

# Hue Light

IMMUNITY CARE SYSTEMS



# Hydrogen, Inhalation instead of “drinking” it. Hydrogen Inhalation

## Hydrogen Inhalation Therapy

**Starting from Dr. Shigeo Ohta's (Nippon Medical School) clinical trial on oxidative effect of hydrogen, multiple papers on hydrogen treatment have been published, and hydrogen has been drawing a lot of attention by numerous people.**

*As a result for the past 10 years, 'hydrogen water generator' has been popular among people, and lots of hydrogen water related products, such as hydrogen water generator and tumblers are being sold. However, most scientists has been raising a question in hydrogen water. According to the statement from Ministry of Food and Drug Safety, hydrogen in hydrogen water generator is either not present, or barely present. Not only it is barely present, but it evaporates once it is exposed to oxygen of certain temperature, or it doesn't get absorbed into the body. Thus, at last recent news reported that drinking hydrogen generated water is no different than drinking 'normal' water. This shows a theory that separated hydrogen gas does not dissolve into water on its own.*

Companies explain that hydrogen concentration reaches up to 1,000ppb at maximum.

*Although 1,000ppb seems like a high number, ppb illustrates 1 in a billion particles, which means that 1mg (0.001g) of hydrogen is dissolved in 1 liter (1,000g) of water. Drinking daily recommendation of water intake (2 liters) in hydrogen water will only result in intake of 0.002g of hydrogen.*

Moreover, once water containing trace of hydrogen is exposed to oxygen or the temperature increases, hydrogen within the water immediately evaporates. As this scientific knowledge become well known, and the fact that most of Dr. Shigeo Ohta's and others'(Nippon Medical School) clinical trials used hydrogen gas become known, Hydrogen inhalation therapy has been suddenly drawing attention to it



**2016 November, as Hydrogen Inhalation Therapy got approved as advanced medical treatment B by Japan's Ministry of Health, Labour and Welfare,**

**Centered in Japan and USA, many hospitals are introducing Hydrogen Inhalation Therapy, and cases of using hydrogen inhalation therapy at home, work and natural healing centers have been increasing.**

## Why hydrogen inhalation therapy?

**Remember the three following things about Hydrogen**

- Hydrogen is originally gas
- Thus it has tendency to spread out.
- It very small that it can even leave through muscle and bone.

## Ultimatum of Anti-oxidation – Hydrogen Inhalation

Anti-oxidation is the process that prevents the increase of active oxygen that necessarily occurs during cell regeneration, or suppresses over activity of active oxygen species. Anti-oxidation substances can naturally occur in the body (SOD, catalase, peroxiredoxin, glutathione) but one can also experience the anti-oxidation effect through stress management, intake of anti-oxidant foods, exercising, or healthy lifestyle. Anti-oxidation supplements, medicine, and food products currently out in the market requires intake through mouth and sent down to digestive track. Anti-oxidation effect will only show once the product is thoroughly digested, absorbed, and transferred all around the body via blood vessels. The effect will differ based on one's digestive/absorptive ability, thus anti-oxidant product might not reach a certain area of the body. Especially for patients with lowered metabolic activity, it is even harder to see the anti-oxidation effect. The water that we drink passes into stomach a certain agent (esophagus, in this case). However, hydrogen inhaled through nose will absorb directly into the tubes that connect to neck and lungs, which will immediately reach eyes and brain. The smallest element in the universe can easily permeate through skin,

bone, muscle, organs, and vessels, reaching into our cells. For important organs such as brain, there is a barrier which only allows certain substances in, and blocking external factors from permeating in. However, hydrogen – a small molecule – can freely pass the barrier and act as anti-oxidant and functions the immune system.



## Product's advantage and characteristics

- Solid polymer electrolyte technology
- Optimal for therapeutic purposes breathing
- Electrode and multiple unit electrolysis cell structure
- Uses sterile distilled water for electrolysis (no harmful alkali additives)
- Low power consumption, Low cell voltage
- Maintain 1 air pressure, triple safety device
- High electrolysis efficiency, can use up to 7 hours and 50 minutes non-stop.



## Product Specifications

Produced quantity and indicationcc/min	cc/min	Molecular hydrogen : 800cc-1,000cc Oxygen : 400cc-500cc Total : 1,200cc-1,500cc Real time produced quantity indicated
Hydrogen, Oxygen purity	%	> 99.9995
Output pressure	Barr	1 Barr
Voltage	W	350W 33A
Power/Current	AC voltage	Input AC220V 50-60Hz, Output DC 7.5V
Water, and tank capacity	Liter	Sterile distilled water 2L
Operating environment	Indoors 5°C ~ 45°C	<80 % indoor humidity
Weight	Kg	<22
Size/Measurement	mm	Width: 530mm, Height: 500mm, Length: 220 mm
Usage time		Max 7h50min of continuous usage Accumulated usage time indicated
Manufacturer		Huelight Corporation Made In Korea

## Molecular hydrogen for an ambulance

Molecular hydrogen gas of high purity acts as an important factor in medical field, especially in emergency medical treatment of cerebral infarction or cardiac infarction. Cerebral or cardiac infarction occurs when the blood vessels of brain or heart gets blocked which also limits the blood supply to the organs. In result, it limits the oxygen and nutrients supply to cells, causing necrosis of the tissue. In an urgent situation where each second matters, usually a normal respirator is used, rapidly supplying oxygen to tissue where it lacks oxygen. This might result in mass production of active oxygen.

Especially during treatment of cerebral infarction, it is important to slow down the cell destruction, lower the brain temperature, and removing largely produced active oxygen. In May 2007, Nippon Medical School's Dr. Ohta Shigeo's research paper on "effect of hydrogen inhalation during temporary cardiac arrest state" mentioned the power of hydrogen gas inhalation. For this reason hospitals in Japan introduced molecular hydrogen inhalation devices in emergency medicine system, and performing hydrogen gas inhalation to emergency patients. This is the reason why all ambulances in Korea should introduce hydrogen inhalation device in the future.

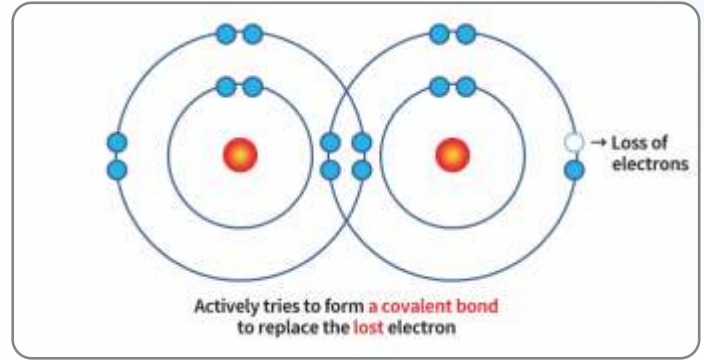




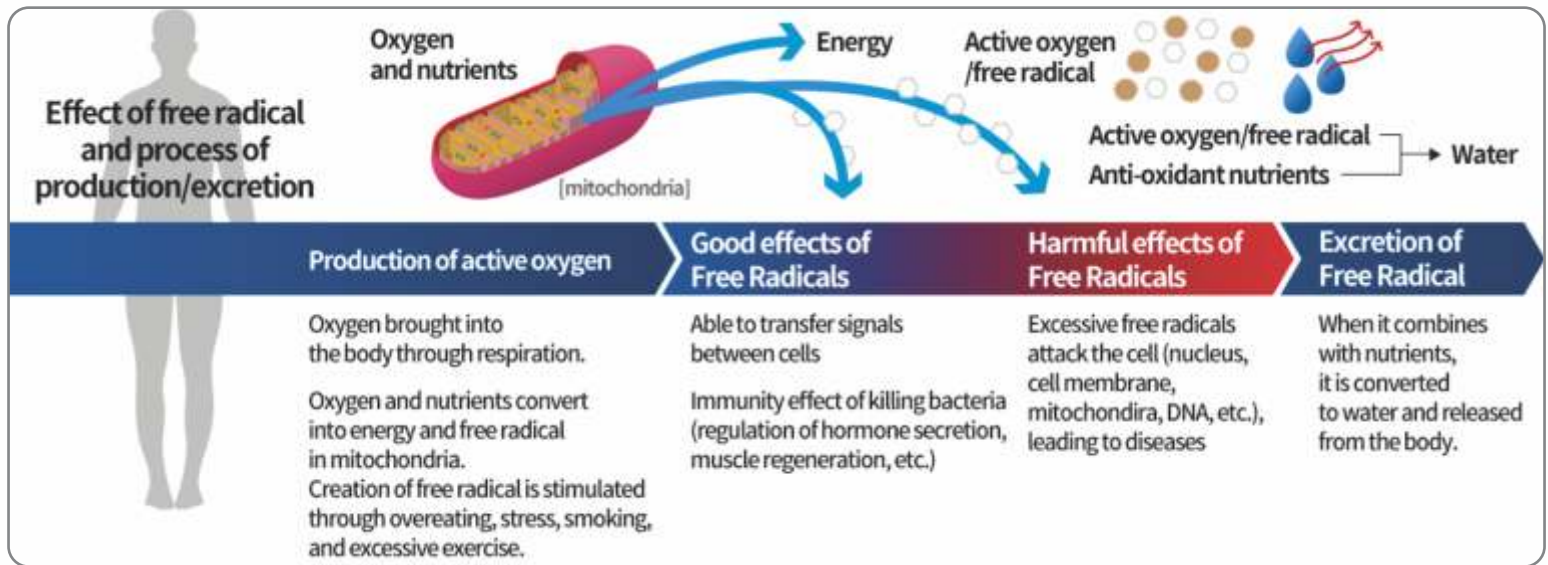
## Properly Understanding Free Radical Species

Most living things on earth respire through oxygen. Through respiration, in the the electron of an organic matter that is ingested during process of making ATP (energy source Adenosine Triphosphate) at mitochondria is passed on to oxygen which produces energy. The oxygen that received the electron transforms with proton into water, a steady state. However, in this process, a tiny fraction of it does not transform into water, and only receive electron to become a radical. In a case it loses an electron instead of receiving it, this chemically denature other cells and holds the tendency to take away an electron from others.

Cause of Active Oxygen Generation	Alternative Names for Active Oxygen
<ul style="list-style-type: none"> <li>• Stress</li> <li>• UV-rays</li> <li>• Chemical substance (agricultural pesticides, pesticides, medicine, nitrogenous compound, etc)</li> <li>• overeating, alcohol, smoking, etc.</li> <li>• Macrophage that engulfs bacteria and virus</li> <li>• Radiation</li> <li>• Instant food</li> <li>• Strenuous exercise (physical labor, overworking)</li> <li>• other environmental pollution</li> </ul>	<ul style="list-style-type: none"> <li>• Free Radical</li> </ul>



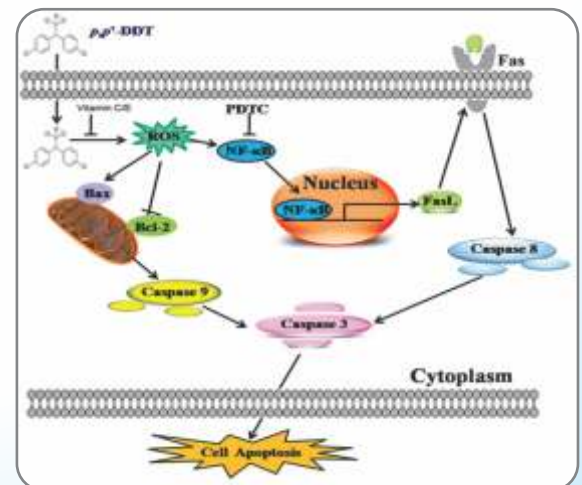
like so, a molecule with a strong tendency to take away an electron from other tissue cells is called “free radical (Active oxygen)”. Active oxygen species include superoxide radical, hydrogen peroxide, hydroxyl radical, and singlet oxygen. But there are two sides to this active oxygen (Free radical). Balanced active oxygen plays a huge role in immune system as it acts as a medium for oxidation return signal which is necessary for maintaining homeostasis. On the other side, too much active oxygen may cause oxidative stress on protein or DNA, which leads to error, halt, apoptosis, necrosis, and etc, during cell regeneration. It is shown in many research papers that this is closely related to cancer, diabetes, autoimmune disease, heart disease, and other diseases.



Hydrogen not only has the anti-oxidant function but there also is an evidence that it can aid in balance and regulation of cell signaling at a molecular level. Dr. Ohno's report on “molecular hydrogen suppressing acute allergic reaction”, from Nagoya University, stated that acute allergic reaction is not related to active oxygen, thus it is not explainable solely based on the function of active oxygen. To this, Dr. Nakaonun from Pittsburgh university found out anti-apoptosis protein appeared from lung cells once hydrogen gas is inhaled into a mouse during lung transplant, therefore concluded that **supressed inflammation is partially due to hydrogen molecule's function on cell signalling process.**

**The reason why this study is important is because anti-oxidizing function of hydrogen and molecular cellular response, cell signalling theory between each enzyme can be the beginning of curing intractable diseases such as dementia, cancer, and autoimmune disease.**

In recent research papers, hydrogen is effective in anti-inflammatory, anti-allergy, autoimmune disease, chemotherapy side effects, competency of athletes, recovery of chronic fatigue, and acceleration of energy metabolism.



## Advantage of active oxygen

Some experts claim that “hydrogen is selective and only reacts with bad active oxygen” but this is a groundless claim.

Regardless of its good and bad sides, the problem is the overly produced active oxygen. There are simply active oxygen that has lost the balance due to over-production and active oxygen that has been produced properly. Over-production of active oxygen is due to increase of stress agents which is caused through disease or stress.

Without sufficient amount, hydrogen inhalation therapy will not result in an expected outcome. The more you inhale, the better result you will see.

## Lung cancer and Lung diseases

### Hydrogen gas inhibits lung cancer progression through targeting SMC3

Lung cancer is one of the most common lethal malignancies in the globe. The patients' prognoses are dim due to its high metastatic potential and drug resistance. In this research, during the search for lung cancer cure, it was discovered that molecular hydrogen (H<sub>2</sub>) has suppressed the lung cancer progression through the Structural Maintenance of Chromosomes 3 (SMC3). (Hebei Medical University, 2018 May 29th)

### Hydrogen gas inhalation protects against acute lung injury

Hydrogen, a therapeutic gas, has potent cytoprotective, anti-inflammatory, and antioxidant effects in Acute Lung Injury (ALI) treatment. This study examined the effects of inhaled hydrogen on ALI caused by HS/R.

HS/R induced ALI, as demonstrated by significantly impaired gas exchange, congestion, edema, cellular infiltration, and hemorrhage in the lungs. Hydrogen inhalation mitigated lung injury after HS/R, as indicated by significantly improved gas exchange and reduced cellular infiltration and hemorrhage. Hydrogen inhalation did not affect hemodynamic status during HS/R. (Department of Emergency, Disaster and Critical Care Medicine, Hyogo College of Medicine, Nishinomiya, Japan, May 14th 2015)



### Protection by Inhaled Hydrogen Therapy of Acute Lung Injury can be Tracked in vivo using Molecular Imaging

Inhaled hydrogen gas (H<sub>2</sub>) provides protection in rat models of human acute lung injury (ALI). We previously reported that oxidative stress and endothelial cell death in vivo of ALI can be stopped. (University of Wisconsin Medical Center, Milwaukee, USA, Oct 1st 2017)

### Hydrogen inhalation ameliorates ventilator-induced lung injury

Hydrogen inhalation functions as an anti-oxidant and can be useful as a new therapeutic treatment gas. Inhaled hydrogen gas effectively reduced VILI-associated inflammatory responses, at both a local and systemic level, via its antioxidant, anti-inflammatory and anti-apoptotic effects.

### Inhaling hydrogen may help reduce lung damage in critically ill patients (an animal study)

According to this study using rats, inhaling small amounts of hydrogen in addition to concentrated oxygen may help stem the damage the lung tissue that occurs when critically ill patients are given oxygen for long periods of time.

## Let's sleep properly

### Ultimatum of Anti-oxidation: hydrogen inhalation

To people who thinks even 24 hours a day is not enough, it is their wish to rather sleep a short amount of time without waking up in the middle of the night.

However, being exposed to chronic stress at workplace, our sympathetic nerves become overly activated, resulting in not being able to fall asleep at night. Even after falling asleep with much effort, shallow sleep is repeated, which is insufficient for the brain to recover from the stress that it received throughout the day. Once this patten is repeated, it becomes difficult to escape from chronic fatigue, and the immune system is lowered.

Not only workers, but students/teens are also in an environment where good quality of sleep is hard to achieve, due to late night studying, parents returning home late, smartphone games, etc.

Lack of sleep during growth period causes impaired concentration and cognitive skills and causes obesity. Moreover, it also impairs the frontal lobe where it controls emotions.

Hydrogen inhalation has an effect of creating a balance between sympathetic nerves and parasympathetic nerves, hence calming down the brain. If parasympathetic nerve is activated, NON REM sleep is achieved, which leads to good quality of sleep that recovers mind and body's fatigue. Deep sleep stimulates release of hormones and enhances the immune system. Performing hydrogen inhalation therapy during sleep is a great way to get into deep sleep.





## Parkinson's and Brain diseases

Parkinson's is a nerve disease that is caused by the lack of dopamine in the brain. Major symptoms include shaking of hands and feet, slower movement, muscle stiffness and it might also develop dementia as complication. Symptoms arise the most around the age after 40s~50s, and it is categorized as an incurable disease.

Researches have been happening in Japan and USA to study whether molecular hydrogen, a strong anti-oxidant, has the ability to suppress progression of Parkinson's and other brain diseases.

*"This page organizes some important research papers on the relationship of hydrogen and Parkinsons/brain diseases. (Source: <https://www.ncbi.nlm.nih.gov>) We hope that it will help Parkinsons/brain disease patients and their families.*

### Ingestion of hydrogen gas can improve neurological function outcome in the spontaneously hypertensive stroke

Hydrogen gas decreased oxidative stress (8-OHdG, 4-HNE and nitrotyrosine) and exerted neuroprotective effects (improvement of neurological score and reduction in infarct and hemorrhagic volumes) and also reduced MMP-9 activation in a middle cerebral artery occlusion model.

### Medical hydrogen gas for stroke therapy: summary of progress 2015-2016

Stroke is a cerebrovascular disease with high mortality and morbidity. Despite extensive research, there are only a very limited number of therapeutic approaches suitable for treatment of stroke patients as yet. Mounting evidence has demonstrated that such gases as oxygen, hydrogen and hydrogen sulfide are able to provide neuroprotection after stroke. (Discipline of Neuroscience, Department of Anatomy, Shanghai Jia Tong University School of Medicine Jun 30th, 2017)

### Hydrogen gas inhalation treatment in acute cerebral infarction: a randomized controlled clinical study on safety and neuroprotection

Molecular hydrogen (H<sub>2</sub>) acts as a therapeutic antioxidant. Inhalation of H<sub>2</sub>gas (1-4%) was effective for the improvement of cerebral infarction in multiple animal experiments. The H<sub>2</sub>group showed no significant adverse effects with improvements in oxygen saturation. H<sub>2</sub>treatment was safe and effective in patients with acute cerebral infarction. These results suggested a potential for widespread and general application of H<sub>2</sub>gas. (Department of Neurosurgery, Nishijima Hospital, Numazu-city, Shizuoka-ken, Japan Jun 29th, 2017)



## K efficiency (becoming the "god of work" through hydrogen inhalation)

### Ultimatum of anti-oxidation: hydrogen inhalation

**"Come up with an idea by tomorrow." "send me the proposal by the afternoon" "tomorrow is the due date for the project."**

Company employees who are always chasing after new ideas, or creators such as city planning, design, programmer, researcher, accountant, lawyer, composer, artist, writer, and more tend to have their nerves focused on one side of the brain, which over works the sympathetic nerve. According to a study, office workers who sit in front of a computer screen for a long time complain of shoulder pain, back pain, eye strain, trophedema, feeling cold, and period cramps more than salesperson or blue collar workers. Once afternoon hits after lunch, sympathetic nerve activity increases even more, prefrontal cortex's activity decreases, fatigue reaches extreme, and creativity starts to run out.

This is the moment when molecular hydrogen inhalation is needed. Molecular hydrogen inhalation reaches balance of automatic nerve by activating the parasympathetic activity and allows the brain to clear out in a short period of time. This is because high concentration of hydrogen inhalation (1,200cc/min) allows the brain to rest within just 30 minutes. If you would like to increase the efficiency of afternoon's work, you can inhale hydrogen before lunch time, before your brain starts feeling tired.

*Specialized jobs or careers that require creativity usually involve working alone in front of a table, so that hydrogen inhalation is possible during work. Stimulating prefrontal cortex through 3 hours a day of hydrogen inhalation will help you become a great worker who will not be afraid of deadlines and meetings.*



## Q. When and for how long do we inhale hydrogen?

### Ans.

- Takes around 20 minutes for hydrogen to reach cells in all parts of your body.
- In hospitals and clinics in Japan, depending on the patient's condition, hydrogen inhalation is performed for about 1 hour, 1~3 times a day
- For athletes, pre/post-exercise, once each, 60~90 minutes per session
- 60 minutes prior to sleep for severe insomnia
- For normal health, once or twice a day (morning and night) 30~60 minutes per session
- For patients during chemotherapy, brain diseases like Parkinson's, or autoimmune diseases, 4~6 hours (during sleep) (the more the better, and less side effects)ee.

## Q. Is drinking hydrogen water different from hydrogen inhalation?

**Ans. :** Usually 0.001g of hydrogen is present in 1 (half of a large water bottle) of hydrogen water. This is barely a trace of hydrogen, and the size is similar to a peck of dust. Scientifically, in room temperature/pressure, maximum amount of hydrogen that can dissolve in 1 liter of water is 1.6mg (0.0016g). However, using 30 minutes of H-1200, a hydrogen generator for inhalation purpose, is equivalent of drinking 18,000 bottles of 2-liter hydrogen water bottles. [If you use hydrogen for treatment or health purposes, hydrogen inhalation is the key.](#)

## Q. What does hydrogen inhalation do to the human body?

**Ans. :** It reverts overly produced active oxygen in the body, and acts as an anti-oxidant in cell signaling system within molecular cells.

[Especially during chemotherapy, it acts as a strong anti-oxidant and manages chemotherapy side-effects, Parkinson's brain diseases, pneumonia, and maintains immunity.](#)

“From the study of terminal cancer patients by Dr. Junji Akagi, medical treatment center in Tama, Japan”.

## Q. Does hydrogen inhalation help with chronic fatigue?

**Ans. :** In a study of “hydrogen and oxygen gas mixture inhalation on chronic fatigue and fatigue from high intensity exercise”, it has [proven that inhalation mitigates fatigue until one day after the inhalation.](#) (Yamashi University, Japan, General research center, from Dr. Koyama Katsuhiro's study)





**Hue Light**

IMMUNITY CARE SYSTEMS

**Authorised Dealer**