

# Hydrogen-Based Protocols to Modulate Immune Response

Robert Scott Bell

## The Problem:

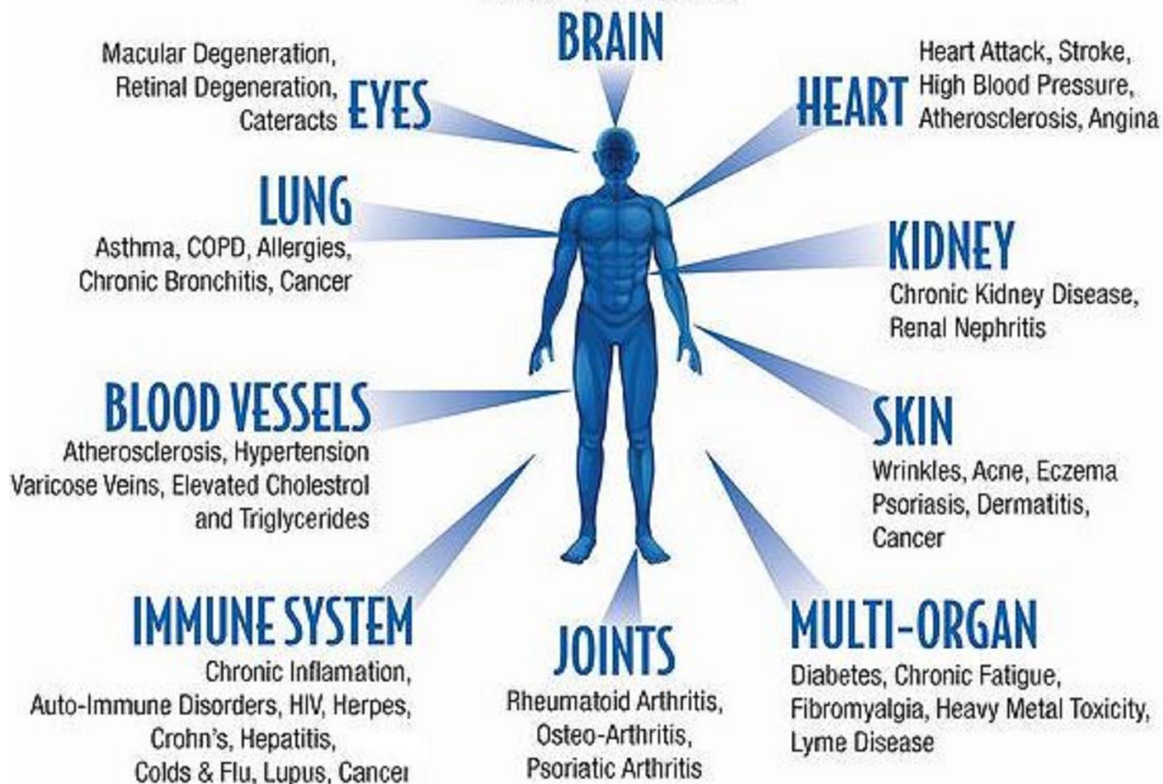
### **Oxidative Stress & Inflammation-Leading Cause of Disease**

#### **How Does Oxidative Stress Occur?**

- 1. Gut Damage-** antibiotics, pesticides, heavy metals, diet
- 2. Anti-Oxidant System compromised= Oxidative Stress.**
- 3. How does Oxidative Stress from ROS affect the body?**
- 4. What can I do to prevent or stop the damage?**

# Free Radical Oxidative Stress

Alzheimer's, Parkinson's, MS, ALS, OCD, ADHD,  
Autism, Migraine, Insomnia, Depression, Dementia,  
Bi-Polar Disorder, Cancer

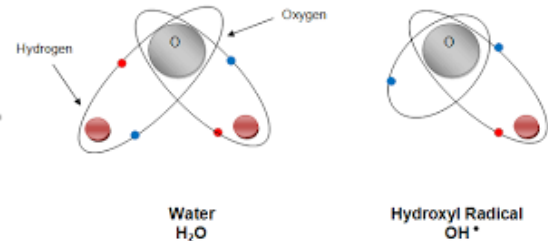


# Oxidative Stress & Inflammation

- **Oxidative stress** is an imbalance between the production of free radicals and the ability of the body to counteract or detoxify their harmful effects through neutralization by antioxidants. Such stress could ultimately lead to cancer and many other diseases.
- Our bodies' inability to keep oxidation in the normal range because the antioxidant abilities of the body are not functioning effectively.

# A Solution: *molecular hydrogen (H<sub>2</sub>)*

- #1 on the Periodic Table –Tiny - can go anywhere in the body.
- **Reduces oxidative stress & inflammation** through direct contact with hydroxyl radicals and **catalase up regulation and signal modulation**, H<sub>2</sub> can lessen the formation of Hydroxyl Radicals.
- **Selective Antioxidant.**- Only reacts with ROS not radicals with physiological role.
- **Converts the Most cytotoxic Radical into H<sub>2</sub>O.**  
(Hydroxyl Radicals are the most cytotoxic)



# Review of Hydrogen Studies

The outcomes in the following studies are not indicators of outcomes for others with similar or the same conditions!



# Hydrogen acts as a therapeutic antioxidant by selectively reducing cytotoxic oxygen radicals

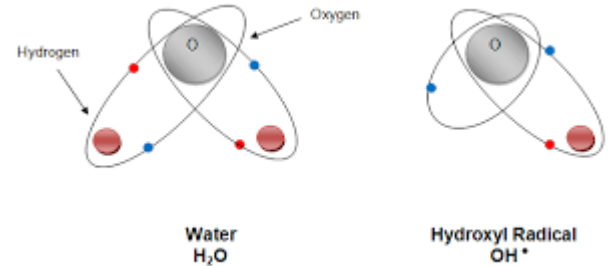
Ikuroh Ohsawa<sup>1</sup>, Masahiro Ishikawa<sup>1</sup>, Kumiko Takahashi<sup>1</sup>, Megumi Watanabe<sup>1,2</sup>, Kiyomi Nishimaki<sup>1</sup>, Kumi Yamagata<sup>1</sup>, Ken-ichiro Katsura<sup>2</sup>, Yasuo Katayama<sup>2</sup>, Sadamitsu Asoh<sup>1</sup> & Shigeo Ohta<sup>1</sup>

Acute oxidative stress induced by ischemia-reperfusion or inflammation causes serious damage to tissues, and persistent oxidative stress is accepted as one of the causes of many common diseases including cancer. We show here that hydrogen (H<sub>2</sub>) has potential as an antioxidant in preventive and therapeutic applications. We induced acute oxidative stress in cultured cells by three independent methods. H<sub>2</sub> selectively reduced the hydroxyl radical, the most cytotoxic of reactive oxygen species (ROS), and effectively protected cells; however, H<sub>2</sub> did not react with other ROS, which possess physiological roles. We used an acute rat model in which oxidative stress damage was induced in the brain by focal ischemia and reperfusion. The inhalation of H<sub>2</sub> gas markedly suppressed brain injury by buffering the effects of oxidative stress. Thus H<sub>2</sub> can be used as an effective antioxidant therapy; owing to its ability to rapidly diffuse across membranes, it can reach and react with cytotoxic ROS and thus protect against oxidative damage.

# Molecular Hydrogen ( $H_2$ ) helps with Oxygen Radicals.

Reactive Oxygen Species are free radicals that are **cytotoxic** (cell damaging).

**Hydroxyl Radicals** are the most cell damaging.



$H_2$  can directly turn Hydroxyl Radicals into Water molecules...

however it is also believed that  $H_2$  lessens the formation of Hydroxyl Radicals through catalase up regulation & signal modulation.



## Selective stimulation of the growth of anaerobic microflora in the human intestinal tract by electrolyzed reducing water.

Department of Physiology of Microorganisms, Biology Faculty, Lomonosov Moscow State University, 119992 Moscow, Russia. nvvorobjeva@mail.ru

96-99% of the "friendly" or residential microflora of intestinal tract of humans consists of strict anaerobes and only 1-4% of aerobes. Many diseases of the intestine are due to a disturbance in the balance of the microorganisms inhabiting the gut. The treatment of such diseases involves the restoration of the quantity and/or balance of residential microflora in the intestinal tract. It is known that aerobes and anaerobes grow at different oxidation-reduction potentials (ORP). The former require positive  $E(h)$  values up to +400 mV. Anaerobes do not grow unless the  $E(h)$  value is negative between -300 and -400 mV. In this work, it is suggested that prerequisite for the recovery and maintenance of obligatory anaerobic microflora in the intestinal tract is a negative ORP value of the intestinal milieu. Electrolyzed reducing water with  $E(h)$  values between 0 and -300 mV produced in electrolysis devices possesses this property. Drinking such water favors the growth of residential microflora in the gut. A sufficient array of data confirms this idea. However, most researchers explain the mechanism of its action by an antioxidant properties destined to detox the oxidants in the gut and other host tissues. Evidence is presented in favor of the hypothesis that the primary target for electrolyzed reducing water is the residential microflora in the gut.

PMID: 15617863 [PubMed - indexed for MEDLINE]

## **Selective stimulation of the growth of anaerobic microflora in the human intestinal tract by ERW.**

**96-99% of the “friendly” or residential microflora consist of strict anaerobes and only 1-4% are aerobes. Many diseases of the intestines are due to the disturbance in the balance of microorganisms inhabiting the gut.**

**Treatment of such diseases involves the restoration of the quantity and/or balance of residential microflora in the gut.**

**Drinking such water favors the growth of residential microflora in the gut.**

**Evidence is presented in favor of the hypothesis that the primary target of ERW is the residential microflora in the gut.**

# Hydrogen–water enhances 5-fluorouracil-induced inhibition of colon cancer

Joshua Runtuwene<sup>1,2</sup>, Haruka Amitani<sup>1</sup>, Marie Amitani<sup>1</sup>, Akihiro Asakawa<sup>1</sup>, Kai-Chun Cheng<sup>1</sup>, Akio Inui<sup>1</sup>

Published April 7, 2015

PubMed 25870767

## ABSTRACT

Oxidative stress is involved in cancer development. Hydrogen (H<sub>2</sub>) is a potent antioxidant and exhibits anti-inflammatory and potentially anticancer-like activities. This study aimed to investigate the role of H<sub>2</sub> in combination with 5-fluorouracil (5-FU) in cancer treatment both in vitro and in vivo using the colon 26 cell line. The survival rate was determined using the Kaplan–Meier survival test, and cell viability was assessed using cell viability imaging kit and the MTT assay, and activation of the cell apoptosis pathway (Phosphorylated adenosine monophosphate activated protein kinase (p-AMPK), Apoptosis-inducing factor (AIF) and Caspase 3) were characterized by western blots. Hydrogen water administration improved the survival of mice with colon 26-induced cancer. Furthermore, hydrogen water enhanced cell apoptosis in cancer cells, resulting in a marked increase in the expression of p-AMPK, AIF and Caspase 3 in colon 26 cells. Hydrogen water also increased the inhibitory effect of 5-FU on colon 26 cells with respect to cell survival rate and anticancer functions. Additionally, high-content hydrogen water exhibited stronger anti oxidative and anticancer activity than did the natural hydrogen water. In conclusion, high-content hydrogen water can inhibit colon cancer, particularly in combination with 5-fluorouracil.

# Hydrogen (H<sub>2</sub>) Water and Colon Cancer...highlights

**Hydrogen is potent anti-oxidant and has anti-inflammatory and potential anti-cancer like properties.**

**Hydrogen Water administration improved the survival of mice with colon 26 induced cancer. Furthermore, hydrogen water enhanced cell apoptosis in cancer cells**

**High-content hydrogen water exhibited stronger anti-oxidative and anti-cancer activities than did the normal hydrogen water. In conclusion, high content hydrogen water can inhibit colon cancer, particularly in combination with 5-fluorouracil. (100% cancer cell death with the combination of H<sub>2</sub> water and 5-FU)**

# Supplementation of hydrogen-rich water improves lipid and glucose metabolism in patients with type 2 diabetes or impaired glucose tolerance

Kajiyama S, Hasegawa G, Asano M, Hosoda H, Fukui M, Nakamura N, Kitawaki J, Imai S, Nakano K, Ohta M, Adachi T, Obayashi H, Yoshikawa T

Oxidative stress is recognized widely as being associated with various disorders including diabetes, hypertension, and atherosclerosis. It is well established that hydrogen has a reducing action. We therefore investigated the effects of hydrogen-rich water intake on lipid and glucose metabolism in patients with either type 2 diabetes mellitus (T2DM) or impaired glucose tolerance (IGT). We performed a randomized, double-blind, placebo-controlled, crossover study in 30 patients with T2DM controlled by diet and exercise therapy and 6 patients with IGT. The patients consumed either 900 mL/d of hydrogen-rich pure water or 900 mL of placebo pure water for 8 weeks, with a 12-week washout period. Several biomarkers of oxidative stress, insulin resistance, and glucose metabolism, assessed by an oral glucose tolerance test, were evaluated at baseline and at 8 weeks. Intake of hydrogen-rich water was associated with significant decreases in the levels of modified low-density lipoprotein (LDL) cholesterol (ie, modifications that increase the net negative charge of LDL), small dense LDL, and urinary 8-isoprostanes by 15.5% (P b .01), 5.7% (P b .05), and 6.6% (P b .05), respectively. Hydrogen-rich water intake was also associated with a trend of decreased serum concentrations of oxidized LDL and free fatty acids, and increased plasma levels of adiponectin and extracellular-superoxide dismutase. In 4 of 6 patients with IGT, intake of hydrogen-rich water normalized the oral glucose tolerance test. In conclusion, these results suggest that supplementation with hydrogen-rich water may have a beneficial role in prevention of T2DM and insulin resistance.

## Supplementation with Hydrogen (H<sub>2</sub>) Rich Water improves lipid and glucose metabolism in patients with Type 2 Diabetes or Impaired Glucose Tolerance.

Randomized, double-blind, placebo-controlled, crossover study in 30 patients with T2DM controlled by diet and exercise therapy and 6 patients with IGT. Used 900m/L of hydrogen rich pure water or 900 m/L of placebo pure water for 8weeks 12 week washout.

Intake of Hydrogen-rich water associated with significant decreases in:

Modified LDL(15.5%), small dense LDL(5.7%), urinary 8 isoprostanes by (6.6%)

Decreased serum concentrations of oxidized LDL, Free Fatty Acids, increased plasma levels of adiponectin, and extracellular-superoxide dismutase.

Normalized the oral glucose tolerance test in 4 of 6 IGT patients.

Conclusion, results suggest supplementation with H<sub>2</sub> enriched water may have a beneficial role in prevention of T2DM and insulin resistance.

# Molecular Hydrogen- Additional Effects

- **700 Studies** (45 human): beneficial in over 170 human disease models.
- **Anti-Aging**, Glucose Uptake, Insulin Signaling, SIRT 1 and Telomerase Activity.
- Stimulates **Anaerobic Microflora** to **repair gut issues** & **supports the immune system boost**. Supports growth of good bacteria.
- Stimulates gastric GHRELIN secretions: **benefits Neurological issues** like: Parkinsons', Althzeimers', Autism, Rheumatoid Arthritis, Auto-immune.

# Critical importance of Proper Hydration!

- Promotes better brain & cardiovascular health.
- **Significantly decreases risk of colon, breast, and bladder cancer.**
- Better gastrointestinal health, better digestion, assimilation of nutrition, and elimination of toxins.
- Increased energy, cognitive function, benefits muscles and joints, decreases toxins, keeps the body cooler, better skin, better elimination, higher performance & less fatigue, better lung health, less allergies & asthma, better weight mgmt.

**FILTERING WATER IS CRITICAL FOR PROPER HYDRATION!**



# How to get hydrogen in my life?

- Methods of administration: produced in the gut, Inhalation or Dissolved in water (electrolysis or reactive magnesium).
- Best method of administration: dissolved in water.
- Benefits of dissolved in water vs. inhalation:
  1. Easier to use. Less time. No change in normal behavior.
  2. Ghrelin Secretions for Neurological benefits (Cognitive Increase) won't happen with inhalation.
  3. Getting hydrogen at the same time as getting hydrated.



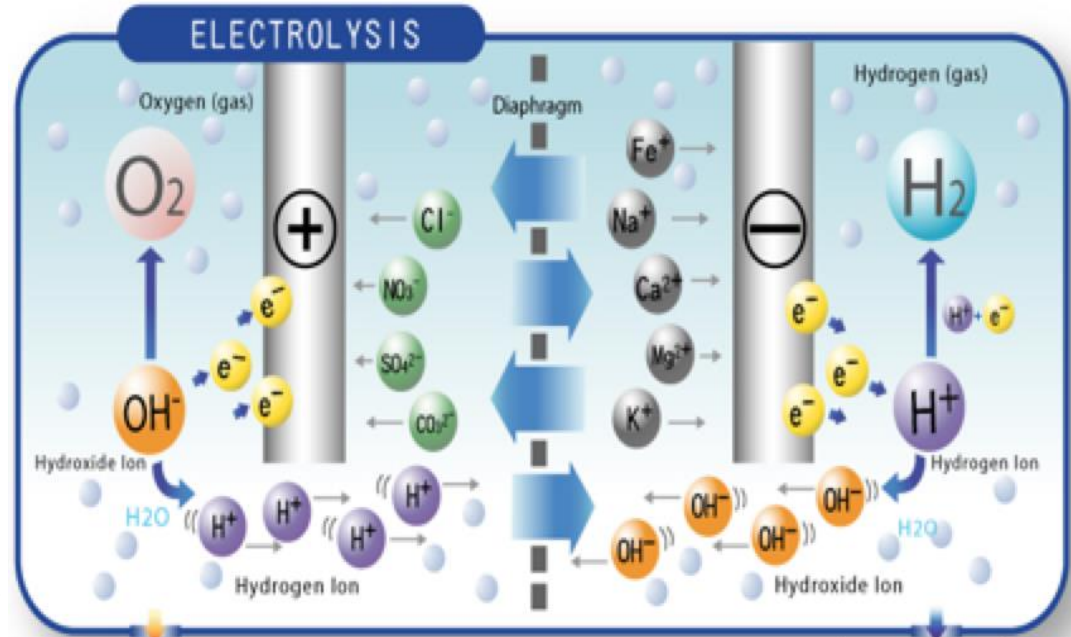
# How Hydrogen is Produced with Electrolysis

Water ( $\text{H}_2\text{O}$ ) is separated into 2 streams.  
 $\text{H}_2$  gas and  $\text{O}_2$  gas are separated and then dissolved into the 2 streams.

**Minerals are attracted to the Cathode (-).  
The scale deposits reduce the dissolved  
 $\text{H}_2$  gas in the water within a few weeks!**

Patented technology in the Echo® Ultra machine makes it impossible for minerals to build up on the cathode! This ensures  $\text{H}_2$  gas is always dissolved in the water in therapeutic concentration!

**Other machines must be cleaned every 1-2 weeks to have therapeutic concentration of  $\text{H}_2$  in water!**



# Dr. Kate Keville, DC- South Carolina, USA

Life experiences include:

- Doctorate of Chiropractic from Sherman Chiropractic College
- B.S. in Education from Ohio State University
- Serving United States Army Military Intelligence
- Owning and operating 4 vegetarian restaurants
- She has participated in 5 marathons, several triathlons, and half an ironman.
- Dr. Kate also supported her son Kevil Murray in his amazing success in healing himself of terminal cancer.



Dr. Kate Keville, DC- South Carolina, USA-

Her Experience:

I had been using A major brand of alkaline water machine for eight years. I still used an inhaler for breathing issues and had minor joint pain. I met Paul B. at a conference. I asked him why his machine was better than others, quite sarcastically, because of my lack of results with what I had been using. Paul suggested I try a glass of his water and the rest is history. I drank six ounces, and I felt my chest expand, my thoracic vertebra popped, and my breathing became vey easy. I have not used my inhaler since that day, four years ago. I have a machine at home, and in my office. I watch patients daily see results with this water.

## Dr. Kate Keville: Case Studies:

Joe E. a patient, purchased a machine. Joe was on two blood pressure medications, and his blood pressure was still 190 over 95. Within a month drinking the water, Joe was off all blood pressure medications, and his blood pressure normalized.

Patricia had a persistent cough for over three years. Patricia had lost weight, could not sleep, could not work, the cough literally took over her life. Patricia began getting water from my office machine and drinking it regularly. After a month drinking the water, the cough has become more manageable. Patricia is sleeping, eating, she has gained weight, and each day is better. I am certain in time, the cough will dissipate.

Mary went on vacation to the beach. She returned with flesh eating bacteria, with a threat to amputate her nose. This bacteria was eating away her face. I provided my holistic care, and suggested she apply the water acid 4 on her face three times a day. Within one week, the flesh eating bacteria was irradiated. Mary's face healed nicely. For your information, the traditional medical treatment of antibiotics did not work. Mary's face I believe was saved by the water.