

## ARTICLE

# Electrified Water as a Regulator of Cell Proliferation

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### ABSTRACT

It was previously found that the electric charge of water determines its ability to interact with other substances, including biologically significant ones. It is shown here that the electric charge of water can also determine its ability to penetrate and accumulate in living cells. In particular, it has been shown that the high penetrating ability of positively charged water determines both its active penetration into cells and accumulation in them, which creates favourable conditions for cell proliferation. At the same time, it has been shown that the low penetrating ability of negatively charged water determines its ability to slow down cell proliferation. It also discusses how medics can obtain and use water at different charges.

## 1. Introduction

The fact that water is the main component of all human biological fluids is beyond doubt. At the same time, the ability of human biological fluids (undoubtedly water in their basis) to change their electric charge (potential) and, therefore, properties, is practically unknown to most. In the process of studying the polymorphism of crystals formed during the drying of tissue fluids of the female body at different stages of the menstrual cycle, I became convinced that these changes do occur (Figure 1)<sup>[1]</sup>.



**Figure 1.** This is what dried cervical mucus looks like in the first half of the menstrual cycle, i.e. - in the period from the first (left) to the fourteenth (right) day of the cycle<sup>[1]</sup>

So, studying the nature of this polymorphism (Figure 1), I have found that the shape of the crystals that form when saline solutions dry depends on the electrical charge (potential) of the water on which these solutions were pre-

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pared. In particular, it was found that the drying of saline solutions prepared with positively charged water is accompanied by the formation of cubic or rhombic crystals (Figure 2, left), while the drying of saline solutions prepared with negatively charged water is accompanied by the formation of needle-like or whiskers (Figure 2, right) <sup>[1,2]</sup>. Since this relationship turned out to be true for sodium chloride <sup>[1,2]</sup>, which is the main salt component of almost all human biological fluids, it was concluded that the observed polymorphism (Figure 1) reflects the variations in the electrical potential of the female body fluids that occur during menstrual cycle.



**Figure 2.** It is the crystals that formed after the drying of solutions of  $\text{KH}_2\text{PO}_4$  prepared on the water with potentials of +250 mV (left) and -250 mV (right) <sup>[1,2]</sup>

Moreover, it was assumed that these variations determine the very existence of the menstrual cycle. One way or another, it was also concluded that the timely use of positively and negatively charged water can normalize the menstrual cycle, and untimely use can cause its disturbances. In addition, it was concluded that the use of positively and negatively charged waters for medical purposes is quite safe, since these waters are normal components of the human body, undoubtedly under its control <sup>[1]</sup>.

It is advisable to add that the established dependence (Figure 2) turned out to be very productive. Thus, the knowledge of this dependence made it possible to purposefully reproduce the conditions under which the arborization of salt crystals occurs. As a consequence, this reproduction made it possible to explain the regenerative effect of pulsed electromagnetic fields on nerve tissues. In particular, this reproduction made it possible to explain why such fields can stimulate the formation of new dendritic outgrowths in neurons, and what importance are the chlorides that are part of nerve tissues (Figure 3) <sup>[3]</sup>.



**Figure 3.** The crystals formed after drying an aqueous solution of  $\text{CuCl}_2$ , which was previously subjected to the action of EMF, pulsing with a frequency of 10 Hz for 10 minutes; to increase the contrast, the crystals were treated with ammonia vapor <sup>[3]</sup>

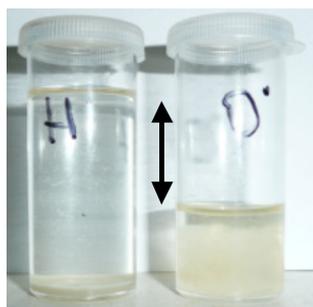
Accordingly, this reproduction (Figure 3) made it possible to quite adequately explain the restorative and stimulating effect of pulsed electromagnetic fields on human nervous tissues, in general <sup>[4]</sup>, and on his brain, in particular <sup>[5]</sup>.

Simultaneously, it was established that positive electrification of water causes its compression, and negative electrification of water causes its decompression. These peculiarities allowed concluding that surface tension of positively charged water is greater significantly than surface tension of negatively charged water. This difference in surface tensions of oppositional charged waters allowed explaining the observed polymorphism of salt crystals (Figure 2). So, it was concluded that more compact crystals are formed due to the rather high surface tension of positively charged water (Figure 2, left), and less compact crystals are formed due to the extremely low surface tension of negatively charged water (Figure 2, right) <sup>[2]</sup>. Naturally, this dependence made it possible to understand the physical reason for the change in blood pressure in women during the menstrual cycle, in particular, the cause of the increase in blood pressure before menstruation, which manifests itself as premenstrual syndrome <sup>[1]</sup>. In addition, this dependence suggested that the tone of blood vessels is determined by the electrical potential of the blood, and the tone of the skin is determined by the electrical potentials of both sweat and air. This assumption made it possible to clarify both the sensitivity of a person to the weather and his sensitivity to anomalous zones. Moreover, this made it possible to propose a method for eliminating both of these sensitivities using suitably electrified water. In particular, given the strong negative electrification of the lower layers of the atmosphere both before and during the cyclone, interested people were invited to drink negatively charged water to compensate for the negative effect of such electrification on a person, in particular, to overcome drows-

iness. The same method of confrontation was proposed to be used by pilots and sailors crossing the Sargasso Sea and the Devil's Sea. At the same time, it was once again noted that electrified water is completely harmless, since it is a normal metabolite of the human body, the activity of which is regulated in a natural way<sup>[6, 7]</sup>. Thus, the knowledge that the surface tension of water depends on its electrical charge has proven to be very productive in the medical aspect.

Further studies made it possible to establish that the ability of water to hydrate biopolymers, including DNA, also depends on its electrical potential. An inexpensive visualization of this relationship can be done with starch powder. Thus, one can make sure that water with a positive potential hydrates starch noticeably better than water with a negative potential (Figure 4)<sup>[1, 2]</sup>.

Moreover, it can be verified that the electric potential of the water determines its penetrating ability. So, you can see that positively charged water, in contrast to negatively charged, is capable of evaporating even from a closed plastic container (Figure 4, right)<sup>[1, 2]</sup>.



**Figure 4.** Swelling of starch in oppositely electrified waters. Starch does not swell in water with the potential of -250 (left) and swells in water with the potential of +250 mV (right)

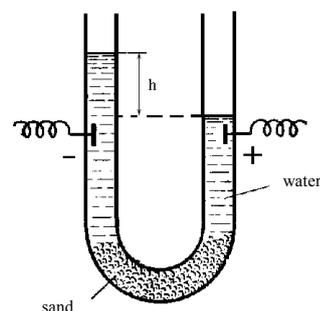
Water with negative potential was obtained by bubbling uncharged water with hydrogen gas (left); water with a positive potential was obtained by bubbling uncharged water with oxygen gas (right).

Water with a positive potential has an abnormally high penetrating ability, which is why it can evaporate even from a closed plastic bottle: the arrow shows how much the level of such water has decreased during the day. In terms of the topic under discussion, it is important that salts dissolved in positively charged water penetrate the plastic along with it.

Both used waters had a temperature of 20-22 °C<sup>[1, 2]</sup>.

Although this phenomenon (Figure 4, right) may be surprising to many, it is a kind of electroosmosis, which is the movement of aqueous solutions in a functioning electrolyzer from the anode to the cathode through a layer of

sand or clay (Figure 5), which was first described in 1809<sup>[8, 9]</sup>. Note that only anolyte, which is a positively charged and oxygenated aqueous solution, passes through layers of sand or clay during electroosmosis (Figure 5), although the same electromotive force acts on the catholyte.



**Figure 5.** This is an illustration of electroosmosis, which consists in moving water or an aqueous solution from the anode compartment of a functioning electrolyzer to its cathode compartment through a finely porous partition separating both compartments

Thus, the high penetrating ability of water, which acquires a positive charge upon contact with oxygen (Figure 4, right), is no more surprising than the exceptional penetrating ability of anolyte, which determines the very existence of electroosmosis (Figure 5). Additionally, it should be noted that the high penetration of water exposed to ionizing radiation is also explained by the action of active oxygen<sup>[10]</sup>. Thus, the discussed phenomenon (Figure 4, right) cannot be considered completely unexpected.

Together, it should be noted that the described difference (Figure 4) turned out to be no less productive in medical terms than the previously described additions. So, this dependence made it possible to better understand the features of water exchange in women at different stages of the menstrual cycle and, in particular, the physical reason for the appearance of edema in them before the onset of menstruation. Accordingly, all of this was seen as evidence that the electrification of the body fluids of women is important for the development of a fertilized egg<sup>[11]</sup>.

It is logical that all this ultimately led to the need to analyze the effect of oppositely electrified waters on metabolism, proliferation and cell viability. Let us consider how the described potential-dependent properties of water help in the analysis of such influence.

## 2. Discussion

You should immediately accept the fact that water is the main component of the human body. In other words, the human body is primarily a water structure. Thus, Leonardo da Vinci's attractive definition "Life is inspired water" can now be replaced with a more correct definition

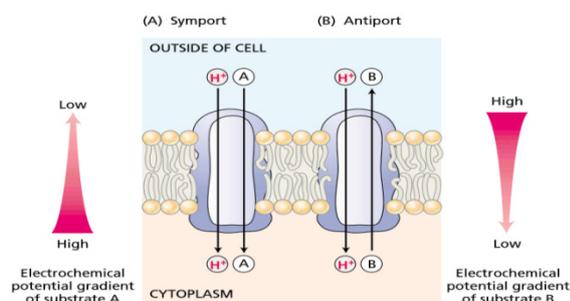
“Life is structured water”, which more fully reflects the understanding of the vital importance of structured water. This allows us to assert that it is water (and not peptides, as they say) that is the main building block of all living structures. This also allows us to assert that any growth of living matter is accompanied by both the accumulation of water and its involvement in newly formed structures, in particular, in biomolecules and cells.

Let's consider in this aspect the exceptional properties of positively charged water (Figure 4, right) [1,2]. They suggest that it is positively charged water that is capable of creating hydration shells of newly formed living structures. Moreover, the discovered abilities of negatively charged water (Figure 4, left) [1,2] suggest that it is capable of slowing down the formation of new living structures, in any case, the formation of their hydration shells.

Despite the fact that these explanations seem rather exhaustive and, I hope, convincing, the antagonistic effect of differently charged waters on the growth processes occurring in living matter, including cell proliferation, has both additional justification and limitation. Let's examine them.

## 2.1 Effect of Electrified Water on Proton Gradients around Cells

It is believed that the presence of proton gradients on the outer sides of the cytoplasmic membranes is characteristic of the cellular life form in general. Moreover, the ability to create these proton gradients is believed to be the exclusive domain of living cells [11]. These statements reflect the importance of such gradients for cell life, in particular, the fact that their energy allows cells to realize two types of secondary transmembrane transport, namely symport and antiport (Figure 6) [11-16].



**Figure 6.** The energy of proton gradients on cytoplasmic membranes allows cells to realize two types of secondary active transport: symport and antiport. At the symptom (A), a proton, penetrating into a cell from the outside, captures one substrate molecule (for example, a glucose molecule).

With antiport (B), the energy “scattered” by a proton entering the cell from the outside can be used to remove cations (for example, sodium ions) from the cell [14]

This means that the state of these proton gradients determines both of these types of secondary transmembrane transport (Figure 6) and, therefore, affects the rate of cellular metabolism in general [11-16]. In addition, this suggests that the saturation of the intercellular space with uncompensated protons, in which positively charged water is rich, can increase this proton gradient and, therefore, intensify cellular metabolism.

At the same time, this suggests that the state of these proton gradients can determine the intensity of the penetration of positively charged water, in fact, electroosmotic (Figure 5), into the cells and, accordingly, the intensity of water accumulation inside the cells. In turn, this suggests that the saturation of the intercellular space with positively charged water will also create conditions conducive to cell proliferation. It is obvious that the high penetrating ability of positively charged water, as well as its ability to hydrate biopolymers (Figure 4, right), do not contradict, at least, such assumptions.

At the same time, it cannot be ruled out that cells can burst with an unlimited growth of these proton gradients and, accordingly, an unlimited supply of positively charged water to the cells. Thus, it can be expected that unlimited positive electrification of the internal contents of cells and their external environment can destroy cell membranes in the same way as the surface tension of positively charged water dissipates starch powder (Figure 7, left) [2].



**Figure 7.** Left: the starch powder applied on the water surface with a potential of +250 mV forms a thin film that completely covers the water surface. Right: On the surface of water with a potential of -200 mV, the powdered starch remains at the application site and sinks [2]

This suggests that the proton guns used by oncologists [17-19] kill cancer cells, probably also by dissolving their membranes, at least cytoplasmic ones, that is, in the same way as positively charged water. The fact that this assumption is not far from reality is confirmed by the fact that a drop of liquid oil forms an invisible layer on the surface of positively charged water, spreading over it in the same way as powdered starch (Figure 7, left), but remains

unchanged on the surface of negatively charged water like a lump of starch powder (Figure 7, right) <sup>[2]</sup>. Thus, proton guns initiate apoptosis of the (of the two main) types that arise as a result of irreversible and, therefore, unlimited cell swelling <sup>[20]</sup>.

It is noteworthy that the effect of positively charged water on cells can be compared with the analogous effect of reactive oxygen, low (usually submicromolar) concentrations of which cause cell proliferation, and high concentrations (usually  $\geq 10 \mu\text{M}$ ) cause their apoptosis or necrosis <sup>[21]</sup>. The fact that reactive oxygen provides positive electrification of water <sup>[22]</sup>, which we used earlier (Figure 4, right), makes this analogy more remarkable. In any case, all this correlates well with the opinion of Paracelsus: "Everything is poison, and nothing is devoid of poisonousness; just one dose makes the poison invisible" or, in a more popular interpretation: "Everything is poison, everything is medicine; both determine the dose". Thus, it is quite obvious that it is necessary to control the positive potential of the water used as a therapeutic agent.

Now let's analyze the effect of neutralizing protons in the extracellular space with the help of negatively charged water, or rather, with the help of hydroxyl ions, which this water is rich in:  $\text{H}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O}$ . It is clear that this neutralization will decrease the same proton gradient and, therefore, slow down both types of secondary transmembrane transport (Figure 6) and cellular metabolism in general. Of course, this same neutralization will hinder the growth of living matter, which needs water to form hydration shells of new biopolymers, and, consequently, cell proliferation. Obviously, the low penetrating and hydrating capacity of negatively charged water (Figure 4, left; Figure 7, left) will also prevent it from both penetrating cells from the extracellular space and hydrating intracellular structures, in particular, newly formed ones. All this allows us to consider negatively charged water as a means of preventing cell proliferation.

In addition, all this suggests that the loss of intracellular water by cells upon contact with negatively charged water can also be fatal for them, in accordance with the second pathway of apoptosis, which consists in irreversible drying of cells <sup>[20]</sup>. This is in complete agreement with the opinion of the authors who assert that the dissipation of proton gradients is invariably accompanied by cell death <sup>[11]</sup>. Agree, all this also confirms the correctness of the maxim of Paracelsus.

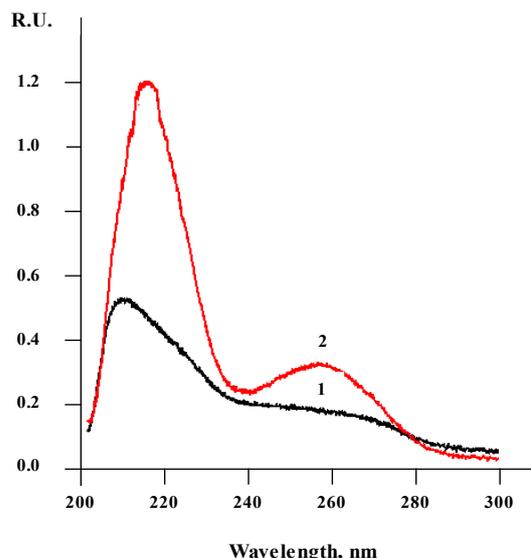
It should be added that the energy of proton gradients formed on the outer sides of bacterial cytoplasmic membranes, which are conjugate, are used by  $\text{H}^+$ -ATP-synthases integrated into such membranes for ATP synthesis:  $\text{ADP} + \text{Pi} \rightarrow \text{ATP} + \text{H}_2\text{O}$  <sup>[12, 15, 23 - 25]</sup>. This suggests that

neutralization of their cytoplasmic proton gradients is fatal, first of all, for bacteria. Thus, negatively charged water can be positioned as antiseptic, killing bacteria, including pathogenic.

## 2.2 Effect of Electrified Waters on DNAs

After all that has been said, I hope that you will easily perceive the fact that DNA practically does not dissolve in water, which is sufficiently negatively charged, but dissolves instantly in water, which is sufficiently positively charged <sup>[2,26,27]</sup>. In turn, this allows us to conclude that positively charged water hydrates DNA better than negatively charged water, and also that the degree of DNA hydration in a positively charged aqueous medium is higher than in a negatively charged one. Let's also take into account that the difference in the degree of hydration of DNA molecules induces their  $\text{A} \leftrightarrow \text{B}$  transitions and, as a consequence, the activity of DNA and RNA polymerases, the intensity of peptide synthesis, cell proliferation, etc. <sup>[28-30]</sup>. Then there will be every reason to assert that the electrification of the aqueous environment of DNA also affects cell proliferation.

In this aspect, it is useful to compare the UV absorption spectra of lymphocytes from healthy subjects (Figure 8, spectrum 1) and from patients with B-cell chronic lymphocytic leukaemia (B-CCL) (Figure 8, spectrum 2) <sup>[31]</sup>. You can see that the last spectrum has a noticeable peak at  $\sim 260 \text{ nm}$ , which indicates either a significant positive electrification of the environment of lymphocytic DNA <sup>[2,26,32]</sup>, or their modification with oxygen <sup>[33,34]</sup> (it is quite possible - and about both at once.).



**Figure 8.** UV absorption spectra of lymphocytes: 1 - lymphocytes of healthy subjects; 2 - lymphocytes of patients with B-CCL <sup>[31]</sup>

Negative electrification of lymphocytes from healthy people is confirmed by a peak at 208 nm (Figure 8, spectrum 1), and positive electrification of lymphocytes from patients with B-CCL is confirmed by a peak at 215 nm (Figure 8, spectrum 2) <sup>[31,32]</sup>.

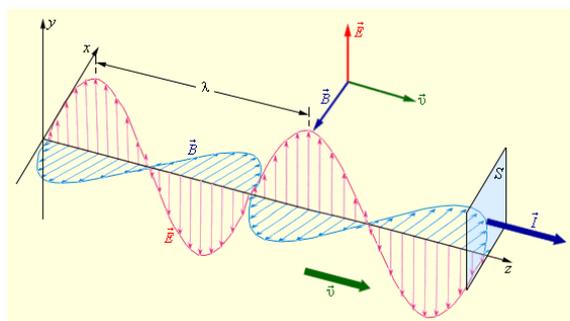
Given that the proliferation of lymphocytes from patients with B-cell chronic lymphocytic leukemia (B-CCL) proceeds more actively than the proliferation of lymphocytes in healthy subjects, we can say that positive electrification of the karyoplasms of lymphocytes contributes to their proliferation, while its negative electrification does not. In addition, all this suggests that neutralizing the positively electrified karyoplasms of lymphocytes with negatively charged water can prevent cancer.

In this aspect, water saturated with hydrogen gas looks very promising, firstly, because such water is negatively charged <sup>[22]</sup> and, secondly, because hydrogen gas dissolved in such water can restore nuclear DNA, which oxidation usually accompanies (or causes) cancer <sup>[35 - 40]</sup>. (You should also pay attention to DMSO, which can quickly penetrate into the body through the skin, destroy structured water <sup>[22]</sup> and remove hydroxyl radicals from DNA <sup>[41]</sup>.)

### 2.3 Fundamentals of Photodynamic and Thermal Cancer Therapy

Since cancer cells are positively charged, they may be more sensitive to additional positive electrification than healthy cells. Both photodynamic and thermal anticancer therapies (hyperthermia) <sup>[42-47]</sup> are based, in fact, on these different sensitivities. Let's see this.

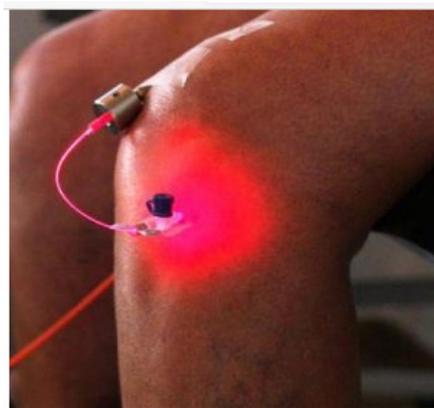
Initially, let's take into account that the Pointing vector, which determines, as many people know, the direction of light rays, also determines the direction of movement and positive charges, which few people know about (Figure 9) <sup>[48]</sup>.



**Figure 9.** This is a diagram illustrating the structure of the Pointing vector.  $E$  and  $B$  are the electric and magnetic components of the vector, therefore.  $v$  is the speed of positive charges forming a current  $I$  in the direction of the Poynting vector  $[E, B]$  <sup>[48]</sup>

This allows us to conclude that focused light itself (that is, without photosensitizers), or rather, the proton flux that

it induces, is just as lethal for (positively charged) cancer cells as a proton gun <sup>[17 - 19]</sup>. Since human tissues are most transparent to red light <sup>[43]</sup>, its use in photodynamic cancer therapy is preferable (Figure 10).



**Figure 10.** So the tumor is irradiated with a red laser

Before we analyze anticancer thermotherapy (also known as hypothermia), let's remember how starch paste is made. First, a suspension of starch is prepared in cold water, and then this suspension is poured into boiling water in a thin stream. It is during such manipulations that the cold starch suspension extracts protons from boiling water. Remember that starch swells only in water saturated with uncompensated protons (Figure 4). It should also be realized that with such manipulations we form a two-phase system, between the phases of which there is a flux of uncompensated protons.

In this case, the distribution of protons between cold and boiled water follows the Kyon rule: when two phases come into contact, the phase with a higher dielectric constant gets a positive charge, and the phase with a lower dielectric constant gets a negative charge <sup>[22]</sup>. Since the dielectric constant of water at 20 °C is  $\sim 81$ , and the dielectric constant of water at 100 °C is  $\sim 55$  <sup>[22]</sup>, cold water accumulates protons and gains a positive charge, while boiled water loses protons and acquires a negative charge. Thus, anticancer hyperthermia uses the same mechanism of saturation of human tissues with protons, as we do, making starch paste.

It is clear that negative, at least less positive, electrification of healthy cells determines their less sensitivity to both illumination and heating, in fact, to excessive positive electrification.

At the same time, all means aimed at destroying cancer cells with the help of protons simultaneously induce positive electrification of human tissues and, therefore, create favorable conditions for the reproduction of surviving cells. Moreover, the surrounding of the surviving cells is enriched with fragments of killed cancer cells, which the

surviving cells can use as nutrients. Thus, these types of cancer therapies combine the killing of cancer cells with the simultaneous stimulation of new cancer cells and tumor growth, which is counterproductive. It is also counterproductive to use photosensitizers for additional oxidation of the DNA of cancer cells [42-44], that is, for the oxidation of those DNA that are already oxidized [21,31,36-40].

Based on this, it should be noted that anticancer therapy is more preferable, aimed not at destroying cancer cells, but at their deep chemical recovery [40]. At the same time, negative electrification of cancerous tumors creates conditions for the emergence of new nerve contacts (Figure 3), which means for the restoration of the innervation of damaged tissues, in the absence of which the tissues swell at least uncontrollably. Thus, the use of negatively charged water as an antitumor agent seems to be quite reasonable. In particular, the electron gun, which scientists from the Siberian Branch of the Russian Academy of Sciences are trying to use as an antitumor agent, appears to be a more promising anticancer therapy than a proton gun.

## 2.4 Obtaining Electrized Water in the Laboratory

If you are interested in all this, it is useful to know how you can get both positive and negative water, in particular - in the laboratory. So, in laboratory conditions, water with a positive electric charge (potential) is convenient to obtain:

(1) by bubbling uncharged water with gaseous oxygen, this is an electron acceptor;

(2) by filtering uncharged water through silica gel, this absorbs hydroxyl ions from the water,  $\text{OH}^-$  [2,22].

When receiving positively charged water, it is advisable to use glassware, since glass absorbs hydroxyl ions,  $\text{OH}^-$  [22,27].

Water with a negative electric charge (potential) is conveniently obtained:

(1) by bubbling uncharged water with gaseous hydrogen, this is an electron donor;

(2) by filtering uncharged water through activated carbon that absorbs hydrogen ions,  $\text{H}^+$  [22].

When receiving negatively charged water, it is advisable to use polyethylene dishes, since polyethylene absorbs hydrogen ions,  $\text{H}^+$ .

Water with the required value of the electric potential is conveniently obtained:

(1) by varying the thickness of the sorbent layer through which water is filtered;

(2) by varying the time the gas passes through the water and (or) its pressure [2].

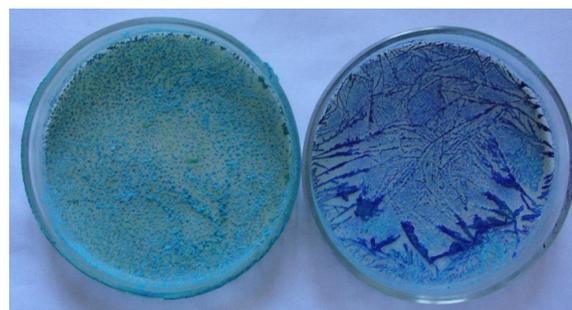
As many find this acceptable, both anolyte and catholyte can be used. Moreover, the drying of anolytes is accompanied by the formation of cubic or rhombic crystals

(Figure 11, left), and the drying of catholytes is accompanied by the formation of needle-shaped crystals (Figure 11, right). In this, both anolyte and catholyte are clearly similar to positively and negatively charged waters, respectively (Figure 2) [2].

In addition, positively charged water can be obtained by rotating uncharged water counterclockwise with your left hand (Figure 12, left), and negatively charged water by rotating uncharged water clockwise with your right hand (Figure 12, right).



**Figure 11.** This is how the crystals that formed after drying  $\text{CuSO}_4$  solutions from anode (left) and cathode (right) departments of functioned electrolyzer look like



**Figure 12.** These are crystals formed after drying  $\text{CuSO}_4$  solutions, which were prepared by turning counterclockwise with left hand (left) and clockwise with right hand (right); both Petri dishes were rotated for 1 min

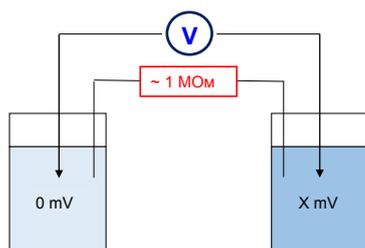
This method of electrifying water uses the fact that the left hand has a predominantly positive charge, and the right hand predominantly negative [49], as well as the interaction of rotating waters with the electromagnetic field of the Earth [7]. Despite the uncommonness of the latter method of electrifying water, it seems to be the most “clean”, since it excludes any pollutants from entering the water.

All described methods should take into account the negative electrification of air at low atmospheric pressure and its positive electrification at high atmospheric pres-

sure<sup>[50]</sup>. One should also take into account the fact that positively charged water loses its charge upon evaporation<sup>[7]</sup>, as well as the fact that light and glass enhance the positive electrification of water<sup>[27, 48]</sup>.

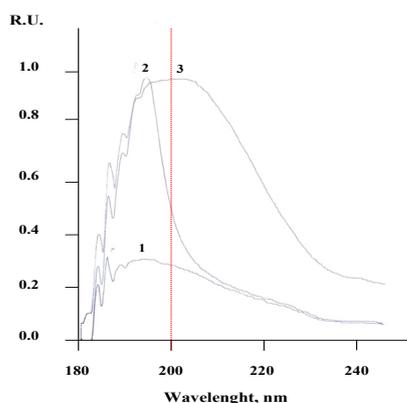
## 2.5 Water Potential Measurement

The electric potential of electrized water, relatively uncharged water, can be measured using a U-shaped tube with a tap at the point of the bend, in both knees of which stainless steel electrodes are soldered. When the valve is closed, one of the elbows of the tube is filled with uncharged water, and the other elbow of the tube is filled with electrized water. The potential difference between the electrodes is recorded after the valve is opened with a voltmeter: this difference is taken as the potential of electrized water<sup>[2]</sup>. This method of measurement is generally accepted, but it is more convenient to measure the potential of electrized water as shown in the Figure 13.



**Figure 13.** This is the most convenient setup for measuring the electric potential of water: on the left is a vessel with uncharged water (0 mV), on the right is a vessel with water, the potential of which is determined (X mV) from a voltmeter reading (V)

As an additional control, the difference in UV absorption of negatively and positively electrified waters (Figure 14)<sup>[2,27,32]</sup> can be quite valuable.



**Figure 14.** UV absorbance spectra of the water: 1 - fresh distilled water; 2 - water, filtered through activated carbon; 3 - water, filtered through silica gel

The spectra were not processed<sup>[2, 27, 32]</sup>.

## 3. Conclusion

Since water is both the main component of the human body and the most important nutrient for humans, it should be borne in mind that the properties of water depend on its electrification. It should be especially taken into account that human biological fluids, at least women, can change their own charge (potential) and that these changes are natural. In particular, it should be borne in mind that oppositional charged waters interact differently with biologically significant substances and can affect membrane potentials in different ways, primarily cytoplasmic potentials, affecting both cellular metabolism and cellular activity, including cell proliferation. Without such consideration, many living phenomena will remain incompletely understood. Otherwise, we will have nothing left but powerless to agree with the verdict of Szent-Gyorgyi: “Biology, perhaps, because until now not successful in understanding the most common functions that focused on the matter in the form of particles, keeping away them from two matrixes: water and electromagnetic fields”.

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