

The Redox - Technique

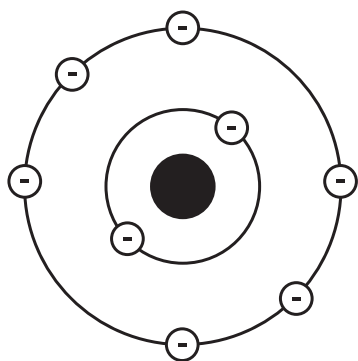
A theoretical analysis of the water ionization and its impact on the human body.

Every kind of life depends on water, as water represents the most basic chemical of life. Thus a high percentage of all animals and plants have chosen the habitat water in the course of evolution. Life in general has its origin in the water. Even the body of any living being consists of 70 – 90% of water, depending on where it lives.

All chemical reactions that support life in plants and animals are fuelled by water. Water does not only represent the environment where these chemical reactions take place but is also the most crucial of all elements involved.

Water is a universal solvent!

Water is a universal polarized solvent. Due to its strong polarization it is able to dissolve all polarized substances and to build up hydrogen bridge linkages, which are basically responsible for the specific geometry of proteins and nucleic acids.

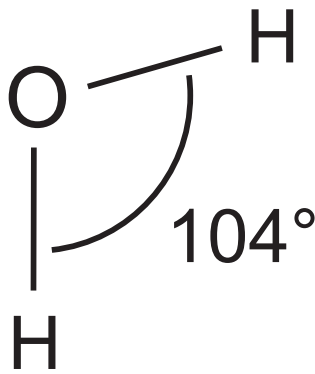


Oxygen atom and its 8 electrons

A water molecule with the chemical formula H_2O contains 2 hydrogen atoms and 1 oxygen atom. The hydrogen atom contains 1 proton in its nucleus and 1 electron on its sheath, which is constantly circulating around the atom core.

Oxygen contains 8 protons and 8 neutrons in its nucleus. The 8 electrons circulate around the core on different tracks each with a different radius. 2 electrons are located on the inner sheath. The other 6 electrons circulate around the nucleus on a track with a far bigger radius. Those 6 electrons are also called valiancy or metastasis electrons.

The valiancy electrons determine the chemical binding ability of the oxygen atom. An oxygen atom prefers the condition of having 8 electrons on its outer sheath because this means a higher chemical stability. This condition can only be achieved by a compound with 2 hydrogen atoms. In this case the oxygen uses 2 electrons of the hydrogen, while the hydrogen uses 2 electrons of the oxygen. The mutually used pairs of electrons represent the chemical compound. Energy is necessary to untie the mentioned compound.

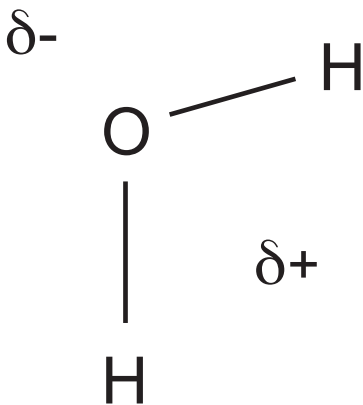


Due to the special position of the pairs of electrons, an asymmetric molecule arises. The binding pairs of electrons of this molecule represent an angle of 104° relative to the hydrogen.

The polarity of water molecules is crucial!

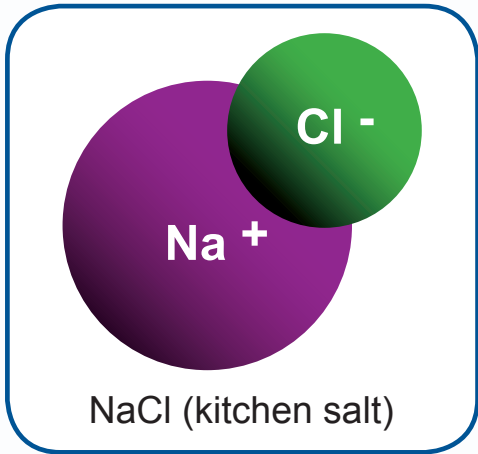
One property of atoms becomes conspicuous when considering the covalent linkage between different partners. This property is called "electro negativity". This expression explains the electron attracting impact of the concerned Element on the binding pairs of electrons. The electron attracting property of oxygen (a value of 3.5) is nearly two times as strong as that of hydrogen (a value of 2.1). This fact has an impact on the position of the binding pairs of electrons. They are attracted more closely to the oxygen and thus they cause negative increment charges (δ^-). At the opposite end of the molecule those two electrons are missing and thus a positive increment charge (δ^+) occurs.

Molecules whose ends are differently charged are called dipoles. Due to the strong difference in electro negativity within the water molecule, water is a strong dipole and a strong polarized solvent.



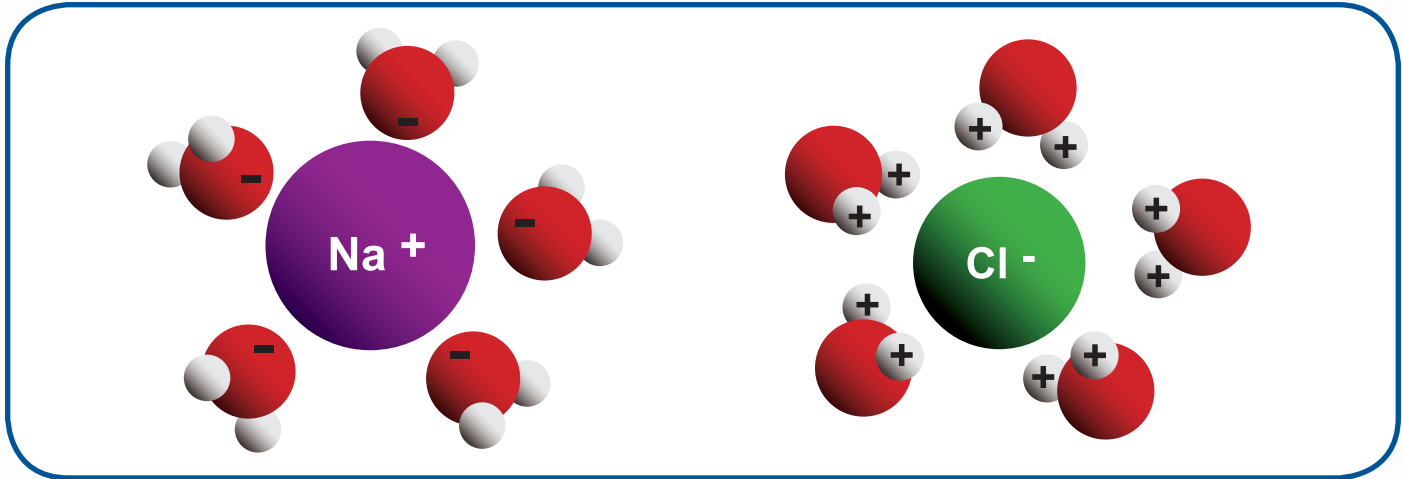
The dipole-character is of primary importance to the properties of water!

- Water molecules build up intermediate molecular connections to vicinal molecules as their negative ends attract the positive ends of the vicinal molecules and vice versa. The "hydrogen bridge linkages" are not as strong as the linking powers within the molecule and thus can easily be created and afterwards be untied again.
- The hydrogen bridge linkages are responsible for the surface tension of water (drops, "water's skin") and the relatively high boiling point of water (100°C).
- Water molecules are ideal means to dissolve Ion-connections. Due to their different charges water molecules are able to introduce into the matrix of negatively and positively charged ions and to surround those ions with a hydrate-sheath. The positive side of the water dipole now tends towards the negative ions, whereby the negative ions are being covered, so that the positive side of the dipole tends in its direction. This is also why the hard grains of salt can so easily be dissolved in water.



In a dry condition, salt is a very solid compound. If water is added, the salt will be dissolved as the positively charged Na⁺ connects with the negative pole of the H₂O molecule while the negatively charged Cl⁻ connects with the positive pole of the H₂O molecule.

As this simple example obviously shows, the rather weak compounds of single water molecules are able to dissolve relatively strong compounds with the help of this convergence process. That basically is the reason why we call water a universal solvent. It is a natural solution which is able to break up very strong and sophisticated compounds. That is the chemistry that surrounds everything on earth, in the sky, on the land and in the water.

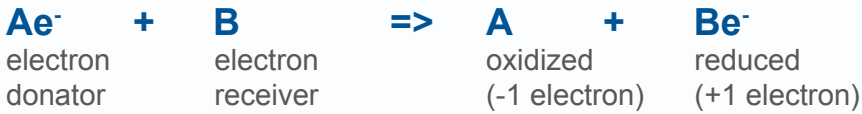


Oxidation and Reduction reactions (Redox-reactions)

This procedure is crucial in most biological systems. In chemistry, **oxidation** is defined as donation of electrons (e.g. rusting of metal). The opposite reaction known as **reduction** means the absorption of electrons.

Oxidation = donation of electrons
Reduction = absorption of electrons

No oxidation can take place without a simultaneous reduction. This mutual relation between reduction and oxidation is known as “**Redox-Reaction**”. The chemical scheme looks as follows:



These Redox-reactions often take place in crucial spots of metabolism in biological systems (photosynthesis, citric acid cycle).

Acid and alkaline (basic): The pH-value!

Another important type of reaction is the “acid-base-reaction”. Even in extremely pure water ions can be found. They cause a lowered conductivity of water. Ions are the result of a reaction between 2 water molecules.

Autoprotolysis: In this reaction, one water molecule gives off a hydrogen-ion (proton or H^+ -ion). The other water molecule absorbs that proton.

In chemistry this is defined as follows:

All substances that give off protons are called acids.

All substances that absorb protons are called bases.

Scheme of the Autoprotolysis:



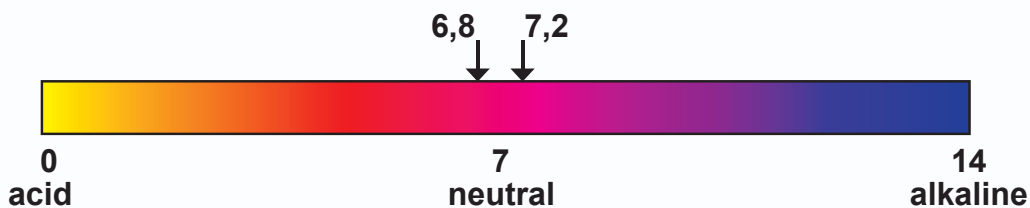
If the concentration of H_3O^+ - ions in the water is determined, a concentration of $10^{-7} \text{ mol / l } H_3O^+ = 10^{-7} \text{ mol / l}$ is obtained.

This value can be manipulated by either adding acids and increasing the concentration of H_3O^+ - ions (e.g. 10^{-3} mol/l) or by adding bases and lowering the concentration of H_3O^+ - ions (e.g. 10^{-9} mol/l). In chemistry, the **pH-value** measures the concentration of hydrogen ions.

The pH-value is the negative decadal logarithm of the concentration of hydrogen-ions:

Concentration of water ions (mol / l)	PH-value	Property of the solution
10^{-7}	7	neutral
10^{-3}	3	acidic
10^{-9}	9	alkaline

Classification table of the pH-value (for the human cells the ideal pH is between 6.8 and 7.2):



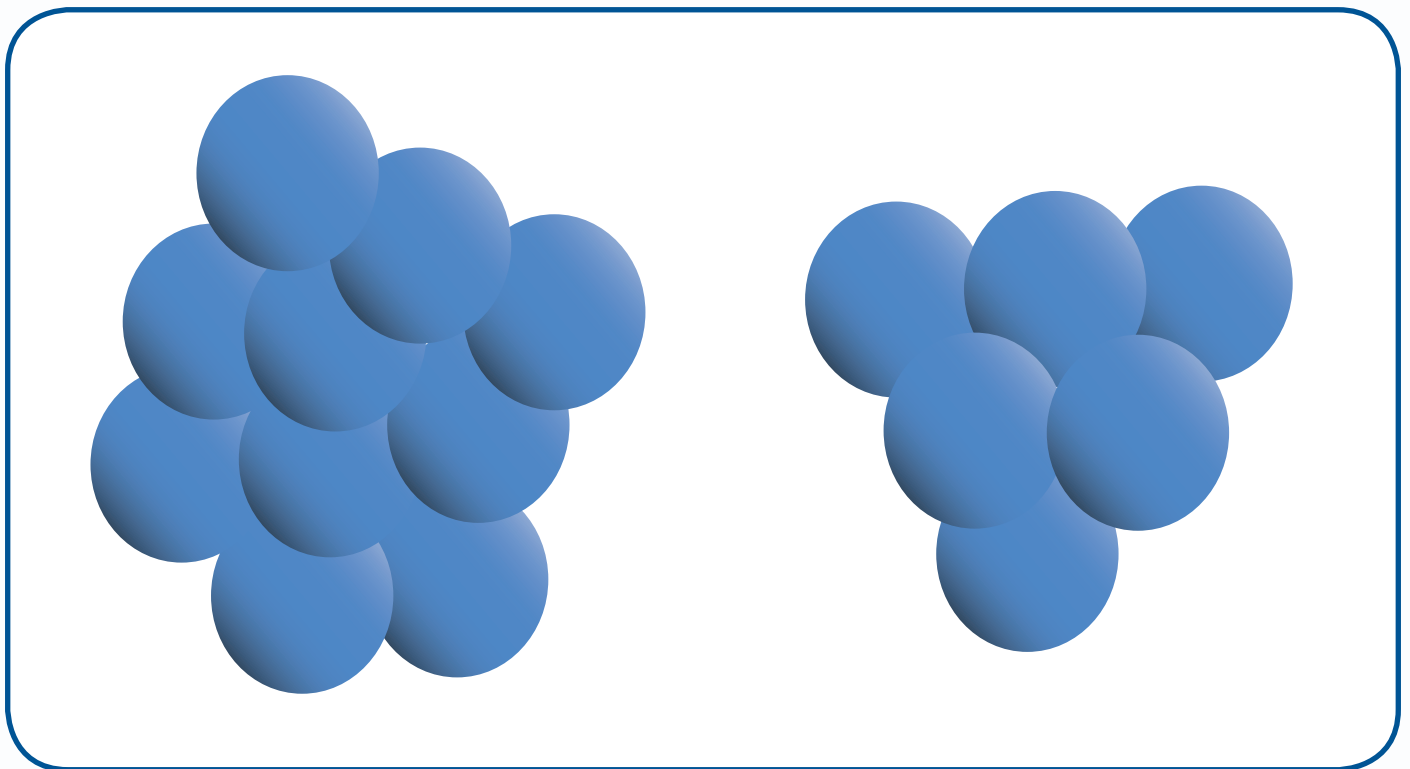
As the concentration is logarithmically measured, a switch from pH3 to pH2 means that the acid concentration increases tenfold.

A nationwide disease: the body is in general too acidic!

Hydrogen sulphide, ammonium, histamines, indoles, scatoles and carbolic acids are created by decomposition. These substances can be regarded as the main cause of skin diseases, liver damages and allergic reactions. Indoles are even said to cause cancer. Antioxidant agents (ionized water, vitamins, tracer elements and minerals) chemically neutralize the active oxygen in order to prevent the human body from inner oxidation. This effect is able to slow down the aging process. Ionized, alkaline water has an enormous reduction potential (it stops the damaging impact of active oxygen on cells), which can even be increased further by applying additional anti-oxidant agents (SPS, ORTHOMED or WON). This all requires a healthy intestine system.

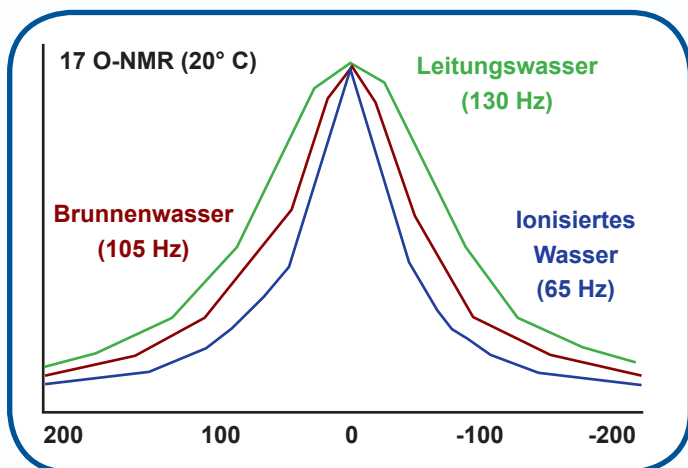
A healthy gut means a healthy body!

This effect is favored by the reduction in size of the H_2O -clusters (bundling of H_2O molecules from 10-13 (see left picture) to 5-6 (see right picture)) and by a supply of each cell of the organism that is 6 times better than the one normal potable water provides.



Water clusters: smaller is better!

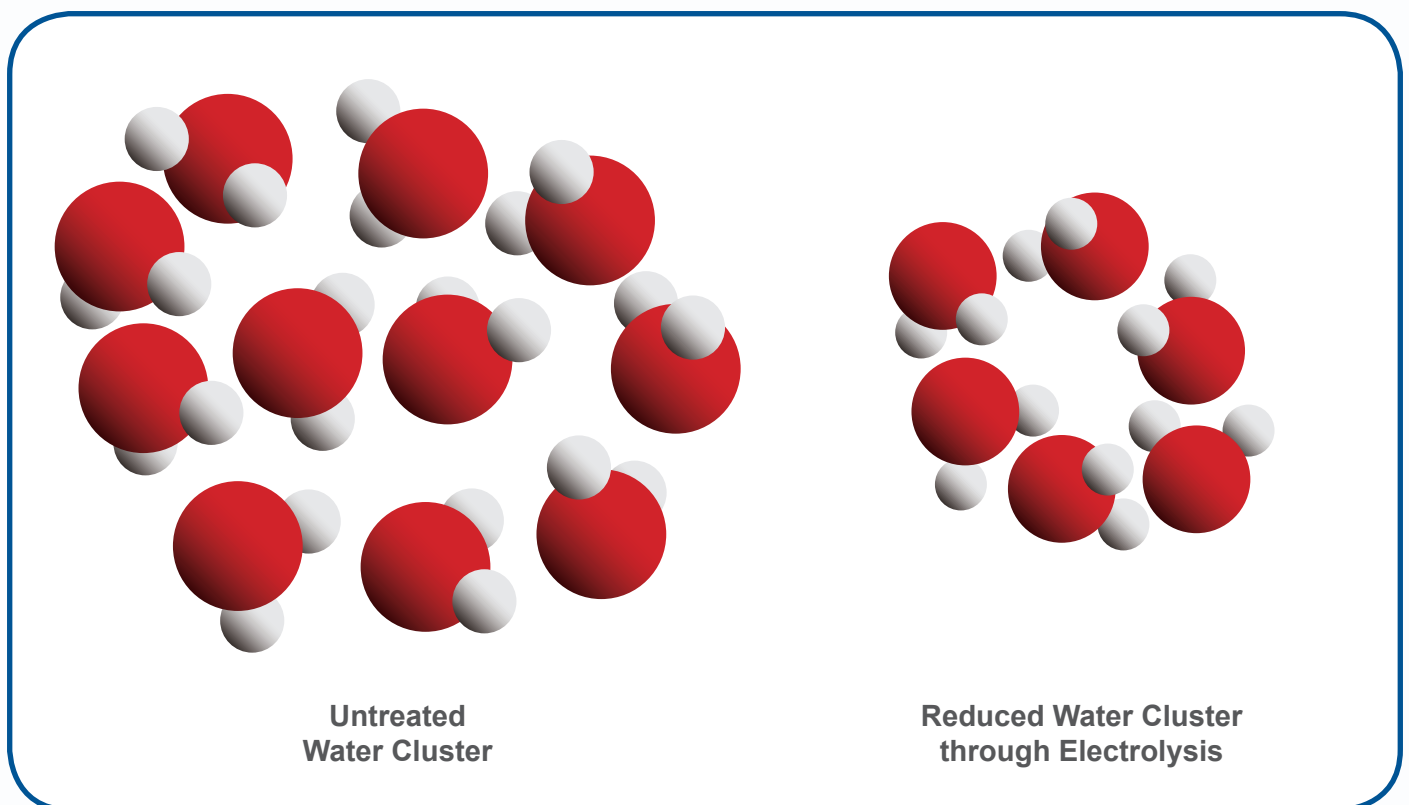
NMR-Analysis (Nuclear Magnetic Resonance) show, that potable water has a cluster-size of 10 to 16 H_2O molecules. After the electrolysis with the water ionizer the size of the cluster has decreased to 5 to 6 H_2O molecules, as the following diagram shows:



The diagram shows an NMR-analysis with the help of which the cluster size of different types of water was measured.

The result is a value of **65 Hz for ionized water** and **130 Hz for normal potable water**. This proves that clusters of ionized water are only half the size of clusters of normal potable water.

Other waters have following parameters: mineral water 94 Hz, milk 210 Hz, distilled water 118 Hz, reverse-osmosis water 150 Hz und acidic water 280 Hz.



Too much oxygen?

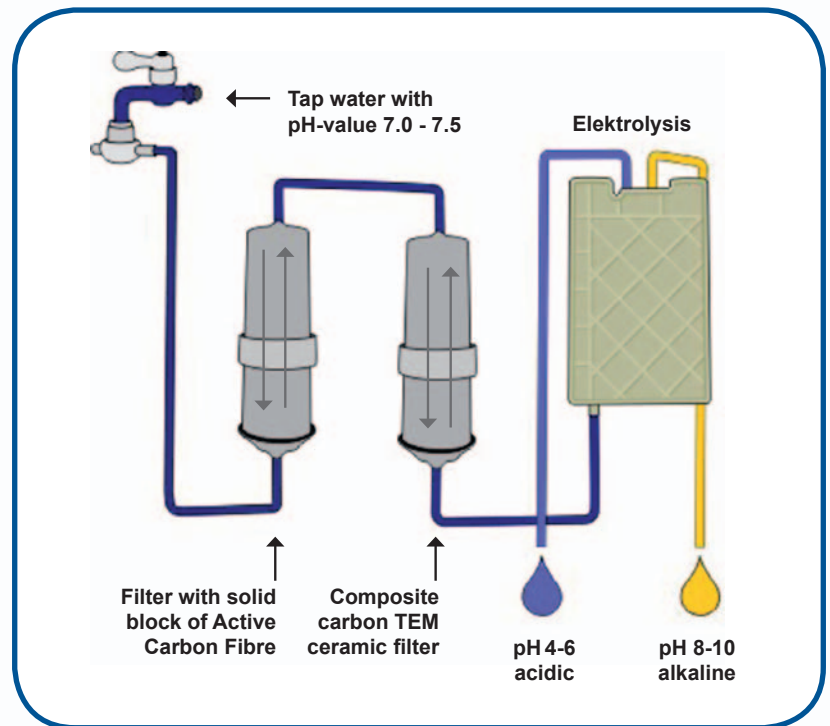
Oxygen is essential for every living being. Highly concentrated, active oxygen (free radical) is used for disinfection and for eliminating bacteria, virus and metabolic waste products. Nevertheless, active oxygen can have a negative impact when electrons from other molecules are absorbed and cells are damaged due to the active oxygen's high oxidizing potential. This "electron-theft" is responsible for the oxidation of tissue in the human body and thus causes various diseases.

How does the water ionizer work?

The water ionizer is an electric device which is directly connected to a water tap in order to ionize the normal, potable water before it is used.

A special joint installed on the water tap conducts the water into the ionizer unit. Within the machine the water is first cleaned in **2 active charcoal block filters** (in the second filter additionally through TEM-ceramics). Then, the water is lead into the “electrolysis section” which is equipped with platinum covered titanium electrodes. This is where the electrolysis actually takes place.

Cations, positive ions, surround the negative electrodes and produce cathode water (reduced water). Anions, negative ions, surround the positive electrodes and produce anode water (oxidized water).



The Redox-potential of ionized water

- **Normal potable water** has a reduction potential of +100mV to +150mV. This means that it is able absorb electrons and to make other molecules oxidize.
- **Reduced water** with a reduction potential of -100mV to -350mV has a very high concentration of electrons which is necessary to eliminate active oxygen and other free radicals. Furthermore it prevents biological molecules from being damaged by reduction through active oxygen. A positive effect of this process is that cells that are protected to such an extent are less sensitive to infections or diseases.
- **Oxidized water** with a reduction potential of up to +800mV is an oxidizing agent that is able to destroy bacteria. Oxidized water coming from a water ionizer can be used for cleaning your hands, food stuff or kitchen utensils and also flowers are thankful for oxidized water.

Redox-potential

Reduction / Oxidation – Redox-Potential

type of water	Redox Potential	pH-value	What does that mean?
Normal, tap water	+100 to +150mV	7 - 8	Slight oxidation potential.
Reduced water	-50 up to -350mV	8 - 11	Strong reduction potential. It contains plenty of electrons to neutralize free radicals.
Oxidized water	+700 up to +800mV	6 - 3	Strong oxidation potential. Contains only few electrons what explains its sterilizing property!

Ionized water in a diet

Ionized alkaline water is perfectly suitable for diets. It can supply especially old people with fluids and vitamins in abundance because of its low molecular weight of 18 (Vitamin C: 176), its minute cluster size (5-6 instead of 10-13 molecules) and its exceptional reduction potential. It simultaneously reduces the intestinal autointoxication (decomposition and fermentation in the digestive organs). Ionized water can easily be absorbed by the inner organs, especially by “filter-organs” like the liver. Favored by its small molecular weight, its minute cluster size and its strong reduction potential the healthy cells within the body are protected.

Comparison of molecular weights

Substances	Molecular weight
micro water	18
beta-carotene	150
vitamin E	153
vitamin C	176

Thus, ionized water keeps your body healthy and slows down the aging process!



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