

THE SCIENCE AND PROMISE OF FULLERENE WATER

Water containing fullerenes, or carbon buckyballs, has been shown to have powerful antioxidant and detoxifying properties. It can also protect against radiation exposure and neutralise waterborne pathogens, heavy metals, nitrates and pesticides.

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A Revolutionary Approach to Exposure to Lethal Doses of Radiation

The quest for effective radioprotectors has been underway for decades. New radioprotectors—chemical compounds used to protect living organisms from ionising radiation—are tested under very stringent conditions. Astronauts, for example, need protection from exposure to extremely high levels of radiation when crossing the Van Allen belts. The Sun itself can blast the Earth with X-band coronal mass ejections with little warning, thus another need for radioprotectors.

There is a layer of radioactive particulates from Fukushima, Japan, that's an additional threat to our atmosphere. Weather (rain, snow, storms) tends to bring it down, and many locations now have to endure sporadic increases of up to 10 times the normal background radiation. The Nuclear Emergency Tracking Center (NETC) posts RADCON level alerts that are updated every minute anywhere in the world (see <http://www.netc.com/>).

The need for a new concept in addressing these issues is greater today than ever before. Radiation levels have increased to such an extent that some form of protection or supplement is required to deal with changes in our exposure.

Activated charcoal and related carbon-based compounds have always had a place in our medicine chests. Enter the recent Ukrainian and Russian studies with fullerenes, a group of special carbon-form structures that trap water inside specific geometric surfaces. This is one of the newest directions around the nature and structure of water.

Fullerene Water in Detoxification and Radiation Protection

Fullerene water has been shown to have significant health-promoting properties (see <http://www.c60water.com/en/protection.html>). It seems to increase the liver's capacity to detoxify and excrete toxic substances. To prevent hangover or mitigate its effects, for example, it suffices to take several drinks of such water before or after drinking alcohol. The same should be done in the event of a possible toxic hazard or a case of food poisoning.

Pre-clinical studies at the National University of Pharmacy, Ukraine, found that fullerene water facilitates recovery of haemodynamic (blood flow) and trophic processes in the liver, and has a pronounced hepatoprotective effect.

Clinical studies at the Kharkov National Medical University, Ukraine, involving fullerene water treatment of patients with chronic hepatitis of toxic origin, demonstrated a significant decrease in clinical manifestations of the disease, frequency of cytolysis syndromes, immune inflammation and liver-cell deficiency. It's suggested that fullerene water can be included in the combination treatment of liver pathology with a viral and toxic aetiology. Pre-clinical studies showed that water containing carbon molecules had a cardioprotective effect by inhibiting myocardial intoxication and producing a pronounced normalising effect on cardiac muscle functionality.

In experimental alcoholisation models, fullerene water effectively protected animals from alcohol's toxic effect in the setting of prolonged chronic action of ethylene doses and prevented injury of the tissues in the brain and liver—organs that are most exposed to the effects of alcohol.

Researchers from the Institute of Physiologically Active Compounds in Kharkov, Ukraine, the Institute of Theoretical and Experimental Biophysics in Pushchino, Russia, and other institutes exposed rats to X-ray doses which caused severe radiation disease and death in all animals. The use of fullerene water made for the survival of 15 per cent of animals, although subsequent studies showed a greatly improved survival rate.

Pre-clinical studies at the Grigoriev Institute for Medical Radiology of the National Academy of Medical Science of Ukraine tested the effect of water at lower radiation doses. In the group of experimental rats given ordinary water, 37 per cent died after being exposed to radiation. Intake of fullerene water in a 15-day period (five days prior to exposure and 10 days after) made for the survival of 95 per cent of the animals, the course of the radiation disease being significantly relieved.

Fullerene water is recommended for those who, due to their professional activity or for diagnostic purposes, will be exposed to, are being exposed to or have been exposed to ionising radiation.

In May 2011, the Institute of Physiologically Active Compounds offered assistance to the government of Japan, via the ambassador to Ukraine, to help those suffering from radiation exposure after the Fukushima Daiichi Nuclear Power Plant disaster. It's believed that the offer wasn't accepted.

Discovery and Structure of Fullerenes

Dew drops are formed during the cooling of water vapour. When graphite vapour is cooled, carbon atom "droplets" are formed. These carbon balls were discovered in 1985. Sixty carbon atoms form a sphere with a striking similarity to a football (or soccer ball), reduced by 200 million times. As with the football, the

carbon molecule is hollow inside. Because of this similarity, researchers wanted to call this molecule "footballene", but then decided to honour American architect R. Buckminster Fuller—inventor of the geodesic dome, which resembles this carbon molecule—by naming it "buckminsterfullerene C₆₀", shortened to "fullerene C₆₀", the "buckyball". (See image 1.)

Five-petalled flowers, sea stars and human biomolecules are monosymmetrical. The fullerene C₆₀ molecule has six fivefold rotational axes and a number of other notable geometric attributes. This is the only molecule in nature with such unique symmetry.

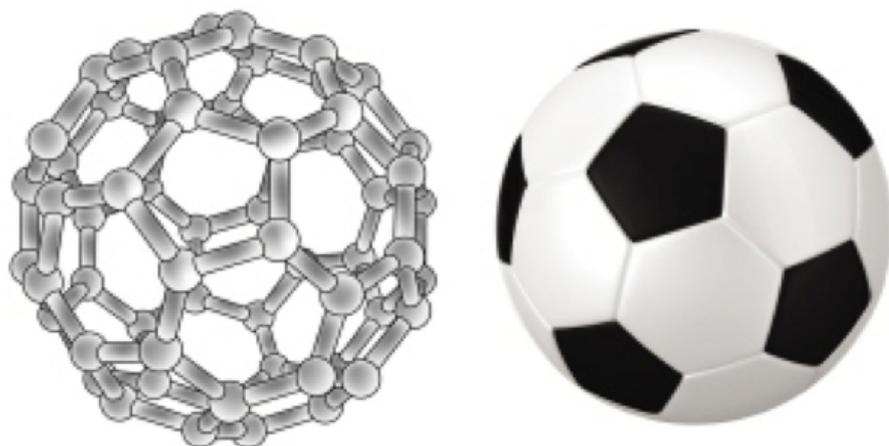
It is noteworthy that these carbon molecules were found first in a laboratory and only then in nature. They were discovered in the North Karelian shungites in northwestern Russia as well as in fulgurites in the USA and India. They are also present in some grades of activated carbon. In nature, fullerenes are formed by lightning bolts, natural gas combustion and volcanic eruptions. In 2010, fullerenes were found in large quantities in space as gases, and in 2012 they were discovered as solids. In 2011, researchers published the results of their investigations of air samples taken above the Mediterranean Sea; they found fullerenes in all 43 air samples taken from Barcelona to Istanbul.

Water Caged in Buckyballs

The fullerene is a carbon allotrope, i.e., it exists in different forms. It's 100 times stronger than diamond or graphite. Fullerenes can be of different types, e.g., C₆₀, C₇₀, etc., depending on the number of carbon atoms. The most stable and best studied is the C₆₀, with 60 carbon atoms. It is the only molecular form of carbon, in contrast to diamond and graphite which are crystalline forms with a certain spatial arrangement of carbon atoms in the lattice. Nature brought together in one object many contradictory concepts. The fullerene is a link between organic and inorganic matter. It is a molecule, a particle and a cluster. The diameter of the C₆₀ molecule is one nanometre.

If you look inside the fullerene, you'll find only an emptiness pierced by electromagnetic fields containing "nothing", a "vacuum bubble" enclosed in a carbon shell. This does not fit the well-known thesis that nature does not tolerate a vacuum. Vacuum and matter are two pillars of the universe that harmoniously unite in one molecule.

The fullerene carbon shell does not allow penetration into it of any material particles (ions, atoms or molecules), but the spaces between carbon atoms allow the ingress of small molecules such as those of water. (See image 2.)



Health Benefits of Fullerene Water

Among fullerenes' fundamental properties, which are apparent at the level of both the cell and the whole organism, are their incredible antioxidant actions. They suppress the processes of peroxidation and free-radical oxidation. They behave as the most powerful and long-acting antioxidants known.

As a means of fighting free radicals, oxygen atoms lack a single electron which they then take away from a living cell. The antioxidant activity of a fullerene has 1,000 times the effect of any other known antioxidants (like vitamin E or β -carotene).

Thanks to their acceptor properties, fullerenes are able to interact selectively with other molecules. When in a water environment, they transfer these properties in orderly layers of water at a considerable distance from their surface. This action filters and restructures the water in your body. It is believed that it is the geometric structure of the fullerene itself that restructures the water.

Fullerenes normalise cellular metabolism, increase enzyme activity and strengthen the stability of the cell, including its genetic apparatus, against external influences (heat, viruses, etc.). As a result, the regenerative ability of body tissues improves.

In addition, fullerenes normalise the nerve processes, influencing the exchange of neurotransmitters and improving the capacity for and resistance to stress. Fullerenes also have explicit anti-inflammatory and antihistamine effects and thus can relieve pain, suppress the development of many allergic diseases and improve immunity.

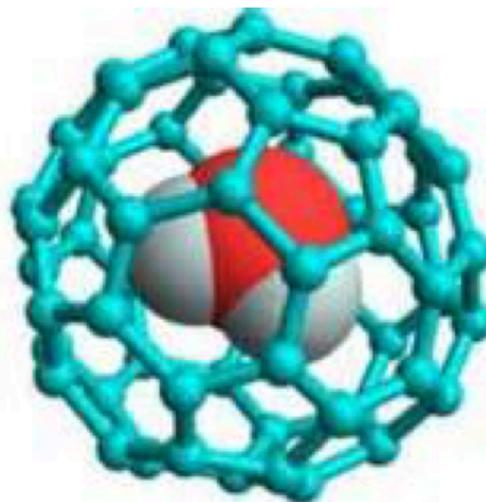
Fullerenes function even in ultra-small doses (as in homeopathy) and their effects can last for months, even after a single dose. Studies in this arena began with Dr Rustum Roy of Pennsylvania State University.

Many pathologies in a living organism can be overcome and health returned to normal with fullerene treatment.

Fullerenes in Nature

Fullerenes are everywhere in nature, and especially where carbon and high energy exist. They can be found near carbon stars, in interstellar space, in places where lightning has struck, and close to volcano craters. They even form when gas burns in the household gas cooker or in the flame of a regular lighter. Fullerenes can also form nanotubes of carbon (see image 3) and become superconductors.

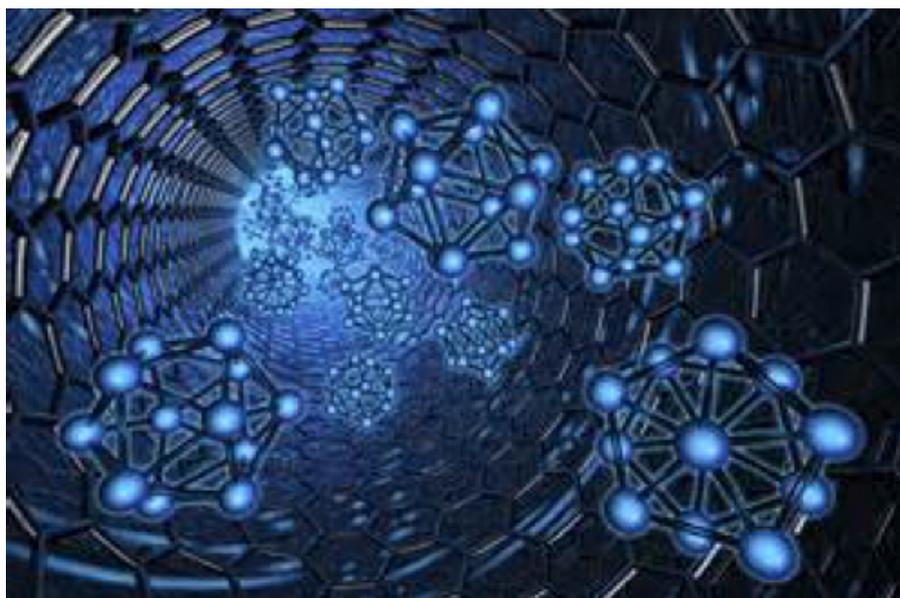
Fullerenes have been found in places of ancient carbon-rock accumulation. The Karelian shungite



mineral has a special place in this regard. These rocks are comprised of up to 80 per cent pure carbon and are about two billion years old. The nature of their origin is still not clear. One suggestion is that they resulted from the impact of a large carbon meteorite.

It was in 1992 that natural fullerenes were found in shungite. By 1999, using the idea of obtaining hydrated fullerene water solutions, one laboratory succeeded in extracting and identifying fullerene, but only C₆₀, in high-carbon type-I shungite.

Since the time of Peter the Great, a spring known as the Marcial Waters, in Karelia, has been famous for its therapeutic properties. It was assumed that increased iron content was responsible, but there are many springs containing iron and as a rule the medicinal effects after their use are rather limited. It was only when fullerenes were found in shungite rocks, through which the spring flows, that it was hypothesised that fullerenes are the key to the Marcial Waters' medicinal effects.



When stored, these life-giving clusters disintegrate. Fullerenes do not dissolve in water spontaneously. This is why there is no structure-forming element that is able to preserve ordered water clusters for long periods. Such water soon takes on the properties of regular water. In addition, the ions present rebuild native water structures themselves, forming their own hydrated clusters.

Fullerene water comprises just carbon balls dissolved in water. But when water comes into contact with a fullerene, it restructures the relationship of one fullerene with the next, forming a nanotube.

Carbon Nanotubes

Carbon nanotubes are forms of carbon (like diamond) with a cylindrical nanostructure. Nanotubes have been constructed with length-to-diameter ratios of up to 132,000,000:1, significantly larger than for any other material known at this time. Their bonds are stronger than even those of diamonds. (See image 4.)

These cylindrical carbon molecules have unusual properties. In particular, owing to their extraordinary thermal conductivity and mechanical and electrical properties, carbon nanotubes are used as additives to various structural materials. For example, nanotubes form a tiny portion of the materials in some primarily carbon-fibre products like baseball bats, golf clubs and car parts.

Nanotubes are members of the fullerene structural family. Their name is derived from their long hollow structure, the walls formed by one-atom-thick sheets of carbon called "graphene". (See image 5.) These sheets are rolled at specific and discrete (mirror-image) angles, and the combination of the rolling angle and radius decides the nanotube's properties.

Nanotubes are categorised as single-walled nanotubes



(SWNTs) and multi-walled nanotubes (MWNTs). (See image 6.) Individual nanotubes naturally align themselves into "ropes", held together by van der Waals forces; more specifically, this is called "pi stacking".

Shungite as a Water Purifier

When formed as a nanotube, fullerenes become filters for such toxins as radioactive particulates and heavy metal ions. When placed in water, the fullerenes in carbon-rich shungite attract and neutralise waterborne contaminants.

Shungite has been used commercially in Russia as a water filtration/purification medium since the 1990s (see <http://tinyurl.com/poaptct>). Among the contaminants it can remove are pathogenic bacteria and other microbes, nitrates, copper, magnesium, iron, heavy metals, pesticides, volatile organic chemicals, pharmaceuticals, and chlorine and fluorine compounds. Shungite can also clean up visually dirty water and eliminate any sour taste. One of the reasons why shungite can neutralise contaminants is because its fullerene composition can hold a tremendous amount of hydrogen.

Shungite's ability to cleanse water goes far beyond carbon filtration, as demonstrated by the water from Lake Onega near the shungite deposits in Karelia, Russia. Water from the lake can be used for drinking without any prior treatment—the result of thousands of years of interaction with shungite.

During the 1990s, many experiments and studies on shungite's influence on the human body were conducted. The mineral has been documented as having a high oxidative/reductive capacity, and shungite water is known for its antioxidant effect. Scientists have concluded that shungite water is absolutely nontoxic.

Shungite water has been found to have a strong antibacterial effect. During one experiment, shungite water was contaminated with *Streptococcus* groups A and D. After only half an hour in the shungite water, the concentration of *Streptococcus* group D decreased by a factor of a 100 and group A by a factor of nine hundred!

Fullerenes offer limitless possibilities in preventing and treating radiation sickness, improving health and neutralising environmental toxins. ∞

About the Author:

Dr Richard Alan Miller, based in Oregon, USA, is a physicist and herbalist with expertise in growing and marketing botanicals. His interest in fullerenes as a potential remedy for radiation exposure was sparked by his own experience with radiation

damage.

Dr Miller is the author of diverse papers and books on metaphysics, parapsychology and alternative agriculture. His recent books include *Power Tools for the 21st Century* (reviewed in 20/05) and *ESP Induction through Forms of Self-Hypnosis* (17/03). His most recent contributions to NEXUS are “The New Directions of Mind Control” (20/04), “ESP Induction through Self-Hypnosis” (17/03) and “The *Cordyceps sinensis* Medicinal Mushroom” (16/03).

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