm of H₂ in the water.

To explain this, let's say your technology can provide 0.5 ppm of H₂, this would mean for you to get to the level of 3mg per day, you would need to consume ($3/0.5=6$) 6 litres of water per day, and this might be too much for you. It is also important not to consume too much at one time, but to spread your consumption out over the course of the day. The way I like to think of it is that you need to give your body a constant supply of H₂ antioxidants to fight the free radicals that are constantly produced, so replacing as many beverages as possible and consuming Molecular H₂ Water instead is my preferred approach.

Important: *If you have a kidney disorder, you may need to consider inhalation of H₂ rather than drinking more water than your kidneys can handle as this could be detrimental to your health.*

The next part of our journey will bring us to the beginning of the research into what started as Electrolytic Water, was soon to become Electrolysed Reduced Water and in this book we are focused on the Molecular Hydrogen (H₂) Water component as this is the miracle part of the journey.

The history of Molecular H₂ in Electrolysed Reduced Water

Taken from Electrolyzed Water: Its History and Relevance to Modern Health Management.

Authors: N.L Darnell, M.D Trow. 2013

Electrolytic water technology has been in commercial development for more than a century. In 1851, Charles Watt discovered that electrolytic sodium hypochlorite could be produced through the electrolysis of salt water. In 1889, William Webster patented the process for producing electrolytic sodium hypochlorite as a method of sewage disinfection. This process, which later became known as the Hermite Process, was evaluated by the British Institute of Preventive Medicine and deemed an effective form of sanitation in 1893. Subsequently, treatment with electrolytic sodium hypochlorite was deemed to be an equally effective means of municipal water purification. Although the technology demonstrated efficacy, the lack of mature electrical infrastructure made its implementation costly and cumbersome relative to the more established methods of sanitation at the time. Thus, it was not widely adopted by municipalities during the late 1800s and early 1900s.

Scotland, France and Great Britain

At the turn of the 20th century, physicians began investigating electrolytic sodium hypochlorite as a germicide and topical disinfectant. It was used experimentally in Glasgow, Scotland, in 1901 to assist in suppressing an outbreak of the Bubonic plague. A short time later, World War I provided another opportunity for advancement. An electrolytic water generator was installed experimentally on the French hospital ship Charles Roux around 1915. This generator relied on seawater as a saline solution. Surgeons utilised electrolytic sodium hypochlorite from this generator as a topical disinfectant on hundreds of surgical cases with remarkable success.

Following success aboard the Charles Roux, the technology was further refined by doctors H.D. Dakin and H.G. Carlisle in association with Dr. Edward Hopkinson. Hopkinson was the personal scientific assistant to Sir William Siemens, a co-founder of the multinational firm Siemens AG, and later became the head of electrical engineering at Maher and Platt of Manchester, one of England's largest engineering firms. The electrolytic water generator designed by the three was installed on the British hospital ship H.M.H.S Aquitania. Aboard the Aquitania electronic sodium hypochlorite was used for laundry and general cleaning,

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water purification and surgical disinfection. British physicians noted that electronic sodium hypochlorite healed wounds faster than boric acid and iodine. Further research revealed that it was effective at suppressing B.Coli, Staphylococcus and anthrax. In 1915, electronic sodium hypochlorite, also referred to as electronically generated hypochlorous acid, was defined in the British Medical Journal as “the most powerful antiseptic known.”

In 1918 The Rockefeller Institute for Medical Research, located in the United States, investigated the work of doctors Dakin, Carlisle and Hopkinson. Despite positive scientific data and successful field testing of electrolytic water technology by military surgeons in France and Great Britain, the burgeoning field of synthetic pharmaceutical medication was favoured by Western medical establishment. Further development of the technology in the United States was relegated to the automotive and aerospace industries. Other countries forged ahead with medical applications.

Japan

Japanese soda and bleaching powder manufacturers were utilising electrolysis for industrial chemical production as far back as 1918. A byproduct of this process was electrolysed reduced water. For many years it was simply discarded. During the 1930's Machesue Suwa, a Japanese medical researcher, began investigating the effects of this water on plants and animals. In 1952 he invented the first device for the production of potable electrolysed reduced water. His invention was timely.

During the early 1950's the country of Japan was still recovering from the devastating consequences of World War II. Japanese physicians found themselves wrestling with a broken medical infrastructure and routine shortages of pharmaceutical supplies. In an effort to combat these challenges they implemented the world's most progressive disease prevention based health care system. At the time, it was known as nunngen-dokku. Today, it is more commonly known as Ningen Dock. Through this health care model Japanese physicians began investigating alternative methods to disease prevention and management. During these investigations they discovered that the consumption of electrolysed reduced water was effective in the treatment of intestinal abnormal fermentation, acid indigestion, chronic diarrhoea, chronic constipation and dyspepsia. In 1965 the Japanese Ministry of Health, Labour and Welfare recognised the consumption of electrolysed reduced water was a viable medical treatment

Russia

During the 1960's and 1970's Russian research scientists began investigating the medical applications of electrolysed water as well. The All-Russian Institute of Medical Engineering focused predominantly on the development of electrochemically activated solutions as a means of pathogen suppression. Russian scientists revisited the concept of producing antimicrobial solutions through the electrolysis of seawater. Additional research revealed that powerful yet environmentally friendly disinfectants could be produced through the simple process of electrolysing tap water and table salt. This research eventually led to the long awaited development of electrolysed oxidising water as a modern clinical disinfectant. To date, electrolysed oxidising water has demonstrated germicidal efficiency against more than 50 pathogens, including MRSA and Klebsiella pneumonia, with no risk of antibiotic resistance.

United States

In the United States, the evolution of electrolytic water technology took a different path. During the 1960's NASA developed the technology as a means of producing heat, electricity and portable water for manned spacecraft. Since then, domestic research has revolved around space-based life support systems, energy production and vehicle propulsion systems. As such, its development in America has been confined to the aerospace and transportation industries. Meanwhile, its health care virtues have largely been overlooked by Western medicine. Somewhat ironically, NASA recently began investigating the physiological benefits of electrolysed reduced water and its potential to protect astronauts from the damaging effects of cosmic radiation.

It seems that in countries and communities where allopathic medicine and the prescription of medications are the dominant methods of health care, the functional benefits of electrolysed water are largely ignored. On the other hand, in countries and communities where disease prevention is favoured over disease treatment electrolysed water is frequently used as a nutritional aid, clinical sanitiser and surgical disinfectant. In Japan electrolytic water generators, which meet the JIS T-2004 specifications established by the Japanese Standards Association, are eligible for licensing under Paragraph 1, Article 13 of the Pharmaceutical Affairs Law of Japan as clinical and home use medical devices by the Japanese Ministry of Health, Labour and Welfare.

Continuing Research on Electrolysed Water

The medically documented Nordenau Phenomenon, which occurred in the early 1990s, triggered resurgence in research to better understand the mechanisms of action and physiological benefits of electrolysed water. This research revealed that electrolysed reduced water is rich in dissolved hydrogen gas (H₂), which imparts a significant free radical scavenging effect on living tissues. To date, the therapeutic effects of hydrogen gas have been documented against more than thirty different diseases in both animal and human models. Hydrogen has demonstrated antioxidative, anti-inflammatory and anti-allergic effects. Additional research has demonstrated that hydrogen can increase insulin sensitivity, stabilise serum glucose levels, suppress LDL cholesterol and suppress risk factors associated with obesity and metabolic syndrome. More current research suggests that hydrogen suppresses the development of mitochondrial myopathies, neurological disorders and arthritis.

In terms of research and development, the country of Japan remains at the forefront of electrolytic water technology. There are two organisations in Japan which steward its development and marketing. The Association of Alkaline Ionized Water Apparatus and the Functional Water Foundation. Medically certified generators remain the safest and most effective means of producing and consuming water that is enriched with hydrogen gas.

Research in the United States is continuing to gain momentum. Doctors Peter Agre and Roderick Mackinnon, Nobel Prize winning laureates, recently illustrated the mechanism by which electrolysed reduced water may influence cellular hydration. Additional research performed by Dr. Gerald Pollack, a professor of bioengineering at the University of Washington, has demonstrated the unique molecular behaviour of electrolysed water. The recent work of Dr. Atsunori Nakao, a Japanese surgeon and transplant researcher at the University of Pittsburgh, has revealed that hydrogen rich water may be a potential new tool in the management of cardiovascular health.

Agricultural researchers at the University of Connecticut, Pennsylvania State University, Oregon State University, Virginia State University and the University of Georgia have been investigating both electrolysed reduced and oxidising waters for more than a decade. They have demonstrated that these electrochemically activated solutions can be used to reduce pesticides and pathogens in the processing of fruits, vegetables, eggs and meats. The USDA now recognises the use of electrolysed oxidised water as a viable method for suppressing foodborne pathogens. As a result of these domestic research endeavours, Western health care practitioners are slowly becoming aware of electrolytic water and its relevance to human health and environmental sustainability.

Japan Rises Above Them All

Prior to the 1950's little was notable about the health and longevity of Japan's citizens. They now entertain the longest life expectancies of any nation in the world. It is not uncommon for Japanese men and women to maintain their independence, mobility and quality of life well into their nineties. It is not coincidental that the country of Japan also maintains one of the lowest infant mortality rates among all industrialised nations. The remarkable health of Japan's citizens is due in part to high standards of culturally imposed nutrition, personal hygiene and self-discipline. Other contributing factors include national commitments to disease prevention and universal care. Japan also has the highest consumption in the world of Molecular Hydrogen Water (H₂).

The Life Expectancy of Americans

In contrast, the health care system in the United States is geared predominantly towards disease treatment. On a yearly basis, Americans consume more prescription medications than the citizens of twelve other industrialised nations combined. It is not coincidental that America has the most expensive health care system on the planet. Despite the high cost of care, it is disturbing to note that Americans rank 47th in life expectancy when compared to the citizens of other countries. The United States also maintains the highest first-day infant mortality rate among all wealthy nations. According to the New England Journal of Medicine, the most recent generation of American youth may be the first generation in American history not to live longer than the generation that preceded it. It is clear that Western medicine's disease treatment approach to health management has not yielded significant improvements in human health and longevity. In contrast the overzealous application of synthetically produced prescription medications has created unnecessary complexities, dependencies and morbidities. The most pronounced example of this phenomenon is the development of antibiotic resistance.

How to make Miracle Molecular H₂ Water in your home

As we have discussed earlier, with the exception of a few sacred places in the world, water containing H₂ is very rare. However it is possible to make Molecular H₂ Water at home using an Ioniser, which is what I do. The beauty of this approach is that you have an unlimited supply for you and your family for many years to come.

Side Note: *At the beginning of this book, I mentioned soaking my feet in H₂ water and its effect on my damaged toes. The device I use also makes water of different pH (potential of hydrogen) levels and the level I used was 11.5 pH, which is not recommended to drink but exerted a very strong anti-inflammatory effect for me. Recently my wife badly burned her finger on a hot iron and after soaking her finger in 11.5 pH water, she didn't even get a blister, which I found fascinating.*

I would like to be very clear that after all my research into this area, I am very confident in recommending only one H₂ machine as I know this is the best on the market. As I will discuss later, you can buy cheaper H₂ units, yet unfortunately like most industries, companies jump on the profit bandwagon simply to make money and will say anything and everything to get your attention and money. However, a recent study showed that the metal plates in some of these inferior devices degraded over a period of time and there were traces of platinum in the water. So we must make sure that the technology we use is medical grade and safe, there is no middle ground. I am so confident in the technology that I recommend that I am delighted to say that my son drinks lots of Molecular H₂ Water on a daily basis.

For me it's all about results especially when it comes to health. I only want to recommend the best as it's not something to be second guessing. Just be very careful when doing your own online research and always remember there are no laws or regulations to what people say or upload, so tread carefully.

As you will see at the end of this book I have over 1,000 research articles from A to Z, with links to each study on the benefits of H₂. Countless hours of study have gone into this, and I continue my studies, as for me this is the most important health discovery of our times. I feel it is my duty to educate the world on the many benefits and uses of electrolysed reduced water known as Molecular H₂ Water.

The importance of a consistent supply of Molecular H₂

There is an unfortunate way that many people look at nutritional supplementation, so let's start there. Many people, who have yet to be educated, think of supplementation in the same way that they think about an antibiotic, take it for a while and that's all you need to do. The same applies for painkillers, many people think that once the pain is gone, everything is fine. This is simply not the case! While being intentionally outside the scope of this book I will touch upon this.

Most people are in a nutritionally deficient state and they need to consume high quality nutritional supplements at a therapeutic level to provide their body with sufficient levels to support the repair process. The Recommended Daily Value or Nutrient Reference Value is the survival level, so in many cases it is simply useless. It is important that you speak with a qualified practitioner who can advise you of the correct level for your current health status.

If you were taking antioxidants in capsule form, you need to take them every day for as long as your body is producing free radicals and since every breath you take produces them, it is simple enough to see that you need to take them till the day you stop breathing!

As we need to consume water on a daily basis to stay hydrated, for me it makes sense that if I drink Molecular H₂ Water, I am giving my body an abundance of water and antioxidants all at the same time. Remember that H₂ is converting the Hydroxyl Radical to water, so as well as protecting your cells, you are actually hydrating them. Consuming H₂, as we have discussed earlier, further supports the action of any antioxidants we may be getting from our diet or through nutritional supplementation.

How long does the H₂ remain in water?

This is a really common but important question and it's essential that you understand this. As H₂ is so small and so light, it leaves the water relatively quickly. Let's say you had 1,000 ml of H₂ water and it contained 1.6 ppm. The answer lies in what is called half-life. Wikipedia says *"Half-life is the time required for a quantity to reduce to half of its initial value. The term is commonly used in nuclear physics to describe how quickly unstable atoms undergo radioactive decay or how long stable atoms survive. The term is also used more generally to characterise any type of exponential decay."* The half-life of H₂ is approximately 2 hours at room temperature, while exposed to the air. Therefore, in approximately 2 hours the 1.6 ppm, would be 0.8 ppm. So, in approximately 10 hours all the H₂ would be gone from the water. This emphasises why it is so important to get the Molecular H₂ Water directly from your ioniser and consume it as it's created to get the best potential effect.

TIP: *Keeping chilled H₂ in a sealed container will increase the half-life, also the higher the H₂ concentration in the water, the faster it will leave or the shorter the half-life will be.*

Choosing the right technology

There are many companies on the market that claim to make Molecular H₂ Water and you can see devices online for as little as \$60. This is an area of great concern for me personally, because if you read my personal experience of Molecular H₂, you know the transformative effect it has had on me and you can understand why I am so passionate about it and what led me to write this book.

It is my firm conviction that my choice of technology has been at the centre of the effects that I have enjoyed. The technology that I use is made by a Japanese company and at the time of writing this book is celebrating their 50th year in business. They are a global company with a presence in 25 countries and recently opened their 43rd office.

In Japan their technology is manufactured in a factory that is ISO 13485 certified for the production of medical devices and related services. They hold numerous certifications for their products. They manufacture all components used in their technology, with nothing outsourced to China or Korea and as such the technology they produce is classed as a medical grade device in Japan. Therefore, if you are considering getting a water ioniser for yourself, the first sign of a reputable device is medical grade certification, if it doesn't have this certification, then it is not a device to consider. On the note of medical certification, Japan has the most stringent approval process when it comes to medical device approval, where it can take up to 12 years to secure approval and certification.

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If you are looking to potentially transform your life and the lives of your family members and even future generations, please make sure that the technology you invest in is the best as in the next section I will explain why.

The correct platinum plates

The production of Molecular H₂ Water is done via an electrolysis process, which produces Electrolysed Reduced Water, within which is Molecular H₂. An electric current is delivered to titanium plates that are dipped in medical grade platinum and it is this process that creates the Molecular (H₂) Water. Platinum is universally accepted as the best material for water electrolysis as it is non-reactive and because it is an excellent conductor. However, due to its expense (the price of platinum in 2008 was as high as \$2,240.00/ounce <http://www.kitco.com/>), platinum-coated titanium is the industry standard for water electrolysis. Titanium is a dense, durable metal but it is also very reactive and should not be directly exposed to water during electrolysis.



Figure 43: Solid plates

While some manufacturers use stainless steel or other alloys, the most reputable companies use medical grade titanium and medical grade platinum. The ioniser I use has medical grade platinum-coated, medical grade titanium plates. The plates of an ioniser are like the engine of a car. They are directly responsible for the quality of the resulting water.

I have mentioned medical grade platinum a number of times as opposed to platinum as there is a distinct difference between the two. Medical grade platinum must be certified, whereas non-medical grade platinum does not and this is an important distinction.

Just as the size and the number of cylinders determine the efficiency of an engine, plate size and surface area determine the effectiveness and the efficiency of a water ioniser. These factors directly influence the amount of water that can be ionised on a day-to-day basis and over the life of the ioniser. They also influence the degree to which the water is ionised, the amount of Molecular H₂ Water created and is reflected in the pH and the ORP of the water.

Some manufacturers use mesh plates to increase the surface area (by adding texture, the actual surface area is increased). Mesh plates can improve overall efficiency, but they have several drawbacks. Mesh plates tend to break down due to expansion and contraction caused by the heat of electrolysis. Cracks expose titanium to the water and require more frequent replacement and repair. Mesh plates also collect hard water deposits and require more frequent cleaning. In areas with hard water an ioniser with mesh plates will have a much shorter life span compared to solid plates. Some manufacturers even void their warranty when hard water is used. It is the number and the surface area of these plates that is important.

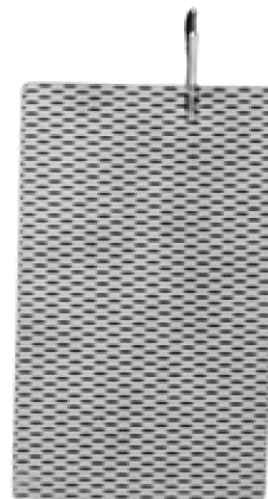


Figure 44: Mesh plates

Since plates are the most expensive single component of a water ioniser, this accounts for the significant portion of the price difference between the leading medical ioniser I use and some of the cheaper knock offs that are available.

Power Output

The wattage or power output is really important when it comes to the electrolysis process. A higher wattage output is more effective in the same way that a higher wattage light bulb will produce more light. The medical grade ioniser I recommend uses 230 watts of power when producing Molecular H₂ Water, whereas other devices on the market use between 80 and 200 watts. What do you think that could mean for the quality of the water they produce? I will leave that with you to consider.

The importance of a transformer vs SMPS

The ioniser I recommend uses a transformer, meaning that the power is constantly flowing providing a consistent, steady electrical charge which is what is necessary to transfer enough energy to accomplish stable ionisation and micro-clustering.

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There are two basic types of power regulators used in the ioniser industry today - transformer and switched mode power supply (SMPS). A transformer is the most stable, effective and time-tested form of electrical regulator. The biggest concern with transformers is overheating during constant or prolonged use. SMPS systems were devised to overcome the overheating problem. They maintain voltage levels according to the machine's demand by using "pulsed" power rather than continual voltage. This takes care of the possibility of overheating.

A switch mode power supply regulates voltage by turning the flow of electricity on and off at extremely high rates of speed. The power supply is at "full off" approximately half the time during ionisation to protect the mesh plates from overheating and melting. When an ioniser with SMPS runs for 2 minutes, approximately 1 minute of that time would be with no electric current being sent to the plates!

Some manufacturers have chosen to use SMPS systems even though they do not supply the power output of a transformer. Other manufacturers have chosen to include circuit breakers with transformer-powered machines to shut off the machine during overheating.

The Ioniser I use and recommend are transformer-powered and do not require circuit breakers because they simply do not overheat, even with intense usage.

Final words on choosing your water ioniser

As you have read, the power of Molecular Hydrogen (H₂) is immense! The potential it holds for you is incredible as its actions are at the deepest levels in your body. Addressing issues at a cellular level by flooding your entire body with antioxidants is a major component of a successful health strategy.

I am a firm believer that you get what you pay for and when it comes to water ionisers that make Molecular Hydrogen (H₂) this is no different. The device I recommend is a medical grade device that uses solid plates and a transformer, meaning that it can provide the correct current into the correct plates to produce a non-contaminated water that has an abundance of Molecular Hydrogen (H₂) and therein lies its potential for health.

There are plenty of *knockoffs* on the market that claim to be the best but please tread cautiously when considering these devices.

Make sure of the following:

- it is a medical grade device.
- the plates are medical grade titanium, coated in medical grade platinum.
- they have a transformer to supply the correct and consistent current and not SMPS.
- that the plates are solid and not mesh, which can contract and cause degradation of the plate, potentially contaminating the water with metallic particles.

Conclusion

The process of life is a battle between the air we breathe and the cells we need to produce the very energy that is essential for all our bodily processes and functions. It is, however, this very process that is undermining our health and is the major contributor towards degenerative diseases that plague our society. From the foods we eat to the air we breathe; we are constantly being exposed to additional chemicals and toxins that all need to be processed and eliminated from our bodies. Yet the very act of the processing is dependent upon us having a steady supply of internal resources that can neutralise this threat. The unfortunate reality is that these resources diminish as we age and as they do, those who do not act will see their health decline.

I am certainly an advocate of a balanced nutritious diet, nutritional supplementation, antioxidant supplementation, exercise, and reduction of stress, but as you have read, these simply are not enough, yet this is the advice that most health professionals provide and even possibly just a subset of these recommendations.

Since my youth, I have always been fascinated with the intricate workings of the human body. From my background as a complementary medical practitioner, particularly when I was focused on cardiovascular health and while creating my cardiovascular health recovery program, I knew free radicals were dangerous and were a major contributor to cardiovascular disease. However, that was where I stopped and it was only after being introduced to Molecular Hydrogen (H₂) Water, did I delve deeper into the actual cellular processes behind free radical creation and elimination.

Learning that Superoxide Anion is converted by Superoxide Dismutase (SOD) to Hydrogen Peroxide, which in turn is converted by Glutathione Peroxidase (GPX) to Water, was amazing, but I was truly blown away when I learned that the smallest known molecule in the universe could hold the answer to addressing a primary cause of disease and degenerative conditions, namely the conversion of Hydroxyl to water by Molecular Hydrogen (H₂).

In Japan there are high instances of people living independent lives well into their 90's, so my question is why can't you and I enjoy the same? Personally, living into my 90's is something that really appeals to me. I like the thought of seeing my children raise their own families and being the fun granddad that can still run around with the kids.

Let's face it, we are all going to die and there is no escaping that reality, but we have a choice. We can resign ourselves to years of pain and debilitating diseases, prolonged suffering of ourselves and our families and the eventual, most likely, painful death or we can accept the

inevitable and take steps along the way that will help us towards leaving this plane of existence, having lived a life that wasn't overshadowed by a constant battle with illness and simply existing, waiting for our time to come.

Molecular Hydrogen (H₂) Water seems like such a logical and simple addition to make to your life. It will provide you with a constant supply of antioxidants that penetrate every tissue in your body, while having the potential to eliminate a primary cause of disease, long before it becomes a problem. In Ireland we call that a *no-brainer*!

Clinical References Related to Molecular Hydrogen (H₂) and specific conditions.

The following scientific articles, although promising and interesting, do not constitute clinical guidelines that Molecular Hydrogen (H₂) can cure or prevent a specific disease. Consult your medical health provider for medical questions.

Ageing

1. Role of Molecular Hydrogen in Ageing and Ageing-Related Diseases
<https://europepmc.org/article/MED/35340218>
2. Molecular Hydrogen Alleviates Cellular Senescence in Endothelial Cells
<https://europepmc.org/article/MED/27477846>
3. Chronic inflammation and oxidative stress as a major cause of age-related diseases and cancer
<https://pubmed.ncbi.nlm.nih.gov/19149749>
4. Protective Effect of Molecular Hydrogen Following Different Routes of Administration on D-Galactose-Induced Aging Mice
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8558637/>
5. The effects of 6-month hydrogen-rich water intake on molecular and phenotypic biomarkers of aging in older adults aged 70 years and over: A randomized controlled pilot trial
<https://www.sciencedirect.com/science/article/abs/pii/S0531556521003569?via%3Dihub>
6. Hydrogen: therapeutic potential in wellness and medicine
<https://www.zenelandhealthcare.com/wp-content/uploads/2021/06/Hydrogen-Therapeutic-in-Wellness-and-Medicine.pdf>
7. Recent Progress Toward Hydrogen Medicine: Potential of Molecular Hydrogen for Preventive and Therapeutic Applications
<https://www.ingentaconnect.com/content/ben/cpd/2011/00000017/00000022/art00002>
8. Redox-Mechanisms of Molecular Hydrogen Promote Healthful Longevity
<https://europepmc.org/article/MED/37237854>
9. Lifespan extension - Extension of the Lifespan of *Caenorhabditis elegans* by the Use of Electrolyzed Reduced Water
<https://www.tandfonline.com/doi/abs/10.1271/bbb.100250>
10. Chapter 49 - Molecular hydrogen as a nutraceutical for extending the health span
<https://www.sciencedirect.com/science/article/abs/pii/B9780128198155000197>

Alzheimer's Disease

1. The role of hydrogen therapy in Alzheimer's disease management: Insights into mechanisms, administration routes, and future challenges
<https://www.sciencedirect.com/science/article/pii/S0753332223016050>
2. The role of hydrogen in Alzheimer's disease
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6352568/>
3. Therapeutic Inhalation of Hydrogen Gas for Alzheimer's Disease Patients and Subsequent Long-Term Follow-Up as a Disease-Modifying Treatment: An Open Label Pilot Study
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10057981/>
4. Molecular Hydrogen: an Emerging Therapeutic Medical Gas for Brain Disorders
<https://europepmc.org/article/MED/36567361>
5. Molecular Hydrogen Neuroprotection in Post-Ischemic Neurodegeneration in the Form of Alzheimer's Disease Proteinopathy: Underlying Mechanisms and Potential for Clinical Implementation-Fantasy or Reality?
<https://europepmc.org/article/MED/35743035>
6. Neuroprotective and Preventative Effects of Molecular Hydrogen
<https://europepmc.org/article/MED/33076798>
7. Circulating messenger for neuroprotection induced by Molecular Hydrogen
<https://europepmc.org/article/MED/31100203>
8. Hydrogen-rich saline reduces oxidative stress and inflammation by inhibit of JNK and NF- κ B activation in a rat model of amyloid-beta-induced Alzheimer's disease
<https://www.sciencedirect.com/science/article/abs/pii/S0304394011000383>
9. Hydrogen-rich saline improves memory function in a rat model of amyloid-beta-induced Alzheimer's disease by reduction of oxidative stress
<https://www.sciencedirect.com/science/article/abs/pii/S0006899310003938>
10. Molecular Hydrogen reduces LPS-induced neuroinflammation and promotes recovery from sickness behaviour in mice
<https://europepmc.org/article/PMC/3409143>
11. Inhalation of hydrogen gas attenuates brain injury in mice with cecal ligation and puncture via inhibiting neuroinflammation, oxidative stress and neuronal apoptosis
<https://www.sciencedirect.com/science/article/abs/pii/S0006899314012517>
12. Hydrogen-Related Enhancement of In Vivo Antioxidant Ability in the Brain of Rats Fed Coral Calcium Hydride
<https://link.springer.com/article/10.1007/s11064-010-0204-5>
13. Electrochemically reduced water protects neural cells from oxidative damage
<https://europepmc.org/article/PMC/4212634>

14. Long-Term Inhalation of Hydrogen Gas for Patients with Advanced Alzheimer's Disease: A Case Report Showing Improvement in Fecal Incontinence
<https://esmed.org/MRA/mra/article/view/2951>

Athletic Performance

1. Effects of Molecular Hydrogen supplementation on fatigue and aerobic capacity in healthy adults: A systematic review and meta-analysis
<https://europepmc.org/article/MED/36819697>
2. The Acute Effects of a Single Dose of Molecular Hydrogen Supplements on Responses to Ergogenic Adjustments during High-Intensity Intermittent Exercise in Humans
<https://europepmc.org/article/MED/36235628>
3. Molecular Hydrogen Mitigates Performance Decrement during Repeated Sprints in Professional Soccer Players
<https://europepmc.org/article/MED/35276867>
4. Molecular Hydrogen as an adjuvant therapy may be associated with increased oxygen saturation and improved exercise tolerance in a COVID-19 patient
<https://europepmc.org/article/MED/34765212>
5. Molecular Hydrogen Positively Affects Physical and Respiratory Function in Acute Post-COVID-19 Patients: A New Perspective in Rehabilitation
<https://europepmc.org/article/MED/35206179>
6. Molecular Hydrogen as an Adjuvant Therapy May be Associated with Increased Oxygen Saturation and Improved Exercise Tolerance In a COVID-19 patient
<https://europepmc.org/article/PPR/PPR399766>
7. Molecular Hydrogen downregulates acute exhaustive exercise-induced skeletal muscle damage
<https://europepmc.org/article/MED/33356867>
8. Application of Molecular Hydrogen as a Novel Antioxidant in Sports Science
<https://europepmc.org/article/MED/32015786>
9. Inhaled Molecular Hydrogen attenuates intense acute exercise-induced hippocampal inflammation in sedentary rats
<https://europepmc.org/article/MED/31715290>
10. Molecular Hydrogen reduces acute exercise-induced inflammatory and oxidative stress status
<https://europepmc.org/article/MED/30243702>
11. Acute Supplementation with Molecular Hydrogen Benefits Submaximal Exercise Indices. Randomised, Double-Blinded, Placebo-Controlled Crossover Pilot Study
<https://europepmc.org/article/MED/30918832>

12. Molecular Hydrogen in sports medicine: new therapeutic perspectives
<https://europepmc.org/article/MED/25525953>
13. Muscle fatigue - Pilot study: Effects of drinking hydrogen-rich water on muscle fatigue caused by acute exercise in elite athletes
<https://europepmc.org/article/PMC/3395574>
14. Sports-related soft tissue injury - Effectiveness of Oral and Topical Hydrogen for Sports-Related Soft Tissue Injuries
<https://pubmed.ncbi.nlm.nih.gov/25295663/>
15. Exercise-induced metabolic acidosis - Hydrogen-Rich Water Affected Blood Alkalinity in Physically Active Men
<https://pubmed.ncbi.nlm.nih.gov/24392771/>
16. Selective protective effect of hydrogen water on free radical injury of athletes after high-intensity exercise
<http://www.biomedres.info/biomedical-research/selective-protective-effect-of-hydrogen-water-on-free-radical-injury-of-athletes-after-highintensity-exercise.pdf>
17. Effect of Astaxanthin Supplementation on Cardiorespiratory Function in Runners
https://journals.lww.com/acsm-msse/fulltext/2017/05001/Effect_of_Astaxanthin_Supplementation_on.2758.aspx
18. Effects of hydrogen rich water on prolonged intermittent exercise
<https://pubmed.ncbi.nlm.nih.gov/28474871/>
19. Effects of hydrogen bathing on exercise-induced oxidative stress and delayed-onset muscle soreness
http://wprim.whocc.org.cn/admin/article/articleDetail?WPRIMID=378181&articleId=378181&locale=zh_CN
20. Molecular Hydrogen Affected Post-Exercise Recovery in Judo Athletes
https://journals.lww.com/acsm-msse/fulltext/2016/05001/Molecular_Hydrogen_Affected_Post_Exercise_Recovery.3217.aspx
21. Impact of hydrogen-rich gas mixture inhalation through nasal cannula during post-exercise recovery period on subsequent oxidative stress, muscle damage, and exercise performances in men
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8092152/>
22. Acute Supplementation with Molecular Hydrogen Benefits Submaximal Exercise Indices. Randomized, Double-Blinded, Placebo-Controlled Crossover Pilot Study
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6425901/>

Autism Spectrum Disorder

1. Neuroinflammation and Oxidative Stress in the Pathogenesis of Autism Spectrum Disorder
<https://europepmc.org/article/MED/36982559>

The Miracle You Make In Your Kitchen

2. Administration of molecular hydrogen during pregnancy improves behavioral abnormalities of offspring in a maternal immune activation model
<https://www.nature.com/articles/s41598-018-27626-4>
3. Hydrogen-Rich Water Ameliorates Autistic-Like Behavioral Abnormalities in Valproic Acid-Treated Adolescent Mice Offspring
<https://www.frontiersin.org/articles/10.3389/fnbeh.2018.00170/full?>
4. Redox Effects of Molecular Hydrogen and Its Therapeutic Efficacy in the Treatment of Neurodegenerative Diseases
<https://www.mdpi.com/2227-9717/9/2/308>
5. Neuroinflammation: The Brain is on Fire in a Cytokine Storm
<https://www.researchednutritionals.com/wp-content/uploads/2017/02/Neuroinflammation-The-brain-on-fire-newsletter-2-14-17-002.pdf>
6. Target Neuro-oxidative Stress with Molecular Hydrogen
<https://researchednutritionals.com/wp-content/uploads/2017/02/Target-Neurooxidative-stress-with-Molecular-hydrogen-2-22-17.pdf>
7. Coadministration of Hydrogen Gas as Part of the Carrier Gas Mixture Suppresses Neuronal Apoptosis and Subsequent Behavioral Deficits Caused by Neonatal Exposure to Sevoflurane in Mice
<https://pubs.asahq.org/anesthesiology/article/118/1/105/304/Coadministration-of-Hydrogen-Gas-as-Part-of-the>
8. Pharmaceutical Companies Behind the Eight Ball in Treatment of Mitochondrial Dysfunction
<https://www.researchednutritionals.com/wp-content/uploads/2017/05/Pharmaceutical-companies-behind-the-eight-ball-in-treatment-of-mitochondrial-dysfunction.pdf>
9. Implications of Gut Microbiota in Neurodegenerative Diseases
<https://www.frontiersin.org/articles/10.3389/fimmu.2022.785644/full>
10. Brain changes in a maternal immune activation model of neurodevelopmental brain disorders
<https://www.sciencedirect.com/science/article/pii/S0301008218300030>
11. Maternal molecular hydrogen administration on lipopolysaccharide-induced mouse fetal brain injury
https://www.jstage.jst.go.jp/article/jcbrn/57/3/57_15-90/_article

Autoimmune Disorders

1. Molecular Hydrogen Protects Human Melanocytes from Oxidative Stress by Activating Nrf2 Signaling
<https://europepmc.org/article/MED/32234461>

2. Molecular Hydrogen decelerates rheumatoid arthritis progression through inhibition of oxidative stress
<https://europepmc.org/article/MED/27830032>
3. Molecular Hydrogen: New Antioxidant and Anti-inflammatory Therapy for Rheumatoid Arthritis and Related Diseases
<https://www.ingentaconnect.com/content/ben/cpd/2013/00000019/00000035/art00013>
4. Rheumatoid arthritis - Therapeutic efficacy of infused Molecular Hydrogen in saline on rheumatoid arthritis: A randomized, double-blind, placebo-controlled pilot study
<https://pubmed.ncbi.nlm.nih.gov/24929023/>
5. Hydrogen, a Novel Therapeutic Molecule, Regulates Oxidative Stress, Inflammation, and Apoptosis
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8721893>
6. Rheumatoid arthritis - Consumption of water containing a high concentration of Molecular Hydrogen reduces oxidative stress and disease activity in patients with rheumatoid arthritis: an open-label pilot study
<https://europepmc.org/article/PMC/3563451>
7. Molecular hydrogen reduces oxidative stress and disease activity in patients with rheumatoid arthritis
<https://hho-bulgaria.com/en/molecular-hydrogenoxidative-stress-rheumatoid-arthritis/>

Blood/Blood Vessels

1. Molecular Hydrogen exposure improves functional state of red blood cells in the early postoperative period: a randomized clinical study
<https://europepmc.org/article/MED/36204784>
2. Atherosclerosis - Hydrogen-rich saline prevents neointima formation after carotid balloon injury by suppressing ROS and the TNF- α /NF- κ B pathway
<https://www.sciencedirect.com/science/article/abs/pii/S0021915011010719>
3. Atherosclerosis - Hydrogen decreases athero-susceptibility in apolipoprotein B-containing lipoproteins and aorta of apolipoprotein E knockout mice
<https://www.sciencedirect.com/science/article/abs/pii/S0021915011011312>
4. Atherosclerosis - Molecular Hydrogen stabilizes atherosclerotic plaque in low-density lipoprotein receptor-knockout mice
<https://www.sciencedirect.com/science/article/abs/pii/S0891584915002865>
5. Atherosclerosis - Consumption of hydrogen water prevents atherosclerosis in apolipoprotein E knockout mice
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X08021219>
6. Atherosclerosis - Hydrogen-rich water prevents lipid deposition in the descending aorta in a rat periodontitis model

<https://www.sciencedirect.com/science/article/abs/pii/S0003996912001379>

7. AGEs-induced blood vessel damage - Hydrogen-rich medium suppresses the generation of reactive oxygen species, elevates the Bcl-2/Bax ratio and inhibits advanced glycation end product-induced apoptosis
<https://www.spandidos-publications.com/ijmm/31/6/1381>
8. Neointimal hyperplasia - Hydrogen-rich saline attenuates vascular smooth muscle cell proliferation and neointimal hyperplasia by inhibiting reactive oxygen species production and inactivating the Ras-ERK1/2-MEK1/2 and Akt pathways
<https://www.spandidos-publications.com/10.3892/ijmm.2013.1256>
9. Hyperplasia in arterialized vein graft - Oral intake of hydrogen-rich water inhibits intimal hyperplasia in arterialized vein grafts in rats
<https://europepmc.org/article/PMC/3307379>
10. Vascular dysfunction - Chronic hydrogen-rich saline treatment attenuates vascular dysfunction in spontaneous hypertensive rats
<https://www.sciencedirect.com/science/article/abs/pii/S0006295212000780>
11. Vascular endothelial function - Consumption of water containing over 3.5 mg of dissolved hydrogen could improve vascular endothelial function
<https://europepmc.org/article/PMC/4207582>
12. Molecular hydrogen protects mice against polymicrobial sepsis by ameliorating endothelial dysfunction via an Nrf2/HO-1 signaling pathway
<https://pubmed.ncbi.nlm.nih.gov/26253656/>
13. Aplastic anemia - Therapeutic Effects of Hydrogen-Rich Solution on Aplastic Anemia in Vivo
<https://karger.com/cpb/article/32/3/549/153324>
14. Maintenance of multipotential stroma/mesenchymal stem cells - Hydrogen gas treatment prolongs replicative lifespan of bone marrow multipotential stromal cells in vitro while preserving differentiation and paracrine potentials
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X10011125>
15. Neutrophil function - Relationship between exhaled hydrogen and neutrophil function in the general population
https://www.jstage.jst.go.jp/article/hirosakiigaku/65/2-4/65_138/_article/-char/ja/
16. Inhibition of collagen-induced platelet aggregation - Hydrogen May Inhibit Collagen-Induced Platelet Aggregation: An ex vivo and in vivo Study
https://www.jstage.jst.go.jp/article/internalmedicine/51/11/51_51.7161/_article/-char/ja/
17. Improvement of blood fluidity - Colloidal Platinum in Hydrogen-Rich Water Exhibits Radical-Scavenging Activity and Improves Blood Fluidity

<https://www.ingentaconnect.com/contentone/asp/jnn/2012/00000012/00000005/art00045>

18. Constitutive hydrogen inhalation prevents vascular remodeling via reduction of oxidative stress

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0227582>

Blood Pressure/Hypertension

1. Molecular Hydrogen ameliorates several characteristics of preeclampsia in the Reduced Uterine Perfusion Pressure (RUPP) rat model
<https://europepmc.org/article/MED/27789293>
2. Hydrogen ameliorates pulmonary hypertension in rats by anti-inflammatory and antioxidant effects
<https://www.sciencedirect.com/science/article/pii/S0022522315008648>
3. Protection of oral hydrogen water as an antioxidant on pulmonary hypertension
<https://europepmc.org/article/PMC/3751215>
4. Chronic hydrogen-rich saline treatment reduces oxidative stress and attenuates left ventricular hypertrophy in spontaneous hypertensive rats
<https://link.springer.com/article/10.1007/s11010-012-1264-4>
5. Hypertensive renal injury - Consumption of hydrogen-rich water alleviates renal injury in spontaneous hypertensive rats
<https://link.springer.com/article/10.1007/s11010-014-2024-4>
6. Improving outcomes from resuscitation: from hypertension and hemodilution to therapeutic hypothermia to H₂
<https://pubmed.ncbi.nlm.nih.gov/25366996/>
7. Protection of oral hydrogen water as an antioxidant on pulmonary hypertension
<https://pubmed.ncbi.nlm.nih.gov/23955545/>
8. Protective effects of hydrogen-rich saline on monocrotaline-induced pulmonary hypertension in a rat model
<https://pubmed.ncbi.nlm.nih.gov/21375753/>
9. Acarbose treatment and the risk of cardiovascular disease and hypertension in patients with impaired glucose tolerance: the STOP-NIDDM trial
<https://pubmed.ncbi.nlm.nih.gov/12876091/>

Bones and Joints

1. Molecular Hydrogen decelerates rheumatoid arthritis progression through inhibition of oxidative stress
<https://europepmc.org/article/MED/27830032>
2. Molecular Hydrogen enhances osteogenesis in Danio rerio embryos
<https://europepmc.org/article/MED/33410131>

The Miracle You Make In Your Kitchen

3. Protective effects of Molecular Hydrogen on steroid-induced osteonecrosis in rabbits via reducing oxidative stress and apoptosis
<https://europepmc.org/article/MED/28148301>
4. Psoriasis - Improvement of psoriasis-associated arthritis and skin lesions by treatment with Molecular Hydrogen: A report of three cases
<https://pubmed.ncbi.nlm.nih.gov/25936373/>
5. Rheumatoid arthritis - Consumption of water containing a high concentration of Molecular Hydrogen reduces oxidative stress and disease activity in patients with rheumatoid arthritis: an open-label pilot study
<https://europepmc.org/article/PMC/3563451>
6. Rheumatoid arthritis - Therapeutic efficacy of infused Molecular Hydrogen in saline on rheumatoid arthritis: A randomized, double-blind, placebo-controlled pilot study
<https://pubmed.ncbi.nlm.nih.gov/24929023/>
7. Osteoporosis - Treatment with hydrogen molecules prevents RANKL-induced osteoclast differentiation associated with inhibition of ROS formation and inactivation of MAPK, AKT and NF-kappa B pathways in murine RAW264.7 cells
<https://link.springer.com/article/10.1007/s00774-013-0530-1>
8. Osteoporosis - Hydrogen water consumption prevents osteopenia in ovariectomized rats
<https://europepmc.org/article/PMC/3596646>
9. Bone loss induced by microgravity - Treatment of hydrogen molecule abates oxidative stress and alleviates bone loss induced by modeled microgravity in rats
<https://link.springer.com/article/10.1007/s00198-012-2028-4>
10. TNF α -induced osteoblast injury - Treatment with hydrogen molecule alleviates TNF α -induced cell injury in osteoblast
<https://link.springer.com/article/10.1007/s11010-012-1450-4>
11. NO-induced cartilage toxicity - Molecular Hydrogen protects chondrocytes from oxidative stress and indirectly alters gene expressions through reducing peroxynitrite derived from Nitric Oxide
<https://europepmc.org/article/PMC/3231990>
12. Hydrogen-rich saline prevents bone loss in diabetic rats induced by streptozotocin
<https://pubmed.ncbi.nlm.nih.gov/28748382/>
13. An In Situ Depot for Continuous Evolution of Gaseous H₂ Mediated by a Magnesium Passivation/Activation Cycle for Treating Osteoarthritis
<https://pubmed.ncbi.nlm.nih.gov/29923670/>
14. Protective effect of hydrogen gas therapy after germinal matrix hemorrhage in neonatal rats
<https://pubmed.ncbi.nlm.nih.gov/21725762/>

15. Hydrogen and N-acetyl-L-cysteine rescue oxidative stress-induced angiogenesis in a mouse corneal alkali-burn model
<https://pubmed.ncbi.nlm.nih.gov/20847117/>
16. Hydrogen-rich saline attenuates steroid-associated femoral head necrosis through inhibition of oxidative stress in a rabbit model
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4726855/>
17. Protective effects of hydrogen gas inhalation on radiation-induced bone marrow damage in cancer patients: a retrospective observational study
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8174412/>

Brain Disorders/Brain Injury

1. Molecular Hydrogen: an Emerging Therapeutic Medical Gas for Brain Disorders
<https://europepmc.org/article/MED/36567361>
2. Effect of Molecular Hydrogen treatment on Sepsis-Associated encephalopathy in mice based on gut microbiota
<https://europepmc.org/article/MED/36468415>
3. Transcriptomic and metabolomic studies on the protective effect of Molecular Hydrogen against nuclear electromagnetic pulse-induced brain damage
<https://europepmc.org/article/MED/36817910>
4. Molecular Hydrogen alleviates lung injury after traumatic brain injury: Pyroptosis and apoptosis
<https://europepmc.org/article/MED/34883075>
5. Neuroprotective and Preventative Effects of Molecular Hydrogen
<https://europepmc.org/article/MED/33076798>
6. Molecular Hydrogen as a Medical Gas for the Treatment of Myalgic Encephalomyelitis/Chronic Fatigue Syndrome: Possible Efficacy Based on a Literature Review
<https://europepmc.org/article/MED/35493814>
7. Hydrogen-rich water attenuates oxidative stress in rats with traumatic brain injury via Nrf2 pathway
<https://pubmed.ncbi.nlm.nih.gov/29907217/>
8. Neuroprotective Effects of Molecular Hydrogen: A Critical Review
<https://europepmc.org/article/MED/33078374>
9. Application of Molecular Hydrogen as a Novel Antioxidant in Sports Science
<https://europepmc.org/article/MED/32015786>

The Miracle You Make In Your Kitchen

10. Molecular Hydrogen alleviates brain injury and cognitive impairment in a chronic sequelae model of murine polymicrobial sepsis
<https://europepmc.org/article/MED/33052428>
11. Molecular Hydrogen: current knowledge on mechanism in alleviating free radical damage and diseases
<https://academic.oup.com/abbs/article-pdf/51/12/1189/32815441/gmz121.pdf>
12. Molecular Hydrogen Prevents Social Deficits and Depression-Like Behaviors Induced by Low-Intensity Blast in Mice
<https://europepmc.org/article/MED/30053086>
13. Molecular Hydrogen affords neuroprotection in a translational piglet model of hypoxic-ischemic encephalopathy
<https://europepmc.org/article/MED/28011948>
14. Molecular Hydrogen inhalation attenuates postoperative cognitive impairment in rats
<https://europepmc.org/article/MED/28614179>
15. Molecular Hydrogen alleviates asphyxia-induced neuronal cyclooxygenase-2 expression in newborn pigs
<https://europepmc.org/article/MED/29565041>
16. Hydrogen acts as a therapeutic antioxidant by selectively reducing cytotoxic oxygen radicals
<https://www.nature.com/articles/nm1577>
17. The neuroprotective effects of intraperitoneal injection of hydrogen in rabbits with cardiac arrest
<https://www.sciencedirect.com/science/article/abs/pii/S0300957212008726>
18. The Effect of Hydrogen-Rich Saline on the Brain of Rats with Transient Ischemia
<https://www.sciencedirect.com/science/article/abs/pii/S002248041100076X>
19. Lactulose ameliorates cerebral ischemia–reperfusion injury in rats by inducing hydrogen by activating Nrf2 expression
<https://www.sciencedirect.com/science/article/abs/pii/S089158491300405X>
20. Hydrogen Suppresses Hypoxia/Reoxygenation-Induced Cell Death in Hippocampal Neurons Through Reducing Oxidative Stress
<https://karger.com/cpb/article/36/2/585/72887>
21. Hydrogen gas reduced acute hyperglycemia-enhanced hemorrhagic transformation in a focal ischemia rat model
<https://www.sciencedirect.com/science/article/abs/pii/S030645221000610X>

22. Hydrogen-rich water protects against ischemic brain injury in rats by regulating calcium buffering proteins
<https://www.sciencedirect.com/science/article/abs/pii/S0006899315003340>
23. Hydrogen improves neurological function through attenuation of blood–brain barrier disruption in spontaneously hypertensive stroke-prone rats
<https://bmcneurosci.biomedcentral.com/articles/10.1186/s12868-015-0165-3>
24. Hydrogen inhalation ameliorated mast cell mediated brain injury after ICH in mice
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3630247/>
25. Hydrogen-rich saline protects retina against glutamate-induced excitotoxic injury in guinea pig
<https://www.sciencedirect.com/science/article/abs/pii/S0014483511003915>
26. Neuroprotective effect of hydrogen-rich saline against neurologic damage and apoptosis in early brain injury following subarachnoid hemorrhage: possible role of the Akt/GSK3 β signaling pathway
<https://europepmc.org/article/PMC/3999200>
27. Nuclear factor- κ B/Bcl-XL pathway is involved in the protective effect of hydrogen-rich saline on the brain following experimental subarachnoid hemorrhage in rabbits
<https://onlinelibrary.wiley.com/doi/abs/10.1002/jnr.23281>
28. Hydrogen-Rich Saline Attenuated Subarachnoid Hemorrhage-Induced Early Brain Injury in Rats by Suppressing Inflammatory Response: Possible Involvement of NF- κ B Pathway and NLRP3 Inflammasome
<https://europepmc.org/article/MED/26091790>
29. Hydrogen-rich saline alleviates early brain injury via reducing oxidative stress and brain edema following experimental subarachnoid hemorrhage in rabbits
<https://europepmc.org/article/PMC/3436733>
30. Effects of intravenous infusion of hydrogen-rich fluid combined with intra-cisternal infusion of magnesium sulfate in severe aneurysmal subarachnoid hemorrhage: study protocol for a randomized controlled trial
<https://europepmc.org/article/PMC/4172868>
31. Beneficial effects of hydrogen gas in a rat model of traumatic brain injury via reducing oxidative stress
<https://www.sciencedirect.com/science/article/abs/pii/S0006899310016288>
32. Molecular Hydrogen in drinking water protects against neurodegenerative changes induced by traumatic brain injury
<https://europepmc.org/article/PMC/4176020>
33. Hydrogen-Rich Saline is Cerebroprotective in a Rat Model of Deep Hypothermic Circulatory Arrest
<https://link.springer.com/article/10.1007/s11064-011-0476-4>

The Miracle You Make In Your Kitchen

34. Molecular Hydrogen reduces LPS-induced neuroinflammation and promotes recovery from sickness behaviour in mice
<https://europepmc.org/article/PMC/3409143>
35. Inhalation of hydrogen gas attenuates brain injury in mice with cecal ligation and puncture via inhibiting neuroinflammation, oxidative stress and neuronal apoptosis
<https://www.sciencedirect.com/science/article/abs/pii/S0006899314012517>
36. Electrochemically reduced water protects neural cells from oxidative damage
<https://europepmc.org/article/PMC/4212634>
37. Hydrogen exerts neuroprotective effects on OGD/R damaged neurons in rat hippocampal by protecting mitochondrial function via regulating mitophagy mediated by PINK1/Parkin signaling pathway
<https://pubmed.ncbi.nlm.nih.gov/29958907/>
38. Hydrogen-Rich Saline Activated Autophagy via HIF-1 α Pathways in Neuropathic Pain Model
<https://pubmed.ncbi.nlm.nih.gov/29888265/>
39. FoxO1-mediated autophagy plays an important role in the neuroprotective effects of hydrogen in a rat model of vascular dementia
<https://pubmed.ncbi.nlm.nih.gov/31005352/>
40. Hydrogen inhalation improves mouse neurological outcomes after cerebral ischemia/reperfusion independent of anti-necroptosis
<https://pubmed.ncbi.nlm.nih.gov/29770189/>
41. Hydrogen-rich water improves cognitive impairment gender-dependently in APP/PS1 mice without affecting A β clearance
<https://pubmed.ncbi.nlm.nih.gov/29683360/>
42. Neuroprotective effects of hydrogen inhalation in an experimental rat intracerebral hemorrhage model
<https://pubmed.ncbi.nlm.nih.gov/30016724/>
43. Hydrogen Gas Inhalation Treatment in Acute Cerebral Infarction: A Randomized Controlled Clinical Study on Safety and Neuroprotection
<https://pubmed.ncbi.nlm.nih.gov/28669654/>
44. Hydrogen-rich saline attenuates anxiety-like behaviors in morphine-withdrawn mice
<https://pubmed.ncbi.nlm.nih.gov/28359771/>
45. Hydrogen gas attenuates sevoflurane neurotoxicity through inhibiting nuclear factor κ -light-chain-enhancer of activated B cells signaling and proinflammatory cytokine release in neonatal rats
<https://pubmed.ncbi.nlm.nih.gov/28926473/>
46. Molecular hydrogen protects against oxidative stress-induced SH-SY5Y neuroblastoma cell death through the process of mitohormesis
<https://pubmed.ncbi.nlm.nih.gov/28467497/>

47. Pilot study of H₂ therapy in Parkinson's disease: A randomized double-blind placebo-controlled trial
<https://movementdisorders.onlinelibrary.wiley.com/doi/abs/10.1002/mds.25375>
48. Hydrogen gas inhalation inhibits progression to the "irreversible" stage of shock after severe hemorrhage in rats
<https://pubmed.ncbi.nlm.nih.gov/28640781/>
49. Hydrogen-rich saline attenuates hyperalgesia and reduces cytokines in rats with post-herpetic neuralgia via activating autophagy
<https://pubmed.ncbi.nlm.nih.gov/29762002/>
50. Hydrogen saline suppresses neuronal cell apoptosis and inhibits the p38 mitogen-activated protein kinase-caspase-3 signaling pathway following cerebral ischemia-reperfusion injury
<https://pubmed.ncbi.nlm.nih.gov/28849153/>
51. Hydrogen-rich saline attenuates isoflurane-induced caspase-3 activation and cognitive impairment via inhibition of isoflurane-induced oxidative stress, mitochondrial dysfunction, and reduction in ATP levels
<https://pubmed.ncbi.nlm.nih.gov/28386342/>
52. Hydrogen-rich water improves neurological functional recovery in experimental autoimmune encephalomyelitis mice
<https://pubmed.ncbi.nlm.nih.gov/27138092/>
53. Treatment with Hydrogen-Rich Saline Delays Disease Progression in a Mouse Model of Amyotrophic Lateral Sclerosis
<https://pubmed.ncbi.nlm.nih.gov/26537817/>
54. Hydrogen water reduces NSE, IL-6, and TNF- α levels in hypoxic-ischemic encephalopathy
<https://pubmed.ncbi.nlm.nih.gov/28352827/>
55. The protective effects of hydrogen on HO-1 expression in the brain after focal cerebral ischemia reperfusion in rats
<https://pubmed.ncbi.nlm.nih.gov/27966325/>
56. Hydrogen-rich water attenuates brain damage and inflammation after traumatic brain injury in rats
<https://pubmed.ncbi.nlm.nih.gov/26826009/>
57. Neuroprotective Effect of Hydrogen-Rich Saline in Global Cerebral Ischemia/Reperfusion Rats: Up-Regulated Tregs and Down-Regulated miR-21, miR-210 and NF- κ B Expression
<https://pubmed.ncbi.nlm.nih.gov/27386874/>
58. Inhalation of water electrolysis-derived hydrogen ameliorates cerebral ischemia-reperfusion injury in rats - A possible new hydrogen resource for clinical use
<https://pubmed.ncbi.nlm.nih.gov/33010975/>

The Miracle You Make In Your Kitchen

59. Effects of hydrogen-rich water on the expression of aquaporin 1 in the cerebral cortex of rat with traumatic brain injury
<https://pubmed.ncbi.nlm.nih.gov/29923387/>
60. Hydrogen-rich saline mediates neuroprotection through the regulation of endoplasmic reticulum stress and autophagy under hypoxia-ischemia neonatal brain injury in mice
<https://pubmed.ncbi.nlm.nih.gov/27317636/>
61. Hydrogen-rich saline promotes motor functional recovery following peripheral nerve autografting in rats
<https://pubmed.ncbi.nlm.nih.gov/26622383/>
62. Protective effect of hydrogen-rich medium against high glucose-induced apoptosis of Schwann cells in vitro
<https://pubmed.ncbi.nlm.nih.gov/26035067/>
63. Hydrogen Suppresses Hypoxia/Reoxygenation-Induced Cell Death in Hippocampal Neurons Through Reducing Oxidative Stress
<https://pubmed.ncbi.nlm.nih.gov/25997722/>
64. Hydrogen-rich water attenuates amyloid β -induced cytotoxicity through upregulation of Sirt1-FoxO3a by stimulation of AMP-activated protein kinase in SK-N-MC cells
<https://pubmed.ncbi.nlm.nih.gov/26271894/>
65. Hydrogen-rich saline attenuates neuronal ischemia--reperfusion injury by protecting mitochondrial function in rats
<https://pubmed.ncbi.nlm.nih.gov/24969549/>
66. Delayed neurovascular dysfunction is alleviated by hydrogen in asphyxiated newborn pigs
<https://pubmed.ncbi.nlm.nih.gov/23859876/>
67. Safety of intravenous administration of hydrogen-enriched fluid in patients with acute cerebral ischemia: initial clinical studies
<https://pubmed.ncbi.nlm.nih.gov/23799921/>
68. Hydrogen inhalation ameliorated mast cell-mediated brain injury after intracerebral hemorrhage in mice
<https://pubmed.ncbi.nlm.nih.gov/23388512/>
69. Hydrogen-rich saline reverses oxidative stress, cognitive impairment, and mortality in rats submitted to sepsis by cecal ligation and puncture
<https://pubmed.ncbi.nlm.nih.gov/22482765/>
70. Hydrogen gas ameliorates oxidative stress in early brain injury after subarachnoid hemorrhage in rats
<https://pubmed.ncbi.nlm.nih.gov/22336722/>
71. Hydrogen rich saline reduces immune-mediated brain injury in rats with acute carbon monoxide poisoning
<https://pubmed.ncbi.nlm.nih.gov/23146304/>

72. Protective effects of hydrogen-rich saline in a rat model of traumatic brain injury via reducing oxidative stress
<https://pubmed.ncbi.nlm.nih.gov/22475349/>
73. Hydrogen-rich saline protects against oxidative damage and cognitive deficits after mild traumatic brain injury
<https://pubmed.ncbi.nlm.nih.gov/22742936/>
74. Beneficial effect of hydrogen-rich saline on cerebral vasospasm after experimental subarachnoid hemorrhage in rats
<https://pubmed.ncbi.nlm.nih.gov/22589232/>
75. The neuroprotective effects of electrolyzed reduced water and its model water containing molecular hydrogen and Pt nanoparticles
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3285010/>
76. Hippocampal gene network analysis suggests that coral calcium hydride may reduce accelerated senescence in mice
<https://pubmed.ncbi.nlm.nih.gov/22118758/>
77. Improved brain MRI indices in the acute brain stem infarct sites treated with hydroxyl radical scavengers, Edaravone and hydrogen, as compared to Edaravone alone. A non-controlled study
<https://pubmed.ncbi.nlm.nih.gov/22146068/>
78. Hydrogen inhalation is neuroprotective and improves functional outcomes in mice after intracerebral hemorrhage
<https://pubmed.ncbi.nlm.nih.gov/21725752/>
79. Protective effects of hydrogen on fetal brain injury during maternal hypoxia
<https://pubmed.ncbi.nlm.nih.gov/21725773/>
80. Hydrogen supplemented air inhalation reduces changes of prooxidant enzyme and gap junction protein levels after transient global cerebral ischemia in the rat hippocampus
<https://pubmed.ncbi.nlm.nih.gov/21718970/>
81. Hydrogen is neuroprotective against surgically induced brain injury
<https://pubmed.ncbi.nlm.nih.gov/22146427/>
82. Neuroprotective effects of hydrogen gas on brain in three types of stress models: A 31P-NMR and ESR study
<https://www.sciencedirect.com/science/article/abs/pii/S0168010211019614>
83. Research advances on hydrogen therapy in nervous system diseases
<https://pubmed.ncbi.nlm.nih.gov/21166060/>
84. Hydrogen is neuroprotective and preserves cerebrovascular reactivity in asphyxiated newborn pigs
<https://pubmed.ncbi.nlm.nih.gov/20657346/>

85. Hydrogen-rich pure water prevents superoxide formation in brain slices of vitamin C-depleted SMP30/GNL knockout mice
<https://pubmed.ncbi.nlm.nih.gov/18706888/>
86. Suppression of Oxidative Stress-Induced Apoptosis of Neuronal Cells by Electrolyzed-Reduced Water
https://link.springer.com/chapter/10.1007/1-4020-3103-3_50
87. A basic study on molecular hydrogen (H₂) inhalation in acute cerebral ischemia patients for safety check with physiological parameters and measurement of blood H₂ level
<https://pubmed.ncbi.nlm.nih.gov/22916706/>
88. The effect of hydrogen gas on a mouse bilateral common carotid artery occlusion
<https://pubmed.ncbi.nlm.nih.gov/23564105/>

Cancer

1. Antitumoral Activity of Molecular Hydrogen and Proton in the Treatment of Glioblastoma: An Atypical Pharmacology
<https://europepmc.org/article/MED/37626524>
2. Effects of Molecular Hydrogen in the Pathophysiology and Management of Metabolic and Non-communicable Diseases
<https://europepmc.org/article/PPR/PPR654992>
3. A Systematic Review of Molecular Hydrogen Therapy in Cancer Management
<https://europepmc.org/article/MED/36708550>
4. Transcriptomic and metabolomic studies on the protective effect of Molecular Hydrogen against nuclear electromagnetic pulse-induced brain damage
<https://europepmc.org/article/MED/36817910>
5. Role of Molecular Hydrogen in Ageing and Ageing-Related Diseases
<https://europepmc.org/article/MED/35340218>
6. Molecular Hydrogen Inhibits Colorectal Cancer Growth via the AKT/SCD1 Signaling Pathway
<https://europepmc.org/article/MED/35528164>
7. Molecular Hydrogen as a Potential Clinically Applicable Radioprotective Agent
<https://europepmc.org/article/MED/33925430>
8. Molecular Hydrogen: A potential radioprotective agent
<https://europepmc.org/article/MED/32763820>
9. Molecular Hydrogen is a promising therapeutic agent for pulmonary disease
<https://europepmc.org/article/MED/35187885>

10. Molecular Hydrogen induces metabolic reprogramming to promote differentiation of glioma stem cells
<https://europepmc.org/article/PPR/PPR128977>
11. Molecular Hydrogen: current knowledge on mechanism in alleviating free radical damage and diseases
<https://academic.oup.com/abbs/article-pdf/51/12/1189/32815441/gmz121.pdf>
12. Molecular Hydrogen suppresses glioblastoma growth via inducing the glioma stem-like cell differentiation
<https://europepmc.org/article/MED/31113492>
13. Molecular Hydrogen: potential in mitigating oxidative-stress-induced radiation injury
<https://europepmc.org/article/MED/30543459>
14. Molecular Hydrogen: a preventive and therapeutic medical gas for various diseases
<https://europepmc.org/article/MED/29254278>
15. Cisplatin-induced nephropathy - Molecular Hydrogen alleviates nephrotoxicity induced by an anti-cancer drug cisplatin without compromising anti-tumor activity in mice
<https://link.springer.com/article/10.1007/s00280-008-0924-2>
16. Fe-NTA-induced nephrotoxicity and tumor progression - Consumption of hydrogen-rich water protects against ferric nitrilotriacetate-induced nephrotoxicity and early tumor promotional events in rats
<https://www.sciencedirect.com/science/article/abs/pii/S0278691513006790>
17. Radiation-induced thymic lymphoma - Hydrogen Protects Mice from Radiation Induced Thymic Lymphoma in BALB/c Mice
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3065742/>
18. Tumor angiogenesis - Inhibitory Effect of Electrolyzed Reduced Water on Tumor Angiogenesis
https://www.jstage.jst.go.jp/article/bpb/31/1/31_1_19/_article/-char/ja/
19. Enhancement of 5-FU antitumor efficacy - Hydrogen-water enhances 5-fluorouracil-induced inhibition of colon cancer
<https://europepmc.org/article/PMC/4393812>
20. Chronic inflammation and oxidative stress as a major cause of age-related diseases and cancer
<https://pubmed.ncbi.nlm.nih.gov/19149749>
21. Hydrogen gas inhibits lung cancer progression through targeting SMC3
<https://pubmed.ncbi.nlm.nih.gov/29852353/>

22. Therapeutic efficacy of hydrogen-rich saline alone and in combination with PI3K inhibitor in non-small cell lung cancer
<https://pubmed.ncbi.nlm.nih.gov/29901139/>
23. Protective effect of hydrogen-rich water on liver function of colorectal cancer patients treated with mFOLFOX6 chemotherapy
<https://pubmed.ncbi.nlm.nih.gov/29142752/>
24. On the antitumor properties of biomedical magnesium metal
<https://pubs.rsc.org/en/content/articlelanding/2014/tb/c4tb01421a#!divAbstract>
25. Magnesium metal—A potential biomaterial with antibone cancer properties
<https://onlinelibrary.wiley.com/doi/abs/10.1002/jbm.a.34933?deniedAccessCustomisedMessage=&userIsAuthenticated=false&>
26. Mechanism of Cancer Cell Death Induced by Hydrogen Discharged from Palladium Base Hydrogen Storage Alloy
<https://www.scientific.net/AMR.699.284>
27. Suppressive effects of electrochemically reduced water on matrix metalloproteinase-2 activities and in vitro invasion of human fibrosarcoma HT1080 cells
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3386386/>
28. Influence of Hydrogen Discharged from Palladium Base Hydrogen Storage Alloys on Cancer Cells
<https://www.scientific.net/MSF.706-709.520>
29. Investigation of protective effect of hydrogen-rich water against cisplatin-induced nephrotoxicity in rats using blood oxygenation level-dependent magnetic resonance imaging
<https://pubmed.ncbi.nlm.nih.gov/21882093/>
30. Radiation-induced adverse effects - Effects of drinking hydrogen-rich water on the quality of life of patients treated with radiotherapy for liver tumors
<https://europepmc.org/article/PMC/3231938>
31. Antitumor effects of nano-bubble hydrogen-dissolved water are enhanced by coexistent platinum colloid and the combined hyperthermia with apoptosis-like cell death
<https://pubmed.ncbi.nlm.nih.gov/21042740/>
32. Enhanced induction of mitochondrial damage and apoptosis in human leukemia HL-60 cells due to electrolyzed-reduced water and glutathione
<https://pubmed.ncbi.nlm.nih.gov/19202298/>
33. Platinum nanocolloid-supplemented hydrogendissolved water inhibits growth of human tongue carcinoma cells preferentially over normal cells
<https://pubmed.ncbi.nlm.nih.gov/19783965/>
34. Neutral pH hydrogen-enriched electrolyzed water achieves tumor-preferential clonal growth inhibition over normal cells and tumor invasion inhibition concurrently with intracellular oxidant repression
<https://pubmed.ncbi.nlm.nih.gov/19192719/>

35. Suppression of two-stage cell transformation by electrolyzed reduced water containing platinum nanoparticles
https://link.springer.com/chapter/10.1007/1-4020-4457-7_16#page-1
36. Electrolyzed Reduced Water Supplemented with Platinum Nanoparticles Suppresses Promotion of Two-stage Cell Transformation
<https://pubmed.ncbi.nlm.nih.gov/19003049/>
37. Anticancer Effect of Alkaline Reduced Water(International Conference on Mind Body Science : Physical and Physiological Approach joint with The Eighteenth Symposium on Life Information Science)
<https://cir.nii.ac.jp/crid/1390564238088655616>
38. Suppression of Invasion of Cancer Cells and Angiogenesis by Electrolyzed Reduced Water
<https://www.proquest.com/openview/9f6724cb967742f2df54d6a49525d6f0/1?pq-origsite=gscholar&cbl=38079>
39. Electrolyzed Reduced Water Induces Differentiation in K-562 Human Leukemia Cells
https://link.springer.com/chapter/10.1007/978-94-017-0726-8_67#page-1
40. Electrolyzed Reduced Water Which Can Scavenge Active Oxygen Species Suppresses Cell Growth and Regulates Gene Expression of Animal Cells
https://link.springer.com/chapter/10.1007/0-306-46860-3_15#page-1
41. Response of five established solid transplantable mouse tumors and one mouse leukemia to hyperbaric hydrogen
<https://pubmed.ncbi.nlm.nih.gov/99233/>
42. Hyperbaric hydrogen therapy: a possible treatment for cancer
<https://pubmed.ncbi.nlm.nih.gov/1166304/>
43. Anti-inflammatory and antitumor action of hydrogen via reactive oxygen species
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6096066/>

Cardiovascular Diseases

1. Molecular Hydrogen Reduces the Degree of Endothelial Alteration under Conditions of Chronic Heart Failure
<https://europepmc.org/article/MED/37773571>
2. Therapeutic Potential of Molecular Hydrogen in Metabolic Diseases from Bench to Bedside
<https://europepmc.org/article/MED/37111299>
3. Effects of Molecular Hydrogen in the Pathophysiology and Management of Cardiovascular and Metabolic Diseases
<https://europepmc.org/article/PPR/PPR608467>

4. Dynamics of Metabolic and Oxidative Parameters of Erythrocytes during Treatment of Chronic Heart Failure with Molecular Hydrogen
<https://europepmc.org/article/MED/36210415>
5. The Effect of Molecular Hydrogen on Functional States of Erythrocytes in Rats with Simulated Chronic Heart Failure
<https://europepmc.org/article/MED/36836774>
6. Molecular Hydrogen Alleviates Cellular Senescence in Endothelial Cells
<https://europepmc.org/article/MED/27477846>
7. Molecular Hydrogen: A novel therapy for the treatment of pulmonary hypertension
[https://www.jtcvs.org/article/S0022-5223\(15\)01012-0/pdf](https://www.jtcvs.org/article/S0022-5223(15)01012-0/pdf)
8. The Effect of Molecular Hydrogen on Functional States of Erythrocytes in Rats with Simulated Chronic Heart Failure
<https://europepmc.org/article/MED/36836774>
9. Role of Molecular Hydrogen in Ageing and Ageing-Related Diseases
<https://europepmc.org/article/MED/35340218>
10. Application of Molecular Hydrogen in Heart Surgery under Cardiopulmonary Bypass
<https://europepmc.org/article/MED/34513069>
11. Drinking Molecular Hydrogen Water Is Beneficial to Cardiovascular Function in Diet-Induced Obesity Mice
<https://europepmc.org/article/MED/33922704>
12. Molecular and Cellular Mechanisms Associated with Effects of Molecular Hydrogen in Cardiovascular and Central Nervous Systems
<https://europepmc.org/article/MED/33333951>
13. Molecular Hydrogen: current knowledge on mechanism in alleviating free radical damage and diseases
<https://academic.oup.com/abbs/article-pdf/51/12/1189/32815441/gmz121.pdf>
14. A New Approach for the Prevention and Treatment of Cardiovascular Disorders. Molecular Hydrogen Significantly Reduces the Effects of Oxidative Stress
<https://europepmc.org/article/MED/31159153>
15. Molecular Hydrogen: a preventive and therapeutic medical gas for various diseases
<https://europepmc.org/article/MED/29254278>
16. Molecular Hydrogen potentiates beneficial anti-infarct effect of hypoxic postconditioning in isolated rat hearts: a novel cardioprotective intervention
<https://europepmc.org/article/MED/28350967>

17. Atherosclerosis - Hydrogen-rich saline prevents neointima formation after carotid balloon injury by suppressing ROS and the TNF- α /NF- κ B pathway
<https://www.sciencedirect.com/science/article/abs/pii/S0021915011010719>
18. Atherosclerosis - Hydrogen decreases athero-susceptibility in apolipoprotein B-containing lipoproteins and aorta of apolipoprotein E knockout mice
<https://www.sciencedirect.com/science/article/abs/pii/S0021915011011312>
19. Atherosclerosis - Molecular Hydrogen stabilizes atherosclerotic plaque in low-density lipoprotein receptor-knockout mice
<https://www.sciencedirect.com/science/article/abs/pii/S0891584915002865>
20. Atherosclerosis - Consumption of hydrogen water prevents atherosclerosis in apolipoprotein E knockout mice
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X08021219>
21. Atherosclerosis - Hydrogen-rich water prevents lipid deposition in the descending aorta in a rat periodontitis model
<https://www.sciencedirect.com/science/article/abs/pii/S0003996912001379>
22. Vascular dysfunction - Chronic hydrogen-rich saline treatment attenuates vascular dysfunction in spontaneous hypertensive rats
<https://www.sciencedirect.com/science/article/abs/pii/S0006295212000780>
23. Vascular endothelial function - Consumption of water containing over 3.5 mg of dissolved hydrogen could improve vascular endothelial function
<https://europepmc.org/article/PMC/4207582>
24. Mitochondrial Dysfunction in Vascular Wall Cells and Its Role in Atherosclerosis
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8396504>
25. Acarbose treatment and the risk of cardiovascular disease and hypertension in patients with impaired glucose tolerance: the STOP-NIDDM trial
<https://pubmed.ncbi.nlm.nih.gov/12876091/>
26. Regulative effects of hydrogen-rich medium on monocytic adhesion and vascular endothelial permeability
<https://pubmed.ncbi.nlm.nih.gov/24423914/>
27. Protective Effect of Molecular Hydrogen on Antimycin A-induced Injury in H9c2 Cardiomyocytes
https://www.jstage.jst.go.jp/article/jarde/16/1/16_16_21/article/-char/ja/

Cholesterol

1. Effects of Molecular Hydrogen-dissolved alkaline electrolyzed water on intestinal environment in mice
<https://europepmc.org/article/MED/29770190>

The Miracle You Make In Your Kitchen

2. Hydrogen-rich water decreases serum LDL-cholesterol levels and improves HDL function in patients with potential metabolic syndrome
<https://pubmed.ncbi.nlm.nih.gov/23610159/>
3. Hydrogen Activates ATP-Binding Cassette Transporter A1-Dependent Efflux Ex Vivo and Improves High-Density Lipoprotein Function in Patients With Hypercholesterolemia: A Double-Blinded, Randomized, and Placebo-Controlled Trial
<https://academic.oup.com/jcem/article/100/7/2724/2829665>
4. Cigarette smoke exposure impairs reverse cholesterol transport which can be minimized by treatment of hydrogen-saturated saline
<https://pubmed.ncbi.nlm.nih.gov/26634341/>
5. Hydrogen-rich water decreases serum LDL-cholesterol levels and improves HDL function in patients with potential metabolic syndrome
<https://pubmed.ncbi.nlm.nih.gov/23610159/>
6. Administration of hydrogen-saturated saline decreases plasma low-density lipoprotein cholesterol levels and improves high-density lipoprotein function in high-fat diet-fed hamsters
<https://pubmed.ncbi.nlm.nih.gov/22153840/>
7. The Effects of 24-Week, High-Concentration Hydrogen-Rich Water on Body Composition, Blood Lipid Profiles and Inflammation Biomarkers in Men and Women with Metabolic Syndrome: A Randomized Controlled Trial
<https://www.tandfonline.com/doi/full/10.2147/DMSO.S240122>

Dementia

1. Effects of Molecular Hydrogen Assessed by an Animal Model and a Randomized Clinical Study on Mild Cognitive Impairment
<https://europepmc.org/article/MED/29110615>
2. Consumption of Molecular Hydrogen Prevents the Stress-Induced Impairments in Hippocampus-Dependent Learning Tasks during Chronic Physical Restraint in Mice
<https://www.nature.com/articles/npp200895>
3. Drinking hydrogen water ameliorated cognitive impairment in senescence-accelerated mice
<https://europepmc.org/article/PMC/2872234>
4. Molecular Hydrogen reduces LPS-induced neuroinflammation and promotes recovery from sickness behaviour in mice
<https://europepmc.org/article/PMC/3409143>
5. Inhalation of hydrogen gas attenuates brain injury in mice with cecal ligation and puncture via inhibiting neuroinflammation, oxidative stress and neuronal apoptosis
<https://www.sciencedirect.com/science/article/abs/pii/S0006899314012517>

6. Hydrogen-Related Enhancement of In Vivo Antioxidant Ability in the Brain of Rats Fed Coral Calcium Hydride
<https://link.springer.com/article/10.1007/s11064-010-0204-5>
7. Electrochemically reduced water protects neural cells from oxidative damage
<https://europepmc.org/article/PMC/4212634>
8. FoxO1-mediated autophagy plays an important role in the neuroprotective effects of hydrogen in a rat model of vascular dementia
<https://pubmed.ncbi.nlm.nih.gov/31005352/>

Diabetes

1. Medical Application of Molecular Hydrogen to Diabetic Kidney Disease: Therapeutic Potential through Improvements in Mitochondrial Function
<https://europepmc.org/article/PPR/PPR718910>
2. Therapeutic Potential of Molecular Hydrogen in Metabolic Diseases from Bench to Bedside
<https://europepmc.org/article/MED/37111299>
3. Role of Molecular Hydrogen in Ageing and Ageing-Related Diseases
<https://europepmc.org/article/MED/35340218>
4. Molecular Hydrogen Mediates Neurorestorative Effects After Stroke in Diabetic Rats: the TLR4/NF- κ B Inflammatory Pathway
<https://europepmc.org/article/MED/35895245>
5. Molecular Hydrogen improves type 2 diabetes through inhibiting oxidative stress
<https://europepmc.org/article/MED/32537002>
6. Molecular Hydrogen: current knowledge on mechanism in alleviating free radical damage and diseases
<https://academic.oup.com/abbs/article-pdf/51/12/1189/32815441/gmz121.pdf>
7. Protective Effects of Hydrogen Saline on Diabetic Retinopathy in a Streptozotocin-Induced Diabetic Rat Model
<https://www.liebertpub.com/doi/abs/10.1089/jop.2010.0129>
8. Hydrogen-Rich Saline Prevents Early Neurovascular Dysfunction Resulting from Inhibition of Oxidative Stress in STZ-Diabetic Rats
<https://www.tandfonline.com/doi/abs/10.3109/02713683.2012.748919>
9. Treatment with hydrogen molecule attenuates cardiac dysfunction in streptozotocin-induced diabetic mice
<https://www.sciencedirect.com/science/article/abs/pii/S1054880715000551>
10. Diabetes mellitus - Supplementation of hydrogen-rich water improves lipid and glucose metabolism in patients with type 2 diabetes or impaired glucose tolerance
<https://www.sciencedirect.com/science/article/abs/pii/S0271531708000237>

The Miracle You Make In Your Kitchen

11. Diabetes mellitus - Hydrogen improves glycemic control in type1 diabetic animal model by promoting glucose uptake into skeletal muscle
<https://europepmc.org/article/PMC/3542317>
12. Hydrogen gas production is associated with reduced interleukin-1 β mRNA in peripheral blood after a single dose of acarbose in Japanese type 2 diabetic patients
<https://pubmed.ncbi.nlm.nih.gov/25962664/>
13. Subcutaneous injection of hydrogen gas is a novel effective treatment for type 2 diabetes
<https://pubmed.ncbi.nlm.nih.gov/28390099/>
14. Protective effects of hydrogen-rich saline against erectile dysfunction in a streptozotocin induced diabetic rat model
<https://pubmed.ncbi.nlm.nih.gov/23220246/>
15. Hydrogen improves glycemic control in type1 diabetic animal model by promoting glucose uptake into skeletal muscle
<https://pubmed.ncbi.nlm.nih.gov/23326534/>
16. Therapeutic effects of hydrogen saturated saline on rat diabetic model and insulin resistant model via reduction of oxidative stress
<https://pubmed.ncbi.nlm.nih.gov/22800834/>
17. Hydrogen-rich medium protects human skin fibroblasts from high glucose or mannitol induced oxidative damage
<https://pubmed.ncbi.nlm.nih.gov/21596020/>
18. Preeclampsia - Protective effects of hydrogen-rich saline in preeclampsia rat model
<https://www.sciencedirect.com/science/article/abs/pii/S0143400411002414>
19. Anti-diabetes effect of water containing hydrogen molecule and Pt nanoparticles
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3284969/>
20. Suppressive effects of electrolyzed reduced water on alloxan-induced apoptosis and type 1 diabetes mellitus
<https://pubmed.ncbi.nlm.nih.gov/21063772/>
21. Molecular hydrogen improves obesity and diabetes by inducing hepatic FGF21 and stimulating energy metabolism in db/db mice
<https://pubmed.ncbi.nlm.nih.gov/21293445/>
22. Preservative effect of electrolyzed reduced water on pancreatic beta-cell mass in diabetic db/db mice
<https://pubmed.ncbi.nlm.nih.gov/17268057/>
23. Anti-diabetic effects of electrolyzed reduced water in streptozotocin-induced and genetic diabetic mice
<https://pubmed.ncbi.nlm.nih.gov/16945392/>

24. Anti-diabetic effect of alkaline-reduced water on OLETF rats
<https://pubmed.ncbi.nlm.nih.gov/16428818/>
25. Anti-Oxidative Water Improves Diabetes
https://link.springer.com/chapter/10.1007/978-94-010-0369-8_137#page-1
26. Electrolyzed and Natural Reduced Water Exhibit Insulin-Like Activity on Glucose Uptake into Muscle Cells and Adipocytes
https://link.springer.com/chapter/10.1007/0-306-46875-1_90

Dialysis

1. Hemodialysis - Biological Effects of Electrolyzed Water in Hemodialysis
<https://pubmed.ncbi.nlm.nih.gov/19342864/>
2. Hemodialysis - Dialysate with high dissolved hydrogen facilitates dissociation of indoxyl sulfate from albumin
<https://europepmc.org/article/PMC/4393549>
3. Peritoneal dialysis - Transperitoneal administration of dissolved hydrogen for peritoneal dialysis patients: a novel approach to suppress oxidative stress in the peritoneal cavity
<https://europepmc.org/article/PMC/3734057>
4. Peritoneal dialysis - Successful treatment of encapsulating peritoneal sclerosis by hemodialysis and peritoneal lavage using dialysate containing dissolved hydrogen
<https://europepmc.org/article/PMC/4335940>
8. Improvement of the fraction of human mercaptalbumin on hemodialysis treatment using hydrogen-dissolved hemodialysis fluid: a prospective observational study
<https://rrtjournal.biomedcentral.com/articles/10.1186/s41100-016-0054-y>
9. A novel bioactive haemodialysis system using dissolved dihydrogen (H₂) produced by water electrolysis: a clinical trial
<https://pubmed.ncbi.nlm.nih.gov/20388631/>
10. Electrolysed-reduced water dialysate improves T-cell damage in end-stage renal disease patients with chronic haemodialysis
<https://pubmed.ncbi.nlm.nih.gov/20190245/>
11. Novel haemodialysis (HD) treatment employing molecular hydrogen (H₂)-enriched dialysis solution improves prognosis of chronic dialysis patients: A prospective observational study
Improvement of the fraction of human mercaptalbumin on hemodialysis treatment using hydrogen-dissolved hemodialysis fluid: a prospective observational study
<https://rrtjournal.biomedcentral.com/articles/10.1186/s41100-016-0054-y>
12. Successful treatment of encapsulating peritoneal sclerosis by hemodialysis and peritoneal lavage using dialysate containing dissolved hydrogen
<https://pubmed.ncbi.nlm.nih.gov/25700467/>

The Miracle You Make In Your Kitchen

13. Dialysate with high dissolved hydrogen facilitates dissociation of indoxyl sulfate from albumin
<https://pubmed.ncbi.nlm.nih.gov/25883914/>
14. Effect of a hydrogen (H₂)-enriched solution on the albumin redox of hemodialysis patients
<https://pubmed.ncbi.nlm.nih.gov/24274030/>
15. A novel bioactive haemodialysis system using dissolved dihydrogen (H₂) produced by water electrolysis: a clinical trial
<https://academic.oup.com/ndt/article/25/9/3026/1941444?login=false>
16. Less-oxidative hemodialysis solution rendered by cathode-side application of electrolyzed water
<https://pubmed.ncbi.nlm.nih.gov/17576297/>
17. Electrolyzed-reduced water reduced hemodialysis-induced erythrocyte impairment in end-stage renal disease patients
<https://pubmed.ncbi.nlm.nih.gov/16760903/>
18. Reduced hemodialysis-induced oxidative stress in end-stage renal disease patients by electrolyzed reduced water
<https://pubmed.ncbi.nlm.nih.gov/12846769/>
19. Impact of hemodialysis solutions containing different levels of molecular hydrogen (H₂) on the patient-reported outcome of fatigue
<https://rrtjournal.biomedcentral.com/articles/10.1186/s41100-022-00422-7>
20. Amelioration of fatigue in chronic dialysis patients with dialysis solution employing electrolyzed water containing molecular hydrogen (H₂) and its association with autonomic function balance
<https://rrtjournal.biomedcentral.com/articles/10.1186/s41100-021-00376-2>
21. Amelioration of hemodialysis-induced oxidative stress and fatigue with a hemodialysis system employing electrolyzed water containing molecular hydrogen
<https://rrtjournal.biomedcentral.com/articles/10.1186/s41100-021-00353-9>

Ears

1. Hydrogen protects auditory hair cells from free radicals
https://journals.lww.com/neuroreport/abstract/2009/05060/hydrogen_protects_auditory_hair_cells_from_free.11.aspx
2. Inhaled hydrogen gas therapy for prevention of noise-induced hearing loss through reducing reactive oxygen species
<https://www.sciencedirect.com/science/article/abs/pii/S0168010214001850>
3. Inhalation of hydrogen gas attenuates cisplatin-induced ototoxicity via reducing oxidative stress
<https://www.sciencedirect.com/science/article/abs/pii/S0165587611005325>

4. Hydrogen protects auditory hair cells from cisplatin-induced free radicals
<https://www.sciencedirect.com/science/article/abs/pii/S0304394014005989>
5. Inhalation of hydrogen gas attenuates ouabain-induced auditory neuropathy in gerbils
<https://europepmc.org/article/PMC/4003360>
6. Prevention of ischemia-induced hearing loss by intravenous administration of hydrogen-rich saline in gerbil
<https://pubmed.ncbi.nlm.nih.gov/29223865/>
7. Hydrogen Inhalation Protects against Ototoxicity Induced by Intravenous Cisplatin in the Guinea Pig
<https://pubmed.ncbi.nlm.nih.gov/28955207/>
8. Molecular mechanisms underlying the protective effects of hydrogen-saturated saline on noise-induced hearing loss
<https://pubmed.ncbi.nlm.nih.gov/28549396/>
9. Hydrogen-saturated saline protects intensive narrow band noise-induced hearing loss in guinea pigs through an antioxidant effect t
<https://pubmed.ncbi.nlm.nih.gov/24945316/>
10. Hydrogen-rich saline alleviates experimental noise-induced hearing loss in guinea pigs
<https://pubmed.ncbi.nlm.nih.gov/22387110/>
11. Hydrogen in drinking water attenuates noise-induced hearing loss in guinea pigs
<https://pubmed.ncbi.nlm.nih.gov/20888392/>
12. Hydrogen protects vestibular hair cells from free radicals
<https://pubmed.ncbi.nlm.nih.gov/20879827/>

Eyes

1. Molecular Hydrogen: current knowledge on mechanism in alleviating free radical damage and diseases
<https://academic.oup.com/abbs/article-pdf/51/12/1189/32815441/gmz121.pdf>
2. The preventive and therapeutic effects of Molecular Hydrogen in ocular diseases and injuries where oxidative stress is involved
<https://europepmc.org/article/MED/30773939>
3. Protection of the Retina by Rapid Diffusion of Hydrogen: Administration of Hydrogen-Loaded Eye Drops in Retinal Ischemia–Reperfusion Injury
<https://iovs.arvojournals.org/article.aspx?articleid=2186289>
4. Hydrogen-rich saline reduces cell death through inhibition of DNA oxidative stress and overactivation of poly (ADP-ribose) polymerase-1 in retinal ischemia-reperfusion injury
<https://europepmc.org/article/PMC/4464386>

The Miracle You Make In Your Kitchen

5. Protective Effects of Hydrogen Saline on Diabetic Retinopathy in a Streptozotocin-Induced Diabetic Rat Model
<https://www.liebertpub.com/doi/abs/10.1089/jop.2010.0129>
6. Hydrogen-Rich Saline Prevents Early Neurovascular Dysfunction Resulting from Inhibition of Oxidative Stress in STZ-Diabetic Rats
<https://www.tandfonline.com/doi/abs/10.3109/02713683.2012.748919>
7. Hydrogen Saline Treatment Attenuates Hyperoxia-Induced Retinopathy by Inhibition of Oxidative Stress and Reduction of VEGF Expression
<https://karger.com/ore/article-abstract/47/3/122/258392/Hydrogen-Saline-Treatment-Attenuates-Hyperoxia?redirectedFrom=PDF>
8. Protective effect of saturated hydrogen saline against blue light-induced retinal damage in rats
<https://europepmc.org/article/PMC/3359028>
9. Hydrogen-rich saline ameliorates the retina against light-induced damage in rats
<https://europepmc.org/article/PMC/4016026>
10. Hydrogen-rich saline protects retina against glutamate-induced excitotoxic injury in guinea pig
<https://www.sciencedirect.com/science/article/abs/pii/S0014483511003915>
11. Protective effect of Molecular Hydrogen against oxidative stress caused by peroxynitrite derived from Nitric Oxide in rat retina
<https://onlinelibrary.wiley.com/doi/abs/10.1111/ceo.12525>
12. Hydrogen-rich saline promotes survival of retinal ganglion cells in a rat model of optic nerve crush
<https://europepmc.org/article/PMC/4051757>
13. Hydrogen saline prevents selenite-induced cataract in rats
<https://europepmc.org/article/PMC/3731457>
14. Hydrogen and N-Acetyl-L-Cysteine Rescue Oxidative Stress-Induced Angiogenesis in a Mouse Corneal Alkali-Burn Model
<https://iovs.arvojournals.org/article.aspx?articleid=2126880>
15. Molecular Hydrogen regulates the expression of miR-9, miR-21 and miR-199 in LPS-activated retinal microglia cells
<https://europepmc.org/article/PMC/3693006>
16. Hydrogen postconditioning promotes survival of rat retinal ganglion cells against ischemia/reperfusion injury through the PI3K/Akt pathway
<https://pubmed.ncbi.nlm.nih.gov/29288664/>
17. The Comparative Efficiency of Intraperitoneal and Intravitreal Injection of Hydrogen Rich Saline against N-Methyl- N-Nitrosourea Induced Retinal Degeneration: A Topographic Study
<https://pubmed.ncbi.nlm.nih.gov/28900397/>

18. The protection of hydrogen-rich saline on a rat dry eye model induced by scopolamine hydrobromide
<https://pubmed.ncbi.nlm.nih.gov/28494565/>
19. Postconditioning with inhaled hydrogen promotes survival of retinal ganglion cells in a rat model of retinal ischemia/reperfusion injury
<https://pubmed.ncbi.nlm.nih.gov/26705611/>
20. Hydrogen prevents corneal endothelial damage in phacoemulsification cataract surgery
<https://pubmed.ncbi.nlm.nih.gov/27498755/>
21. Protective effects of hydrogen-rich saline against N-methyl-N-nitrosourea-induced photoreceptor degeneration
<https://pubmed.ncbi.nlm.nih.gov/27215478/>
22. Protective effect of molecular hydrogen against oxidative stress caused by peroxynitrite derived from nitric oxide in rat retina
<https://pubmed.ncbi.nlm.nih.gov/25801048/>
23. Sirtuin Type 1 Mediates the Retinal Protective Effect of Hydrogen-Rich Saline Against Light-Induced Damage in Rats
<https://pubmed.ncbi.nlm.nih.gov/26720481/>
24. Protection of the retina by rapid diffusion of hydrogen: administration of hydrogen-loaded eye drops in retinal ischemia-reperfusion injury
<https://pubmed.ncbi.nlm.nih.gov/19834032/>
25. The reason for the amelioration of N-methyl-N-nitrosourea-induced retinitis pigmentosa in rats by hydrogen-rich saline
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5638968/>

Fatigue

1. Effects of Molecular Hydrogen supplementation on fatigue and aerobic capacity in healthy adults: A systematic review and meta-analysis
<https://europepmc.org/article/MED/36819697>
2. Molecular Hydrogen (H₂) as a potential treatment for acute and chronic fatigue
<https://europepmc.org/article/MED/33368699>
3. Molecular Hydrogen as a Medical Gas for the Treatment of Myalgic Encephalomyelitis/Chronic Fatigue Syndrome: Possible Efficacy Based on a Literature Review
<https://europepmc.org/article/MED/35493814>
4. Impact of hemodialysis solutions containing different levels of molecular hydrogen (H₂) on the patient-reported outcome of fatigue
<https://rrtjournal.biomedcentral.com/articles/10.1186/s41100-022-00422-7>

The Miracle You Make In Your Kitchen

5. Amelioration of fatigue in chronic dialysis patients with dialysis solution employing electrolyzed water containing molecular hydrogen (H₂) and its association with autonomic function balance
<https://rrtjournal.biomedcentral.com/articles/10.1186/s41100-021-00376-2>
6. Amelioration of hemodialysis-induced oxidative stress and fatigue with a hemodialysis system employing electrolyzed water containing molecular hydrogen
<https://rrtjournal.biomedcentral.com/articles/10.1186/s41100-021-00353-9>
7. Drinking hydrogen water enhances endurance and relieves psychometric fatigue: a randomized, double-blind, placebo-controlled study
<https://cdnsiencepub.com/doi/abs/10.1139/cjpp-2019-0059>
8. Myalgic encephalomyelitis/chronic fatigue syndrome: From pathophysiological insights to novel therapeutic opportunities
<https://www.sciencedirect.com/science/article/abs/pii/S1043661819308011>

Genetics

1. Molecular hydrogen regulates gene expression by modifying the free radical chain reaction-dependent generation of oxidized phospholipid mediators
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4704061/>
2. Molecular hydrogen modulates gene expression via histone modification and induces the mitochondrial unfolded protein response
<https://pubmed.ncbi.nlm.nih.gov/28890349/>
3. Molecular Hydrogen as a Novel Antitumor Agent: Possible Mechanisms Underlying Gene Expression
<https://www.mdpi.com/1422-0067/22/16/8724>
4. Chapter Fifteen - Molecular Hydrogen as a Novel Antioxidant: Overview of the Advantages of Hydrogen for Medical Applications
<https://www.sciencedirect.com/science/article/abs/pii/S0076687914001037>
5. Molecular Hydrogen protects chondrocytes from oxidative stress and indirectly alters gene expressions through reducing peroxynitrite derived from Nitric Oxide
<https://europepmc.org/article/PMC/3231990>
6. Electrolyzed–Reduced Water Scavenges Active Oxygen Species and Protects DNA from Oxidative Damage
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X97966225>
7. Simultaneous oral and inhalational intake of molecular hydrogen additively suppresses signaling pathways in rodents
<https://pubmed.ncbi.nlm.nih.gov/25707580/>

Heart

1. Inhalation of hydrogen gas reduces infarct size in the rat model of myocardial ischemia–reperfusion injury
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X08010838>

2. Pharmacological postconditioning with lactic acid and hydrogen rich saline alleviates myocardial reperfusion injury in rats
<https://europepmc.org/article/PMC/4415575>
3. Hydrogen gas protects against serum and glucose deprivation-induced myocardial injury in H9c2 cells through activation of the NF-E2-related factor 2/heme oxygenase 1 signaling pathway
<https://www.spandidos-publications.com/mmr/10/2/1143>
4. Treatment with hydrogen molecule attenuates cardiac dysfunction in streptozotocin-induced diabetic mice
<https://www.sciencedirect.com/science/article/abs/pii/S1054880715000551>
5. Inhalation of hydrogen gas attenuates left ventricular remodeling induced by intermittent hypoxia in mice
<https://journals.physiology.org/doi/full/10.1152/ajpheart.00150.2011>
6. Hydrogen gas attenuates embryonic gene expression and prevents left ventricular remodeling induced by intermittent hypoxia in cardiomyopathic hamsters
<https://journals.physiology.org/doi/full/10.1152/ajpheart.00228.2014>
7. Chronic hydrogen-rich saline treatment reduces oxidative stress and attenuates left ventricular hypertrophy in spontaneous hypertensive rats
<https://link.springer.com/article/10.1007/s11010-012-1264-4>
8. Image-Guided Hydrogen Gas Delivery for Protection from Myocardial Ischemia-Reperfusion Injury via Microbubbles
<https://pubmed.ncbi.nlm.nih.gov/28557412/>
9. The Effects of Hydrogen Gas Inhalation on Adverse Left Ventricular Remodeling After Percutaneous Coronary Intervention for ST-Elevated Myocardial Infarction - First Pilot Study in Humans
<https://pubmed.ncbi.nlm.nih.gov/28321000/>
10. Hydrogen-rich solution against myocardial injury and aquaporin expression via the PI3K/Akt signaling pathway during cardiopulmonary bypass in rats
<https://pubmed.ncbi.nlm.nih.gov/29956781/>
11. Hydrogen gas improves left ventricular hypertrophy in Dahl rat of salt-sensitive hypertension
<https://pubmed.ncbi.nlm.nih.gov/29902079/>
12. Early Aerobic Exercise Combined with Hydrogen-Rich Saline as Preconditioning Protects Myocardial Injury Induced by Acute Myocardial Infarction in Rats
<https://pubmed.ncbi.nlm.nih.gov/30033489/>
13. Inhalation of Hydrogen Attenuates Progression of Chronic Heart Failure via Suppression of Oxidative Stress and P53 Related to Apoptosis Pathway in Rats
<https://pubmed.ncbi.nlm.nih.gov/30108516/>

The Miracle You Make In Your Kitchen

14. Hydrogen-rich solution attenuates myocardial injury caused by cardiopulmonary bypass in rats via the Janus-activated kinase 2/signal transducer and activator of transcription 3 signaling pathway
<https://pubmed.ncbi.nlm.nih.gov/29928398/>
15. Hydrogen-containing saline alleviates pressure overload-induced interstitial fibrosis and cardiac dysfunction in rats
<https://pubmed.ncbi.nlm.nih.gov/28656216/>
16. Efficacy of inhaled HYdrogen on neurological outcome following Brain Ischemia During post-cardiac arrest care (HYBRID II trial): study protocol for a randomized controlled trial
<https://pubmed.ncbi.nlm.nih.gov/29058596/>
17. The Effects of Hydrogen Gas Inhalation on Adverse Left Ventricular Remodeling After Percutaneous Coronary Intervention for ST-Elevated Myocardial Infarction - First Pilot Study in Humans
<https://pubmed.ncbi.nlm.nih.gov/28321000/>
18. Hydrogen Gas Attenuates Myocardial Ischemia Reperfusion Injury Independent of Postconditioning in Rats by Attenuating Endoplasmic Reticulum Stress-Induced Autophag
<https://pubmed.ncbi.nlm.nih.gov/29035876/>
19. Hydrogen-rich saline attenuates hippocampus endoplasmic reticulum stress after cardiac arrest in rats
<https://pubmed.ncbi.nlm.nih.gov/28087437/>
20. High-concentration hydrogen protects mouse heart against ischemia/reperfusion injury through activation of thePI3K/Akt1 pathway
<https://pubmed.ncbi.nlm.nih.gov/29093541/>
21. Hydrogen (H₂) Inhibits Isoproterenol-Induced Cardiac Hypertrophy via Antioxidative Pathways
<https://pubmed.ncbi.nlm.nih.gov/27833552/>
22. Hydrogen Inhalation is Superior to Mild Hypothermia in Improving Cardiac Function and Neurological Outcome in an Asphyxial Cardiac Arrest Model of Rats
<https://pubmed.ncbi.nlm.nih.gov/26849632/>
23. Hydrogen-Rich Saline Attenuates Cardiac and Hepatic Injury in Doxorubicin Rat Model by Inhibiting Inflammation and Apoptosis
<https://pubmed.ncbi.nlm.nih.gov/28104928/>
24. Pharmacological postconditioning with lactic acid and hydrogen rich saline alleviates myocardial reperfusion injury in rats
<https://pubmed.ncbi.nlm.nih.gov/25928542/>

25. Protective effects of hydrogen-rich medium on lipopolysaccharide-induced monocytic adhesion and vascular endothelial permeability through regulation of vascular endothelial cadherin
<https://pubmed.ncbi.nlm.nih.gov/26125821/>
26. Cardioprotective Effect of Hydrogen-rich Saline on Isoproterenol-induced Myocardial Infarction in Rats
<https://pubmed.ncbi.nlm.nih.gov/25533677/>
27. Hydrogen-containing saline attenuates doxorubicin-induced heart failure in rats
<https://www.ingentaconnect.com/content/govi/pharmaz/2014/00000069/00000008/art00012>
28. Cardioprotective Effect of Hydrogen-rich Saline on Isoproterenol-induced Myocardial Infarction in Rats
<https://pubmed.ncbi.nlm.nih.gov/25533677/>
29. Hydrogen-Rich Saline Improves Survival and Neurological Outcome After Cardiac Arrest and Cardiopulmonary Resuscitation in Rats
<https://pubmed.ncbi.nlm.nih.gov/24937348/>
30. Hydrogen Inhalation During Normoxic Resuscitation Improves Neurological Outcome in a Rat Model of Cardiac Arrest Independently of Targeted Temperature Management
<https://pubmed.ncbi.nlm.nih.gov/25366995/>
31. Breathing nitric oxide plus hydrogen gas reduces ischemia-reperfusion injury and nitrotyrosine production in murine heart
<https://pubmed.ncbi.nlm.nih.gov/23771690/>
32. Insufflation of hydrogen gas restrains the inflammatory response of cardiopulmonary bypass in a rat model
<https://pubmed.ncbi.nlm.nih.gov/23020073/>
33. H₂ mediates cardioprotection via involvements of K(ATP) channels and permeability transition pores of mitochondria in dogs
<https://pubmed.ncbi.nlm.nih.gov/22527618/>
34. Inhalation of hydrogen gas protects against myocardial stunning and infarction in swine
<https://pubmed.ncbi.nlm.nih.gov/22263852/>
35. Hydrogen-supplemented drinking water protects cardiac allografts from inflammation-associated deterioration
<https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1432-2277.2012.01542.x>
36. H₂ gas improves functional outcome after cardiac arrest to an extent comparable to therapeutic hypothermia in a rat model
<https://pubmed.ncbi.nlm.nih.gov/23316300/>

37. A new insight into the molecular hydrogen effect on coenzyme Q and mitochondrial function of rats
<https://cdnsiencepub.com/doi/abs/10.1139/cjpp-2019-0281>

Human Studies

1. Positive effects of hydrogen-water bathing in patients of psoriasis and parapsoriasis en plaques
<https://pubmed.ncbi.nlm.nih.gov/29795283/>
2. Effects of Molecular Hydrogen Assessed by an Animal Model and a Randomized Clinical Study on Mild Cognitive Impairment
<https://europepmc.org/article/MED/29110615>
3. Novel haemodialysis (HD) treatment employing molecular hydrogen (H₂)-enriched dialysis solution improves prognosis of chronic dialysis patients: A prospective observational study
<https://pubmed.ncbi.nlm.nih.gov/29321509/>
4. 28-Days Hydrogen-Rich Water Supplementation Affects Exercise Capacity in Mid-Age Overweight Women
https://journals.lww.com/acsm-msse/fulltext/2018/05001/28_Days_Hydrogen_Rich_Water_Supplementation.2411.aspx
5. Protective effect of hydrogen-rich water on liver function of colorectal cancer patients treated with mFOLFOX6 chemotherapy
<https://pubmed.ncbi.nlm.nih.gov/29142752/>
6. Drinking hydrogen-rich water for 4 weeks positively affects serum antioxidant enzymes in healthy men: a pilot study
<https://www.researchgate.net/publication/318701337>
7. Selective protective effect of hydrogen water on free radical injury of athletes after high-intensity exercise
<http://www.biomedres.info/biomedical-research/selective-protective-effect-of-hydrogen-water-on-free-radical-injury-of-athletes-after-highintensity-exercise.pdf>
8. Effect of Astaxanthin Supplementation on Cardiorespiratory Function in Runners
https://journals.lww.com/acsm-msse/fulltext/2017/05001/Effect_of_Astaxanthin_Supplementation_on.2758.aspx
9. Hydrogen Gas Inhalation Treatment in Acute Cerebral Infarction: A Randomized Controlled Clinical Study on Safety and Neuroprotection
<https://pubmed.ncbi.nlm.nih.gov/28669654/>
10. Effects of Molecular Hydrogen Assessed by an Animal Model and a Randomized Clinical Study on Mild Cognitive Impairment
<https://europepmc.org/article/MED/29110615>
11. Hydrogen-rich water for improvements of mood, anxiety, and autonomic nerve function in daily life
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5806445/>

12. Molecular Hydrogen affects body composition, metabolic profiles, and mitochondrial function in middle-aged overweight women
<https://europepmc.org/article/MED/28560519>
13. The Effects of Hydrogen Gas Inhalation on Adverse Left Ventricular Remodeling After Percutaneous Coronary Intervention for ST-Elevated Myocardial Infarction - First Pilot Study in Humans
<https://pubmed.ncbi.nlm.nih.gov/28321000/>
14. Effects of hydrogen rich water on prolonged intermittent exercise
<https://pubmed.ncbi.nlm.nih.gov/28474871/>
15. Successful treatment with hydrogen rich water in a case of chronic graft-versus-host-disease
<https://pubmed.ncbi.nlm.nih.gov/27867488/>
16. Improvement of the fraction of human mercaptalbumin on hemodialysis treatment using hydrogen-dissolved hemodialysis fluid: a prospective observational study
<https://rrtjournal.biomedcentral.com/articles/10.1186/s41100-016-0054-y>
17. Effects of hydrogen bathing on exercise-induced oxidative stress and delayed-onset muscle soreness
http://wprim.whocc.org.cn/admin/article/articleDetail?WPRIMID=378181&articleId=378181&locale=zh_CN
18. Molecular Hydrogen Affected Post-Exercise Recovery in Judo Athletes
https://journals.lww.com/acsm-msse/fulltext/2016/05001/Molecular_Hydrogen_Affected_Post_Exercise_Recovery.3217.aspx
19. Relationship between exhaled hydrogen and neutrophil function in the general population
https://www.jstage.jst.go.jp/article/hirosakiigaku/65/2-4/65_138/article/-char/ja/
20. Hydrogen gas production is associated with reduced interleukin-1 β mRNA in peripheral blood after a single dose of acarbose in Japanese type 2 diabetic patients
<https://pubmed.ncbi.nlm.nih.gov/25962664/>
21. Psoriasis - Improvement of psoriasis-associated arthritis and skin lesions by treatment with Molecular Hydrogen: A report of three cases
<https://pubmed.ncbi.nlm.nih.gov/25936373/>
22. Drinking Hydrogen-Rich Water Has Additive Effects on Non-Surgical Periodontal Treatment of Improving Periodontitis: A Pilot Study
<https://pubmed.ncbi.nlm.nih.gov/26783840/>
23. Effects of intravenous infusion of hydrogen-rich fluid combined with intra-cisternal infusion of magnesium sulfate in severe aneurysmal subarachnoid hemorrhage: study protocol for a randomized controlled trial
<https://europepmc.org/article/PMC/4172868>
24. Vascular endothelial function - Consumption of water containing over 3.5 mg of dissolved hydrogen could improve vascular endothelial function
<https://europepmc.org/article/PMC/4207582>

The Miracle You Make In Your Kitchen

25. Sports-related soft tissue injury - Effectiveness of Oral and Topical Hydrogen for Sports-Related Soft Tissue Injuries
<https://pubmed.ncbi.nlm.nih.gov/25295663/>
26. Hydrogen-rich water affected blood alkalinity in physically active men
<https://pubmed.ncbi.nlm.nih.gov/24392771/>
27. Rheumatoid arthritis - Therapeutic efficacy of infused Molecular Hydrogen in saline on rheumatoid arthritis: A randomized, double-blind, placebo-controlled pilot study
<https://pubmed.ncbi.nlm.nih.gov/24929023/>
28. Pilot study of H₂ therapy in Parkinson's disease: A randomized double-blind placebo-controlled trial
<https://movementdisorders.onlinelibrary.wiley.com/doi/abs/10.1002/mds.25375?deniedAccessCustomisedMessage=&userIsAuthenticated=false>
29. Hepatitis B - Effect of hydrogen-rich water on oxidative stress, liver function, and viral load in patients with chronic hepatitis B
<https://europepmc.org/article/PMC/5350887>
30. Peritoneal dialysis - Transperitoneal administration of dissolved hydrogen for peritoneal dialysis patients: a novel approach to suppress oxidative stress in the peritoneal cavity
<https://europepmc.org/article/PMC/3734057>
31. Hydrogen-rich water decreases serum LDL-cholesterol levels and improves HDL function in patients with potential metabolic syndrome
<https://pubmed.ncbi.nlm.nih.gov/23610159/>
32. UV-induced skin injury - Atomic hydrogen surrounded by water molecules, H(H₂O)_m, modulates basal and UV-induced gene expressions in human skin in vivo
<https://europepmc.org/article/PMC/3634861>
33. Safety of intravenous administration of hydrogen-enriched fluid in patients with acute cerebral ischemia: initial clinical studies
<https://pubmed.ncbi.nlm.nih.gov/23799921/>
34. Interstitial cystitis - Effect of Supplementation With Hydrogen-rich Water in Patients With Interstitial Cystitis/Painful Bladder Syndrome
<https://pubmed.ncbi.nlm.nih.gov/23374763/>
35. Pressure ulcer - Hydrogen water intake via tube-feeding for patients with pressure ulcer and its reconstructive effects on normal human skin cells in vitro
<https://europepmc.org/article/PMC/3843550>
36. Acute erythematous skin disease - Hydrogen(H₂) treatment for acute erythematous skin diseases. A report of 4 patients with safety data and a non-controlled feasibility study with H₂ concentration measurement on two volunteers
<https://europepmc.org/article/PMC/3407032>
37. A basic study on molecular hydrogen (H₂) inhalation in acute cerebral ischemia patients for safety check with physiological parameters and measurement of blood H₂ level
<https://pubmed.ncbi.nlm.nih.gov/22916706/>

38. Consumption of water containing a high concentration of Molecular Hydrogen reduces oxidative stress and disease activity in patients with rheumatoid arthritis: an open-label pilot study
<https://europepmc.org/article/PMC/3563451>
39. Pilot study: Effects of drinking hydrogen-rich water on muscle fatigue caused by acute exercise in elite athletes
<https://europepmc.org/article/PMC/3395574>
40. Effects of drinking hydrogen-rich water on the quality of life of patients treated with radiotherapy for liver tumors
<https://europepmc.org/article/PMC/3231938>
41. Open-label trial and randomized, double-blind, placebo-controlled, crossover trial of hydrogen-enriched water for mitochondrial and inflammatory myopathies
<https://europepmc.org/article/PMC/3231939>
42. A novel bioactive haemodialysis system using dissolved dihydrogen (H₂) produced by water electrolysis: a clinical trial
<https://pubmed.ncbi.nlm.nih.gov/20388631/>
43. Effectiveness of Hydrogen Rich Water on Antioxidant Status of Subjects with Potential Metabolic Syndrome—An Open Label Pilot Study
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2831093/>
44. Electrolysed-reduced water dialysate improves T-cell damage in end-stage renal disease patients with chronic haemodialysis
<https://pubmed.ncbi.nlm.nih.gov/20190245/>
45. Biological Effects of Electrolyzed Water in Hemodialysis
<https://pubmed.ncbi.nlm.nih.gov/19342864/>
46. Effect of Molecular Hydrogen Saturated Alkaline Electrolyzed Water on Disuse Muscle Atrophy in Gastrocnemius Muscle
<https://cir.nii.ac.jp/crid/1390282680231637888>
47. Supplementation of hydrogen-rich water improves lipid and glucose metabolism in patients with type 2 diabetes or impaired glucose tolerance
<https://www.sciencedirect.com/science/article/abs/pii/S0271531708000237>
48. A Clinical Trial of Orally Administered Alkaline Reduced Water
https://www.dbpia.co.kr/journal/articleDetail?nodeId=NODE00848796&language=k_o_KR&hasTopBanner=true
49. Intra-Individual Ergonomics (I2E): Performance Effects of Ultra-Negative-Ion Water
<https://journals.sagepub.com/doi/abs/10.1177/154193120705102604>
50. Electrolyzed-reduced water reduced hemodialysis-induced erythrocyte impairment in end-stage renal disease patients
<https://pubmed.ncbi.nlm.nih.gov/16760903/>
51. Electrolyzed-reduced water reduced hemodialysis-induced erythrocyte impairment in end-stage renal disease patients
<https://pubmed.ncbi.nlm.nih.gov/16760903/>

52. The Effects of Hydrogen Gas Inhalation on Adverse Left Ventricular Remodeling After Percutaneous Coronary Intervention for ST-Elevated Myocardial Infarction - First Pilot Study in Humans
<https://pubmed.ncbi.nlm.nih.gov/28321000/>
53. Hydrogen-Rich Saline Attenuates Lipopolysaccharide-Induced Heart Dysfunction by Restoring Fatty Acid Oxidation in Rats by Mitigating C-Jun N-Terminal Kinase Activation
<https://pubmed.ncbi.nlm.nih.gov/26565704/>
54. The effects of 6-month hydrogen-rich water intake on molecular and phenotypic biomarkers of aging in older adults aged 70 years and over: A randomized controlled pilot trial
<https://www.sciencedirect.com/science/article/abs/pii/S0531556521003569?via%3Dihub>
55. The Effects of 24-Week, High-Concentration Hydrogen-Rich Water on Body Composition, Blood Lipid Profiles and Inflammation Biomarkers in Men and Women with Metabolic Syndrome: A Randomized Controlled Trial
<https://www.tandfonline.com/doi/full/10.2147/DMSO.S240122>
56. Hydrogen-rich water reduces liver fat accumulation and improves liver enzyme profiles in patients with non-alcoholic fatty liver disease: a randomized controlled pilot trial
<https://www.sciencedirect.com/science/article/abs/pii/S2210740119300853>

Inflammation/Allergies

1. Sepsis - Hydrogen-rich saline ameliorates lung injury associated with cecal ligation and puncture-induced sepsis in rats
<https://www.sciencedirect.com/science/article/abs/pii/S0014480015000325>
2. Sepsis - Hydrogen gas inhibits high-mobility group box 1 release in septic mice by upregulation of heme oxygenase 1
<https://www.sciencedirect.com/science/article/abs/pii/S0022480415001559>
3. Sepsis - Protective effects of hydrogen gas on murine polymicrobial sepsis via reducing oxidative stress and hmgb1 release
https://journals.lww.com/shockjournal/Fulltext/2010/07000/100_Oxygen_Inhalation_Protects_Against.15.aspx
4. Sepsis - Combined early fluid resuscitation and hydrogen inhalation attenuates lung and intestine injury
<https://europepmc.org/article/PMC/3558572>
5. LPS/IFN γ -induced NO production - Molecular Hydrogen inhibits lipopolysaccharide/interferon γ -induced Nitric Oxide production through modulation of signal transduction in macrophages
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X11010965>

6. LPS-induced inflammatory response - Heme oxygenase-1 mediates the anti-inflammatory effect of Molecular Hydrogen in LPS-stimulated RAW 264.7 macrophages
<https://www.sciencedirect.com/science/article/pii/S1743919113010807>
7. LPS-induced vascular permeability - Hydrogen-Rich Medium Attenuated Lipopolysaccharide-Induced Monocyte-Endothelial Cell Adhesion and Vascular Endothelial Permeability via Rho-Associated Coiled-Coil Protein Kinase
https://journals.lww.com/shockjournal/fulltext/2015/07000/Hydrogen_Rich_Medium_Attenuated.9.aspx
8. Zymosan-induced inflammation - Hydrogen Gas Improves Survival Rate and Organ Damage in Zymosan-Induced Generalized Inflammation Model
https://journals.lww.com/shockjournal/Fulltext/2010/11000/Protective_Effects_of_Hydrogen_Gas_on_Murine.00010.aspx
9. Carrageenan-induced paw edema - Anti-inflammation effects of hydrogen saline in LPS activated macrophages and carrageenan induced paw oedema
<https://europepmc.org/article/PMC/3298497>
10. Inflammatory response of cardiopulmonary bypass - Insufflation of Hydrogen Gas Restrains the Inflammatory Response of Cardiopulmonary Bypass in a Rat Model
<https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1525-1594.2012.01535.x>
11. Type I allergy - Molecular Hydrogen suppresses FcεRI-mediated signal transduction and prevents degranulation of mast cells
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X0901849X>
12. Asthma - Hydrogen-rich saline reduces airway remodeling via inactivation of NF-κB in a murine model of asthma
<https://www.europeanreview.org/wp/wp-content/uploads/1033-1043.pdf>
13. Molecular Hydrogen as a Novel Protective Agent against Pre-Symptomatic Diseases
<https://www.mdpi.com/1422-0067/22/13/7211>
14. Combination therapy of molecular hydrogen and hyperoxia improves survival rate and organ damage in a zymosan-induced generalized inflammation model
<https://pubmed.ncbi.nlm.nih.gov/27284352/>
15. Heme oxygenase-1 mediates the anti-inflammatory effect of molecular hydrogen in LPS-stimulated RAW 264.7 macrophages
<https://pubmed.ncbi.nlm.nih.gov/24148794/>
16. Direct Targets and Subsequent Pathways for Molecular Hydrogen to Exert Multiple Functions: Focusing on Interventions in Radical Reactions
<https://www.ingentaconnect.com/content/ben/cpd/2021/00000027/00000005/art00004>
17. Anti-inflammatory and antitumor action of hydrogen via reactive oxygen species
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6096066/>

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18. Biological Responses to Hydrogen Molecule and its Preventive Effects on Inflammatory Diseases
<https://pubmed.ncbi.nlm.nih.gov/32981496/>
19. Inhaled Molecular Hydrogen reduces hippocampal neuroinflammation, glial reactivity and ameliorates memory impairment during systemic inflammation
<https://europepmc.org/article/MED/37449286>
20. Combating Oxidative Stress and Inflammation in COVID-19 by Molecular Hydrogen Therapy: Mechanisms and Perspectives
<https://europepmc.org/article/MED/34646423>
21. Molecular Hydrogen as a Novel Protective Agent against Pre-Symptomatic Diseases
<https://europepmc.org/article/MED/34281264>

Intestines

1. Hydrogen-rich saline protects against intestinal ischemia/reperfusion injury in rats
<https://www.tandfonline.com/doi/abs/10.1080/10715760902870603>
2. The Effects of Hydrogen-Rich Saline on the Contractile and Structural Changes of Intestine Induced by Ischemia-Reperfusion in Rats
<https://www.sciencedirect.com/science/article/abs/pii/S0022480409004193>
3. Ulcerative Colitis - Hydrogen mediates suppression of colon inflammation induced by dextran sodium sulfate
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X09010614>
4. Ulcerative Colitis - Protective effects of hydrogen-rich saline on ulcerative colitis rat model
<https://www.sciencedirect.com/science/article/abs/pii/S0022480413004952>
5. Colon Inflammation - Lactulose Mediates Suppression of Dextran Sodium Sulfate-Induced Colon Inflammation by Increasing Hydrogen Production
<https://link.springer.com/article/10.1007/s10620-013-2563-7>
6. Hydrogen Gas Alleviates the Intestinal Injury Caused by Severe Sepsis in Mice by Increasing the Expression of Heme Oxygenase-1
https://journals.lww.com/shockjournal/fulltext/2015/07000/Hydrogen_Gas_Alleviate_s_the_Intestinal_Injury.14.aspx
7. Protective effects of hydrogen-rich saline on necrotizing enterocolitis in neonatal rats
<https://www.sciencedirect.com/science/article/abs/pii/S0022346812009542>
8. Intestinal Microbiota Ecological Response to Oral Administrations of Hydrogen-Rich Water and Lactulose in Female Piglets Fed a Fusarium Toxin-Contaminated Diet
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6024725/>

9. Hydrogen-water ameliorates radiation-induced gastrointestinal toxicity via MyD88's effects on the gut microbiota
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5799803/>
10. Transplantation of High Hydrogen-Producing Microbiota Leads to Generation of Large Amounts of Colonic Hydrogen in Recipient Rats Fed High Amylose Maize Starch
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5852720/>
11. Effects of molecular hydrogen-dissolved alkaline electrolyzed water on intestinal environment in mice
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5908129/>
12. Gastroesophageal reflux disease (GERD) - Modulation of the oxidative plasmatic state in gastroesophageal reflux disease with the addition of rich water Molecular Hydrogen: A new biological vision
<https://europepmc.org/article/MED/29512923>
13. Protective effects of hydrogen rich water on the intestinal ischemia/reperfusion injury due to intestinal intussusception in a rat model
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5510290/>
14. Hydrogen-rich water protects against inflammatory bowel disease in mice by inhibiting endoplasmic reticulum stress and promoting heme oxygenase-1 expression
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5330822/>
15. Intestine - Luminal Injection of Hydrogen-Rich Solution Attenuates Intestinal Ischemia-Reperfusion Injury in Rats
https://journals.lww.com/transplantjournal/fulltext/2015/03000/Luminal_Injection_of_Hydrogen_Rich_Solution.11.aspx
16. Dose-dependent inhibition of gastric injury by hydrogen in alkaline electrolyzed drinking water
<https://bmccomplementmedtherapies.biomedcentral.com/articles/10.1186/1472-6882-14-81>
17. Colonic hydrogen generated from fructan diffuses into the abdominal cavity and reduces adipose mRNA abundance of cytokines in rats
<https://pubmed.ncbi.nlm.nih.gov/24132574/>
18. Selective stimulation of the growth of anaerobic microflora in the human intestinal tract by electrolyzed reducing water
<https://pubmed.ncbi.nlm.nih.gov/15617863/>
19. Effects of Alkaline-Reduced Drinking Water on Irritable Bowel Syndrome with Diarrhea: A Randomized Double-Blind, Placebo-Controlled Pilot Study
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5925025/>

The Miracle You Make In Your Kitchen

20. Molecular Hydrogen is comparable to sulfasalazine as a treatment for DSS-induced colitis in mice
<https://europepmc.org/article/MED/34345230>
21. Reshaping of bacterial Molecular Hydrogen metabolism contributes to the outgrowth of commensal E. coli during gut inflammation
<https://europepmc.org/article/MED/34085924>
22. Molecular Hydrogen: current knowledge on mechanism in alleviating free radical damage and diseases
<https://academic.oup.com/abbs/article-pdf/51/12/1189/32815441/gmz121.pdf>
23. Molecular Hydrogen: a preventive and therapeutic medical gas for various diseases
<https://europepmc.org/article/MED/29254278>
24. Effects of Molecular Hydrogen-dissolved alkaline electrolyzed water on intestinal environment in mice
<https://europepmc.org/article/MED/29770190>
25. Three hydrogen-rich solutions protect against intestinal injury in uncontrolled hemorrhagic shock
<https://pubmed.ncbi.nlm.nih.gov/26221308/>
26. Mechanism of influence of molecular hydrogen on the function of the proximal tubule of the nephron in irritable bowel syndrome
<https://apcz.umk.pl/JEHS/article/view/JEHS.2021.11.02.006>
27. Electrolyzed Hydrogen Water Alleviates Abdominal Pain through Suppression of Colonic Tissue Inflammation in a Rat Model of Inflammatory Bowel Disease
<https://www.mdpi.com/2072-6643/14/21/4451>
28. Ameliorating Role of Hydrogen-Rich Water Against NSAID-Induced Enteropathy via Reduction of ROS and Production of Short-Chain Fatty Acids
<https://link.springer.com/article/10.1007/s10620-022-07781-5>
29. Hydrogen-rich water partially alleviate inflammation, oxidative stress and intestinal flora dysbiosis in DSS-induced chronic ulcerative colitis mice
<https://www.sciencedirect.com/science/article/abs/pii/S1896112621000523>
30. Microbial hydrogen economy alleviates colitis by reprogramming colonocyte metabolism and reinforcing intestinal barrier
<https://www.tandfonline.com/doi/full/10.1080/19490976.2021.2013764>

Intoxication - Poisoning

1. Carbon monoxide - Hydrogen-rich saline reduces delayed neurologic sequelae in experimental carbon monoxide toxicity
https://journals.lww.com/ccmjournal/abstract/2011/04000/hydrogen_rich_saline_reduces_delayed_neurologic.22.aspx

2. Carbon monoxide - Effects of Hydrogen-rich Saline on Rats with Acute Carbon Monoxide Poisoning
<https://www.sciencedirect.com/science/article/abs/pii/S0736467912006737>
3. Sevoflurane - Coadministration of Hydrogen Gas as Part of the Carrier Gas Mixture Suppresses Neuronal Apoptosis and Subsequent Behavioral Deficits Caused by Neonatal Exposure to Sevoflurane in Mice
<https://pubs.asahq.org/anesthesiology/article/118/1/105/304/Coadministration-of-Hydrogen-Gas-as-Part-of-the>
4. Sevoflurane - Neonatal Exposure to Sevoflurane in Mice Causes Deficits in Maternal Behavior Later in Adulthood
<https://pubs.asahq.org/anesthesiology/article/120/2/403/11798/Neonatal-Exposure-to-Sevoflurane-in-Mice-Causes>
5. Doxorubicin-induced heart failure - Hydrogen-containing saline attenuates doxorubicin-induced heart failure in rats
<https://www.ingentaconnect.com/content/govi/pharmaz/2014/00000069/00000008/art00012>
6. Melamine-induced urinary stone - The melamine excretion effect of the electrolyzed reduced water in melamine-fed mice
<https://www.sciencedirect.com/science/article/abs/pii/S0278691511001815>
7. Chlorpyrifos-induced neurotoxicity - Oral intake of hydrogen-rich water ameliorated chlorpyrifos-induced neurotoxicity in rats
<https://www.sciencedirect.com/science/article/pii/S0041008X14002348>
8. Neuroprotective effect of hydrogen-rich saline in acute carbon monoxide poisoning
<https://pubmed.ncbi.nlm.nih.gov/23607699/>
9. Hydrogen rich saline reduces immune-mediated brain injury in rats with acute carbon monoxide poisoning
<https://pubmed.ncbi.nlm.nih.gov/23146304/>

Ischemia/Reperfusion Injuries

1. Hydrogen-rich saline reduces cell death through inhibition of DNA oxidative stress and overactivation of poly (ADP-ribose) polymerase-1 in retinal ischemia-reperfusion injury
<https://pubmed.ncbi.nlm.nih.gov/25954991/>
2. Hydrogen-rich saline attenuates ischemia-reperfusion injury in skeletal muscle
<https://pubmed.ncbi.nlm.nih.gov/25588949/>
3. Beneficial effects of hydrogen-rich saline against spinal cord ischemia-reperfusion injury in rabbit
<https://pubmed.ncbi.nlm.nih.gov/23603405/>
4. Hydrogen inhalation decreases lung graft injury in brain-dead donor rats
<https://pubmed.ncbi.nlm.nih.gov/23273744/>

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5. Protective effect of hydrogen-rich saline on ischemia/reperfusion injury in rat skin flap
<https://pubmed.ncbi.nlm.nih.gov/23645175/>
6. Coadministration of hydrogen gas as part of the carrier gas mixture suppresses neuronal apoptosis and subsequent behavioral deficits caused by neonatal exposure to sevoflurane in mice
<https://pubmed.ncbi.nlm.nih.gov/23221861/>
7. Hydrogen as additive of HTK solution fortifies myocardial preservation in grafts with prolonged cold ischemia
<https://pubmed.ncbi.nlm.nih.gov/22264873/>
8. A novel method of preserving cardiac grafts using a hydrogen-rich water bath
<https://pubmed.ncbi.nlm.nih.gov/23273745/>
9. Effect of hydrogen gas on the survival rate of mice following global cerebral ischemia (Shock 37(6), 645-652, 2012).
<https://pubmed.ncbi.nlm.nih.gov/22986794/>
10. Effect of hydrogen gas on the survival rate of mice following global cerebral ischemia
<https://pubmed.ncbi.nlm.nih.gov/22392146/>
11. Protective effects of hydrogen-rich saline in a rat model of permanent focal cerebral ischemia via reducing oxidative stress and inflammatory cytokines
<https://pubmed.ncbi.nlm.nih.gov/23010312/>
12. Hydrogen-rich saline attenuates lung ischemia-reperfusion injury in rabbits
<https://pubmed.ncbi.nlm.nih.gov/22225976/>
13. Inhaled hydrogen gas therapy for prevention of testicular ischemia/reperfusion injury in rats
<https://pubmed.ncbi.nlm.nih.gov/22498389/>
14. Protective effects of hydrogen rich saline solution on experimental testicular ischemia-reperfusion injury in rats
<https://pubmed.ncbi.nlm.nih.gov/22503049/>
15. Inhalation of hydrogen gas attenuates cognitive impairment in transient cerebral ischemia via inhibition of oxidative stress
<https://pubmed.ncbi.nlm.nih.gov/22333294/>
16. Intake of water with high levels of dissolved hydrogen (H₂) suppresses ischemia-induced cardio-renal injury in Dahl salt-sensitive rats
<https://pubmed.ncbi.nlm.nih.gov/21193644/>
17. Anti-inflammatory effect of hydrogen-rich saline in a rat model of regional myocardial ischemia and reperfusion
<https://pubmed.ncbi.nlm.nih.gov/20851484/>
18. Hydrogen-rich saline protects against renal ischemia/reperfusion injury in rats
<https://pubmed.ncbi.nlm.nih.gov/21392793/>
19. Hydrogen saline offers neuroprotection by reducing oxidative stress in a focal cerebral ischemia-reperfusion rat model
<https://pubmed.ncbi.nlm.nih.gov/22146222/>
20. The effect of hydrogen-rich saline on the brain of rats with transient ischemia
<https://pubmed.ncbi.nlm.nih.gov/21435662/>

21. Beneficial effects of hydrogen gas against spinal cord ischemia-reperfusion injury in rabbits
<https://pubmed.ncbi.nlm.nih.gov/21195696/>
22. The effects of hydrogen-rich saline on the contractile and structural changes of intestine induced by ischemia-reperfusion in rats
<https://pubmed.ncbi.nlm.nih.gov/19932899/>
23. Hydrogen-rich saline solution attenuates renal ischemia-reperfusion injury
<https://pubmed.ncbi.nlm.nih.gov/20480186/>
24. Amelioration of rat cardiac cold ischemia/reperfusion injury with inhaled hydrogen or carbon monoxide, or both
<https://pubmed.ncbi.nlm.nih.gov/20036162/>
25. Inhaled hydrogen gas therapy for prevention of lung transplant-induced ischemia/reperfusion injury in rats
<https://pubmed.ncbi.nlm.nih.gov/21048533/>
26. Hydrogen-rich saline protects against intestinal ischemia/reperfusion injury in rats
<https://pubmed.ncbi.nlm.nih.gov/19353364/>
27. Hydrogen-rich saline protects myocardium against ischemia/reperfusion injury in rats
<https://pubmed.ncbi.nlm.nih.gov/19596825/>
28. Hydrogen-rich saline reduces lung injury induced by intestinal ischemia/reperfusion in rats
<https://pubmed.ncbi.nlm.nih.gov/19249288/>
29. Neuroprotective effects of hydrogen saline in neonatal hypoxia-ischemia rat model
<https://pubmed.ncbi.nlm.nih.gov/19063869/>
30. Inhalation of hydrogen gas reduces infarct size in the rat model of myocardial ischemia-reperfusion injury
<https://pubmed.ncbi.nlm.nih.gov/18541148/>
31. Hydrogen therapy reduces apoptosis in neonatal hypoxia-ischemia rat model
<https://pubmed.ncbi.nlm.nih.gov/18603371/>
32. Inhalation of hydrogen gas suppresses hepatic injury caused by ischemia/reperfusion through reducing oxidative stress
<https://pubmed.ncbi.nlm.nih.gov/17673169/>

Kidney and Urinary System Health

1. Effects of Molecular Hydrogen in the Pathophysiology and Management of Metabolic and Non-communicable Diseases
<https://europepmc.org/article/PPR/PPR654992>
2. Clinical Use and Treatment Mechanism of Molecular Hydrogen in the Treatment of Various Kidney Diseases including Diabetic Kidney Disease
<https://europepmc.org/article/MED/37893190>

The Miracle You Make In Your Kitchen

3. Molecular Hydrogen: current knowledge on mechanism in alleviating free radical damage and diseases
4. <https://academic.oup.com/abbs/article-pdf/51/12/1189/32815441/gmz121.pdf>
Molecular Hydrogen regulates PTEN-AKT-mTOR signaling via ROS to alleviate peritoneal dialysis-related peritoneal fibrosis
<https://europepmc.org/article/MED/31930571>
5. Dissolved Molecular Hydrogen (H₂) in Peritoneal Dialysis (PD) solutions preserves mesothelial cells and peritoneal membrane integrity
<https://europepmc.org/article/MED/29089029>
6. Renal I/R injury - Intake of water with high levels of dissolved hydrogen (H₂) suppresses ischemia-induced cardio-renal injury in Dahl salt-sensitive rats
<https://academic.oup.com/ndt/article/26/7/2112/1895116>
7. Renal I/R injury - Hydrogen-Rich Saline Protects Against Renal Ischemia/Reperfusion Injury in Rats
<https://www.sciencedirect.com/science/article/abs/pii/S0022480410009297>
8. Acute renal injury - Effects of hydrogen-rich saline on early acute kidney injury in severely burned rats by suppressing oxidative stress induced apoptosis and inflammation
<https://link.springer.com/article/10.1186/s12967-015-0548-3>
9. Acute renal injury - Hydrogen-rich saline attenuates acute renal injury in sodium taurocholate-induced severe acute pancreatitis by inhibiting ROS and NF- κ B pathway
<https://europepmc.org/article/PMC/4386702>
10. Acute renal injury - Hydrogen-rich saline ameliorates renal injury induced by unilateral ureteral obstruction in rats
<https://www.sciencedirect.com/science/article/abs/pii/S1567576913002889>
11. Acute renal injury - Inhalation of Hydrogen Gas Is Beneficial for Preventing Contrast-Induced Acute Kidney Injury in Rats
<https://karger.com/nee/article-abstract/128/3-4/116/378603/Inhalation-of-Hydrogen-Gas-Is-Beneficial-for?redirectedFrom=fulltext>
12. Hypertensive renal injury - Consumption of hydrogen-rich water alleviates renal injury in spontaneous hypertensive rats
<https://link.springer.com/article/10.1007/s11010-014-2024-4>
13. Cisplatin-induced nephropathy - Molecular Hydrogen alleviates nephrotoxicity induced by an anti-cancer drug cisplatin without compromising anti-tumor activity in mice
<https://link.springer.com/article/10.1007/s00280-008-0924-2>

14. Cisplatin-induced nephropathy - Investigation of protective effect of hydrogen-rich water against cisplatin-induced nephrotoxicity in rats using blood oxygenation level-dependent magnetic resonance imaging
<https://link.springer.com/article/10.1007/s11604-011-0588-4>
15. Gentamicin-induced nephrotoxicity - Protective Effect of Hydrogen-rich Water against Gentamicin-induced Nephrotoxicity in Rats using Blood Oxygenation Level-dependent MR Imaging
https://www.jstage.jst.go.jp/article/mrms/10/3/10_3_169/article/-char/ja/
16. Inhibition of AGEs production - Hydrogen-rich water inhibits glucose and α,β - dicarbonyl compound-induced reactive oxygen species production in the SHR.Cg-Leprcp/NDmcr rat kidney
<https://medicalgasresearch.biomedcentral.com/articles/10.1186/2045-9912-2-18>
17. Renal calcium deposition - Inhalation of hydrogen gas ameliorates glyoxylate-induced calcium oxalate deposition and renal oxidative stress in mice
<https://europepmc.org/article/PMC/4440082>
18. Electrolyzed-reduced water reduced hemodialysis-induced erythrocyte impairment in end-stage renal disease patients
<https://pubmed.ncbi.nlm.nih.gov/16760903/>
19. Hydrogen Gas Does Not Ameliorate Renal Ischemia Reperfusion Injury in a Preclinical Model
<https://onlinelibrary.wiley.com/doi/abs/10.1111/aor.13118>
20. Nephroprotective effect of electrolyzed reduced water against cisplatin-induced kidney toxicity and oxidative damage in mice
<https://www.sciencedirect.com/science/article/pii/S1726490117302617>
21. Hydrogen Rich Water Attenuates Renal Injury and Fibrosis by Regulation Transforming Growth Factor- β Induced Sirt1
https://www.jstage.jst.go.jp/article/bpb/40/5/40_b16-00832/article/-char/ja/
22. Hydrogen-Rich Saline Alleviates Kidney Fibrosis Following AKI and Retains Klotho Expression
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5554490/>
23. Hydrogen-Rich Saline Promotes the Recovery of Renal Function after Ischemia/Reperfusion Injury in Rats via Anti-apoptosis and Anti-inflammation
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4840252/>
24. Hydrogen-Rich Saline Attenuates Acute Kidney Injury After Liver Transplantation via Activating p53-Mediated Autophagy
https://journals.lww.com/transplantjournal/Fulltext/2016/03000/Hydrogen_Rich_Saline_Attenuates_Acute_Kidney.21.aspx

The Miracle You Make In Your Kitchen

25. A novel fluid resuscitation protocol: provide more protection on acute kidney injury during septic shock in rats
<https://pubmed.ncbi.nlm.nih.gov/24955162/>
26. Molecular Hydrogen: a preventive and therapeutic medical gas for various diseases
<https://europepmc.org/article/MED/29254278>
27. Pretreatment with hydrogen-rich saline reduces the damage caused by glycerol-induced rhabdomyolysis and acute kidney injury in rats
<https://pubmed.ncbi.nlm.nih.gov/24495844/>
28. Amelioration of cardio-renal injury with aging in dahl salt-sensitive rats by H₂-enriched electrolyzed water
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3866609/>
29. Hydrogen-rich University of Wisconsin solution attenuates renal cold ischemia-reperfusion injury
<https://pubmed.ncbi.nlm.nih.gov/22683850/>
30. Experimental verification of protective effect of hydrogen-rich water against cisplatin-induced nephrotoxicity in rats using dynamic contrast-enhanced CT
<https://pubmed.ncbi.nlm.nih.gov/20505032/>
31. Electrolysed-reduced water dialysate improves T-cell damage in end-stage renal disease patients with chronic haemodialysis
<https://pubmed.ncbi.nlm.nih.gov/20190245/>
32. Electrolyzed water reduces urinary protein excretion in the streptozotocin induced diabetic Dahl salt sensitive rats
https://faseb.onlinelibrary.wiley.com/doi/abs/10.1096/fasebj.22.1_supplement.947.17
33. Interstitial cystitis - Effect of Supplementation With Hydrogen-rich Water in Patients With Interstitial Cystitis/Painful Bladder Syndrome
<https://pubmed.ncbi.nlm.nih.gov/23374763/>
34. Preventive Effect of Hydrogen Water on the Development of Detrusor Overactivity in a Rat Model of Bladder Outlet Obstruction
<https://pubmed.ncbi.nlm.nih.gov/26518110/>
35. Effect of water diuresis with hydrogen saturation on the course of acute kidney damage during the separation of oxidation and phosphorylation
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9762360/>
36. Molecular Hydrogen Suppresses Renal Injury in Chronic Kidney Disease Rats
<https://pdfs.semanticscholar.org/d9d4/5f46bfb06c430b55ed792fef54b96072f04c.pdf>

Liver Health

1. Therapeutic Potential of Molecular Hydrogen in Metabolic Diseases from Bench to Bedside
<https://europepmc.org/article/MED/37111299>
2. The Effect of Adjuvant Therapy with Molecular Hydrogen on Endogenous Coenzyme Q10 Levels and Platelet Mitochondrial Bioenergetics in Patients with Non-Alcoholic Fatty Liver Disease
<https://europepmc.org/article/MED/37569850>
3. Long-term and daily use of Molecular Hydrogen induces reprogramming of liver metabolism in rats by modulating NADP/NADPH redox pathways
<https://europepmc.org/article/MED/35273249>
4. Protective effects of Molecular Hydrogen on hepatotoxicity induced by sub-chronic exposure to chlorpyrifos in rats
<https://europepmc.org/article/MED/32955216>
5. Molecular Hydrogen: current knowledge on mechanism in alleviating free radical damage and diseases
6. <https://academic.oup.com/abbs/article-pdf/51/12/1189/32815441/gmz121.pdf>
Molecular Hydrogen accelerates the reversal of acute obstructive cholangitis-induced liver dysfunction by restoring gap and tight junctions
<https://europepmc.org/article/MED/31059036>
7. Effects of Molecular Hydrogen-dissolved alkaline electrolyzed water on intestinal environment in mice
<https://europepmc.org/article/MED/29770190>
8. Molecular Hydrogen protects against ischemia-reperfusion injury in a mouse fatty liver model via regulating HO-1 and Sirt1 expression
<https://europepmc.org/article/MED/30232347>
9. Liver Injury - Hydrogen gas inhalation protects against liver ischemia/reperfusion injury by activating the NF- κ B signaling pathway
<https://europepmc.org/article/PMC/4473536>
10. Liver Injury - Inhalation of hydrogen gas suppresses hepatic injury caused by ischemia/reperfusion through reducing oxidative stress
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X07015525>
11. Liver Injury - Pectin and high-amylose maize starch increase caecal hydrogen production and relieve hepatic ischaemia–reperfusion injury in rats
<https://www.cambridge.org/core/journals/british-journal-of-nutrition/article/pectin-and-highamylose-maize-starch-increase-caecal-hydrogen-production-and-relieve-hepatic-ischaemiareperfusion-injury-in-rats/B3302AC010DFFB2F3C958137A161D5F7>

The Miracle You Make In Your Kitchen

12. Liver Injury - Beneficial Effects of Hydrogen Gas on Porcine Liver Reperfusion Injury With Use of Total Vascular Exclusion and Active Venous Bypass
<https://www.sciencedirect.com/science/article/abs/pii/S0041134513013481>
13. Hepatitis B - Effect of hydrogen-rich water on oxidative stress, liver function, and viral load in patients with chronic hepatitis B
<https://europepmc.org/article/PMC/5350887>
14. Hydrogen-rich water prevents progression of nonalcoholic steatohepatitis and accompanying hepatocarcinogenesis in mice
<https://aasldpubs.onlinelibrary.wiley.com/doi/full/10.1002/hep.25782>
15. Liver Injury - Hydrogen-rich saline attenuates postoperative liver failure after major hepatectomy in rats
<https://www.sciencedirect.com/science/article/abs/pii/S2210740113002659>
16. Liver Injury - Lactulose accelerates liver regeneration in rats by inducing hydrogen
<https://www.sciencedirect.com/science/article/abs/pii/S0022480415000657>
17. Liver Injury - Inhalation of hydrogen gas reduces liver injury during major hepatotectomy in swine
<https://europepmc.org/article/PMC/3468851>
18. Liver Injury - Jaundice - Hydrogen-rich saline protects against liver injury in rats with obstructive jaundice
<https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1478-3231.2010.02254.x>
19. Liver Injury - Saturated Hydrogen Saline Attenuates Endotoxin-Induced Acute Liver Dysfunction in Rats
<https://pdfs.semanticscholar.org/2f16/92f6714cc7065833c9fa4facbeb07247f833.pdf>
20. Liver Injury - Hydrogen-rich water protects against acetaminophen-induced hepatotoxicity in mice
<https://europepmc.org/article/PMC/4394080>
21. Liver Injury - The protective role of hydrogen-rich saline in experimental liver injury in mice
<https://www.sciencedirect.com/science/article/abs/pii/S016882781000810X>
22. Liver Injury - Hepatitis - Hydrogen from intestinal bacteria is protective for Concanavalin A-induced hepatitis
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X09011619>
23. Liver - Cirrhosis - Concomitant inhibition of oxidative stress and angiogenesis by chronic hydrogen-rich saline and N-acetylcysteine treatments improves systemic, splanchnic and hepatic hemodynamics of cirrhotic rats
<https://onlinelibrary.wiley.com/doi/abs/10.1111/hepr.12379>
24. Liver - Fibrosis - Effects of oral intake of hydrogen water on liver fibrogenesis in mice
<https://onlinelibrary.wiley.com/doi/abs/10.1111/hepr.12165>

25. Hydrogen-rich saline protects against small-scale liver ischemia-reperfusion injury by inhibiting endoplasmic reticulum stress
<https://www.sciencedirect.com/science/article/abs/pii/S0024320517306604>
26. Post-reperfusion hydrogen gas treatment ameliorates ischemia reperfusion injury in rat livers from donors after cardiac death: a preliminary study
<https://link.springer.com/article/10.1007/s00595-018-1693-0>
27. Hydrogen protects against liver injury during CO₂ pneumoperitoneum in rats
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5788665/>
28. Hydrogen-rich saline improves non-alcoholic fatty liver disease by alleviating oxidative stress and activating hepatic PPAR α and PPAR γ
<https://www.spandidos-publications.com/mmr/15/3/1305>
29. Hydrogen Rich Solution Attenuates Cold Ischemia-Reperfusion Injury in Rat Liver Transplantation
https://journals.lww.com/transplantjournal/fulltext/2017/05003/Hydrogen_Rich_Solution_Attenuates_Cold.31.aspx
30. Anti-oxidant and anti-inflammatory effects of hydrogen-rich water alleviate ethanol-induced fatty liver in mice
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5526762/>
31. Inhalation of high concentrations of hydrogen ameliorates liver ischemia/reperfusion injury through A2A receptor mediated PI3K-Akt pathway
<https://www.sciencedirect.com/science/article/abs/pii/S0006295217300655>
32. Preadministration of Hydrogen-Rich Water Protects Against Lipopolysaccharide-Induced Sepsis and Attenuates Liver Injury
https://journals.lww.com/shockjournal/Fulltext/2017/07000/Preadministration_of_Hydrogen_Rich_Water_Protects.12.aspx
33. Hydrogen Gas Ameliorates Hepatic Reperfusion Injury After Prolonged Cold Preservation in Isolated Perfused Rat Liver
<https://onlinelibrary.wiley.com/doi/abs/10.1111/aor.12710>
34. Hydrogen-Rich Saline Attenuates Acute Hepatic Injury in Acute Necrotizing Pancreatitis by Inhibiting Inflammation and Apoptosis, Involving JNK and p38 Mitogen-Activated Protein Kinase-dependent Reactive Oxygen Species
https://journals.lww.com/pancreasjournal/Abstract/2016/11000/Hydrogen_Rich_Saline_Attenuates_Acute_Hepatic.11.aspx
35. Hydrogen-rich saline protects against mitochondrial dysfunction and apoptosis in mice with obstructive jaundice
<https://www.spandidos-publications.com/10.3892/mmr.2016.4954>
36. Hydrogen-rich water protects against acetaminophen-induced hepatotoxicity in mice
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4394080/>

The Miracle You Make In Your Kitchen

37. Molecular hydrogen attenuates hypoxia/reoxygenation injury of intrahepatic cholangiocytes by activating Nrf2 expression
<https://www.sciencedirect.com/science/article/abs/pii/S037842741530031X>
38. Simultaneous oral and inhalational intake of molecular hydrogen additively suppresses signaling pathways in rodents
<https://pubmed.ncbi.nlm.nih.gov/25707580/>
39. Concomitant inhibition of oxidative stress and angiogenesis by chronic hydrogen-rich saline and N-acetylcysteine treatments improves systemic, splanchnic and hepatic hemodynamics of cirrhotic rats
<https://pubmed.ncbi.nlm.nih.gov/24961937/>
40. Protective effects of hydrogen enriched saline on liver ischemia reperfusion injury by reducing oxidative stress and HMGB1 release
<https://pubmed.ncbi.nlm.nih.gov/24410860/>
41. Hydrogen as a novel and effective treatment of acute carbon monoxide poisoning
<https://pubmed.ncbi.nlm.nih.gov/20347528/>
42. Hepatoprotective effect of electrolyzed reduced water against carbon tetrachloride-induced liver damage in mice
<https://pubmed.ncbi.nlm.nih.gov/19477216/>
43. Electrolyzed-reduced water inhibits acute ethanol-induced hangovers in Sprague-Dawley rats
<https://pubmed.ncbi.nlm.nih.gov/19887722/>
44. Molecular hydrogen suppresses FcepsilonRI-mediated signal transduction and prevents degranulation of mast cells
<https://pubmed.ncbi.nlm.nih.gov/19766097/>
45. Anti-inflammatory properties of molecular hydrogen: investigation on parasite-induced liver inflammation
<https://pubmed.ncbi.nlm.nih.gov/11510417/>
46. Suppressive Effect of High Hydrogen Generating High Amylose Cornstarch on Subacute Hepatic Ischemia-reperfusion Injury in Rats
<https://pubmed.ncbi.nlm.nih.gov/24936356/>
47. Inhalation of molecular hydrogen prevents ischemia-reperfusion liver damage during major liver resection
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6989999/>
48. Biological Effects of Hydrogen Water on Subjects with NAFLD: A Randomized, Placebo-Controlled Trial
<https://www.mdpi.com/2076-3921/11/10/1935>

49. Hydrogen-rich water reduces liver fat accumulation and improves liver enzyme profiles in patients with non-alcoholic fatty liver disease: a randomized controlled pilot trial
<https://www.sciencedirect.com/science/article/abs/pii/S2210740119300853>
50. Effects of alkaline-electrolyzed and hydrogen-rich water, in a high-fat-diet nonalcoholic fatty liver disease mouse model
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6288656/>

Lung and Respiratory Health

1. Effects of Molecular Hydrogen in the Pathophysiology and Management of Metabolic and Non-communicable Diseases
<https://europepmc.org/article/PPR/PPR654992>
2. APOA2: New Target for Molecular Hydrogen Therapy in Sepsis-Related Lung Injury Based on Proteomic and Genomic Analysis
<https://europepmc.org/article/MED/37511084>
3. Role of Molecular Hydrogen in Ageing and Ageing-Related Diseases
<https://europepmc.org/article/MED/35340218>
4. Molecular Hydrogen is a potential protective agent in the management of acute lung injury
<https://europepmc.org/article/MED/35240982>
5. Protective effects of Molecular Hydrogen on lung injury from lung transplantation
<https://europepmc.org/article/MED/33899545>
6. Molecular Hydrogen is a promising therapeutic agent for pulmonary disease
<https://europepmc.org/article/MED/35187885>
7. Molecular Hydrogen Positively Affects Physical and Respiratory Function in Acute Post-COVID-19 Patients: A New Perspective in Rehabilitation
<https://europepmc.org/article/MED/35206179>
8. Molecular Hydrogen as an Adjuvant Therapy May be Associated with Increased Oxygen Saturation and Improved Exercise Tolerance In a COVID-19 patient
<https://europepmc.org/article/PPR/PPR399766>
9. Molecular Hydrogen alleviates asthma through inhibiting IL-33/ILC2 axis
<https://europepmc.org/article/MED/33852061>
10. Molecular Hydrogen: current knowledge on mechanism in alleviating free radical damage and diseases
<https://academic.oup.com/abbs/article-pdf/51/12/1189/32815441/gmz121.pdf>
11. Molecular Hydrogen: a preventive and therapeutic medical gas for various diseases
<https://europepmc.org/article/MED/29254278>

The Miracle You Make In Your Kitchen

12. Molecular Hydrogen attenuates gefitinib-induced exacerbation of naphthalene-evoked acute lung injury through a reduction in oxidative stress and inflammation
<https://europepmc.org/article/MED/30710119>
13. Molecular Hydrogen: A novel therapy for the treatment of pulmonary hypertension
[https://www.jtcvs.org/article/S0022-5223\(15\)01012-0/pdf](https://www.jtcvs.org/article/S0022-5223(15)01012-0/pdf)
14. Hydrogen saline is protective for acute lung ischaemia/reperfusion injuries in rats
<https://www.sciencedirect.com/science/article/abs/pii/S1443950612010608>
15. Hydrogen-Rich Saline Attenuates Lung Ischemia-Reperfusion Injury in Rabbits
<https://www.sciencedirect.com/science/article/abs/pii/S0022480411008213>
16. Hydrogen gas reduces hyperoxic lung injury via the Nrf2 pathway in vivo
<https://europepmc.org/article/PMC/3652058>
17. Saturated hydrogen saline protects the lung against oxygen toxicity
<https://image.sciencenet.cn/olddata/kexue.com.cn/upload/blog/file/2010/8/201081011321540220.pdf>
18. Hydrogen-Rich Saline Provides Protection Against Hyperoxic Lung Injury
<https://www.sciencedirect.com/science/article/abs/pii/S0022480410007754>
19. Hydrogen inhalation reduced epithelial apoptosis in ventilator-induced lung injury via a mechanism involving nuclear factor-kappa B activation
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X11005717>
20. Hydrogen inhalation ameliorates ventilator-induced lung injury
<https://europepmc.org/article/PMC/3219999>
21. Hydrogen inhalation ameliorates lipopolysaccharide-induced acute lung injury in mice
<https://www.sciencedirect.com/science/article/abs/pii/S1567576911003663>
22. Molecular Hydrogen Ameliorates Lipopolysaccharide-Induced Acute Lung Injury in Mice Through Reducing Inflammation and Apoptosis
https://journals.lww.com/shockjournal/Fulltext/2012/05000/Molecular_Hydrogen_Ameliorates.15.aspx
23. Saturated hydrogen saline attenuates endotoxin-induced lung dysfunction
<https://www.sciencedirect.com/science/article/abs/pii/S0022480415004886>
24. Combination Therapy With Nitric Oxide and Molecular Hydrogen in a Murine Model of Acute Lung Injury
https://journals.lww.com/shockjournal/Fulltext/2015/05000/Combination_Therapy_With_Nitric_Oxide_and.13.aspx
25. Hydrogen-rich saline reduces lung injury induced by intestinal ischemia/reperfusion in rats
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X09003763>

26. Hydrogen-Rich Saline Protects Against Acute Lung Injury Induced by Extensive Burn in Rat Model
<https://academic.oup.com/jbcr/article-abstract/32/3/e82/4588345>
27. Consumption of hydrogen water reduces paraquat-induced acute lung injury in rats
<https://europepmc.org/article/PMC/3035012>
28. Effects of hydrogen water on paraquat-induced pulmonary fibrosis in mice
<https://www.kitasato-u.ac.jp/ktms/kaishi/pdf/KMJ45-1/KMJ45-1p009-016.pdf>
29. Attenuation of cigarette smoke-induced airway mucus production by hydrogen-rich saline in rats
<https://europepmc.org/article/PMC/3869805>
30. Protective Effects of Hydrogen-Rich Saline on Rats with Smoke Inhalation Injury
<https://europepmc.org/article/PMC/4454757>
31. Hydrogen ameliorates pulmonary hypertension in rats by anti-inflammatory and antioxidant effects
<https://www.sciencedirect.com/science/article/pii/S0022522315008648>
32. Protection of oral hydrogen water as an antioxidant on pulmonary hypertension
<https://europepmc.org/article/PMC/3751215>
33. The Anti-inflammatory Effect of Hydrogen on Lung Transplantation Model of Pulmonary Microvascular Endothelial Cells During Cold Storage Period
https://journals.lww.com/transplantjournal/fulltext/2018/08000/the_anti_inflammatory_effect_of_hydrogen_on_lung.19.aspx
34. Hydrogen protects against hyperoxia-induced apoptosis in type II alveolar epithelial cells via activation of PI3K/Akt/Foxo3a signaling pathway
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X17323707>
35. Hydrogen gas inhalation protects against cigarette smoke-induced COPD development in mice
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6051853/>
36. Hydrogen gas inhalation during ex vivo lung perfusion of donor lungs recovered after cardiac death
<https://www.sciencedirect.com/science/article/abs/pii/S1053249818315080>
37. Hydrogen protects lung from hypoxia/re-oxygenation injury by reducing hydroxyl radical production and inhibiting inflammatory responses
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5964155/>
38. Changes in IL-4 and IL-13 expression in allergic-rhinitis treated with hydrogen-rich saline in guinea-pig model
<https://www.sciencedirect.com/science/article/abs/pii/S0301054616301604>

The Miracle You Make In Your Kitchen

39. Hydrogen-rich saline attenuates eosinophil activation in a guinea pig model of allergic rhinitis via reducing oxidative stress
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5237150/>
40. Protective effect of hydrogen-saturated saline on acute lung injury induced by oleic acid in rats
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5606060/>
41. Effects of hydrogen-rich saline on endotoxin-induced uveitis
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5402351/>
42. Immersing lungs in hydrogen-rich saline attenuates lung ischaemia–reperfusion injury
<https://academic.oup.com/ejcts/article/51/3/442/2439487?login=false>
43. Hydrogen-rich pure water prevents cigarette smoke-induced pulmonary emphysema in SMP30 knockout mice
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X17315802>
44. Hydrogen coadministration slows the development of COPD-like lung disease in a cigarette smoke-induced rat model
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5422326/>
45. Protective Effects of Hydrogen-Rich Saline Against Lipopolysaccharide-Induced Alveolar Epithelial-to-Mesenchymal Transition and Pulmonary Fibrosis
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5445901/>
46. Protection by Inhaled Hydrogen Therapy in a Rat Model of Acute Lung Injury can be Tracked in vivo Using Molecular Imaging
<https://www.ingentaconnect.com/content/wk/shk/2017/00000048/00000004/art00011>
47. Effects of hydrogen-rich saline on aquaporin 1, 5 in septic rat lungs
<https://pubmed.ncbi.nlm.nih.gov/27229103/>
48. Hydrogen-rich water ameliorates bronchopulmonary dysplasia (BPD) in newborn rats
<https://pubmed.ncbi.nlm.nih.gov/26845501/>
49. Protection of donor lung inflation in the setting of cold ischemia against ischemia-reperfusion injury with carbon monoxide, hydrogen, or both in rats
<https://pubmed.ncbi.nlm.nih.gov/26969763/>
Hydrogen Gas Inhalation Attenuates Seawater Instillation-Induced Acute Lung Injury via the Nrf2 Pathway in Rabbits
<https://pubmed.ncbi.nlm.nih.gov/27596008/>
50. Hydrogen water alleviates lung injury induced by one-lung ventilation
<https://pubmed.ncbi.nlm.nih.gov/26182997/>
51. The effects of hydrogen gas inhalation during ex vivo lung perfusion on donor lungs obtained after cardiac death
<https://pubmed.ncbi.nlm.nih.gov/25750008/>

52. Hydrogen preconditioning during ex vivo lung perfusion improves the quality of lung grafts in rats
<https://pubmed.ncbi.nlm.nih.gov/25121557/>
53. Hydrogen-rich saline reduces airway remodeling via inactivation of NF- κ B in a murine model of asthma
<https://pubmed.ncbi.nlm.nih.gov/23661516/>
54. Effect of hydrogen inhalation on p38 MAPK activation in rats with lipopolysaccharide- induced acute lung injury
<https://pubmed.ncbi.nlm.nih.gov/22931625/>
55. Hydrogen therapy attenuates irradiation-induced lung damage by reducing oxidative stress
<https://molecularhydrogeninstitute.org/lung-and-other-organs/>
56. Hydrogen Therapy may be a Novel and Effective Treatment for COPD
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3108576/>
57. Effect of hydrogen-rich saline on blood pressure and antioxidant ability of lung tissue in scalded rats following delayed resuscitation
<https://pubmed.ncbi.nlm.nih.gov/21223652/>
58. Molecular hydrogen as an adjuvant therapy may be associated with increased oxygen saturation and improved exercise tolerance in a COVID-19 patient
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8572338/>

Mental Health

1. Effects of hydrogen water and psychological treatment in a sample of women with panic disorder: a randomized and controlled clinical trial
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9239392/>
2. Molecular Hydrogen: an Emerging Therapeutic Medical Gas for Brain Disorders
<https://europepmc.org/article/MED/36567361>
3. Neuroprotective Effects of Molecular Hydrogen: A Critical Review
<https://europepmc.org/article/MED/33078374>
4. Molecular Hydrogen increases resilience to stress in mice
<https://europepmc.org/article/MED/28852144>
5. Oxidative stress and anxiety
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2763246/>
6. Molecular Hydrogen: an Emerging Therapeutic Medical Gas for Brain Disorders
<https://europepmc.org/article/MED/36567361>
7. Neuroprotective Effects of Molecular Hydrogen: A Critical Review
<https://europepmc.org/article/MED/33078374>

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8. Molecular Hydrogen increases resilience to stress in mice
<https://europepmc.org/article/MED/28852144>
9. Molecular Hydrogen Prevents Social Deficits and Depression-Like Behaviors Induced by Low-Intensity Blast in Mice
<https://europepmc.org/article/MED/30053086>
10. Molecular hydrogen: an overview of its neurobiological effects and therapeutic potential for bipolar disorder and schizophrenia
<https://link.springer.com/article/10.1186/2045-9912-3-11>
11. The Potential of Hydrogen for Improving Mental Disorders
<https://pubmed.ncbi.nlm.nih.gov/33185151/>
12. Effects of molecular hydrogen intervention on the gut microbiome in methamphetamine abusers with mental disorder
<https://www.sciencedirect.com/science/article/pii/S036192302200332X#ab0015>
13. Hydrogen-rich water for improvements of mood, anxiety, and autonomic nerve function in daily life
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5806445/>
14. Gas therapy strategies for depression and schizophrenia: A review
https://journals.lww.com/md-journal/fulltext/2023/11170/gas_therapy_strategies_for_depression_and.21.aspx
15. Molecular Hydrogen Prevents Social Deficits and Depression-Like Behaviors Induced by Low-Intensity Blast in Mice
<https://academic.oup.com/jnen/article/77/9/827/5058951>
16. Alleviation of the chronic stress response attributed to the antioxidant and anti-inflammatory effects of electrolyzed hydrogen water
<https://www.sciencedirect.com/science/article/pii/S0006291X20322129>
17. Hydrogen-rich saline attenuates anxiety-like behaviors in morphine-withdrawn mice
<https://pubmed.ncbi.nlm.nih.gov/28359771/>
18. Effects of hydrogen-rich water on depressive-like behavior in mice
<https://pubmed.ncbi.nlm.nih.gov/27026206/>

Metabolic Conditions

1. Therapeutic Potential of Molecular Hydrogen in Metabolic Diseases from Bench to Bedside
<https://europepmc.org/article/MED/37111299>
2. Effects of Molecular Hydrogen in the Pathophysiology and Management of Cardiovascular and Metabolic Diseases
<https://europepmc.org/article/PPR/PPR608467>
3. Molecular Hydrogen: a preventive and therapeutic medical gas for various diseases
<https://europepmc.org/article/MED/29254278>

4. Diabetes mellitus - Supplementation of hydrogen-rich water improves lipid and glucose metabolism in patients with type 2 diabetes or impaired glucose tolerance
<https://www.sciencedirect.com/science/article/abs/pii/S0271531708000237>
5. Diabetes mellitus - Hydrogen improves glycemic control in type1 diabetic animal model by promoting glucose uptake into skeletal muscle
<https://europepmc.org/article/PMC/3542317>
6. Hyperlipidemia - Molecular Hydrogen attenuates fatty acid uptake and lipid accumulation through downregulating CD36 expression in HepG2 cells
<https://europepmc.org/article/PMC/3599869>
7. Hyperlipidemia - Administration of hydrogen-saturated saline decreases plasma low-density lipoprotein cholesterol levels and improves high-density lipoprotein function in high-fat diet-fed hamsters
<https://www.sciencedirect.com/science/article/abs/pii/S0026049511003532>
8. Hyperlipidemia - Hydrogen Activates ATP-Binding Cassette Transporter A1-Dependent Efflux Ex Vivo and Improves High-Density Lipoprotein Function in Patients With Hypercholesterolemia: A Double-Blinded, Randomized, and Placebo-Controlled Trial
<https://academic.oup.com/jcem/article/100/7/2724/2829665>
9. Metabolic syndrome - Effectiveness of hydrogen rich water on antioxidant status of subjects with potential metabolic syndrome-an open label pilot study
<https://europepmc.org/article/PMC/2831093>
10. Metabolic process-related gene expression - Hepatic Oxidoreduction-Related Genes Are Upregulated by Administration of Hydrogen-Saturated Drinking Water
https://www.jstage.jst.go.jp/article/bbb/75/4/75_100819/article/-char/ja/
11. Oxidized low density lipoprotein-induced cell toxicity - H₂ inhibits TNF- α -induced lectin-like oxidized LDL receptor-1 expression by inhibiting nuclear factor κ B activation in endothelial cells
<https://link.springer.com/article/10.1007/s10529-011-0630-8>
12. Serum alkalinization - Serum alkalinization and hydrogen-rich water in healthy men
<https://europepmc.org/article/PMC/3498110>
13. Exercise-induced metabolic acidosis - Hydrogen-Rich Water Affected Blood Alkalinity in Physically Active Men
<https://www.tandfonline.com/doi/abs/10.1080/15438627.2013.852092>
14. Effectiveness of Hydrogen Rich Water on Antioxidant Status of Subjects with Potential Metabolic Syndrome—An Open Label Pilot Study
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2831093/>
15. Subcutaneous injection of hydrogen gas is a novel effective treatment for type 2 diabetes
<https://pubmed.ncbi.nlm.nih.gov/28390099/>

The Miracle You Make In Your Kitchen

16. Molecular Hydrogen affects body composition, metabolic profiles, and mitochondrial function in middle-aged overweight women
<https://europepmc.org/article/MED/28560519>
17. Coral calcium hydride prevents hepatic steatosis in high fat diet-induced obese rats: A potent mitochondrial nutrient and phase II enzyme inducer
<https://pubmed.ncbi.nlm.nih.gov/26774456/>
18. Cigarette smoke exposure impairs reverse cholesterol transport which can be minimized by treatment of hydrogen-saturated saline
<https://pubmed.ncbi.nlm.nih.gov/26634341/>
19. Hydrogen-rich water decreases serum LDL-cholesterol levels and improves HDL function in patients with potential metabolic syndrome
<https://pubmed.ncbi.nlm.nih.gov/23610159/>
20. Hydrogen-rich medium suppresses the generation of reactive oxygen species, elevates the Bcl-2/Bax ratio and inhibits advanced glycation end product-induced apoptosis
<https://pubmed.ncbi.nlm.nih.gov/23563626/>
21. Molecular hydrogen attenuates fatty acid uptake and lipid accumulation through downregulating CD36 expression in HepG2 cells
<https://pubmed.ncbi.nlm.nih.gov/23448206/>
22. Anti-obesity effect of alkaline reduced water in high fat-fed obese mice
<https://pubmed.ncbi.nlm.nih.gov/23811554/>
23. Protection of oral hydrogen water as an antioxidant on pulmonary hypertension
<https://pubmed.ncbi.nlm.nih.gov/23955545/>
24. Protective effects of hydrogen-rich saline against erectile dysfunction in a streptozotocin induced diabetic rat model
<https://pubmed.ncbi.nlm.nih.gov/23220246/>
25. Antibacterial Activity of Hydrogen-rich Water Against Oral Bacteria
<http://www.kijob.or.kr/journal/article.php?code=1242>
26. Hydrogen improves glycemic control in type1 diabetic animal model by promoting glucose uptake into skeletal muscle
<https://pubmed.ncbi.nlm.nih.gov/23326534/>
27. Administration of hydrogen-saturated saline decreases plasma low-density lipoprotein cholesterol levels and improves high-density lipoprotein function in high-fat diet-fed hamsters
<https://pubmed.ncbi.nlm.nih.gov/22153840/>
28. Chronic hydrogen-rich saline treatment attenuates vascular dysfunction in spontaneous hypertensive rats
<https://pubmed.ncbi.nlm.nih.gov/22342731/>

29. Chronic hydrogen-rich saline treatment reduces oxidative stress and attenuates left ventricular hypertrophy in spontaneous hypertensive rats
<https://link.springer.com/article/10.1007/s11010-012-1264-4>
30. Therapeutic effects of hydrogen saturated saline on rat diabetic model and insulin resistant model via reduction of oxidative stress
<https://pubmed.ncbi.nlm.nih.gov/22800834/>
31. Suppressive Effect of High Hydrogen Generating High Amylose Cornstarch on Subacute Hepatic Ischemia-reperfusion Injury in Rats
<https://pubmed.ncbi.nlm.nih.gov/24936356/>
32. Atherosclerosis - Hydrogen decreases athero-susceptibility in apolipoprotein B-containing lipoproteins and aorta of apolipoprotein E knockout mice
<https://www.sciencedirect.com/science/article/abs/pii/S0021915011011312>
33. Inhalation of hydrogen gas attenuates left ventricular remodeling induced by intermittent hypoxia in mice
<https://journals.physiology.org/doi/full/10.1152/ajpheart.00150.2011>
34. Hydrogen-rich water prevents progression of nonalcoholic steatohepatitis and accompanying hepatocarcinogenesis in mice
<https://aasldpubs.onlinelibrary.wiley.com/doi/full/10.1002/hep.25782>
35. Erectile dysfunction - Protective Effects of Hydrogen-Rich Saline Against Erectile Dysfunction in a Streptozotocin Induced Diabetic Rat Model
<https://www.auajournals.org/doi/abs/10.1016/j.juro.2012.12.001>
36. Hydrogen-rich medium protects human skin fibroblasts from high glucose or mannitol induced oxidative damage
<https://pubmed.ncbi.nlm.nih.gov/21596020/>
37. Effects of hydrogen-rich water on abnormalities in a SHR.Cg-Leprcp/NDmcr rat - a metabolic syndrome rat model
<https://pubmed.ncbi.nlm.nih.gov/22146083/>
38. Effectiveness of Hydrogen Rich Water on Antioxidant Status of Subjects with Potential Metabolic Syndrome—An Open Label Pilot Study
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2831093/>
39. Hydrogen gas reduced acute hyperglycemia-enhanced hemorrhagic transformation in a focal ischemia rat model
<https://pubmed.ncbi.nlm.nih.gov/20423721/>
40. Suppressive Effect of ERW on Lipid Peroxidation and Plasma Triglyceride Level
https://link.springer.com/chapter/10.1007/978-90-481-3892-0_52#page-1
41. The Suppressive Effect of Electrolyzed Reduced Water on Lipid Peroxidation
https://link.springer.com/chapter/10.1007/978-94-017-0726-8_66

Mouth/Oral Cavity

1. Hydrogen-rich water attenuates experimental periodontitis in a rat model
<https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1600-051X.2011.01801.x>
2. Effects of hydrogen-rich water on aging periodontal tissues in rats
<https://europepmc.org/article/PMC/4078318>
3. Hydrogen-rich water achieves cytoprotection from oxidative stress injury in human gingival fibroblasts in culture or 3D-tissue equivalents, and wound-healing promotion, together with ROS-scavenging and relief from glutathione diminishment
<https://link.springer.com/article/10.1007/s13577-016-0150-x>
4. Influence of hydrogen-occluding-silica on migration and apoptosis in human esophageal cells in vitro
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5510297/>
5. Inhibition of streptococcal biofilm by hydrogen water
<https://www.sciencedirect.com/science/article/abs/pii/S0300571217300040>
6. Drinking Hydrogen-Rich Water Has Additive Effects on Non-Surgical Periodontal Treatment of Improving Periodontitis: A Pilot Study
<https://pubmed.ncbi.nlm.nih.gov/26783840/>
7. Effect of electrolyzed reduced water on Wistar rats with chronic periodontitis on malondialdehyde levels
<https://e-journal.unair.ac.id/MKG/article/view/4000>
8. Antibacterial Activity of Hydrogen-rich Water Against Oral Bacteria
<http://www.kijob.or.kr/journal/article.php?code=1242>
9. Hydrogen-Rich Water Intake Accelerates Oral Palatal Wound Healing via Activation of the Nrf2/Antioxidant Defense Pathways in a Rat Model
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4699099/>

Multiple Sclerosis

1. Molecular Hydrogen: an Emerging Therapeutic Medical Gas for Brain Disorders
<https://europepmc.org/article/MED/36567361>
2. Neuroprotective and Preventative Effects of Molecular Hydrogen
<https://europepmc.org/article/MED/33076798>
3. Hydrogen-rich water improves neurological functional recovery in experimental autoimmune encephalomyelitis mice
<https://pubmed.ncbi.nlm.nih.gov/27138092/>

Neurological/Neurodegenerative Diseases

1. Molecular Hydrogen therapy for neurological diseases: a review of current evidence.
<https://europepmc.org/article/MED/36571372>

2. Effects of Molecular Hydrogen in the Pathophysiology and Management of Metabolic and Non-communicable Diseases
<https://europepmc.org/article/PPR/PPR654992>
3. Molecular Hydrogen: an Emerging Therapeutic Medical Gas for Brain Disorders
<https://europepmc.org/article/MED/36567361>
4. Role of Molecular Hydrogen in Ageing and Ageing-Related Diseases
<https://europepmc.org/article/MED/35340218>Neuroprotective and Preventative Effects of Molecular Hydrogen
<https://europepmc.org/article/MED/33076798>
Neuroprotective Effects of Molecular Hydrogen: A Critical Review
<https://europepmc.org/article/MED/33078374>
5. Molecular and Cellular Mechanisms Associated with Effects of Molecular Hydrogen in Cardiovascular and Central Nervous Systems
<https://europepmc.org/article/MED/33333951>
6. Circulating messenger for neuroprotection induced by Molecular Hydrogen
<https://europepmc.org/article/MED/31100203>
7. Chronic Molecular Hydrogen inhalation mitigates short and long-term memory loss in polymicrobial sepsis
<https://europepmc.org/article/MED/32348775>
8. Molecular Hydrogen as a Neuroprotective Agent
<https://europepmc.org/article/MED/27281176>
9. Molecular Hydrogen: a preventive and therapeutic medical gas for various diseases
<https://europepmc.org/article/MED/29254278>
10. Effects of Molecular Hydrogen Assessed by an Animal Model and a Randomized Clinical Study on Mild Cognitive Impairment
<https://europepmc.org/article/MED/29110615>
11. Molecular Hydrogen in the treatment of acute and chronic neurological conditions: mechanisms of protection and routes of administration
<https://europepmc.org/article/MED/28751802>
12. Molecular Hydrogen reduces LPS-induced neuroinflammation and promotes recovery from sickness behaviour in mice
<https://europepmc.org/article/PMC/3409143>
13. Inhalation of hydrogen gas attenuates brain injury in mice with cecal ligation and puncture via inhibiting neuroinflammation, oxidative stress and neuronal apoptosis
<https://www.sciencedirect.com/science/article/abs/pii/S0006899314012517>

The Miracle You Make In Your Kitchen

14. Hydrogen-Related Enhancement of In Vivo Antioxidant Ability in the Brain of Rats Fed Coral Calcium Hydride
<https://link.springer.com/article/10.1007/s11064-010-0204-5>
15. Electrochemically reduced water protects neural cells from oxidative damage
<https://europepmc.org/article/PMC/4212634>
16. H₂ Treatment Attenuated Pain Behavior and Cytokine Release Through the HO-1/CO Pathway in a Rat Model of Neuropathic Pain
<https://link.springer.com/article/10.1007/s10753-015-0161-x>
17. Intrathecal infusion of hydrogen-rich normal saline attenuates neuropathic pain via inhibition of activation of spinal astrocytes and microglia in rats
<https://europepmc.org/article/PMC/4032255>
18. Molecular Hydrogen attenuates neuropathic pain in mice
<https://europepmc.org/article/PMC/4062523>
19. Hydrogen-rich saline controls remifentanyl-induced hypernociception and NMDA receptor NR1 subunit membrane trafficking through GSK-3 β in the DRG in rats
<https://www.sciencedirect.com/science/article/abs/pii/S0361923014000951>
20. Hydrogen-rich saline prevents remifentanyl-induced hyperalgesia and inhibits MnSOD nitration via regulation of NR2B-containing NMDA receptor in rats
<https://www.sciencedirect.com/science/article/abs/pii/S0306452214007660>
21. Spinal Peroxynitrite Contributes to Remifentanyl-induced Postoperative Hyperalgesia via Enhancement of Divalent Metal Transporter 1 without Iron-responsive Element-mediated Iron Accumulation in Rats
<https://pubs.asahq.org/anesthesiology/article/122/4/908/14016/Spinal-Peroxynitrite-Contributes-to-Remifentanyl>
22. Molecular hydrogen as an emerging therapeutic medical gas for neurodegenerative and other diseases
<https://pubmed.ncbi.nlm.nih.gov/22720117/>

Non-Communicable Diseases

1. Effects of Molecular Hydrogen in the Pathophysiology and Management of Metabolic and Non-communicable Diseases
<https://europepmc.org/article/PPR/PPR654992>

Obesity

1. Molecular Hydrogen affects body composition, metabolic profiles, and mitochondrial function in middle-aged overweight women
<https://europepmc.org/article/MED/28560519>

2. Molecular Hydrogen modulates brain glutamate/GABA-glutamine cycle in overweight humans
<https://europepmc.org/article/MED/37560746>
3. Therapeutic Potential of Molecular Hydrogen in Metabolic Diseases from Bench to Bedside
<https://europepmc.org/article/MED/37111299>
4. Preventive Effects of Drinking Hydrogen-Rich Water on Gingival Oxidative Stress and Alveolar Bone Resorption in Rats Fed a High-Fat Diet
<https://pubmed.ncbi.nlm.nih.gov/28098768/>
5. 28-Days Hydrogen-Rich Water Supplementation Affects Exercise Capacity in Mid-Age Overweight Women
https://journals.lww.com/acsm-msse/fulltext/2018/05001/28_Days_Hydrogen_Rich_Water_Supplementation.2411.aspx
6. Anti-obesity effect of alkaline reduced water in high fat-fed obese mice
<https://pubmed.ncbi.nlm.nih.gov/23811554/>
7. The Effects of 24-Week, High-Concentration Hydrogen-Rich Water on Body Composition, Blood Lipid Profiles and Inflammation Biomarkers in Men and Women with Metabolic Syndrome: A Randomized Controlled Trial
<https://www.tandfonline.com/doi/full/10.2147/DMSO.S240122>
8. Therapeutic Efficacy of Molecular Hydrogen: A New Mechanistic Insight
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6806612/>
9. Hydrogen-rich water reduces liver fat accumulation and improves liver enzyme profiles in patients with non-alcoholic fatty liver disease: a randomized controlled pilot trial
<https://www.sciencedirect.com/science/article/abs/pii/S2210740119300853>

Pain

1. Neuroprotective Effects of Molecular Hydrogen: A Critical Review
<https://europepmc.org/article/MED/33078374>
2. H₂ Treatment Attenuated Pain Behavior and Cytokine Release Through the HO-1/CO Pathway in a Rat Model of Neuropathic Pain
<https://link.springer.com/article/10.1007/s10753-015-0161-x>
3. Intrathecal infusion of hydrogen-rich normal saline attenuates neuropathic pain via inhibition of activation of spinal astrocytes and microglia in rats
<https://europepmc.org/article/PMC/4032255>
4. Molecular Hydrogen attenuates neuropathic pain in mice
<https://europepmc.org/article/PMC/4062523>

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5. Hydrogen-rich saline controls remifentanyl-induced hypernociception and NMDA receptor NR1 subunit membrane trafficking through GSK-3 β in the DRG in rats
<https://www.sciencedirect.com/science/article/abs/pii/S0361923014000951>
6. Hydrogen-rich saline prevents remifentanyl-induced hyperalgesia and inhibits MnSOD nitration via regulation of NR2B-containing NMDA receptor in rats
<https://www.sciencedirect.com/science/article/abs/pii/S0306452214007660>
7. Spinal Peroxynitrite Contributes to Remifentanyl-induced Postoperative Hyperalgesia via Enhancement of Divalent Metal Transporter 1 without Iron-responsive Element-mediated Iron Accumulation in Rats
<https://pubs.asahq.org/anesthesiology/article/122/4/908/14016/Spinal-Peroxynitrite-Contributes-to-Remifentanyl>
8. Molecular Hydrogen attenuates neuropathic pain in mice
<https://europepmc.org/article/MED/24941001>

Pancreatic

1. Recent advances in studies of Molecular Hydrogen in the treatment of pancreatitis
<https://europepmc.org/article/MED/33148420>
2. Acute Pancreatitis - Hydrogen-Rich Saline Inhibits NLRP3 Inflammasome Activation and Attenuates Experimental Acute Pancreatitis in Mice
<https://www.hindawi.com/journals/mi/2014/930894/>
3. Acute Pancreatitis - Hydrogen-rich saline ameliorates the severity of l-arginine-induced acute pancreatitis in rats
<https://www.sciencedirect.com/science/article/abs/pii/S0006291X1000197X>
4. Acute Pancreatitis - Effects of hydrogen-rich saline on taurocholate-induced acute pancreatitis in rat
<https://europepmc.org/article/PMC/3745843>
5. Hydrogen Treatment Protects Mice Against Chronic Pancreatitis by Restoring Regulatory T Cells Loss
<https://pubmed.ncbi.nlm.nih.gov/29237160/>
6. Protective Effects of Hydrogen Gas on Experimental Acute Pancreatitis
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4845997/>
7. MAPKs and Hsc70 are critical to the protective effect of molecular hydrogen during the early phase of acute pancreatitis
<https://pubmed.ncbi.nlm.nih.gov/26683671/>
8. Experimental studies of effects of hydrogen-rich saline in rats with severe acute pancreatitis
<https://pubmed.ncbi.nlm.nih.gov/23158670/>

9. Hydrogen-rich saline reduces the oxidative stress and relieves the severity of trauma-induced acute pancreatitis in rats
<https://pubmed.ncbi.nlm.nih.gov/22695421/>
10. Hydrogen-rich saline ameliorates the severity of l-arginine-induced acute pancreatitis in rats
<https://pubmed.ncbi.nlm.nih.gov/20138831/>
11. Effect of Reduced Water on the Apoptotic Cell Death Triggered by Oxidative Stress in Pancreatic β HIT-T15 Cell
https://link.springer.com/chapter/10.1007/1-4020-3103-3_21
12. Protective mechanism of reduced water against alloxan-induced pancreatic beta-cell damage: Scavenging effect against reactive oxygen species
<https://pubmed.ncbi.nlm.nih.gov/19003114/>

Parkinson's Disease

1. Molecular Hydrogen: an Emerging Therapeutic Medical Gas for Brain Disorders
<https://europepmc.org/article/MED/36567361>
2. Neuroprotective and Preventative Effects of Molecular Hydrogen
<https://europepmc.org/article/MED/33076798>
3. Circulating messenger for neuroprotection induced by Molecular Hydrogen
<https://europepmc.org/article/MED/31100203>
4. Complexity of Stomach-Brain Interaction Induced by Molecular Hydrogen in Parkinson's Disease Model Mice
<https://europepmc.org/article/MED/28462451>
5. Drinking hydrogen water and intermittent hydrogen gas exposure, but not lactulose or continuous hydrogen gas exposure, prevent 6-hydroxydopamine-induced Parkinson's disease in rats
<https://europepmc.org/article/PMC/3407490>
6. Oral 'hydrogen water' induces neuroprotective ghrelin secretion in mice
<https://europepmc.org/article/PMC/4070541>
7. Hydrogen in drinking water reduces dopaminergic neuronal loss in the 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine mouse model of Parkinson's disease
<https://europepmc.org/article/PMC/2747267>
8. Molecular Hydrogen is protective against 6-hydroxydopamine-induced nigrostriatal degeneration in a rat model of Parkinson's disease
<https://www.sciencedirect.com/science/article/abs/pii/S0304394009001839>
9. Molecular Hydrogen reduces LPS-induced neuroinflammation and promotes recovery from sickness behaviour in mice
<https://europepmc.org/article/PMC/3409143>

The Miracle You Make In Your Kitchen

10. Inhalation of hydrogen gas attenuates brain injury in mice with cecal ligation and puncture via inhibiting neuroinflammation, oxidative stress and neuronal apoptosis
<https://www.sciencedirect.com/science/article/abs/pii/S0006899314012517>
11. Hydrogen-Related Enhancement of In Vivo Antioxidant Ability in the Brain of Rats Fed Coral Calcium Hydride
<https://link.springer.com/article/10.1007/s11064-010-0204-5>
12. Electrochemically reduced water protects neural cells from oxidative damage
<https://europepmc.org/article/PMC/4212634>
13. Pilot study of H₂ therapy in Parkinson's disease: A randomized double-blind placebo-controlled trial
<https://movementdisorders.onlinelibrary.wiley.com/doi/abs/10.1002/mds.25375>
14. Therapeutic Effects of Hydrogen in Animal Models of Parkinson's Disease
<https://www.hindawi.com/journals/pd/2011/307875/>
15. Complexity of Stomach–Brain Interaction Induced by Molecular Hydrogen in Parkinson's Disease Model Mice
<https://link.springer.com/article/10.1007/s11064-017-2281-1>

Peer Reviewed Studies

Acne

1. The Efficacy and Tolerability of Electrolyzed Oxidized Water in Treating Mild to Moderate Acne
https://www.researchgate.net/publication/237566858_The_Efficacy_and_Tolerability_of_Electrolyzed_Oxidized_Water_in_Treating_Mild_to_Moderate_Acne

Alzheimer's Disease

1. Hydrogen-rich water attenuates amyloid β -induced cytotoxicity through upregulation of Sirt1-FoxO3a by stimulation of AMP-activated protein kinase in SK-N-MC cells
<https://pubmed.ncbi.nlm.nih.gov/26271894/>

Angiogenesis

1. Inhibitory effect of electrolyzed reduced water on tumor angiogenesis
<https://pubmed.ncbi.nlm.nih.gov/18175936/>

Autism

1. Physical exercise and intermittent administration of lactulose may improve autism symptoms through hydrogen production
<https://pubmed.ncbi.nlm.nih.gov/22846252/>
2. Hydrogen as a novel hypothesized emerging treatment for oxidative stress in autism
<https://pubmed.ncbi.nlm.nih.gov/23047522/>
3. Hydrogen as a novel hypothesized emerging treatment for oxidative stress in autism
<https://www.europeanreview.org/wp/wp-content/uploads/1469.pdf>

Cardiovascular & Metabolic Diseases

1. Hydrogen Therapy in Cardiovascular and Metabolic Diseases: from Bench to Bedside
<https://pubmed.ncbi.nlm.nih.gov/29763888/>

Cataract

1. Hydrogen-Rich Saline as an Innovative Therapy for Cataract: A Hypothesis
<https://pubmed.ncbi.nlm.nih.gov/27606690/>

Cellular Redox State

1. New Approach in Translational Medicine: Effects of Electrolyzed Reduced Water (ERW) on NF- κ B/iNOS Pathway in U937 Cell Line under Altered Redox State
<https://www.ncbi.nlm.nih.gov/pubmed/27598129>

Chemotherapy

1. Potential protective role of hydrogen against cisplatininduced side effects during chemotherapy: A mini-review of a novel hypothesis for antagonism of hydrogen
<https://www.ajol.info/index.php/tjpr/article/view/164283>

Diabetes

1. Supplementation of hydrogen-rich water improves lipid and glucose metabolism in patients with type 2 diabetes or impaired glucose tolerance
<https://pubmed.ncbi.nlm.nih.gov/19083400/>
2. Hydrogen therapy may be a promising, safe and effective treatment for diabetic erectile dysfunction: a hypothesis
<https://www.pagepress.org/journals/index.php/ams/article/view/ams.2011.e11>

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3. Protective mechanism of reduced water against alloxan-induced pancreatic beta-cell damage: Scavenging effect against reactive oxygen species
<https://pubmed.ncbi.nlm.nih.gov/19003114/>
4. Suppressive effects of electrolyzed reduced water on alloxan-induced apoptosis and type 1 diabetes mellitus
<https://pubmed.ncbi.nlm.nih.gov/21063772/>
5. Anti-diabetic effects of electrolyzed reduced water in streptozotocin-induced and genetic diabetic mice
<https://pubmed.ncbi.nlm.nih.gov/16945392/>
6. Preservative effect of electrolyzed reduced water on pancreatic beta-cell mass in diabetic db/db mice
<https://pubmed.ncbi.nlm.nih.gov/17268057/>

Fibrosarcoma

1. Suppressive effects of electrochemically reduced water on matrix metalloproteinase-2 activities and in vitro invasion of human fibrosarcoma HT1080 cells
<https://pubmed.ncbi.nlm.nih.gov/22695858/>

Haemodialysis

1. Electrolysed-reduced water dialysate improves T-cell damage in end-stage renal disease patients with chronic haemodialysis
<https://pubmed.ncbi.nlm.nih.gov/20190245/>
2. Reduced hemodialysis-induced oxidative stress in end-stage renal disease patients by electrolyzed reduced water
<https://pubmed.ncbi.nlm.nih.gov/12846769/>
3. Electrolyzed-reduced water reduced hemodialysis-induced erythrocyte impairment in end-stage renal disease patients
<https://pubmed.ncbi.nlm.nih.gov/16760903/>
4. Biological effects of electrolyzed water in hemodialysis
<https://pubmed.ncbi.nlm.nih.gov/19342864/>
5. Possible clinical effects of molecular hydrogen (H₂) delivery during hemodialysis in chronic dialysis patients: Interim analysis in a 12 month observation
<https://pubmed.ncbi.nlm.nih.gov/28902900/>
6. Less-oxidative hemodialysis solution rendered by cathode-side application of electrolyzed water
<https://pubmed.ncbi.nlm.nih.gov/17576297/>
7. A novel bioactive haemodialysis system using dissolved dihydrogen (H₂) produced by water electrolysis: a clinical trial
<https://pubmed.ncbi.nlm.nih.gov/20388631/>

8. The hydrogen molecule as antioxidant therapy: clinical application in hemodialysis and perspectives

<https://rrtjournal.biomedcentral.com/articles/10.1186/s41100-016-0036-0>

Hepatitis B

1. Effect of hydrogen-rich water on oxidative stress, liver function, and viral load in patients with chronic hepatitis B

<https://pubmed.ncbi.nlm.nih.gov/24127924/>

Irritable Bowel Syndrome

1. Effects of Alkaline-Reduced Drinking Water on Irritable Bowel Syndrome with Diarrhea: A Randomized Double-Blind, Placebo-Controlled Pilot Study

<https://pubmed.ncbi.nlm.nih.gov/29849734/>

Lactic Acid

1. Pilot study: Effects of drinking hydrogen-rich water on muscle fatigue caused by acute exercise in elite athletes

<https://pubmed.ncbi.nlm.nih.gov/22520831/>

LDL Cholesterol

1. Hydrogen-rich water decreases serum LDL-cholesterol levels and improves HDL function in patients with potential metabolic syndrome

<https://pubmed.ncbi.nlm.nih.gov/23610159/>

Leukaemia

1. Enhanced induction of mitochondrial damage and apoptosis in human leukemia HL-60 cells due to electrolyzed-reduced water and glutathione

<https://www.ncbi.nlm.nih.gov/pubmed/19202298>

2. Electrolyzed Reduced Water Induces Differentiation in K-562 Human Leukemia Cells

https://link.springer.com/chapter/10.1007/978-94-017-0726-8_67?fbclid=IwAR1-AFqe7nRBB6fwCNYPMuNUIoUIQQ5JXedaBlImw3Cl_WOl_6Y3m3EmfSI

Metabolic Syndrome – Obesity

1. Effectiveness of hydrogen rich water on antioxidant status of subjects with potential metabolic syndrome-an open label pilot study

<https://pubmed.ncbi.nlm.nih.gov/20216947/>

Neurological Disorders

1. Molecular Hydrogen as a Neuroprotective Agent
<https://pubmed.ncbi.nlm.nih.gov/27281176/>
2. Hydrogen-rich water attenuates amyloid β -induced cytotoxicity through upregulation of Sirt1-FoxO3a by stimulation of AMP-activated protein kinase in SK-N-MC cells
<https://pubmed.ncbi.nlm.nih.gov/26271894/>
3. Molecular hydrogen in drinking water protects against neurodegenerative changes induced by traumatic brain injury
<https://pubmed.ncbi.nlm.nih.gov/25251220/>
4. Molecular hydrogen in the treatment of acute and chronic neurological conditions: mechanisms of protection and routes of administration
<https://pubmed.ncbi.nlm.nih.gov/28751802/>
5. Hydrogen therapy: from mechanism to cerebral diseases
<https://pubmed.ncbi.nlm.nih.gov/27826423/>

Oxidative Stress & Others

1. Molecular hydrogen is a novel antioxidant to efficiently reduce oxidative stress with potential for the improvement of mitochondrial diseases
<https://pubmed.ncbi.nlm.nih.gov/21621588/>
2. Molecular hydrogen: a therapeutic antioxidant and beyond
<https://pubmed.ncbi.nlm.nih.gov/28217294/>
3. Molecular hydrogen regulates gene expression by modifying the free radical chain reaction-dependent generation of oxidized phospholipid mediators
<https://pubmed.ncbi.nlm.nih.gov/26739257/>
4. Open-label trial and randomized, double-blind, placebo-controlled, crossover trial of hydrogen-enriched water for mitochondrial and inflammatory myopathies
<https://pubmed.ncbi.nlm.nih.gov/22146674/>
5. Preventive and therapeutic application of molecular hydrogen in situations with excessive production of free radicals
<https://pubmed.ncbi.nlm.nih.gov/27643933/>
6. Electrolyzed-reduced water scavenges active oxygen species and protects DNA from oxidative damage
<https://pubmed.ncbi.nlm.nih.gov/9169001/>
7. Hydrogen acts as a therapeutic antioxidant by selectively reducing cytotoxic oxygen radicals
<https://pubmed.ncbi.nlm.nih.gov/17486089/>
8. Review and prospect of the biomedical effects of hydrogen
<https://pubmed.ncbi.nlm.nih.gov/25485090/>

9. Molecular Hydrogen as an Emerging Therapeutic Medical Gas for Neurodegenerative and Other Diseases
<https://www.hindawi.com/journals/omcl/2012/353152/>
10. Molecular hydrogen: a preventive and therapeutic medical gas for various diseases
<https://pubmed.ncbi.nlm.nih.gov/29254278/>
11. Molecular hydrogen as a novel antioxidant: overview of the advantages of hydrogen for medical applications
<https://pubmed.ncbi.nlm.nih.gov/25747486/>
12. Promising novel therapy with hydrogen gas for emergency and critical care medicine
<https://pubmed.ncbi.nlm.nih.gov/29657720/>
13. Does H₂ Alter Mitochondrial Bioenergetics via GHS-R1 α Activation?
<https://pubmed.ncbi.nlm.nih.gov/28435468/>
14. Fundamental Insight into the Methodology of Hydrogen Water in Biological Studies
<https://www.ingentaconnect.com/content/asp/jnn/2017/00000017/00000007/art00102>
15. Clinical Effects of Hydrogen Administration: From Animal and Human Diseases to Exercise Medicine
<https://www.scirp.org/journal/PaperInformation?paperID=62945>
16. The Clinical Application of Hydrogen as a Medical Treatment
<https://pubmed.ncbi.nlm.nih.gov/27777424/>
17. Therapeutic Effects of Hydrogen on Different Diseases
https://link.springer.com/chapter/10.1007/978-94-017-9691-0_6#page-1
18. Molecular hydrogen: An inert gas turns clinically effective e
<https://pubmed.ncbi.nlm.nih.gov/25936365/>
19. Molecular hydrogen as an emerging therapeutic medical gas for neurodegenerative and other diseases
<https://pubmed.ncbi.nlm.nih.gov/22720117/>
20. A review of hydrogen as a new medical therapy
<https://pubmed.ncbi.nlm.nih.gov/22328284/>
21. A hypothesis on chemical mechanism of the effect of hydrogen
<https://medicalgasresearch.biomedcentral.com/articles/10.1186/2045-9912-2-17>
22. Recent advances in hydrogen research as a therapeutic medical gas
<https://pubmed.ncbi.nlm.nih.gov/20815764/>
23. Hydrogen as a selective antioxidant: a review of clinical and experimental studies
<https://pubmed.ncbi.nlm.nih.gov/21226992/>
24. Hydrogen therapy may reduce the risks related to radiation-induced oxidative stress in space flight
<https://pubmed.ncbi.nlm.nih.gov/20851533/>

Parkinson's Disease

1. Pilot study of H₂ therapy in Parkinson's disease: a randomized double-blind placebo-controlled trial
<https://pubmed.ncbi.nlm.nih.gov/23400965/>
2. A randomized double-blind multi-center trial of hydrogen water for Parkinson's disease: protocol and baseline characteristics
<https://pubmed.ncbi.nlm.nih.gov/27176725/>
3. Parkinson's disease may be due to failure of melanin in the Substantia Nigra to produce molecular hydrogen from dissociation of water, to protect the brain from oxidative stress
<https://pubmed.ncbi.nlm.nih.gov/24529916/>

Polycystic Ovarian Syndrome

1. Potential therapeutic effect of alkaline reduced water in polycystic ovarian syndrome
<https://pubmed.ncbi.nlm.nih.gov/28673586/>

Pulmonary Disease

1. Molecular Hydrogen Alleviates Cellular Senescence in Endothelial Cells
<https://pubmed.ncbi.nlm.nih.gov/27477846/>

Radiotherapy (Liver Tumours & Others)

1. Effects of drinking hydrogen-rich water on the quality of life of patients treated with radiotherapy for liver tumors
<https://pubmed.ncbi.nlm.nih.gov/22146004/>
2. Hydrogen as a new class of radioprotective agent
<https://pubmed.ncbi.nlm.nih.gov/24155664/>
3. Molecular hydrogen and radiation protection
<https://pubmed.ncbi.nlm.nih.gov/22537465/>
4. The hypothesis of an effective safe and novel radioprotective agent: hydrogen-rich solution
<https://pubmed.ncbi.nlm.nih.gov/21275114/>

Reflux Disease

1. Potential benefits of pH 8.8 alkaline drinking water as an adjunct in the treatment of reflux disease
<https://pubmed.ncbi.nlm.nih.gov/22844861/>

2. Modulation of the oxidative plasmatic state in gastroesophageal reflux disease with the addition of rich water molecular hydrogen: A new biological vision
<https://pubmed.ncbi.nlm.nih.gov/29512923/>
3. Dose-dependent inhibition of gastric injury by hydrogen in alkaline electrolyzed drinking water
<https://pubmed.ncbi.nlm.nih.gov/24589018/>

Rheumatoid Arthritis

1. Therapeutic efficacy of infused molecular hydrogen in saline on rheumatoid arthritis: a randomized, double-blind, placebo-controlled pilot study
<https://pubmed.ncbi.nlm.nih.gov/24929023/>
2. Consumption of water containing a high concentration of molecular hydrogen reduces oxidative stress and disease activity in patients with rheumatoid arthritis: an open-label pilot study
<https://pubmed.ncbi.nlm.nih.gov/23031079/>
3. Alkaline Mineral Supplementation Decreases Pain in Rheumatoid Arthritis Patients: A Pilot Study
<https://benthamopen.com/ABSTRACT/TONUTRJ-2-100?fbclid=IwAR3hc5piMOk0ype1OQAMBBLvDC5QXgKK3S9dwvMe5GVqtvelmKLW5XjcZTI>

Sports Medicine

1. Molecular hydrogen in sports medicine: new therapeutic perspectives
<https://pubmed.ncbi.nlm.nih.gov/25525953/>

Telomere Shortening in Cancer Cells

1. Telomere Shortening in Cancer Cells by Electrolyzed-Reduced Water
https://link.springer.com/chapter/10.1007/0-306-46869-7_62

Peritoneum

1. Acute peritonitis - Effect of hydrogen-rich water on acute peritonitis of rat models
<https://www.sciencedirect.com/science/article/abs/pii/S1567576914001477>

Post Surgery

1. Molecular Hydrogen: prospective treatment strategy of kidney damage after cardiac surgery
<https://europepmc.org/article/MED/37463517>

2. Molecular Hydrogen inhalation attenuates postoperative cognitive impairment in rats
<https://europepmc.org/article/MED/28614179>
3. Effect of Hydrogen-Rich Saline on Postoperative Intra-Abdominal Adhesion Bands Formation in Mice
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5695092/>

Pregnancy

1. Molecular Hydrogen has a positive impact on pregnancy maintenance through enhancement of mitochondrial function and immunomodulatory effects on T cells
<https://europepmc.org/article/MED/36115583>
2. Effect of Molecular Hydrogen on uterine inflammation during preterm labour
<https://europepmc.org/article/MED/29732148>
3. Administration of Molecular Hydrogen during pregnancy improves behavioral abnormalities of offspring in a maternal immune activation model
<https://europepmc.org/article/MED/29907804>
4. Molecular Hydrogen affords neuroprotection in a translational piglet model of hypoxic-ischemic encephalopathy
<https://europepmc.org/article/MED/28011948>
5. Molecular Hydrogen alleviates asphyxia-induced neuronal cyclooxygenase-2 expression in newborn pigs
<https://europepmc.org/article/MED/29565041>
6. Molecular Hydrogen ameliorates several characteristics of preeclampsia in the Reduced Uterine Perfusion Pressure (RUPP) rat model
<https://europepmc.org/article/MED/27789293>
7. Neonatal cerebral hypoxia - Hydrogen therapy reduces apoptosis in neonatal hypoxia–ischemia rat model
<https://www.sciencedirect.com/science/article/abs/pii/S0304394008007325>
8. Neonatal cerebral hypoxia - Maternal Molecular Hydrogen administration ameliorates rat fetal hippocampal damage caused by in utero ischemia–reperfusion
<https://www.sciencedirect.com/science/article/abs/pii/S0891584914000720>
9. LPS-induced fetal lung injury - Maternal Molecular Hydrogen treatment attenuates lipopolysaccharide-induced rat fetal lung injury
<https://www.tandfonline.com/doi/abs/10.3109/10715762.2015.1038257>
10. Preeclampsia - Protective effects of hydrogen-rich saline in preeclampsia rat model
<https://www.sciencedirect.com/science/article/abs/pii/S0143400411002414>
11. Preeclampsia - Effects of vitamin C, vitamin E, and Molecular Hydrogen on the placental function in trophoblast cells
<https://link.springer.com/article/10.1007/s00404-015-3647-8>

12. Maternal molecular hydrogen administration ameliorates rat fetal hippocampal damage caused by in utero ischemia-reperfusion
<https://pubmed.ncbi.nlm.nih.gov/24509162/>

Radiation

1. Cardiac damage - The Potential Cardioprotective Effects of Hydrogen in Irradiated Mice
<https://ieeexplore.ieee.org/abstract/document/8154351>
2. Lung damage - Hydrogen therapy attenuates irradiation-induced lung damage by reducing oxidative stress
https://journals.physiology.org/doi/full/10.1152/ajplung.00008.2011?fbclid=IwAR2x6_v2H5m11GKWuUfki7N7QqTkUr0yZ8NTh5_JVK7qmPgc_SEiHbWGFvc
3. Testicular damage - Protection by Hydrogen Against Gamma Ray-Induced Testicular Damage in Rats
<https://onlinelibrary.wiley.com/doi/full/10.1111/bcpt.12016>
4. Skin damage - Hydrogen protects rats from dermatitis caused by local radiation
<https://www.tandfonline.com/doi/abs/10.3109/09546634.2012.762639>
5. Germ, hematopoietic and other cell damage - Radioprotective effect of hydrogen in cultured cells and mice
<https://www.tandfonline.com/doi/abs/10.3109/10715760903468758>
6. Germ, hematopoietic and other cell damage - Molecular Hydrogen protects human lymphocyte AHH-1 cells against 12C6+ heavy ion radiation
<https://www.tandfonline.com/abs/doi/10.3109/09553002.2013.817704>
7. Radiation-induced adverse effects - Effects of drinking hydrogen-rich water on the quality of life of patients treated with radiotherapy for liver tumors
<https://europepmc.org/article/PMC/3231938>
8. Radiation-induced immune dysfunction - Protective effect of hydrogen-rich saline against radiation-induced immune dysfunction
<https://europepmc.org/article/PMC/4119399>
9. Hydrogen-Rich Water Ameliorates Total Body Irradiation-Induced Hematopoietic Stem Cell Injury by Reducing Hydroxyl Radical
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5294227/>
10. Protective Effects of Hydrogen against Low-Dose Long-Term Radiation-Induced Damage to the Behavioral Performances, Hematopoietic System, Genital System, and Splenic Lymphocytes in Mice
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5059652/>
11. Hydrogen-rich saline protects immunocytes from radiation-induced apoptosis
<https://pubmed.ncbi.nlm.nih.gov/22460088/>

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12. Hydrogen-rich saline protects spermatogenesis and hematopoiesis in irradiated BALB/c mice
<https://pubmed.ncbi.nlm.nih.gov/22367121/>
13. Hydrogen-rich saline attenuates radiation-induced male germ cell loss in mice through reducing hydroxyl radicals
<https://pubmed.ncbi.nlm.nih.gov/22077489/>
14. Hydrogen Protects Mice from Radiation Induced Thymic Lymphoma in BALB/c Mice
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3065742/>
15. Hydrogen-rich PBS protects cultured human cells from ionizing radiation-induced cellular damage
https://www.researchgate.net/publication/47380104_Hydrogen-rich_PBS_protects_cultured_human_cells_from_ionizing_radiation-induced_cellular_damage
16. Radioprotective effect of hydrogen in cultured cells and mice
<https://pubmed.ncbi.nlm.nih.gov/20166892/>
17. Hydrogen as a New Class of Radioprotective Agent
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3805896/>
18. Protective effects of hydrogen gas inhalation on radiation-induced bone marrow damage in cancer patients: a retrospective observational study
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8174412/>

Reproductive System

1. Molecular Hydrogen: a preventive and therapeutic medical gas for various diseases
<https://europepmc.org/article/MED/29254278>
2. Molecular Hydrogen may enhance the production of testosterone hormone in male infertility through hormone signal modulation and redox balance
<https://europepmc.org/article/MED/30396494>
3. Testicular I/R injury - Inhaled hydrogen gas therapy for prevention of testicular ischemia/reperfusion injury in rats
<https://www.sciencedirect.com/science/article/abs/pii/S0022346811007743>
4. Testicular I/R injury - Protective Effects of Hydrogen Rich Saline Solution on Experimental Testicular Ischemia-Reperfusion Injury in Rats
<https://www.sciencedirect.com/science/article/abs/pii/S0022534712001115>
5. Erectile dysfunction - Protective Effects of Hydrogen-Rich Saline Against Erectile Dysfunction in a Streptozotocin Induced Diabetic Rat Model
<https://www.auajournals.org/doi/abs/10.1016/j.juro.2012.12.001>

6. Nicotine-induced testicular oxidative stress - Long-term treatment of hydrogen-rich saline abates testicular oxidative stress induced by nicotine in mice
<https://europepmc.org/article/PMC/3909133>
7. Cigarette smoke-induced testicular damage - Effect of hydrogen injected subcutaneously on testicular tissues of rats exposed to cigarette smoke
<https://europepmc.org/article/PMC/4483942>
8. Sperm motility - Stimulation of human damaged sperm motility with hydrogen molecule
<https://europepmc.org/article/PMC/4300028>
9. Effects of Hydrogen Gas Inhalation on Endometriosis in Rats
<https://journals.sagepub.com/doi/abs/10.1177/1933719116655622>
10. Hydrogen-rich saline attenuates spinal cord hemisection-induced testicular injury in rats
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5522069/>
11. Hydrogen-rich Water Exerting a Protective Effect on Ovarian Reserve Function in a Mouse Model of Immune Premature Ovarian Failure Induced by Zona Pellucida 3
<https://pubmed.ncbi.nlm.nih.gov/27647193/>
12. Protective effects of hydrogen-rich saline against erectile dysfunction in a streptozotocin induced diabetic rat model
<https://pubmed.ncbi.nlm.nih.gov/23220246/>
13. Molecular Hydrogen Reduces Electromagnetic Pulse-Induced Male Rat Reproductive System Damage in a Rodent Model
<https://www.hindawi.com/journals/omcl/2022/3469474/>

Resuscitation

1. Cardiac arrest - Hydrogen Inhalation During Normoxic Resuscitation Improves Neurological Outcome in a Rat Model of Cardiac Arrest Independently of Targeted Temperature Management
<https://www.ahajournals.org/doi/full/10.1161/CIRCULATIONAHA.114.011848>
2. Cardiac arrest - Hydrogen-Rich Saline Improves Survival and Neurological Outcome After Cardiac Arrest and Cardiopulmonary Resuscitation in Rats
https://journals.lww.com/anesthesia-analgesia/FullText/2014/08000/Hydrogen_Rich_Saline_Improves_Survival_and.20.aspx
3. Hemorrhagic shock - Hydrogen inhalation protects against acute lung injury induced by hemorrhagic shock and resuscitation
<https://www.sciencedirect.com/science/article/abs/pii/S0039606015002500>
4. Hemorrhagic shock - Protective effects of hydrogen-rich saline in uncontrolled hemorrhagic shock
<https://europepmc.org/article/PMC/3991545>

5. Hemorrhagic shock - Effects of three hydrogen-rich liquids on hemorrhagic shock in rats

<https://www.sciencedirect.com/science/article/abs/pii/S0022480414006295>

Sepsis

1. APOA2: New Target for Molecular Hydrogen Therapy in Sepsis-Related Lung Injury Based on Proteomic and Genomic Analysis
<https://europepmc.org/article/MED/37511084>
2. Effect of Molecular Hydrogen treatment on Sepsis-Associated encephalopathy in mice based on gut microbiota
<https://europepmc.org/article/MED/36468415>
3. Inhaled Molecular Hydrogen reduces hippocampal neuroinflammation, glial reactivity and ameliorates memory impairment during systemic inflammation
<https://europepmc.org/article/MED/37449286>
4. Molecular Hydrogen attenuates sepsis-induced cognitive dysfunction through regulation of tau phosphorylation
<https://europepmc.org/article/MED/36538853>
5. Perspective of Molecular Hydrogen in the Treatment of Sepsis
<https://europepmc.org/article/MED/32912119>
6. Recent Advances in Studies of Molecular Hydrogen against Sepsis
<https://europepmc.org/article/MED/31223285>
7. Chronic Molecular Hydrogen inhalation mitigates short and long-term memory loss in polymicrobial sepsis
<https://europepmc.org/article/MED/32348775>
8. Molecular Hydrogen attenuates sepsis-induced neuroinflammation through regulation of microglia polarization through an mTOR-autophagy-dependent pathway
<https://europepmc.org/article/MED/32058932>
9. Molecular Hydrogen Therapy Ameliorates Organ Damage Induced by Sepsis
<https://europepmc.org/article/MED/27413421>
10. Hydrogen Gas Alleviates the Intestinal Injury Caused by Severe Sepsis in Mice by Increasing the Expression of Heme Oxygenase-1
https://journals.lww.com/shockjournal/fulltext/2015/07000/Hydrogen_Gas_Alleviate_s_the_Intestinal_Injury.14.aspx
11. Sepsis - Hydrogen-rich saline ameliorates lung injury associated with cecal ligation and puncture-induced sepsis in rats
<https://www.sciencedirect.com/science/article/abs/pii/S0014480015000325>

12. Sepsis - Hydrogen gas inhibits high-mobility group box 1 release in septic mice by upregulation of heme oxygenase 1
<https://www.sciencedirect.com/science/article/abs/pii/S0022480415001559>
13. Sepsis - Protective effects of hydrogen gas on murine polymicrobial sepsis via reducing oxidative stress and hmgb1 release
https://journals.lww.com/shockjournal/Fulltext/2010/07000/100_Oxygen_Inhalation_Protects_Against.15.aspx
14. Sepsis - Combined early fluid resuscitation and hydrogen inhalation attenuates lung and intestine injury
<https://europepmc.org/article/PMC/3558572>
15. Hydrogen-rich saline reverses oxidative stress, cognitive impairment, and mortality in rats submitted to sepsis by cecal ligation and puncture
<https://pubmed.ncbi.nlm.nih.gov/22482765/>
16. Molecular hydrogen protects mice against polymicrobial sepsis by ameliorating endothelial dysfunction via an Nrf2/HO-1 signaling pathway
<https://pubmed.ncbi.nlm.nih.gov/26253656/>
17. Protective effect and mechanism of hydrogen treatment on lung epithelial barrier dysfunction in rats with sepsis
<https://pubmed.ncbi.nlm.nih.gov/26909920/>
18. Hydrogen gas presents a promising therapeutic strategy for sepsis
<https://pubmed.ncbi.nlm.nih.gov/24829918/>
19. Effects of hydrogen-rich saline treatment on polymicrobial sepsis
<https://pubmed.ncbi.nlm.nih.gov/22795273/>
20. Combination therapy with molecular hydrogen and hyperoxia in a murine model of polymicrobial sepsis
<https://pubmed.ncbi.nlm.nih.gov/23160520/>
21. Effects of hydrogen gas inhalation on serum high mobility group box 1 levels in severe septic mice
<https://pubmed.ncbi.nlm.nih.gov/20936717/>

Skeletal, Muscle and Soft Tissue

1. I/R injury in skeletal muscle - Hydrogen-rich saline attenuates ischemia–reperfusion injury in skeletal muscle
<https://www.sciencedirect.com/science/article/abs/pii/S0022480414011299>
2. Inflammatory and mitochondrial myopathies - Open-label trial and randomized, double-blind, placebo-controlled, crossover trial of hydrogen-enriched water for mitochondrial and inflammatory myopathies
<https://europepmc.org/article/PMC/3231939>

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3. Muscle fatigue - Pilot study: Effects of drinking hydrogen-rich water on muscle fatigue caused by acute exercise in elite athletes
<https://europepmc.org/article/PMC/3395574>
4. Sports-related soft tissue injury - Effectiveness of Oral and Topical Hydrogen for Sports-Related Soft Tissue Injuries
<https://www.tandfonline.com/doi/abs/10.3810/pgm.2014.09.2813>
5. Molecular Hydrogen alleviates motor deficits and muscle degeneration in mdx mice
<https://europepmc.org/article/MED/26866650>
6. Effect of Molecular Hydrogen Saturated Alkaline Electrolyzed Water on Disuse Muscle Atrophy in Gastrocnemius Muscle
<https://cir.nii.ac.jp/crid/1390282680231637888>
7. Molecular Hydrogen Promotes Adipose-derived Stem Cell Myogenic Differentiation via Regulation of Mitochondria
<https://www.ingentaconnect.com/content/ben/cscr/2023/00000018/00000006/art00015>

Skin

1. Mast Cells in Regeneration of the Skin in Burn Wound with Special Emphasis on Molecular Hydrogen Effect
<https://europepmc.org/article/MED/36986447>
2. Molecular Hydrogen promotes wound healing by inducing early epidermal stem cell proliferation and extracellular matrix deposition
<https://europepmc.org/article/MED/36973725>
3. Molecular Hydrogen promotes wound healing by inducing early extracellular matrix deposition and epidermal stem cell proliferation
<https://europepmc.org/article/PPR/PPR514873>
4. Role of Molecular Hydrogen in Skin Diseases and its Impact in Beauty
<https://europepmc.org/article/MED/32981497>
5. Molecular Hydrogen: current knowledge on mechanism in alleviating free radical damage and diseases
<https://academic.oup.com/abbs/article-pdf/51/12/1189/32815441/gmz121.pdf>
6. Molecular Hydrogen: a preventive and therapeutic medical gas for various diseases
<https://europepmc.org/article/MED/29254278>
7. I/R injury - Hydrogen-rich saline attenuates skin ischemia/reperfusion induced apoptosis via regulating Bax/Bcl-2 ratio and ASK-1/JNK pathway
<https://www.sciencedirect.com/science/article/abs/pii/S1748681515001242>
8. I/R injury - Protective effect of hydrogen-rich saline on ischemia/reperfusion injury in rat skin flap
<https://europepmc.org/article/PMC/3650452>

9. UV-induced skin injury - Atomic hydrogen surrounded by water molecules, H(H₂O)_m, modulates basal and UV-induced gene expressions in human skin in vivo
<https://europepmc.org/article/PMC/3634861>
10. UV-induced skin injury - Histological Study on the Effect of Electrolyzed Reduced Water-Bathing on UVB Radiation-Induced Skin Injury in Hairless Mice
https://www.jstage.jst.go.jp/article/bpb/34/11/34_11_1671/article/-char/ja/
11. UV-induced skin injury - The balneotherapy effect of hydrogen reduced water on UVB-mediated skin injury in hairless mice
<https://link.springer.com/article/10.1007/s13273-013-0003-6>
12. Acute erythematous skin disease - Hydrogen(H₂) treatment for acute erythematous skin diseases. A report of 4 patients with safety data and a non-controlled feasibility study with H₂ concentration measurement on two volunteers
<https://europepmc.org/article/PMC/3407032>
13. Atopic dermatitis - The Drinking Effect of Hydrogen Water on Atopic Dermatitis Induced by Dermatophagoides farinae Allergen in NC/Nga Mice
<https://europepmc.org/article/PMC/3852999>
14. Atopic dermatitis - Positive Effects of Hydrogen Water on 2,4-Dinitrochlorobenzene-Induced Atopic Dermatitis in NC/Nga Mice
https://www.jstage.jst.go.jp/article/bpb/37/9/37_b14-00220/article/-char/ja/
15. Psoriasis - Improvement of psoriasis-associated arthritis and skin lesions by treatment with Molecular Hydrogen: A report of three cases
<https://pubmed.ncbi.nlm.nih.gov/25936373/>
16. Pressure ulcer - Hydrogen water intake via tube-feeding for patients with pressure ulcer and its reconstructive effects on normal human skin cells in vitro
<https://europepmc.org/article/PMC/3843550>
17. Burn - Beneficial effects of hydrogen-rich saline on early burn-wound progression in rats
<https://europepmc.org/article/PMC/4395383>
18. Burn - Hydrogen-rich saline resuscitation alleviates inflammation induced by severe burn with delayed resuscitation
<https://www.sciencedirect.com/science/article/abs/pii/S030541791400240X>
19. Arsenic toxicity - Hydrogen-enriched water restoration of impaired calcium propagation by arsenic in primary keratinocytes
<https://www.sciencedirect.com/science/article/abs/pii/S1367912013003556>
20. Positive effects of hydrogen-water bathing in patients of psoriasis and parapsoriasis en plaques
<https://pubmed.ncbi.nlm.nih.gov/29795283/>
21. Effect of electrolyzed water on wound healing
<https://pubmed.ncbi.nlm.nih.gov/11121980/>

The Miracle You Make In Your Kitchen

22. Hydrogen ameliorates oxidative stress via PI3K-Akt signaling pathway in UVB-induced HaCaT cells
<https://pubmed.ncbi.nlm.nih.gov/29532858/>
23. Electrolytically generated hydrogen warm water cleanses the keratin-plug-clogged hair-pores and promotes the capillary blood-streams, more markedly than normal warm water does
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5937298/>
24. Effects of hydrogen-occluding-silica microparticles on wound repair and cell migratory behavior of normal human esophageal epitheliocytes
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6070841/>
25. Hydrogen gas inhalation protects against cutaneous ischaemia/reperfusion injury in a mouse model of pressure ulcer
<https://pubmed.ncbi.nlm.nih.gov/29921037/>
26. Hydrogen-Rich Water Ameliorates Total Body Irradiation-Induced Hematopoietic Stem Cell Injury by Reducing Hydroxyl Radical
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5294227/>
27. The reason for the amelioration of N-methyl-N-nitrosourea-induced retinitis pigmentosa in rats by hydrogen-rich saline
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5638968/>
28. Hydrogen gas protects IP3Rs by reducing disulfide bridges in human keratinocytes under oxidative stress
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5472599/>
29. Hydrogen-rich electrolyzed warm water represses wrinkle formation against UVA ray together with type-I collagen production and oxidative-stress diminishment in fibroblasts and cell-injury prevention in keratinocytes
<https://pubmed.ncbi.nlm.nih.gov/22070900/>
30. Hydrogen-rich saline protects against ultraviolet B radiation injury in rats
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3597779/>
31. Histological study on the effect of electrolyzed reduced water-bathing on UVB radiation-induced skin injury in hairless mice
<https://pubmed.ncbi.nlm.nih.gov/22040878/>
32. Effect of several electrolyzed waters on the skin permeation of lidocaine, benzoic Acid, and isosorbide mononitrate
<https://pubmed.ncbi.nlm.nih.gov/19065312/>
33. Intermittent environmental exposure to hydrogen prevents skin photoaging through reduction of oxidative stress
<https://onlinelibrary.wiley.com/doi/abs/10.1111/ggi.14562>
34. Molecular Hydrogen Protects Human Melanocytes from Oxidative Stress by Activating Nrf2 Signaling
<https://europepmc.org/article/MED/32234461>

Sleep Apnoea

1. Hydrogen gas attenuates embryonic gene expression and prevents left ventricular remodeling induced by intermittent hypoxia in cardiomyopathic hamsters
<https://journals.physiology.org/doi/full/10.1152/ajpheart.00228.2014>

Spinal Cord and Peripheral Nerve

1. Beneficial effects of hydrogen gas against spinal cord ischemia–reperfusion injury in rabbits
<https://www.sciencedirect.com/science/article/abs/pii/S0006899310027599>
2. Beneficial effects of hydrogen-rich saline against spinal cord ischemia-reperfusion injury in rabbits (Same title as above research report)
<https://www.sciencedirect.com/science/article/abs/pii/S0006899313005209>
3. Molecular Hydrogen suppresses reactive astrogliosis related to oxidative injury during spinal cord injury in rats
<https://europepmc.org/article/PMC/6493038>
4. Hydrogen-Rich Saline Protects Against Spinal Cord Injury in Rats
<https://link.springer.com/article/10.1007/s11064-010-0162-y>
5. Hydrogen-Rich Saline Attenuated Neuropathic Pain by Reducing Oxidative Stress
<https://www.cambridge.org/core/journals/canadian-journal-of-neurological-sciences/article/hydrogenrich-saline-attenuated-neuropathic-pain-by-reducing-oxidative-stress/8A895421DEB58A7080FD22A8185CD79E>
6. H₂ Treatment Attenuated Pain Behavior and Cytokine Release Through the HO-1/CO Pathway in a Rat Model of Neuropathic Pain
<https://link.springer.com/article/10.1007/s10753-015-0161-x>
7. Intrathecal infusion of hydrogen-rich normal saline attenuates neuropathic pain via inhibition of activation of spinal astrocytes and microglia in rats
<https://europepmc.org/article/PMC/4032255>
8. Molecular Hydrogen attenuates neuropathic pain in mice
<https://europepmc.org/article/PMC/4062523>
9. Hydrogen-rich saline controls remifentanyl-induced hypernociception and NMDA receptor NR1 subunit membrane trafficking through GSK-3 β in the DRG in rats
<https://www.sciencedirect.com/science/article/abs/pii/S0361923014000951>
10. Hydrogen-rich saline prevents remifentanyl-induced hyperalgesia and inhibits MnSOD nitration via regulation of NR2B-containing NMDA receptor in rats
<https://www.sciencedirect.com/science/article/abs/pii/S0306452214007660>

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11. Spinal Peroxynitrite Contributes to Remifentanyl-induced Postoperative Hyperalgesia via Enhancement of Divalent Metal Transporter 1 without Iron-responsive Element-mediated Iron Accumulation in Rats
<https://pubs.asahq.org/anesthesiology/article/122/4/908/14016/Spinal-Peroxynitrite-Contributes-to-Remifentanyl>
12. Inhalation of Hydrogen of Different Concentrations Ameliorates Spinal Cord Injury in Mice by Protecting Spinal Cord Neurons from Apoptosis, Oxidative Injury and Mitochondrial Structure Damages
<https://pubmed.ncbi.nlm.nih.gov/29763919/>
13. Hydrogen-rich saline injection into the subarachnoid cavity within 2 weeks promotes recovery after acute spinal cord injury
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4498359/>
14. Spinal peroxynitrite contributes to remifentanyl-induced postoperative hyperalgesia via enhancement of divalent metal transporter 1 without iron-responsive element-mediated iron accumulation in rats
<https://pubmed.ncbi.nlm.nih.gov/25501899/>
15. Hydrogen-rich saline protects against spinal cord injury in rats
<https://pubmed.ncbi.nlm.nih.gov/20354783/>

Stomach

1. The protective of hydrogen on stress-induced gastric ulceration
<https://www.sciencedirect.com/science/article/abs/pii/S1567576912001038>
2. Protective role of hydrogen-rich water on aspirin-induced gastric mucosal damage in rats
<https://europepmc.org/article/PMC/3925872>
3. Dose-dependent inhibition of gastric injury by hydrogen in alkaline electrolyzed drinking water
<https://bmccomplementmedtherapies.biomedcentral.com/articles/10.1186/1472-6882-14-81>
4. Chronic Administration with Electrolyzed Alkaline Water Inhibits Aspirin-induced Gastric Mucosal Injury in Rats through the Inhibition of Tumor Necrosis Factor- α Expression
https://www.jstage.jst.go.jp/article/jcbrn1986/32/0/32_0_69/article

Stroke

1. Molecular Hydrogen: Emerging Treatment for Stroke Management
<https://pubmed.ncbi.nlm.nih.gov/37988743>
2. Molecular Hydrogen Application in Stroke: Bench to Bedside
<https://pubmed.ncbi.nlm.nih.gov/32940172/>

3. Molecular Hydrogen: an Emerging Therapeutic Medical Gas for Brain Disorders
<https://europepmc.org/article/MED/36567361>
4. Molecular Hydrogen Mediates Neurorestorative Effects After Stroke in Diabetic Rats: the TLR4/NF- κ B Inflammatory Pathway
<https://europepmc.org/article/MED/35895245>
5. Molecular Hydrogen Neuroprotection in Post-Ischemic Neurodegeneration in the Form of Alzheimer's Disease Proteinopathy: Underlying Mechanisms and Potential for Clinical Implementation-Fantasy or Reality?
<https://europepmc.org/article/MED/35743035>
6. Molecular Hydrogen: current knowledge on mechanism in alleviating free radical damage and diseases
<https://academic.oup.com/abbs/article-pdf/51/12/1189/32815441/gmz121.pdf>
7. Hydrogen Gas Inhalation Treatment in Acute Cerebral Infarction: A Randomized Controlled Clinical Study on Safety and Neuroprotection
<https://pubmed.ncbi.nlm.nih.gov/28669654/>

Transplantation

1. Heart - A novel method of preserving cardiac grafts using a hydrogen-rich water bath
<https://www.sciencedirect.com/science/article/abs/pii/S1053249812013927>
2. Heart - Amelioration of rat cardiac cold ischemia/reperfusion injury with inhaled hydrogen or carbon monoxide, or both
<https://www.sciencedirect.com/science/article/abs/pii/S1053249809008237>
3. Heart - Hydrogen-supplemented drinking water protects cardiac allografts from inflammation-associated deterioration
<https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1432-2277.2012.01542.x>
4. Lung - Profiling molecular changes induced by hydrogen treatment of lung allografts prior to procurement
<https://europepmc.org/article/PMC/4007057>
5. Lung - The effect of donor treatment with hydrogen on lung allograft function in rats
<https://www.sciencedirect.com/science/article/abs/pii/S0039606011002194>
6. Lung - Inhaled Hydrogen Gas Therapy for Prevention of Lung Transplant-Induced Ischemia/Reperfusion Injury in Rats
https://journals.lww.com/transplantjournal/Fulltext/2010/12270/Inhaled_Hydrogen_Gas_Therapy_for_Prevention_of.18.aspx
7. Lung - Lung inflation with hydrogen during the cold ischemia phase decreases lung graft injury in rats
<https://europepmc.org/article/PMC/4935368>
8. Kidney - Oral hydrogen water prevents chronic allograft nephropathy in rats
<https://www.sciencedirect.com/science/article/pii/S0085253815542117>

9. Kidney - Hydrogen-Rich University of Wisconsin Solution Attenuates Renal Cold Ischemia-Reperfusion Injury
https://journals.lww.com/transplantjournal/FullText/2012/07150/Hydrogen_Rich_University_of_Wisconsin_Solution.3.aspx
10. Intestine - Hydrogen-Enriched Preservation Protects the Isogeneic Intestinal Graft and Amends Recipient Gastric Function During Transplantation
https://journals.lww.com/transplantjournal/FullText/2011/11150/Hydrogen_Enriched_Preservation_Protects_the.6.aspx
11. Intestine - Hydrogen Inhalation Ameliorates Oxidative Stress in Transplantation Induced Intestinal Graft Injury
<https://www.sciencedirect.com/science/article/pii/S1600613522055976>
12. Intestine - Luminal Injection of Hydrogen-Rich Solution Attenuates Intestinal Ischemia-Reperfusion Injury in Rats
https://journals.lww.com/transplantjournal/fulltext/2015/03000/Luminal_Injection_of_Hydrogen_Rich_Solution.11.aspx
13. Pancreas - Hydrogen-rich saline protects against ischemia/reperfusion injury in grafts after pancreas transplantations by reducing oxidative stress in rats
<https://europepmc.org/article/PMC/4385641>
14. Osteochondral grafts - Hydrogen supplementation of preservation solution improves viability of osteochondral grafts
<https://europepmc.org/article/PMC/4253708>
15. Acute GVHD - Administration of Hydrogen-Rich Saline Protects Mice From Lethal Acute Graft-Versus-Host Disease (aGVHD)
https://journals.lww.com/transplantjournal/fulltext/2013/03150/Administration_of_Hydrogen_Rich_Saline_Protects.3.aspx
16. Acute GVHD - Administration of hydrogen-rich saline in mice with allogeneic hematopoietic stem-cell transplantation
<https://europepmc.org/article/PMC/4367861>

Additional References

1. The evolution of molecular hydrogen: a noteworthy potential therapy with clinical significance
<https://medicalgasresearch.biomedcentral.com/articles/10.1186/2045-9912-3-10>
2. Chemistry and cosmology
<https://pubs.rsc.org/en/content/articlelanding/2006/fd/b516837f>
3. Studies on the Properties and Real Existence of Aqueous Solution Systems that are Assumed to Have Antioxidant Activities by the Action of “Active Hydrogen
https://www.jstage.jst.go.jp/article/jhs/50/5/50_5_456/_article
4. Hydride
<https://pubchem.ncbi.nlm.nih.gov/compound/166653>

5. Harris, D. C. (2010). Quantitative chemical analysis. Macmillan. 8th ed. p 127
https://www.academia.edu/31178443/Harris_Quantitative_Chemical_Analysis_8th_edition
6. Free Radicals: Properties, Sources, Targets, and Their Implication in Various Diseases
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4310837/>
7. Association of Lifetime Exposure to Glyphosate and Aminomethylphosphonic Acid (AMPA) with Liver Inflammation and Metabolic Syndrome at Young Adulthood: Findings from the CHAMACOS Study
<https://ehp.niehs.nih.gov/doi/full/10.1289/EHP11721>
8. Hydrogen gas distribution in organs after inhalation: Real-time monitoring of tissue hydrogen concentration in rat
<https://www.nature.com/articles/s41598-018-38180-4>
9. Molecular hydrogen: a therapeutic antioxidant and beyond
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5223313>
10. Hydrogen-rich water reduced oxidative stress and renal fibrosis in rats with unilateral ureteral obstruction
<https://pubmed.ncbi.nlm.nih.gov/34365467/>
11. Molecular hydrogen is a novel antioxidant to efficiently reduce oxidative stress with potential for the improvement of mitochondrial diseases
<https://pubmed.ncbi.nlm.nih.gov/21621588>
12. Are antioxidants helpful for disease prevention?
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3093095/>
13. Nutrients for the aging eye
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3693724/>
14. Function and biogenesis of lipopolysaccharides
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6091223>
15. Impact of carbonated beverages on early onset of osteoporosis: A narrative review.
<https://europepmc.org/article/MED/37697739>
16. Reactive oxygen species - sources, functions, oxidative damage
<https://pubmed.ncbi.nlm.nih.gov/32352946>
17. Defining ROS in Biology and Medicine
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5921829>
18. Oxidation Reduction Potential
<https://www.sciencedirect.com/topics/immunology-and-microbiology/oxidation-reduction-potential>
19. Electrolyzed–Reduced Water: Review I. Molecular Hydrogen Is the Exclusive Agent Responsible for the Therapeutic Effects
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9738607/>
20. Electrolyzed–Reduced Water: Review II: Safety Concerns and Effectiveness as a Source of Hydrogen Water
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9736533/>
21. Biochemistry, Water Soluble Vitamins
<https://www.ncbi.nlm.nih.gov/books/NBK538510>

22. Novel Therapeutic Targets in Depression and Anxiety: Antioxidants as a Candidate Treatment
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3964743/>
23. Oxidative stress, the blood–brain barrier and neurodegenerative diseases: The critical beneficial role of dietary antioxidants
<https://www.sciencedirect.com/science/article/pii/S2211383523002721>
24. Free radicals, antioxidants and functional foods: Impact on human health
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3249911>
25. Small and Large Intestine (I): Malabsorption of Nutrients
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8070135>
26. Twenty-First Century Global ADR Management: A Need for Clarification, Redesign, and Coordinated Action
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9368697/>
27. Molecular Hydrogen Therapy—A Review on Clinical Studies and Outcomes
<https://www.mdpi.com/1420-3049/28/23/7785>
28. Oxidative Stress and Pathways of Molecular Hydrogen Effects in Medicine
<https://www.ingentaconnect.com/content/ben/cpd/2021/00000027/00000005/art00005>

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Hydrogen (H) is the smallest molecule in existence and during the production of Electrolyzed Reduced Water something special happens. Two Hydrogen molecules bond together creating Molecular Hydrogen (H₂). This is rarely seen in nature, but has been found in places such as Lourdes, Tlacote, Nordenau and Nadana, where miracles are said to take place.

The true miracle of Molecular Hydrogen (H₂) happens in your body when you drink it. Being so small and gaseous in nature, H₂ rapidly passes through your stomach and digestive system and begins travelling throughout your body with one sole purpose that is essential to your health and longevity.

Molecular Hydrogen (H₂) seeks out a dangerous free radical that is made in your cells called Hydroxyl. This is a particularly nasty free radical as it is so unstable that it steals an electron from any neighbouring cells, leading to what is called Oxidative Stress. This has been linked to inflammation and many of the diseases we encounter as we age.

H₂ is an antioxidant and it can travel to places where other antioxidants cannot, including the brain. H₂ has been shown to have neuroprotective effects on brain cells and can be helpful in the prevention of Alzheimer's Disease, Parkinson's Disease, Dementia and more, which can all be backed up by clinical studies.

It is an amazing molecule that you can make in abundance in your home and when consumed provides you with a constant supply of antioxidants, which can help you to remain healthy at a cellular level and potentially fight many diseases that are related to cellular damage and ageing.



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