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LIQUID ASSETS

Infused into drinking water and skin care, hydrogen (yes, that atom from Chem 101) might prove to be a powerful tool in fighting disease—and delivering glowing skin. **By Megan O'Neill**

Like everyone who came of age post–Cindy Crawford, I was raised to believe one had to chug eight glasses of water a day to stay healthy and beautiful. Okay, sure, water is a life force—up to 60 percent of the adult body is composed of it. But downing liter after tasteless liter has never stirred me in quite the same way as tossing back a sugary blue Gatorade.

Until now. Hydrogen-rich water, in which protons and electrons are added to regular old H_2O, giving it a surplus of hydrogen gas (H_2O + molecular hydrogen does not a new element make), has been a thing in Japan since the 1960s and was called *Shin'nooru* solution. For decades, it was gulped down in bottles and used for bathing. Fast-forward to 18 months ago, when Japan's health ministry approved hydrogen-infused saline IVs for medical use to help treat (solo or alongside other medications) everything from dehydration to serious infections. Now the country is in full-tilt hydrogen mania: Major companies such as Panasonic sell machines that gas up water for at-home guzzling (picture the nonbubbly version of a SodaStream). And Japanese health nuts pop hydrogen-infused antiaging skin supplements (said to help fade melasma) and soak in hydrogen-infused bath salts to reap an array of skin-perfecting, anti-inflammatory, and antioxidant benefits.

Too good to be true? Consider this: In a small 2011 Japanese study from the *Journal of Photochemistry and Photobiology*, six subjects who bathed in hydrogen-enriched water daily for three months showed significant improvement in neck wrinkles compared to a control group. In another study in the same publication, samples of UV-damaged human fibroblasts (aka sun-zapped skin cells) were shown to increase collagen production twofold after being immersed in hydrogen water for three days. Take note, spring breakers.

Hydrogen (H) is the smallest and lightest element in the periodic table. When ingested, it travels throughout the bloodstream and—according to a 2013 review published in the journal *Medical Gas Research*—weasels its way into the mitochondria, the energy centers of a cell, and penetrates the nucleus, where the majority of DNA is stored. Once there, it significantly reduces free radicals—inflammation-causing molecules linked to everything from accelerated skin aging to cancer. This is no small thing: A 2010 study from the *Journal of Clinical Biochemistry and Nutrition* showed that when 20 overweight or obese subjects with symptoms of metabolic syndrome (high blood pressure, insulin resistance) drank 1.5 to 2 liters a day of hydrogen water for eight weeks with no other dietary changes, they saw a 39 percent increase in an enzyme that fortifies the body against free radicals; a 43 percent drop in thiobarbituric acid, a substance linked to oxidative damage; and a *13 percent* decrease in total cholesterol—results comparable to those of cholesterol-controlling meds.

Your own supply of hydrogen water is just an Amazon click away. For $1,200, there's the Lourdes Water Hydrogen Generator, named for the hydrogen-rich Lourdes healing spring at the foot of the French Pyrenees, which has been said to cure—with the help of the Virgin Mary—everything from tumors to tuberculosis. The gadget uses an electric current to multiply the amount of hydrogen gas in your tap water.

Or you can buy the stuff ready-made. Launched in 2015, H Factor Hydrogen Water ($18 per six-pack) comes in a pouch made of aluminum, the material said to best preserve rapidly dissipating hydrogen gas. And there's Dr. Perricone Hydrogen Water, introduced last month: pristine artesian well water from Virginia that has been hydrogen-infused and packaged in 8-

Dirk Lambrechts/Blaublut-Edition.com

and 12-ounce aluminum cans ($3 to $3.50).

"I've never been more excited about a substance," says dermatologist and scientist Nicholas Perricone, MD, the man behind the can—and that's saying a lot, considering he spearheaded the nutraceutical movement of the early aughts. "I truly believe we'll reduce health-care costs by a third when people start drinking hydrogen water."

Perricone himself swills 24 ounces a day—the optimal amount, he says, for max benefits—starting with one "dose" in the morning on an empty stomach to get a clean boost, minus any caffeine jitters. He says that his in-house testing shows that within 15 minutes of drinking his hydrogen water, there was a 10 percent increase in levels of NADH, a compound our bodies produce that energizes all cells (NADH supplements are said to clear brain fog). "The mental clarity you get is phenomenal," Perricone says. He also claims that a jolt of hydrogen water can ease jet lag and—a potential game changer for athletes—speed workout recovery, a theory echoed in a 2015 review in the *Journal of Sports Medicine* that examined drinking hydrogen water as a viable treatment for exercise-induced oxidative stress.

The most portable hit of hydrogen comes in the form of Purative Active H2 Molecular Hydrogen tablets, which contain no molecular hydrogen at all. They're mostly magnesium, which reacts with H2O's bonds to generate hydrogen gas, according to Purative's founder, Nevada-based water scientist and mechanical engineer Robert Slovak, who helped pioneer reverse-osmosis technology, a widely used water-purification method.

Slovak points out that molecular hydrogen is particularly effective because, unlike other antioxidants, not only is it teeny-tiny, it's also unusually selective about the free radicals it tackles. One of its main functions is shutting down hydroxyl, or OH (one molecule of oxygen, one of hydrogen), which is perhaps the most reactive free radical in the human body and which our cells emit as a result of trauma and oxidative stress, as well as (in small amounts) after every single thing we do—from breathing to dancing all night at a club.

Like all free radicals, hydroxyl has an unpaired electron, and that electron turns it into an insatiable whirling dervish that can't be calmed until it stabilizes itself. Slovak says, "It will steal an electron from DNA, cell walls, the mitochondria—and it will damage those when it does."

But hydrogen water cuts it off at the pass, splitting into its two hydrogen atoms, each of which donates its single electron to a hungry hydroxyl radical—triggering a chemical reaction that seems more mystical than scientific. Whereas some antioxidants, such as beta-carotene (found in carrots), can become free radicals themselves after donating their electron to stop a free radical, hydrogen bonds with hydroxyl's hydrogen *and* oxygen to form a whole new molecule that's the opposite of harmful: H_2O.

Hydrogen shuts down a free radical that cells emit after every single thing we do—from breathing to dancing all night at a club.

That's why a 2014 study from the scientific journal *PLOS One* examining traumatic brain injury (TBI)—which cues an uptick in hydroxyl radicals and inflammation, and which research shows may trigger Alzheimer's and Parkinson's—found that when mice drank hydrogen after sustaining a TBI, swelling of the brain was reduced by about half.

So, wait: Drinking souped-up water can prevent free radicals from chomping up our gray matter? Let's not get ahead of ourselves, says New York neurologist and psychiatrist Maurice Preter, MD, who treats patients with dementia and long-term brain injuries. "I don't want to shoot down hydrogen-water therapy. We're badly in need of new treatments for dementia, and there's a need to keep an open mind and look for alternate stuff," Preter says. "But we don't know how long term [its effects] are."

And while New York dermatologist Macrene Alexiades, MD, cites "a great deal of promise incorporating hydrogen water and hydrogen treatment for preventing or reversing oxidative damage from strokes, skin aging, and metabolic diseases, as well as for neurological damage," she points out the effects of drinking the water day-to-day have yet to be measured in well-designed clinical trials.

Perricone is convinced enough that he's also concocted a way to deliver hydrogen's benefits topically, via a skin-care regimen, the H2 Elemental Energy Collection. Each of the five products is packed with you-know-what—promising instant anti-inflammatory, anti-redness, and depuffing effects.

I find myself gently yet noticeably energized after a few swigs of hydrogen water, as if—poof!—I've suddenly gotten an extra bit of sleep. So I'm wholeheartedly down to pay three bucks for a can of water—the same amount people shell out for Red Bull, and $1.69 less than my bougie organic almond milk–cinna-latte—if it might improve my skin and minimize the inflammation I'll accumulate stressing out all winter and lazing around on sun-drenched Brooklyn rooftops come summer. Later, Gatorade.

OBEY YOUR THIRST

Mind, body, and skin get a heady dose of hydrogen from these three superstars.

1. The bottle must be full of water and tightly capped to create the pressurized environment that the magnesium in **PURATIVE ACTIVE H_2 Molecular Hydrogen tablets** needs to infuse water with 2 *million* times more H_2 than it started out with.
2. Keep **DR. PERRICONE Hydrogen Water** chilled (cool temperatures slow the evaporation of gas) and drink it within half an hour of opening the can, says the doctor: "Studies show that if you leave it open for two hours, you lose 50 percent [of the hydrogen]."
3. "You're not going to get that concentration [to the skin] from ingesting it; this is going to a targeted organ. You're getting levels of hydrogen 100 times higher than you would systemically," Perricone says of his topicals, including **PERRICONE MD H_2 Elemental Energy Advanced Renewal Infusion Serum**.

Dr. Perricone Hydrogen Water: Devon Jarvis/Studio D