

generate molecular hydrogen.

As such, artificial hydrogen water for drinking is now on the market, but you need a lot more hydrogen in order to absorb it through your entire body.

Hot spring water containing natural hydrogen is constantly supplied to Obinata-no-yu and Happo-no-yu where your body can take in hydrogen.

The only hot spring in Japan using natural hydrogen spring

Hakuba Happo Onsen has launched several initiatives to utilize the properties of hydrogen described above.

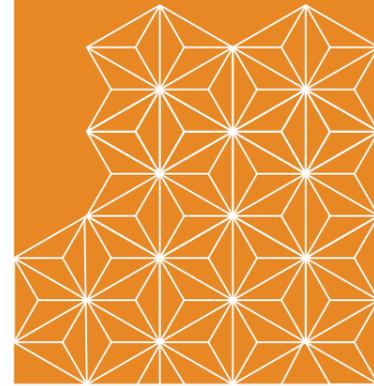
Hydrogen penetrating through the skin can also affect your body. Bathing in natural hydrogen spring continuously or periodically may prevent illness or inhibit the aging process.

Almost 50 - 60ppb of dissolved hydrogen gas has been observed at the open-air hot spring bath of Happo-no-yu. While higher hydrogen concentration would be preferable, the bath contains just enough natural hydrogen.

Obinata-no-yu is trying to maximize the exposure to hydrogen by adding tsubo-yu (a vase-shaped bath) to effectively contain the dissolved hydrogen inside, and utase-yu (drip bath), a shower of newly supplied water.

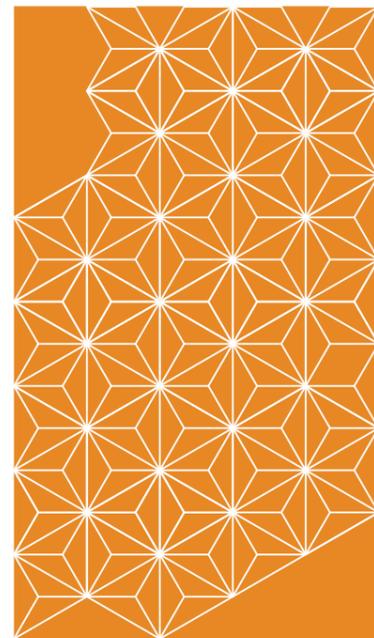
Drinking hydrogen water could also be effective as described above. Hakuba Happo Onsen's Obinata-no-yu is approved and equipped as a drinking spring, but there are certain precautions you follow when drinking this spring water as it contains strong alkaline with a high pH of 11. Guidance from the local health authority is posted at the drinking fountain, and we also recommend that you receive medical instructions from a balneotherapist.

If hydrogen becomes certified as constituent under the Hot Spring Law of Japan and gains academic qualification, it could add new values to the inherent efficacies of Hakuba Happo Onsen.



Hakuba Happo Onsen, A Source of Natural Hydrogen Spring

~ Its antioxidant properties may reduce lifestyle-related diseases and provide anti-aging effects ~



The only hot spring in Japan which contains naturally dissolved hydrogen that has possibly been observed to date.

“Bad” active oxygen causes lifestyle-related diseases and accelerates aging

Anti-aging with antioxidant effects of hydrogen water

Effects of drinking hydrogen water

The only hot spring in Japan using natural hydrogen spring

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<References provided by >
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Happo-one Kaihatsu K.K. “Happo 50 Years Ahead” Project

The only hot spring in Japan which contains naturally dissolved hydrogen that has possibly been observed to date.

In collaboration with Nippon Onsen Research Institute Co., Ltd., our Onsen Division has been conducting research on the amounts of dissolved hydrogen contained in the hot spring waters. Component analysis results were published by Takuya Morimoto of the Institute in his paper titled “Dissolved Hydrogen (H₂) in Natural Hot Spring” that appeared in the December 2014 issue of Hot Spring Sciences magazine (Volume 64, No. 3) of The Japanese Society of Hot Spring Sciences.

According to the paper, Hakuba Happo Onsen is currently the only hot spring in Japan in which dissolved H₂ was observed, and authors suggested that although hydrogen is not stipulated in the current Hot Spring Law of Japan, its effects and efficacy may have many unknown potentials.

On May 22 and June 26, 2015, the Institute conducted further studies taking more precise measurements of the dissolved hydrogen contained in the Hakuba Happo Onsen waters. The following H₂ gas concentrations were observed.

A high dissolved hydrogen concentration of 1,208 ppb was observed in the water of hot spring source no. 1. At locations where spring water is made available to the public, concentration was 243 ppb at the Obinata-no-yu drinking fountain, which is the closest location to the source, and 120 ppb at Happo-no-yu open-air bathing area located near the center of Happo District. The paper suggests that bathing in dissolved hydrogen may have effects on human bodies if a minimum concentration of 50 ppb could be maintained in the bathtubs, so depending on how the water is supplied, the baths could perhaps be used as natural hydrogen spring.

In the same study, the components and (alkaline) pH value of the hot spring water of Hakuba Happo Onsen were found to be highly reducible, which means that the water has antioxidant properties. What are the significances of Hakuba Happo hot spring water’s high hydrogen concentration and high reducibility?



Concentration of dissolved hydrogen

Points of measurement	H ₂ gas concentration
Hot spring source No. 1	1,208 ppb
Hot spring source No. 3	467 ppb
Obinata-no-yu drinking water	243 ppb
Happo-no-yu open-air hot spring	120 ppb

Definition of hydrogen water	80 ppb or greater
Hydrogen water products	Approx. 1,000 ppb

※1,000ppb = 1ppm
<Measurements taken by Nippon Onsen Research Institute Co., Ltd.>

“Bad” active oxygen causes lifestyle-related diseases and accelerates aging

It has been found that many of the human diseases are caused by active oxygen. Our bodies are kept alive by metabolism – a process that digests food and converts it to energy, and moves our heart to make us breathe. Active oxygen is produced during this process of metabolism.

Not all types of active oxygen induce illness. Among the many kinds of active oxygen, those that cause harm to human bodies are called hydroxyl radicals. These “bad” active oxygen damage or destroy our cells and trigger cancer and other lifestyle-related diseases.

Our body generates various enzymes that eradicate harmful active oxygen, but the functions of these enzymes are said to decline at the age of 30, and our body becomes more vulnerable to active oxygen and starts to “rust.” This is the mechanism of aging – how we get wrinkles, freckles and spots.

Anti-aging with antioxidant effects of hydrogen water

Meanwhile, there are substances that have antioxidant effects, which are useful in removing active oxygen: beta-carotene, polyphenol, vitamin C, and catechin, to name but a few. Hydrogen has also been proved in recent studies to have antioxidant effects.

Molecular hydrogen is small and soluble in both water and oil, so they can easily circulate throughout our body compared to other antioxidant substances. And while vitamins and polyphenol are so powerful as to reduce (remove oxygen) even the “good” active oxygen, hydrogen is known to reduce only the “bad” active oxygen.

Such efficient and effective antioxidant properties of hydrogen could be highly useful in anti-aging (in other words, delaying the aging process).

Other studies revealed that hydrogen also has anti-inflammatory, anti-allergic properties, opening new possibilities for curing skin disorder, atopic dermatitis, or even pollen allergy, but despite these recognized effects of hydrogen water in the world of medicine, their guaranteed efficacies against diseases are yet to be proved. So, we cannot say that bathing in hydrogen water will prevent cancer, or drinking hydrogen water will cure your diabetes.

Still, we do know that hydrogen can remove active oxygen, so the question is when the efficacy of hydrogen will be established in the fields of medicine, healthcare and beauty care.

Effects of drinking hydrogen water

Since a paper showing the potency of hydrogen as a therapeutic gas was published in the medical journal “Nature Medicine” in 2007, the antioxidant effects of hydrogen has been recognized followed by the development of hydrogen water products.

Today, artificial hydrogen water promoting its antioxidant effects are sold by many manufacturers and are rapidly gaining popularity. A 500ml hydrogen water bottle can now be purchased for 200 to 500 yen. There are also water servers that can produce hydrogen water at home by electrolyzing tap water to