

# Hydrogenated Water Helps Reduce Oxidative Stress

**Hydrogenated water helps reduce the oxidative stress that accelerates aging. If you are interested in slowing aging, reducing inflammation, and protecting yourself from many diseases and medical conditions, hydrogen water may be the key to your success.**

Free radicals and other reactive oxygen species (ROS) are the result of normal enzymatic and nonenzymatic reactions in the human body. For example, stress, inflammation and exercise can create free radicals.

Free radicals can also be generated because of external influences such as

- Radiation
- X-rays
- Ozone
- tobacco smoke
- Exposure to ultraviolet rays
- Air pollutants
- Industrial chemicals

Oxidative stress due to excess free radicals progressively damage lipids, proteins, carbohydrates, RNA and DNA. This causes damage to cells and homeostatic disruption. The damage accumulates over time throughout the body.

Free radical damage is important because it manifests itself as disease and sickness. Free radical damage is associated with a number of conditions including premature aging, cancer, hypertension, heart diseases, stroke, arthritis, atherosclerosis, metabolic syndrome and diabetes.

## **Balance Between Reactive Oxygen Species and Antioxidants**

The body experiences oxidative stress when the the production of reactive oxygen species exceeds the activity of the antioxidant defense system.

So, a lot of activity has been expended to find safe, effective, natural ways to increase antioxidants in the body.

Most people know that foods containing beta-carotene, vitamin C, and vitamin E have proven antioxidant properties. The trace mineral selenium is often included in this group. In addition, the body itself produces antioxidants such as glutathione, ubiquinol, and uric acid as part of its normal activities.

## Hydrogen as an Antioxidant

But, hydrogen is even more basic than complex molecules such as vitamins and selenium in neutralizing a reactive oxygen species. Hydrogen can combine with reactive oxygen species to prevent DNA damage. But, how do we introduce hydrogen into the body? Hydrogen is present in the atmosphere in minute quantities, only about one part per million.

There are a number of ways to introduce hydrogen into the body. Some of these techniques include:

- Inhaling hydrogen gas
- Drinking hydrogen dissolved water (hydrogen water)
- Taking a bath in hydrogen water
- Injections of hydrogen-dissolved saline
- Dripping hydrogen saline into the eyes
- Modifying intestinal bacteria to produce more hydrogen

While introducing hydrogen into the body may seem new or trendy, it has been used for many years in gas mixtures used for deep diving and for prevention of decompression sickness.

Inhaling hydrogen gas has a rapid effect and is good for acute oxidative stress. But hydrogen in the air is flammable. This limits its use for therapeutic effects mainly to medical facilities. Outside of controlled environments in medical institutions, hydrogen is normally delivered by dissolving hydrogen in water, usually through bubbling or other direct contact with hydrogen.

Water with dissolved hydrogen (but low in dissolved oxygen) has a high pH. It has the ability to scavenge reactive oxygen species and protects the body from oxidative damage.

Mouse studies of dissolved hydrogen indicate, among other benefits, that it reduces atherosclerosis, improved kidney function, and improves brain injuries.

Antioxidants such as vitamins C and E help with glycemic control in both humans and animals. So, if dissolved hydrogen can act as an antioxidant, it may also help with glycemic control.

## Clinical Studies of Hydrogenated Water

While many studies have been done on mice and rats, here are a couple of studies on humans.

In one study 30 patients (24 who had type 2 diabetes which was controlled with diet and exercise and 6 who were insulin resistant) were enrolled in a randomized, double-blind, placebo-controlled, crossover study to determine the effects of hydrogen-rich water. Half these patients consumed 900 mL of hydrogen-rich water and the other half were provided 900 mL of placebo water daily for 8 weeks. After a twelve week "wash-out" period the crossover period

began were the groups switched water types.

Various biomarkers of oxidative stress, insulin resistance, and glucose metabolism were measured before and after the 8 week trial.

Patients receiving hydrogenated water showed significantly lower levels overall of LDL cholesterol and specifically the dangerous small dense LDL as well as significantly lower urinary 8-isoprostanes (an indicator of oxidative stress).

Patients on hydrogenated water also showed increased plasma levels of adiponectin (indicating enhanced insulin sensitivity) and extracellular-superoxide dismutase (important for antioxidant defense). In addition, in 4 of the 6 patients with insulin resistance, the final glucose tolerance test showed normal.

In another study of 20 patients with potential metabolic syndrome (displaying one or more of the metabolic syndrome characteristics). Subject consumed 300-400 mL of hydrogenated water 5 times per day resulting in a total of 1.5 L to 2.0 L of hydrogenated water.

Various measures were made at the start, after 4 weeks and after the 8 week trial period.

After 4 and 8 weeks, the concentration of urinary TBARS (a measure of oxidative stress) decreased significantly from the start of the trial. There was an increase of SOD (superoxide dismutase) indicating increased antioxidant defense. There was a significant increase in good HDL cholesterol as well as a decrease in the ratio of total cholesterol to HDL cholesterol. This study showed no statistically significant difference in fasting glucose levels.

## **Considerations in Purchasing a Hydrogen Water Generator**

You will find hydrogen water generators priced from about \$40 on up. Some expensive versions cost several thousand dollars.

They all work by electrolysis of water. When positive and negative electrodes are placed in water, the water molecule ( $H_2O$ ) is broken up with hydrogen bubbling up from the negative electrode and oxygen bubbling up from the positive electrode.

Cheaper hydrogen water generators place both electrodes at the bottom of the water container so both hydrogen and oxygen bubble up into your water. Because water normally contains some salts, you will also get chlorine bubbling up into your water.

Models costing over \$100 often use Proton Exchange Membrane or PEM technology. Here the positive (oxygen) and negative (hydrogen) electrodes are separated by a membrane that allows hydrogen to bubble up into your water container, but oxygen and chlorine bubbles into another chamber where it is

discharged into the air.

This video explains this concept.

**Hydrogen water may NOT be safe to drink! Find out WHY**

## **Conclusions About Hydrogen Water You Can Use**

Many studies have shown the potential for hydrogen to act as an antioxidant and defend against oxidative stress.

You probably already take vitamins C and E to help combat oxidative stress, slow aging, and help prevent many of the common diseases of aging. And now you can add hydrogen water to your tool box.

More oxygen generators are appearing on the market. Be sure to choose on with PEM technology to get the cleanest, purest hydrogen water for you and your loved ones.

## **Hydrogen Water References**

[Free radicals, antioxidants and functional foods: Impact on human health](#) as published in *Pharmacognosy Review*

[Molecular hydrogen is a novel antioxidant to efficiently reduce oxidative stress with potential for the improvement of mitochondrial diseases](#) as published in *Biochimica et Biophysica Acta*

[Supplementation of hydrogen-rich water improves lipid and glucose metabolism in patients with type 2 diabetes or impaired glucose tolerance](#) as published in *Nutrition Research*

[Effectiveness of Hydrogen Rich Water on Antioxidant Status of Subjects with Potential Metabolic Syndrome—An Open Label Pilot Study](#) as published in *Journal of Clinical Biochemistry and Nutrition*

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## **[Aging, Telomers, Telomerase: Why You Age and How to Reverse Aging](#)**

Stress can cause poor health and make you look exhausted and haggard. Stress is a risk factor for cardiovascular disease, poor immune function, premature aging, high blood pressure, obesity and even diabetes. Exactly how stress brings about the early onset of age-related disease is not entirely clear. Many believe that stress increases the rate of aging within the cells themselves.

# Cellular Aging

Cellular aging is associated with oxidative stress, lowered telomerase activity, and shorter telomere lengths. These factors affect the longevity of your body's cells.

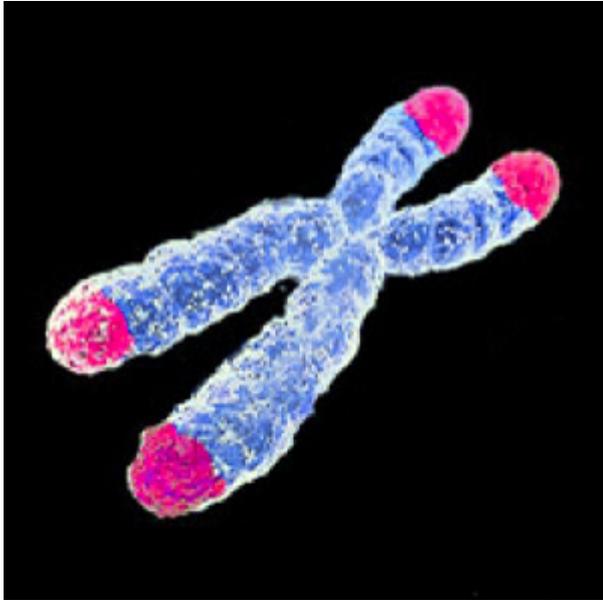


Photo by [AJCI](#) 

Telomeres are the caps or ends of chromosomes which provide protection and help give stability to the chromosomes. Telomeres are composed of terminal sequences of TTAGGG DNA base units at the ends of all chromosomes that signify the end of chromosomal information. At conception there are approximately 2,500 TTAGGG sequences as “end caps” to chromosomal data.

Telomers are a target of oxidative damage and become damaged and shortened due to the action of free radicals.

Psychological stress itself seems to accelerate the shortening of telomeres. In one study 58 mothers were studied. 19 of the mothers had a healthy child while 39 mothers cared for a chronically ill child. The research found that (adjusted for the age of the mother) the more years of caregiving, the shorter the mother's telomeres, the lower the telomerase activity and the more oxidative stress the mothers experienced.

In addition, when adult cells undergo mitosis or cell division these telomere “end caps” are not completely replicated and are shortened by about 100 base units (around 15 TTAGGG sequences) with each cell division.

Telomere shortening is a normal condition that occurs when an adult cell divides. It is thought that there is a limit to the number of times a cell can divide (called the Hayflick limit which is between 50 to 70 cell divisions). When this limit is reached a telomeric crisis stage is reached and the cells no longer divide and approach senescence (deterioration with age).

Studies indicate that chronic emotional stress and frequent viral infections seem to accelerate telomere loss and cause premature aging.

This shortening of the telomeres is considered a risk factor for the onset and progression of many different conditions such as hypertension, atherosclerosis, cardiovascular disease, diabetes, metabolic syndrome, a number of cancers, fibrosis, Alzheimer's disease, a lowered immune system allowing infections, and overall mortality.

## Telomerase

The cellular enzyme telomerase has a protective function on telomeres and can even synthesize new DNA telomere repeats at the end of chromosomes to lengthen telomeres. Telomerase is active during rapid fetal development. But, before birth telomerase is repressed for most cells and further cell division results in telomere shortening and, thus, aging.

Telomerase is still active in some adult cells like the [testes](#), [activated lymphocytes](#) and [stem cells](#). Nearly 90% of human cancers including [leukemia](#) show telomerase activity which helps prevent cell death.

While it is somewhat controversial, some researchers think that telomerase activation may actually help cause some cancers. Other researchers disagree.

## The Science of Cells That Never Get Old | Elizabeth Blackburn

What makes our bodies age? Why does our skin wrinkle, our hair turn white, our immune systems weaken? Biologist Elizabeth Blackburn shared a Nobel Prize for her work finding out the answer, with the discovery of telomerase: an enzyme that replenishes the caps at the end of chromosomes, which break down when cells divide. Learn more about Blackburn's groundbreaking research – including how we might have more control over aging than we think.

## Telomerase Activation

A number of studies have been conducted to investigate increasing or activating telomerase.

In a study of lifestyle choices, 30 men with low-risk prostate cancer participated. The lifestyle changes consisted dietary changes and moderate exercise with stress management. The diet was low in fat (with 10% of calories from fat) mostly of whole plant-based vegetables and fruits, with unrefined grains, legumes, minimal refined carbohydrates with soy and tofu, fish oil, vitamins C and E and selenium. Exercise included 30 minutes of walking per day. Stress management included a hour per day of meditation, stretching, breathing, imagery and progressive relaxation.

The results after 3 months showed an increase of telomerase from 8.05 to 10.38 standard raw units. In addition, there was a decrease in LDL

cholesterol and a decrease in psychological distress.

Several studies have investigated a molecular component of Astragalus, a Chinese plant used in traditional medicine. This compound named TA-65 is a proprietary extract of the dried root of Astragalus membranaceus. It is formulated for humans in 5- to 10-mg capsules.

Several studies of TA-65 have been conducted with mice. Some interesting findings about TA-65 administered mice (compared to controls) include:

- There was a significant decrease in short telomeres indicating TA-65 promotes short telomere rescue.
- Glucose intolerance and insulin resistance (which normally increase with age) were significantly improved.
- Wound healing improved.
- Hair regrowth (after plucking) improved.
- Organ fitness improved.
- Bone density improved.

These results indicate a good potential for beneficial use of TA-65 in humans.

In one human study subjects were evaluated after 3, 6, 9, and 12 months on TA-65 supplementation. The number of subjects who were tested over the course of the trial varied from 43, 59, 27, and 37. The starting dose was from 5-10 mg per day. But, during the course of the trial some subjects increased their dose to 25-50 mg per day.

The results showed no statistically decline in telomere length. But, in most subjects there was a decline in the percentage of short telomeres, again showing short telomere rescue benefits. Senescent cytotoxic T cells (killer T cells responsible for killing infected cells) declined linearly from 39% to 30% indicating an age reversal with a higher percentage of viable cells in a dose-responsive manner.

These results show promise for TA-65 in helping slow the aging process in humans.

## **Results You Can Use**

While research is attempting to find the “miracle pill” that will extend life, such pills are hard to come by. While TA-65 may help humans to slow aging and retain health, it is an expensive solution. Costs for TA-65 are around \$100 for 30 capsules.

Lifestyle changes (at least changes from what is typical) can also affect your healthy lifespan. And, everyone can eat a more healthy diet, exercise, and reduce their daily stress. This is the simple solution for everyone concerned about their health.

## References

- [Compositions and methods for increasing telomerase activity](#) US Patent 7846904B2 currently owned by Telomerase Activation Sciences Inc
  - [Formulations containing astragalus extracts and uses thereof](#) US Patent Application 20070122501A1
  - [Increased telomerase activity and comprehensive lifestyle changes: a pilot study](#) as found in *The lancet Oncology*
  - [Accelerated telomere shortening in response to life stress](#) as published in the *Proceedings of the National Academy of Sciences of the United States of America*
  - [A Natural Product Telomerase Activator As Part of a Health Maintenance Program](#) as published in the journal *REJUVENATION RESEARCH*
  - [The telomerase activator TA-65 elongates short telomeres and increases health span of adult old mice without increasing cancer incidence](#) as published in *Aging Cell*
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## [Discover the Health Benefits of Turmeric](#)

### What is Turmeric?

Turmeric is an inexpensive, tasty, yellow spice used extensively in Asian food. It is also used as a dye for saris and Buddhist monk's robes. Turmeric is a perennial plant that is native to South and Southeast Asia. It requires warm temperatures (68-86 degrees Fahrenheit) and a rainy environment.



Photo by [bungasirait](#) 

It has a long history of use spanning thousands of years in both India and China as a cure for many ailments. Turmeric has played a part in Ayurveda, Siddha medicine, Unani, and traditional Chinese medicine for centuries. More recently western researchers have investigated turmeric and have discovered evidence of many health benefits. One active ingredient in turmeric,

curcumin, has shown its power for its antioxidant and anti-inflammatory properties. More than a billion people regularly consume curcumin in their diet.

## **Health Benefits of Turmeric**

One key to health involves preventing free radical damage throughout your body. Free radicals are atoms or molecules with unpaired electrons that cause chemical reactions (oxidative damage) with cells in your body. They can damage lipids, proteins, DNA, or cell membranes. Free radical damage prevents the body from functioning normally and often causes inflammation or even cell death.

Unfortunately, there are many things in our environment that can create free radicals. Free radicals can be generated by the foods we eat, various drugs and medicines, air and water pollutants, pesticides and exercise to name a few. Oxidative damage caused by free radicals has been associated with various chronic diseases such as cancer, atherosclerosis, and neurodegenerative diseases as well as aging.

To the rescue come antioxidants. These free radical scavengers either prevent free radicals from forming or react with existing free radicals to neutralize them and make them safe. By reducing damage, any inflammation to aid in repairing cell damage is less necessary.

Curcumin has a "[potent anti-inflammatory property](#)" that helps keep free radical contained. It's antioxidant property is 5 to 10 times stronger than vitamins C and E.

But, you should not consider curcumin as a medicine to be taken when you become ill. It is best used daily to help contain free radicals and reduce inflammation. It is a key nutrient that you should take every day.

## **What Free Radical Damage Diseases Can Turmeric and Curcumin Help Prevent?**

Oxidative stress has been a [known factor in many diseases](#) such as:

- cancer
- autoimmune disorders
- aging
- cataract
- rheumatoid arthritis
- cardiovascular disease
- neurodegenerative diseases

Subash C. Gupta, Sridevi Patchva, and Bharat B. Aggarwal in their article [Therapeutic Roles of Curcumin: Lessons Learned from Clinical Trials](#) in *American Association of Pharmaceutical Scientists Journal* citing half a century of research on curcumin indicated:

Some promising effects have been observed in patients with various pro-inflammatory diseases including cancer, cardiovascular disease,

arthritis, uveitis, ulcerative proctitis, Crohn's disease, ulcerative colitis, irritable bowel disease, tropical pancreatitis, peptic ulcer, gastric ulcer, idiopathic orbital inflammatory pseudotumor, oral lichen planus, gastric inflammation, vitiligo, psoriasis, acute coronary syndrome, atherosclerosis, diabetes, diabetic nephropathy, diabetic microangiopathy, lupus nephritis, renal conditions, acquired immunodeficiency syndrome,  $\beta$ -thalassemia, biliary dyskinesia, Dejerine-Sottas disease, cholecystitis, and chronic bacterial prostatitis.

Clinical trials of turmeric and curcumin are ongoing. Some clinical trials are looking various types of cancers (breast, prostate, pancreatic, lung and colorectal), type 2 diabetes, rheumatoid arthritis, ulcerative colitis, dermatitis, cognitive impairments and depression.

### **Bio-Availability Problem**

Clinical trials show that when consumed, the bioavailability of curcumin is relatively low. The liver rapidly clenses the bloodstream of curcumin, quickly making it ineffective.

Several studies has shown that both black pepper and fats greatly help the absorption and retention of curcumin. So, it's best not to take curcumin on an empty stomach, but rather with a meal including some fats and black pepper.

How to get the most of Curcumin. Should you take pills or whole turmeric? How do you increase the bioavailabilty of curcumin? What other foods should you eat with turmeric? These questions and much more are answered in this video!

**Video Rating: / 5**

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## [Vitamins Promoting Healthy Aging](#)

Vitamins Promoting Healthy Aging



People do not realize what vitamins can do for them. Vitamins are great for those who need them. On the other hand, if you have sufficient vitamins, then you will not need regimens of vitamins. Building

vitamins in your system, which has too much already, or sufficient nutrients can cause harm. Vitamins will make you look younger and feel younger as well as make you feel good about yourself, providing you need regimens suited for your system.

How do I learn what vitamins are good for me?



We get natural vitamins in the foods we eat. Some times, you do not get the right amount so you have to take vitamins, which come in many ways. You can get them in a pill form, liquid, powder, etc. If the vitamins you choose do not work for you, your doctor can give you a shot. You can get almost all the vitamins you may need at local drug stores. You will find vitamins at supermarkets, department stores and so on. If you cannot determine which vitamins are right for you, check with your doctor. He may have some recommendations. In fact, you should visit your family doctor first and ask him/her, which vitamins may be suitable for your body type.

How vitamins help you:

Taking vitamins will help you to relieve stress. Vitamins will help control your weight, and help keep you from getting sick with the common cold and the flu. There are many vitamins to help you out. You can check out at your local pharmacy many different kinds. Your pharmacist is your best friend as well as your doctor. He/she may be able to help you find out which vitamins are best suited for your body type.

What kinds of vitamins should I consider and for what purpose?

You have a wide array of vitamins to choose from, including B1, B12, B6, E, D, K, A, and so on. B1 is designed to help your heart function in order. The vitamin will assist your central nervous system as well, helping you to have a better attitude in life. B1 will give you energy, since it is known to swap blood sugar, transferring it to energy. B1 promotes a healthy mucous membrane, and will promote the muscular and cardio functions.

How to decide if you need vitamins:



Some things that you may feel if you are low on vitamins are fatigue. You may feel muscle tenderness, or experience insomnia. Insomnia can benefit from Melatonin supplements. You can get natural vitamins from corn breads, nuts, oatmeal, cereal, wheat and so on. Eat plenty of veggies and fruits also to get the vitamins you need.

If you have colds, you can benefit from Vitamin C. If you are searching for anti-aging vitamins consider E, since According to experts, Vitamin E is responsible for preserving oxygen in the blood, reduce more than 40% of the oxygen amount the heart needs as well. Vitamin E also has been linked to

influential anti-coagulants. Some experts believe the vitamin will slow blood clotting by dilating the blood vessels. If you searching for the vitamin to help you stay young and healthy, then Vitamin E that contains 200 units is for you.

According to German experts Wolf and Luczak Vitamin E is a stabilizer for youth and strong blood. If this is true, then dying cells will be replaced quickly by new cells. Dying cells is responsible for many diseases, including cancer, AIDS, HIV, leukemia and so on. In fact, T-Cells that deteriorate is responsible for AIDS, certain types of cancers, herpes simplex, and so on.