

litewater

Deuterium Depletion Guide

How to Decelerate Aging and Safeguard your Mitochondria

Litewater Scientific

Copyright © 2022, Litewater Scientific, All rights reserved.
Published in Nevada, USA

ISBN: 123-45678-9



Disclaimer: *The information contained in this guide is for educational purposes only and should not replace your healthcare provider's advice and care. Talk to your doctor before making any significant changes to your diet or physical activity levels.*

Table of Contents

Chapter 1:	..... The Key to Radically Changing Your View of Water – and Changing Your Life!
Chapter 2:	..... The “Fountain of Youth”
Chapter 3:	..... The Secret to Centenarians’ Longevity
Chapter 4:	..... Not All Water Was Made Equally
Chapter 5:	..... What is Deuterium Exactly – A Review
Chapter 6:	..... Where Does Deuterium Come From?
Chapter 7:	..... Harmful Effects of Deuterium
Chapter 8:	..... Mitochondria – The Cell’s Engine
Chapter 9:	..... More About Our ATP Synthase Nanomotors?
Chapter 10:	..... Energy Production in the Mitochondria
Chapter 11:	..... The Electron Transport Chain and ATP Generation
Chapter 12:	..... The Kinetic Isotope Effect
Chapter 13:	..... Deuterium in DNA
Chapter 14:	..... Cellular Structure and Signaling
Chapter 15:	..... Breaking the Engine
Chapter 16:	..... Aging and Disease
Chapter 17:	..... DDW and Athletic Performance
Chapter 18:	..... Testing Your Deuterium Levels
Chapter 19:	..... The Best Methods to Deplete Deuterium
Chapter 20:	..... A Deuterium-Depleted Diet
Chapter 21:	..... Fasting for Deuterium Depletion
Chapter 22:	..... Depleting Deuterium with Deuterium-Depleted Water
Chapter 23:	..... Other Helpful Lifestyle Changes
Chapter 24:	..... Benefits of Drinking Deuterium-Depleted Water
Chapter 25:	..... Litewater: The Key to a Long and Healthy Life
Chapter 26:	..... Where is Litewater Produced?
Chapter 27:	..... Don’t Just Take Our Word For It.
Chapter 28:	..... Fun Facts

CHAPTER 1

THE KEY TO RADICALLY CHANGING YOUR VIEW OF WATER – AND CHANGING YOUR LIFE!

Did you know that water, our most essential and revered nutrient for life, also conceals a rarely discussed, biologically destructive form of hydrogen known as deuterium. This deuterium exists in all drinking water.

We believe that drinking deuterium depleted water to deplete deuterium is the closest thing today that exists to the mythical “Fountain of Youth”!

For the last two decades, the topic of health maintenance and optimization has mostly focused on free-radical damage and antioxidant therapies. But currently, the trend is shifting toward the deeper and more relevant issue of mitochondrial and metabolic functioning.

And this is where the constant damage inflicted by deuterium comes in. The health of our mitochondria suffers when we have too much deuterium in our bodies, so depleting deuterium is quickly becoming the go-to solution for easily optimizing your health and regaining the energy of your youth.

You probably never heard of deuterium, but it’s everywhere. We breathe it, we drink it, and we eat it! Cellular aging and mitochondrial degeneration are now linked to excess deuterium, usually disguised as semi-heavy water.

Two hydrogens plus one oxygen make water (H_2O). When you replace one of those hydrogens with deuterium, you get (HDO), semi-heavy water. In a glass of water there are about 3 drops of this HDO. The more HDO the more damage to the mitochondria.

What makes deuterium different from normal hydrogen (called protium) is that it has a neutron, whereas protium does not. Protium = proton and an electron. Deuterium = proton, electron, and a neutron. Deuterium is TWICE the mass of regular hydrogen and this makes it a problem. Here are a important issues with deuterium, a seemingly benign hydrogen isotope.

- According to the Kinetic Isotope Effect, a carbon-deuterium molecular bond is nine times slower to disassociate than a carbon-hydrogen bond, showing us that deuterium replacing hydrogen slows down all chemical biological reactions.
- Deuterium, being twice the mass of protium, takes positions in DNA reserved for protium distorting the shape of DNA leading to errors in transcription.
- Deuterium distorts the shape of enzyme molecules and protein folding which causes mutations.
- Deuterium interference continuously damages the ATP Synthase nanomotors that create the energy we need for life.

Deuterium is found in all water on Earth, including the water we drink. It's a tiny amount (150-155 ppm), but the cumulative effect is substantial.

All food we take into our bodies breaks down to hydrogen and other elements, becoming part of our blood, organs, and DNA. But our cells are only able to utilize regular hydrogen (protium) successfully.

As a result, the presence of heavy hydrogen (deuterium) in the body restricts your ability to create and use energy, limits your DNA's ability to replicate perfectly, and changes how well your body works overall and the rate at which you age.

Deuterium slows and impedes chemical reactions at the mitochondrial level by directly compromising the ATP Synthase nanomotor by taking the place reserved for a protium isotope, twice the weight. Much like trying to fit a square peg into a round hole, it does not work. It damages the motors, causing them to stutter, lose integrity and ultimately break down. Less ATP, the primary energy currency of our biology that makes life possible, is produced, until there is no more.

Deuterium depletion and the science of Deutenomics are probably new to you. Depletion, means to reduce the total body burden of deuterium. When you reduce deuterium in the body by 20% you allow an enormous amount more ATP energy to be produced.

Numerous studies over the past few decades have provided evidence supporting deuterium depletion as a fundamental strategy to radiant health. The mitochondrial knowledge to have is the less deuterium the more energy, the foundation of our health.

As a result of modern dietary and environment conditions, it is essential to reduce your body's burden of deuterium.

CHAPTER 2

THE “FOUNTAIN OF YOUTH”

Healthy cells, for optimal function need to operate in a deuterium-depleted environment. We know this because water inside the mitochondria is 60-70% deuterium depleted.

One of the secrets of youthfulness is increasing your cellular energy and optimizing metabolic function. This is 100% the domain of our mitochondria.

Mitochondria run on the deuterium-depleted water they produce. You can assist your mitochondria, by drinking deuterium-depleted water and minimizing consumption of high deuterium foods.

Our cells have an elaborate system for filtering out deuterium to minimize its damage, but this becomes less effective as we age.

There are numerous methods to deplete deuterium out of tissues, cells, and the body. By altering your diet and lifestyle, consuming deuterium depleted water (DDW), you can reduce the body's deuterium levels and begin to reap benefits that may include:

- Optimized energy levels
- Enhanced performance and recovery
- Stronger immune response
- Supports cognitive function
- Increased metabolism

CHAPTER 3

THE SECRET TO CENTENARIANS' LONGEVITY

In the late 1950's, scientists Gennady D. Berdyshev and Boris N. Rodimov at the University of Tomsk in Siberia were trying to understand why two populations of people living in very harsh conditions had four times more centenarians than anywhere else in the Soviet Union. They discovered that ancient ice – high altitude mountain snow and glacial runoff – were 15-20% lower in deuterium than the global average. (Vienna Standard Mean Ocean Water (VSMOW) of 155.76 ppm (parts per million) at the equator.

Berdyshev and Rodimov endeavored for nearly a decade on research and studies until they had enough information to conclusively link the unusual longevity and vitality of the Yakuts and the Altaians with the consumption of glacial meltwater, which was 15-20% reduced in deuterium from the global average.

They showed that people in these regions where drinking water was lower in deuterium had the healthiest population and most prolonged lifespans in the entire Soviet Union.

The findings were first published in an agricultural journal in Omsk in 1961.

In 1966, Rodimov and I.V. Toroptsev were allowed to publish their work in English for the benefit of researchers and scientists everywhere. They became the very first scientists to show how water depleted in deuterium has a positive biological effect.

This started inquiries into the properties of deuterium depleted water that have been ongoing for 60+ years.

Their experiments with mice observed that an increase of heavy water of just 3% in drinking water caused offspring to have a 20% lower birth weight, three times smaller adult size than the control group, and the inability to reproduce after the third generation!

In another experiment, mice consuming the opposite, deuterium depleted glacial meltwater and the result was increased sexual activity, a larger litter that grew faster and bigger than the control group. It was clear, less deuterium in water meant healthier offspring, the addition of more deuterium in water and they became sterile!

Many Soviet and Eastern European institutions repeated these experiments with different animals and plants to obtain the same results. What they discovered is profound in its simplicity; the addition of deuterium slows down cellular metabolism, and the reduction of it normalizes or speeds it up.

So, could it be that the gradual decline from our peak year after year, a gradual 1% annual reduction in the primary functions of our bodies is tied to deuterium?

When we are young, we are endowed with more energy and vibrancy; we heal faster from injuries, and we can generally get away with a lot more, and this is because we have an over-abundance of healthy mitochondria and ATP production is high. But, unfortunately, years of deuterium exposure, stress, radiation, chemical exposure, injury, general wear and tear lead to mitochondrial decline. Eventually, we can only look back on the strength we once had and the youth we lost¹

Since 2007, when Prof. Dr. Olgun quietly published the "missing link" explanation of exactly how deuterium damages our mitochondria, hope for unlocking more of the secret to radical life extension was restored.

¹Toroptsev, et al., *Biological Role of Heavy Water in Living Organisms*. (Publishing House of Tomsk University; 1966)

A new understanding of aging is needed. We tend to think of people in their 80's and older as inactive with limited energy and mobility – and nearer to death. But, contrary to this misconception, octogenarians (and older) actively participate in society and enjoy the same activities as people half their age. Perhaps they always have, for how can you explain the age and health of 1,789 centenarians reported in a Russian census in 1819?²

In 1970, the Novosti Press Agency reported that the oldest man in the Soviet Union was 165 years old and the oldest woman 195. They both were active and sharp-minded at their ripe old ages. Notably, these people lived in areas where their water was of glacial origin from a high latitude - a key indicator of deuterium reduction.

- *Water enriched with $^1\text{H}_2^{16}\text{O}$ facilitates mitochondrial respiration due to the de-inhibition of proton-couple electron transfer.*
 - *The de-inhibition of proton-coupled electron transfer provides involvement of previously “arrested” mitochondrial activities thus increasing natural energy production in cells.*
 - *An improvement of energetic metabolism with $^1\text{H}_2^{16}\text{O}$ enriched water seems to underlie major biological improvements.*
- Other Regions with Deuterium Depleted Water

Northern Pakistan is another region studied for its deuterium-depleted water. Researchers investigated the famous Hunza people of that area, hoping to discover the cause of their increased longevity and lack of illness. They determined that the deuterium content of their water from the glaciers of Mt. Ultar was about 133 ppm, a deviation of 16% from the 155 ppm global standard.

What we've come to learn is that even a slight depletion of deuterium has a measurable biological benefit. Birds that migrate thousands of miles to mate, lay eggs, and raise their young in latitudes with less deuterium. Why? Because it's a strategy for a bit more energy, which means better health for offspring and an increase in chances of survival!

Data shows just by living in areas with water containing less deuterium, the chances of a longer life dramatically increase. Today, one can incorporate deuterium depleted water into their lifestyle without living in remote mountain areas or the Siberian tundra.

²G.Z. Pitskhelauri, M.D., *The Longliving of Soviet Georgia*. (New York; 1982)

CHAPTER 4

NOT ALL WATER WAS MADE EQUALLY

Water sustains life because its primary function is to help make energy

The water we drink is not just H₂O but also contains a tiny amount of HDO – a heavier form of water. Although it's only about 3 drops of HDO in a glass of water, an accumulation of this heavy water ultimately breaks down the body's ability to make energy.

Deuterium scientists, doctors, and experts believe deuterium in tissue should not exceed 130 ppm. They base this value on the deuterium levels found in a wide range of plants and animals in their natural environment.

For humans, our modern diet and lifestyle have increased our deuterium levels.

From 1933 until 1939, there were 216 published English language studies on the biological effects of deuterium, all arriving at the same observation: **Heavy water impairs vital biological processes.** The experiments included replacing normal water with just 30% heavy water, causing bacteria, plants, and animals to die in a matter of days.

While Russian scientists were doing their research and making quiet breakthroughs, Americans were also following a deuterium trail. In 1963, John F. Thomson, of the medical research division of Argonne National Laboratory in Chicago, wrote the definitive 152-page treatise entitled "Biological Effects of Deuterium."³

In 1966, his colleagues, Joseph J. Katz and Henry L. Crespi, reinforced the biological implications of deuterium, noting in "Deuterated Organisms Cultivation and Uses,"⁴ that deuterium affects the shape of proteins and the replication of DNA. Laboratory mice experiments altered the percentage of heavy water in normal body water and yielded the following observations:

³ John F. Thompson, *Biological Effects of Deuterium*. (Yale Journal of Biology and Medicine; 37(1): 99; August 1964)

⁴ Joseph J. Katz and Henry L. Crespi, *Deuterated Organisms Cultivation and Uses*. (Science; 151 (3715): 1187-1194; March 11, 1966)

Experiment #1: Increasing laboratory mice body water to a 30% concentration of heavy water proved fatal to the mice in days.

Experiment #2: Depleting laboratory mice body water of deuterium by 30% (105 ppm) resulted in significantly increased lifespans.

In 1975, J.D. Gleason and I. Friedman replicated the Russian findings on plant growth and published the first American study on using deuterium depleted water to increase the growth of grains. This small but significant publication in *Nature*⁵ magazine paved the way for a new generation of scientists to understand more deeply deuterium's function in the biology of all living things.

CHAPTER 5

WHAT IS DEUTERIUM EXACTLY – A REVIEW

Deuterium is a heavier isotope of hydrogen with an added neutron that effectively **DOUBLES** the weight of hydrogen. Before Harold C. Urey and his colleagues at Columbia University discovered deuterium in 1932, scientists believed there was only one version of hydrogen and it contained one proton and one electron.

Urey discovered that hydrogen has three different chemical element variants known as isotopes. Hydrogen isotopes include protium (1H), deuterium (2H , D), and tritium (3H).

All three hydrogen isotopes combine with oxygen to form water. However, the isotope protium is the most abundant and creates the lightest version of the water we drink.

- If two protium atoms combine with oxygen, it forms H₂O (light water - 99.985%).
- If one protium and one deuterium atom combine with oxygen, it forms HDO (heavy water - 0.015%).
- If two deuterium atoms combine with oxygen, it forms D₂O. (Too rare to think about).
- Deuterium had gone undetected by physicists because it only makes up 0.0149% of all hydrogen in the Universe.

On average, there is about one deuterium atom for every 6,420 hydrogen atoms in ocean water on Earth's surface, and the deuterium concentration in most of our planet's water is about 150-156 ppm or 0.0156%.

⁵ J. Gleason and I. Friedman, Oats may grow better in water depleted in oxygen 18 and deuterium. (*Nature*; 256: 305; 1975)

The average adult human body contains about 45 liters of total body water (TBW). The concentration of semi-heavy water in the average body is about the same as most water supplies on Earth, 150 ppm. Multiplying 45 liters by 150 mg/liter gives 6.75 grams of semi-heavy water in the average adult human body, or about 1.5 grams of total deuterium.

Doesn't seem like very much but it has taken many decades for scientists to unravel just how extremely significant this small amount of deuterium is.

With 4-12 times more deuterium than the most important nutrients we need for life, this makes it the most abundant contaminant in our bodies.

Age, weight-gain, depressed immune system, bad habits and lack of quality sleep decrease our body's ability to deplete deuterium.

If the body's deuterium burden is too high, its presence continuously interferes with our ability to generate mitochondrial energy.

CHAPTER 6

WHERE DOES DEUTERIUM COME FROM?

Deuterium has been with us since the Big Bang. To understand deuterium, let's talk about what hydrogen is and what it does in our bodies.

The first element created by the Big Bang was hydrogen – one proton and one electron. A neutron came into being and a deuteron was created. Almost all available deuterons combined to make the second element helium. But a small percentage of deuterium nuclei remained unpaired and isolated, trapped between hydrogen and helium as the Universe rapidly cooled from millions of degrees in the first few minutes. The Universe has remained constant to this day at roughly 74% hydrogen, 24% helium, and 2% everything else.

The deuterium atoms that got stuck eventually combined two-to-one with oxygen atoms to create water, and we know this as heavy and semi-heavy water. About six drops of deuterium in the form of semi-heavy water exists in each liter of water on our planet.

Deuterium levels on Earth have been increasing with comet and meteoritic bombardment over time. Geologic records show that even a hundred thousand years ago, deuterium levels were lower than they are now.

CHAPTER 7

HARMFUL EFFECTS OF DEUTERIUM

Although Deuterium is naturally occurring, having too much can directly impact your mitochondrial health.

Due to deuterium's heaviness, its binding ability can distort the shapes of proteins and enzymes and bind to other molecules inhibiting their ability to function normally.

Deuterium also changes the chemical properties of the molecules it forms. The two forms of heavy water (written as HDO and D₂O) containing deuterium will freeze at slightly higher temperatures than H₂O (0°C) and boil at slightly higher temperatures than H₂O (100°C).

Did you know a liter of 97% deuterium depleted water will be almost 300 mg lighter than regular drinking water. You can see it on a good scale!

Shortly after deuterium's discovery in 1931, Gilbert N. Lewis, professor of chemistry at Berkeley, was the first to observe how "heavy water," when frozen, would sink instead of float like normal ice water. He also noted that it strongly delayed the reproduction of microbes and inhibited seed growth.

More researchers discovered and observed that the splitting process of sugar with yeast is nine times slower in heavy water, demonstrating the Kinetic Isotope Effect we mentioned earlier.

Nevertheless, deuterium depleted water is the new standard for water purity and this is too important to be overlooked.

CHAPTER 8

MITOCHONDRIA – THE CELL'S ENGINE

The amount of energy you have daily comes from how well your body can turn food and air into bio electricity. The mitochondria organelles within the cellular plasma are the predominant energy factories which accomplish this.

They produce energy in the form known as Adenosine Triphosphate, or ATP. ATP is the primary energy currency of our biology. Without ATP we would not breathe and we would not blink.

ATP and metabolic water are both synthesized by the mitochondria continuously. The better these are at

get recycled, the more efficient your energy production pathways.

Mitochondria uses atoms of hydrogen to run the motors that produce ATP and metabolic water.

Hydrogen, the smallest atom, is involved in all biological chemical processes that transfer energy in the body. Protium hydrogen assists with both generating that energy and maintaining the integrity of our proteins, permeable membranes, and voltage within the cells.

Hydrogen comes from the food and beverages we consume and eventually makes its way to the mitochondria of the cells. In the mitochondria, hydrogen protons spin the ATP Synthase Nanomotors, nanomotors specifically designed and geared for protium, the common form of hydrogen.

When the twice as heavy deuterium hydrogen flows into the motor it jams it, causing it to stutter, and no energy is made. This excessive wear and tear ultimately shuts down the motor, the mitochondria and the cell.

The average person has a 150 ppm level of deuterium or higher, and those populations noted for increased lifespan and health have a deuterium level of between 120-130 ppm.

The longer you stay depleted of deuterium, the more energy your cells can make.

CHAPTER 9

MORE ABOUT OUR ATP SYNTHASE NANOMOTORS?

In 1929, the German biochemist Karl Lohmann discovered adenosine triphosphate (ATP), the fuel of life produced in the mitochondria and energy source for all living things.⁶

Later, researcher Paul D. Boyer, a molecular biologist at UCLA, discovered that tiny protein ATP Synthase Nanomotors within the mitochondria, which sit at the end of the Electron Transport Chain (ETC), bear the final burden of creating ATP.⁷ They are the smallest electrochemical rotor motors in existence.

This protein assembly, comprised of the catalytic enzyme ATP Synthase (ATPase), spins at 9,000 RPM at its most optimal level to produce ATP and has the structure and function of a mechanical motor, complete with a rotor, stator, and magnetic field. At 100% efficiency, it is beyond any motor large or small that we are able to make.

⁶ Karl Lohmann, *On the Pyrophosphate Fraction in Muscle*. (Naturwissenschaften; 1929)

These ATP Synthase Nanomotors that make ATP are constantly damaged by deuterium taking positions reserved for protium. It helps to understand in depth how mitochondria work to produce energy to fully appreciate how important it is to deplete deuterium.

CHAPTER 10

ENERGY PRODUCTION IN THE MITOCHONDRIA

A deuterium depleted body produces more ATP, and allows more oxygen to be used by the cells. When your body's energy creation pathways are operating unhindered, more cellular energy leads to more physical integrity of all bodily functions.

Let's examine how a cell produces energy to better understand how deuterium may affect that system.

A typical cell first processes the sugar (glucose) or fat (triglycerides) that enters the cell plasma. Then, the end products go into the Szent-Györgyi-Krebs cycle (aka Citric Acid Cycle) which takes place inside the mitochondria.

What everyone learns in molecular biology is The Szent-Györgyi-Krebs cycle produces two carbon dioxides (CO₂), one ATP energy molecule, one flavin adenine dinucleotide (FADH₂), and three nicotinamide adenine dinucleotides (NAD) + hydrogen (H).

One ATP molecule created during the Szent-Györgyi-Krebs cycle is only a modest gain in energy. However, the Szent-Györgyi-Krebs cycle also produces NADH and FADH₂, essential players in the Electron Transport Chain where the bulk of ATP is produced.

It is proposed that the complexity of glycolysis and the Szent-Györgyi-Krebs cycle, why it has so many complicated enzymatic steps is because it is a mechanism for removing deuterium.

CHAPTER 11

THE ELECTRON TRANSPORT CHAIN AND ATP GENERATION

The Electron Transport Chain with the help of hydrogen and oxygen, creates metabolic water and re-

⁷ Paul D. Boyer, et al., A New Concept for Energy Coupling in Oxidative Phosphorylation Based on a Molecular Explanation of the Oxygen Exchange Reactions. (The Molecular Biology Institute and The Department of Chemistry, University of California, Los Angeles, CA; 1973)

leases energy in the form of ATP. However, this release is done in a series of steps so that cells can use the energy created.

A series of biochemical pumps move hydrogen into the inter-membrane space of the mitochondria. This process creates an electrochemical gradient between the inter-membrane space and the inside of the mitochondria, known as the matrix.

The final step of ATP energy production is the ATP Synthase Nanomotor that shuttles hydrogen protons from the inter-membrane space to the mitochondrial matrix, spinning the nanomotor shaft and generating ATP and deuterium depleted metabolic water.

There is a theory that deuterium may obstruct this step as it would bind more strongly to the NAD⁺ and FAD and not be readily released to drive the hydrogen pumps.

CHAPTER 12

THE KINETIC ISOTOPE EFFECT

Our body uses regular hydrogen (one proton, one electron) in many different chemical reactions. When deuterium replaces hydrogen, it slows down the standard reaction rate by up to 9 times. This rate reduction is known as the Kinetic Isotope Effect.

Why does it matter if reaction times slow down? Chemical reactions in our bodies are intricate and highly interconnected and work optimally when energy is conserved. When it comes to energy production, this is particularly important.

- **Some of the processes that slow down are:**
 - **Enzymatic reactions**
 - **Neurotransmitter release and reuptake**
 - **Cellular division and repair**
 - **ATP productions**

Proper timing at the molecular level is critical to your health, and slowing down chemical reactions is a recipe for disaster for all biology.

The Kinetic Isotope Effect also affects the quantum tunneling properties of hydrogen. Deuterium

cannot overcome the same energy barriers as the smaller protium, it's bigger and slower. This makes it a contaminant all the way down to the DNA, when deuterium occupies a position reserved for protium it becomes a real drain.

CHAPTER 13

DEUTERIUM IN DNA

In 1974, British scientist T.R. Griffiths observed that deuterium, being more electronegative than hydrogen, twice as heavy, and having different atomic binding properties than regular hydrogen (protium), interfered with DNA replication.

When DNA repair enzymes contain deuterium in a position reserved for protium, they have a potential for participating in an error reaction, thereby compromising DNA replication and repair.⁸

Griffiths noted, "Deuterium adversely affects the shape of enzyme molecules, which are involved in DNA replication."

The mitochondria do their best to filter out deuterium with its hydrogen recycling mechanism. But when deuterium excessively replaces hydrogen as a building block for DNA, cells, tissues, and organs, it can lead to abnormal cell growth and replication.

By the 1990s, pivotal research was being conducted in Romania and Hungary. W. Bild and colleagues at the Romanian University of Medicine and Pharmacology showed that mice exposed to a sub-lethal dose of 8.5 grays of radiation had a greater survival rate on deuterium depleted water.

Mice consuming water reduced to 30 ppm of deuterium had a 61% survival rate, whereas the control group consuming plain tap water (150 ppm) had a survival rate of only 25%. The test group also maintained normal white blood cell and red blood cell platelet counts compared to the control group, which did not. The same two groups of unfortunate rodents were also infected with pneumonia, and the deuterium depleted test group showed an intensification of immune defenses not seen in the control group.

The growing reported evidence from researchers, and the work of Hungarian Nobel-prize winner Albert Szent-Györgyi, inspired Gábor Somylai, a doctor and molecular biologist. In 1991 he engaged

⁸ T.R. Griffiths, Possible Roles of Deuterium in the Initiation and Propagation of Aging and Other Biochemical Mechanisms and Processes. (Proceedings of the second international conference on stable isotopes, Argonne National Lab., Ill. (USA); p. 3-18; 1975)

in the most extensive clinical trials of the physiological benefits of deuterium depletion ever conducted. He published his findings in 1998 in the paper "The Biological Effects of Deuterium Depletion"⁹ and his 2001 book *Defeating Cancer*.¹⁰

Between October 1992 and the spring of 1999, Dr. Somylai and his team administered some 350,000 liters of deuterium depleted water to approximately 1,200 patients, generating over 12,000 pages of documented records. His groundbreaking work put Hungary on the map as an important center for research on the emerging health science of deutenomics.

CHAPTER 14

Cellular Structure and Signaling

Over time, deuterium accumulation alters the shape and function of molecules in your body because our bodies too easily accept deuterium wherever hydrogen goes, and cells will begin to use deuterium in place of regular hydrogen in chemical formulas or reactions.

The following biomolecules have been shown to malfunction when deuterated:

- **Cholesterol**
- **Hormones**
- **Neurotransmitters**
- **Cellular receptors**

In 2007, Abdullah Olgun, a medical doctor, biochemist, and pharmacologist from the Department of Biochemistry and Clinical Biochemistry at Gülhane School of Medicine in Ankara, Turkey, spent two years researching how deuterium damages cells and pinpointing how that damage causes aging. He found that one of the primary causes is the breakdown of the ATP Synthase nano-motors.¹¹

Olgun determined that roughly every 5-15 seconds, a bare deuteron (a proton-neutron pair), for which there is no open receptor, impinges on the fast-spinning ATP Synthase nanomotor, causing it to malfunction.¹²

At the time of Dr. Olgun's groundbreaking discovery, few scientists realized the gravity of his breakthrough. One notable person that did was Anton Chernopiatko, a Russian businessman, technologist, and deuterium depletion enthusiast who also co-authored with Pomytkin the

⁹ Gábor Somylai, *The Biological Effects of Deuterium Depletion, a possible new tool in cancer therapy.* (Zeitschrift für Onkologie; January 1998)

¹⁰ Gábor Somylai, *Defeating Cancer.* (ISBN-13: 978-0759692619; 2002)

¹¹ Abdullah Olgun, *Biological Effects of Deuteronation: ATP Synthase as an Example.* (Department of Biochemistry and Clinical Biochemistry at Gülhane School of Medicine in Ankara, Turkey; 2007)

2015 study “Deuterium Content of Water Increases Depression Susceptibility: The Potential Role of a Serotonin-Related Mechanism.”¹³

Mr. Chernopiatko embraced the importance of deuterium depletion at an early age, and ultimately put a lifelong quest into action. Being convinced of deuterium’s role as a biological disruptor, he took it upon himself to advance deuterium depleted water production technology beyond laboratory and research purposes and construct the first dedicated facility in the world to produce 90% + super deuterium depleted water commercially.

Now that we are well into the 21st century, the mechanisms of deuterium and how to remove it are well understood. Nevertheless, the awareness of this colossal discovery is still in its infancy. Four international conferences on deuterium depletion in Budapest have provided a place for scientists to present their work. In 2021 Litewater Scientific sponsored the first annual online Deuterium Depletion Summit with the world’s top scientists and experts on deuterium depletion.

One scientist keen on advancing the work is Laszlo Boros, MD, and professor at UCLA who is leading the charge in the new field of deutenomics.

The objective of this new scientific discipline is to understand how biological systems manage deuterium. According to Dr. Boros, “The structured water pool of the (cellular) cytoplasm can thus be considered as a ‘deuterium scavenging water tank’ that absorbs deuterium from carbohydrates and amino acids to protect mitochondrial ATPase nanomotors from breaking, among other functions!”¹⁴

CHAPTER 15

BREAKING THE ENGINES

When deuterium takes the place of hydrogen inside your mitochondria, it breaks the cellular “engines,” compromising your ability to produce the cellular energy known as ATP.

In Review. Hydrogen protons cause the ATP Synthase Nanomotors to spin, they protons take specific positions sized specifically for them, but when a deuteron shows up then it’s like putting a square peg in a round hole, they do not fit.

¹² Abdullah Olgun, Deuteronation and Aging. (Annals of the New York Academy of Science; April 18, 2007)

¹³ T. Strekalova, et al. Deuterium content of water increases depression susceptibility: The potential role of a serotonin - related mechanism. (Behavioural Brain Research; 277, 237-244)

¹⁴ L. Boros, et al. Submolecular regulation of cell transformation by deuterium depleting water exchange reactions in the tricarboxylic acid substrate cycle. (Med. Hypotheses; 87: 69–74; 2016)

These deuterons make it all the way to motor even though multiple steps exist to try and keep them out the Electron Transport Chain.

Nevertheless, they get through and as a result, the nanomotors jam, stutter, and torque, decreasing ATP production, causing wear and tear to the membranes of the mitochondria. Once the membrane starts to leak, it's not long after the nanomotors slow down and stop working.

How often does this really happen? Let us assume that our ATP Synthase Nanomotors operate at the speed of 130 rotations per second.¹⁵

Furthermore, we know that each motor has 10 proton sites (although some have 12). So that means that every second we shuttle 1,300 protons (130×10) across the membrane to run the motor – or 78,000 protons per minute.

If we were to assume that we have the sea-level average deuterium concentration of about 150 ppm, that means that one in 6,420 protons is a deuteron. So, given this speed, we will encounter deuterium hitting a ATP Synthase Nanomotor about every five seconds!

So, even though deuterium concentration is very low in nature, it significantly affects energy production if it causes our energy producing pathways to stutter every five to six seconds.

When we contemplate that the metabolic water made in the mitochondria is 60-70% deuterium depleted the picture gets clearer and clearer.

CHAPTER 16

AGING AND DISEASE

The human body consists of trillions of cells harmoniously working together. If even a slight energy deficiency arises in any cell, imbalance occurs. Consequently, without sufficient energy going to the cells, the body starts to break down – the primary cause of aging.

In 2006, Russian chemist Igor A. Pomytkin and his colleague O.E. Kolesova published the study, "Relationship Between Natural Concentration of Heavy Water Isotopologues and Rate of H₂O₂ Generation by Mitochondria."¹⁶

The study showed that heavy water inhibited mitochondria's ability to produce hydrogen peroxide (H₂O₂), which act as messenger molecules sending signals to regulate oxidative stress.

As a result, more proof was given that many seemingly unrelated diseases and disorders actually have a common root cause – deuterium accumulation.

CHAPTER 17

DDW FOR ATHLETIC PERFORMANCE

Depleting the body of deuterium is becoming one of the most significant interventions in improving general health, raising energy levels and extending our lifespans. What it promises for human performance could be a paradigm shift for sports.

Russian and Romanian studies show that after one month of depleting deuterium by drinking DDW, on a treadmill it was shown that only half the oxygen is needed to perform the same amount of work. This is a huge metabolic revelation!

The sherpas that live in the Himalayas have much lower deuterium levels because the local glacier is 129 ppm, and this is why they can exist at high altitudes and summit Mt. Everest without supplemental oxygen.

CHAPTER 18

TESTING YOUR DEUTERIUM LEVELS

Testing your deuterium level is an important biomarker on the pathway to your optimal mitochondrial health. We recommend testing your deuterium levels, to establish your baseline. Then testing again after three months of a deuterium depleted lifestyle.

You can begin the testing proces by visiting deuteriumtest.com. Which uses advanced isotope testing equipment.

A test runs about \$100-200 USD. You receive a test kit and send it back to the laboratory with a sample of your saliva for testing.

The average person's endogenous (internal) deuterium level is typically in the range of 145 ppm to

¹⁶ Igor A. Pomytkin and O.E. Kolesova. Relationship between Natural Concentration of Heavy Water Isotopologues and Rate of H₂O Generation by Mitochondria. (Bulletin of Experimental Biology and Medicine. 142(5):570-2; December 2006)

155 ppm. One begins to enjoy the health benefits of deuterium depletion when endogenous deuterium levels drop below 130 ppm, ideally closer to 120 ppm, and lower for biohackers, athletes and those with specific health needs.

It's as easy as drinking water!

CHAPTER 19

THE BEST METHODS TO DEplete DEUTERIUM

We naturally deplete excess deuterium through breath, saliva, urine, sweat, and virtually every bodily toxin elimination pathway. However, our natural processes for excreting toxins are not efficient enough to remove the significant amount of deuterium we are burned by without additional assistance.

So, if you would like to try depleting, here are the best ways to go about it.

For optimal results, you can implement more than one method:

- Diet for Deuterium Depletion Fasting
- Deuterium Depleted Water Exercise
- High-Quality Sleep
- Light Therapy
- Cold & Hot Therapy
- Breathwork
- Hyperbaric
- Grounding

CHAPTER 20

A DEUTERIUM DEPLETED DIET

Did you know accumulation of deuterium from diet is being implicated as a critical inhibiting factor? A deuterium-depleted diet may enhance your depletion plan, so it helps to know what foods are high and low in deuterium.

A deuterium depleted diet is an important aid to lowering your overall deuterium levels. Avoid processed foods, excessive carbohydrates, and genetically modified foods.

Plants deplete deuterium by shifting it into sugar storage, so fruits, grains, and sweet and starchy root

vegetables are higher in deuterium. So, as you may have guessed, they are not as good for you as previously thought if your strategy is deuterium depletion.

Instead, eat plenty of leafy greens. Most of them need to be cooked, preferably steamed to unlock their nutrients. There is a wide variety of delicious ones to choose from. Sunflower sprouts, which are eaten raw are also an excellent leafy green.

Other lower-deuterium foods include:

- Nuts and nut butter (macadamia, pecans, almonds, walnuts, brazil nuts, etc.)
- Cottage cheese (from grass fed cows)
- Grass-fed butter and ghee
- Grass-fed meats,
- Free-range poultry
- Wild-caught fish
- Leafy green vegetables
- High-quality fats (hemp seed, palm kernel, coconut, pumpkin, olive oil, etc.)

High-fat diets / paleo-ketogenic diets assist to help the body's ability to filter and produce your own deuterium-depleted water inside your cells — it's hydration from the inside out.

To make things sweet, you can use alternative sweeteners like monk fruit, stevia, and inulin; they are lower in deuterium than sugars and help to minimize blood sugar. Of course a high quality sugars like coconut palm nectar, maple syrup, and raw honey offer a universe of minerals and nutrients, so they should not be excluded just recognized as something to use sparingly.

Avoid Foods High in Deuterium

If you eat meat you should know grain-fed animals will have higher deuterium levels than their grass fed counterparts. In addition, older animals, fish, and fowl lose their ability to deplete deuterium as they age and are likely to have higher deuterium levels.

Other foods to avoid:

- Most processed and canned foods
- Anything with corn syrup
- Carbohydrate heavy dishes
- Processed white sugar, flour and salt
- Hydrogenated and refined vegetable oils

Seasonal Eating

The strength of the sun's UV rays varies from season to season, affecting the deuterium levels of plants and food grown during that time. So, by eating out of schedule with the seasons, you could be eating food with higher deuterium levels, and out of balance with nature causing disharmony in the body. This is subtle but something to consider. Harmonizing to our surroundings.

Ketogenic Diet or Seasonal Ketogenic Diet

The ketogenic diet, or a low-carb/high-fat diet, is an easy and safe way to deplete deuterium without necessarily fasting. As you reduce your carbohydrate consumption and adapt to using fat as fuel, your deuterium levels will decrease.

It's important to mention that some people may have food allergies or food intolerances, so exercise caution. And although fats may contain less deuterium, altering one's diet to primarily consume dietary fat might not be the optimal choice in the big picture. There is a growing consensus that a modified Mediterranean diet is the best. Consult your doctor or nutritionist before creating your new diet plan.

Now, burning our own fat is another matter, and we will look at that more closely in the next section on fasting.

CHAPTER 21

FASTING FOR DEUTERIUM DEPLETION

Our body likes to keep deuterium out of the mitochondria, where it might cause problems with energy production.

Fasting, intermittent fasting, and dry fasting have been shown to lower endogenous deuterium levels because we burn fat when we fast. Fat burning depletes deuterium because, for every kilogram of fat we burn, our body creates a liter of metabolic water (using hydrogen from the fat, plus oxygen from breathing).

Metabolic water is produced inside our cells and is naturally deuterium depleted, 60-70% lower than normal drinking water!

The two main reasons fasting helps with deuterium depletion are:

1. You are not actually adding any food or liquid that contains deuterium while the body's natural mechanisms for depleting deuterium are working at full speed.
2. You will eventually start to burn your body fat because fat contains less deuterium than carbohydrates, and burning fat produces deuterium depleted metabolic water. Intermittent fasting, or time-restricted feeding, might be an exciting and beneficial lifestyle option. Fasting 16-20 hours every day and eating within a window of 4-8 hours will provide the body with many fasting benefits, and it's a great habit that will have you hooked.

With a minimum of 16 hours of fasting, the body will run out of its glycogen store each day and shift its metabolism to fat. Then, if fasting over 16 hours, we start getting some of the benefits of autophagy, which is the body's way of cleaning out damaged cells, and an increase in growth hormone on top of that!

Dry fasting, which restricts both food and liquid (including water), will deliver even better results. It may improve the body's ability to recycle and produce its own metabolic water, which usually has less deuterium. Dry fasting should be thoroughly researched before doing it longer than 24 hours.

Fasting for three days every month (or every couple of months) provides the body with the opportunity to go deeper into ketosis and autophagy, eliminate plaque and biofilm build-up, give digestion a break, and stimulate the body's stem cells and immune system to optimal function.

72 hour water-only or dry fasts, every six months for those in optimal health, every four months for the average person, or every month for those who are obese with poor health markers will further accelerate healing and detoxification results.

Another method that incorporates fasting benefits, and may be more accessible, is doing a fast-mimicking diet for five days (instead of total fasting). This is a low calorie, low, keto strategy of which much is written.

¹⁵ Robert K. Nakamoto, et al. The Rotary Mechanism of the ATP Synthase. (Department of Molecular Physiology and Biological Physics, University of Virginia; 2008)

CHAPTER 22

DEPLETING DEUTERIUM WITH DEUTERIUM DEPLETED WATER

By the beginning of the 21st century, researchers clearly understood that consumption of deuterium depleted water protected DNA from damage. While our biological system does its best to filter out deuterium naturally, a deuterium depleted water drinking protocol lowers deuterium levels most effectively. Jumpstart your depletion by drinking deuterium depleted water. If you have the option, find melted ice water sourced near the poles or spring water from high elevations. Some waters from mountainous areas in North America have 130-140 ppm of deuterium, which is a big difference from the average of 150 ppm in most cities.

You can buy DDW from:

Litewater: The most deuterium-depleted drinking water in the world, it is ultrapure with nothing added. Produced in a state-of-the-art facility in Russia. Litewater can be diluted with any regular drinking water in the therapeutic window of 1x to 4x to obtain between 80 - 120 ppm of deuterium depleted water. Available in 5 & 10 ppm, glass and plastic.

An effective way to achieve and maintain a healthy deuterium-depleted level in the 120 ppm range is by substituting deuterium depleted water for your normal drinking water.

Ideally, deuterium-depleted water would replace all:

Drinking water and pre-packaged beverages* (coffee, tea, milk, juices, energy drinks, soft drinks, etc.)
Water-based beverages made at home and office (coffee, tea, smoothies, concentrated juices, etc.)
Food preparation water (soups, broths, and any dish where water is a significant ingredient). There is no need to use it for boiling (eggs, pasta, steaming, etc.)

CHAPTER 23

OTHER HELPFUL LIFESTYLE CHANGES

Exercise:

Physical activity helps deplete deuterium because it increases your metabolic rate, fat burning, and respiration.

High-Quality Sleep:

A good indicator that you may have high deuterium levels is the amount and quality of your sleep. Try to sleep in darkness without blue light from cell phones or computers.

Light Therapy:

Our bodies can eliminate deuterium more easily when we get a lot of sunlight because red light and infrared stimulates mitochondria to produce more ATP.

Cold and Hot Therapy:

Coldness increases mitochondrial activity, activates brown adipose (fat) tissue, and detoxes fat storage. Sauna causes us to sweat and detox. Going from cold to hot back and forth releases endorphins and beneficial hormones.

Breathwork:

Breathing correctly to fully oxygenate tissues is necessary to deplete deuterium because the aerobic pathways require a significant amount of oxygen to function properly.

Hyperbaric:

A 3-10 times increase in the amount of oxygen dissolved in blood plasma is the result of using hyperbaric chambers. This is a fantastic modern strategy to radically boost healing and supercharge our cells with oxygen.

Grounding:

Grounding means discharging built-up static electricity directly into the Earth or through a conductor and into the ground.

Every chemical reaction and rearrangement of molecules involves electrical charges, attraction, and re-

pulsion. So, when your body's overall electrical charge is off, chemical reactions happen that shouldn't and fail to happen when they should.

15 minutes a day barefoot on the grass or earth is usually enough to do the trick and maintain balance between you and the earth.

Swimming in a lake or sea is another type of grounding. Immersing yourself in water is very cleansing to our internal bioelectric system.

AVOID:

Electromagnetic (EMF) Exposure:

Excessive EMF exposure contributes to uncontrolled oxidative stress (an imbalance of free radicals and antioxidants in the body).

This imbalance leads to cell and tissue damage, induces mitochondrial DNA mutations, damages the mitochondrial respiratory chain, alters membrane permeability, and influences cell signaling, defense and homeostasis mechanisms.

Over-Supplementation:

Synthetic supplements are like processed foods, they have high deuterium levels, sometimes upwards of 200 ppm! Take care to select supplements that are plant based and properly processed without synthetic or highly modified fillers. A company we recommend is Quicksilver Scientific, their liposomal supplements have the best absorption and are second to none.¹⁴

CHAPTER 24

BENEFITS OF DRINKING DEUTERIUM DEPLETED WATER

Reversing Course

In the past 50 years, research has shown that unhealthy levels of deuterium accumulation results from a poor diet which includes high carb/low fat, destructive eating habits such as overconsumption, failure to fast, and insufficient exercise.

However, everyone can benefit from a deuterium-depleted lifestyle, and practices like a whole food diet, fasting, and exercise provide benefits for everyone.

#1 – Less Fatigue and More Energy

Fatigue is a mitochondrial problem. Deuterium depletion has the potential to reverse fatigue and increase your energy levels.

Your mitochondria, the “powerhouse of the cells,” provide your entire body with energy. Sixty-plus years of research points to the systematic destruction of mitochondrial function as the primary risk from excessive endogenous deuterium in cells.

High deuterium levels result in the gradual loss of energy for all cellular processes in the body and disruption of the structure and function of cholesterol, hormones, neurotransmitters, and cell receptors.

Deuterium slows down energy production, interferes with mitochondrial function, and increases damaging free radicals.

#2 – Better Brain Function

The mitochondria have a lot to do with regulating fundamental aspects of your brain function, and it influences your mental function, cognition, and memory.

#3 – Faster Metabolism

It’s easy to understand why deuterium depletion works. In nature, the addition of deuterium slows things down, and the removing of it speeds things up, so it’s the same for our metabolism.

With more energy, you’ll be able to lose unwanted body fat and maintain a healthy weight. However, with damaged mitochondria, you’ll have fat-burning difficulties, sugar cravings, and increased fat storage.

People who have trouble losing weight, struggle with sugar addictions, or have metabolic problems such Type 2 diabetes may benefit from a deuterium depletion lifestyle.

CHAPTER 25

LITEWATER: THE KEY TO DEUTERIUM DEPLETION

Deuterium depleted water is obtained in commercial quantities by carefully recreating and amplifying the natural hydrological cycle artificially in a production factory. Removing the deuterium contaminant from water is a new standard in water purification.

Litewater is the product of this new standard of purity. It is the most deuterium-depleted water in the world, with 94-97% less deuterium than regular drinking water, making it the purest water on Earth. Daily consumption of Litewater goes a long way to help to eliminate deuterium interference.

Litewater 5 and 10 can be diluting 1 to 4 times based on your personal goals and deuterium depletion strategy. This linked dilution chart tells you exactly how to do it. It also explains how to use super deuterium depleted water without dilution for the best effect.

CHAPTER 26

WHERE IS LITEWATER PRODUCED?

Only a few facilities in the world produce deuterium depleted water on a commercial scale – Russia, where it all started, Romania, Hungary, and China.

Litewater is currently produced in our facility in a remote area of Russia called Tambov, a unique bio-diverse forest area designated a chemical and GMO-free green zone. Water is first obtained from a natural artesian well, purified by membrane and DI technology, and then processed via proprietary vacuum rectification distillation at an industrial scale for commercial availability.

The Russian method imitates and amplifies the natural condensation, precipitation, and evaporation cycles of mother nature with better efficiency to remove up to 97% of the deuterium in water. The caveat is that it takes many big specialized columns to make it work, and an entire precision infrastructure so a dedicated plant was created.

Litewater deuterium depleted water is constantly analyzed and verified for purity, then bottled at the source and shipped to North America and other global locations.

The complexity and energy demands make the water expensive to produce, and thus costly to buy, but affordable when it is diluted. For example, a liter of 10 ppm which retails for \$20 per liter when diluted four times makes 120-122 deuterium depleted water at a cost of \$4 per liter. Typically, to successfully deplete deuterium the minimum one requires is 8 liters of Litewater per month.

CHAPTER 27

DON'T JUST TAKE OUR WORD FOR IT...

Here's one of the hundreds of life changing testimonials we've received:

Profile: Litewater customer, Jeff Schuster, noticed a significant increase in his energy levels after incorporating deuterium-depleted water into his daily regimen.

At 73, Jeff leads an active lifestyle and still works as a cameraman for Wheel of Fortune. He drives an hour to work and then recharges his batteries by actively tending to his garden. It's not unusual to see him up on a ladder or trimming his plants.

"I'm moving around at 11 p.m. at the same rate I'm moving around in the morning," he said. "If someone were to say, 'Let's go to a midnight movie,' I would be game to go except if I had to work the next day." Besides his non-stop energy, Schuster says he noticed how his appetite decreased as his physical work endurance increased. Previously, he would drink coffee throughout the day.

"I'm usually asleep within a minute or two after retiring and seldom need a trip to the bathroom during the night," Schuster said. "My coffee is made exclusively with Litewater, but my consumption has decreased significantly. I can say without qualification that, at age 73, I feel much more alert and more positive in spirit."

CHAPTER 28

FUN FACTS

Fun Fact #1

The body makes 1.1 liters of deuterium depleted metabolic water for every 1 kg of fat consumed. Our early ancestors likely derived most of their water from fat. Many, if not most, animals still do this today.

Fun Fact #2

Camels don't need to drink and travel great distances without water because they make their own metabolic water from the big hump of fat stored on their backs. Because of their deuterium depletion strategy, camels live twice as long as horses.

Fun Fact #3

There is no perfect 100% deuterium depleted water with zero parts per million of deuterium in nature. All naturally occurring water contains different concentrations of deuterium.

The lightest water on Earth, formed by natural meteorological processes, is the snow and ice in Antarctica which contains approximately 89 ppm, the lowest of all water on earth and the closest to the water inside our cells (40-60 ppm DDW).

Technically any water under 140 ppm deuterium is considered "depleted."

Fun Fact #4

Litewater is in a category below 25 ppm, referred to as "super light water." This has never been accomplished in human history, as far as we know, a novel solution.

Fun Fact #5

Review: Deuterium is one of the three forms (called isotopes) of the first element, hydrogen.

The first hydrogen isotope is named 'protium' (the most abundant by far and the lightest), consisting of a proton and an electron. Protium is commonly expressed by the symbol ' ^1H '. The second isotope is named 'deuterium' (much less abundant than protium but twice as heavy due to an additional neutron). Deuterium is commonly expressed by the symbol ' D ' or ' ^2H '. The most important fact is that both protium and deuterium combine with oxygen to form water molecules in nature.

Fun Fact #6

ATP synthase is an enzyme that catalyzes the formation of the energy-storage molecule adenosine triphosphate (ATP) using adenosine diphosphate (ADP) and inorganic phosphate (Pi).

Fun Fact #7

1931	Deuterium discovered.
1942	First use of heavy water in a nuclear reaction.
1958-1961	First correlation to growth and longevity with deuterium depletion.
1971	First U.S.-based research published in "NATURE."
1999	First conference on isotopic and molecular processes.
2001	Somlyai publishes "The Biological Effects of Deuterium Depletion."
2007	Olgun publishes "The Biological Effects of Deuteronation: ATP Synthase as an Example."
2010	1st International Symposium on Deuterium Depletion, Budapest, Hungary.
2012	Boros coins the term Deutenomics – the science of deuterium depletion.
2014	Chernopiatko builds first super light DDW production facility.
2021	1st annual Litewater Deuterium Depletion Summit dedicated to Deutenomics.

Fun Fact #8

The natural deuterium levels in water depend on different geographic hydrological factors such as:

- * **Temperature – warm waters contain more deuterium**
- * **Altitude – high mountain waters contain less deuterium**
- * **Source – fresh water contain less deuterium than oceans**
- * **Latitude (distance from the equator) – water on the poles has the least deuterium**

A standard concentration of deuterium in water is 150 ppm, or one atom of deuterium per 6,400 atoms of regular hydrogen. In other words, each liter of water contains only a few drops of deuterium but in the bloodstream.

It does not seem like much but there is 2 to 4 times more deuterium in blood plasma than glucose, there is 3 times as much as potassium, 6 times as much as calcium and there is up to 16 times more deuterium than magnesium in our blood. This contaminant is everywhere and doing damage which cannot be stopped, but it can be slowed.

Level down deuterium to level up your life