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CO_2 as an evolutionarily proven means of protection against adverse external factors

Yuri Pivovarenko
Research and Training Center 'Physical and Chemical Materials Science' Under Kyiv Taras Shevchenko University and NAS of Ukraine, Kiev, Ukraine
E-mail: *y.pivovarenko@gmail.com*

Abstract. Currently, it is believed that the composition of the atmosphere of the ancient Earth was radically different from the composition of the modern one. In particular, it is believed that the atmosphere of the ancient Earth, unlike the modern one, was not only rich in carbon dioxide, but also completely free of gaseous oxygen. This, accordingly, means that the first terrestrial cells appeared in water bodies enriched with carbon dioxide and completely free of gaseous oxygen. At the same time, the fact that the first cells survived and eventually even transformed into highly organized life forms means that that these same bodies of water effectively protected cellular life forms from unwanted external factors such as changes in acidity. Based on the above considerations, it is shown here that these very protective properties of ancient bodies of water were due to the presence of carbon dioxide in them. However, it is shown here that it is precisely these protective properties acquired by carbon dioxide in the aquatic environment that are important for maintaining the well-being of modern people, especially those who are sensitive to the weather. Accordingly, all this creates a sufficiently clear basis for carboxytherapy. Thus, it is shown here that the therapeutic use of carbon dioxide by modern doctors is fully justified, as it allows patients to be more resistant to adverse external factors.

Keywords. Carboxytherapy, weather sensitivity, human buffers, geopathic zones.

1. Introduction

It is now believed that billions of years ago carbon dioxide was one of the main components of the Earth's atmosphere (Figure 1, green area lower left).

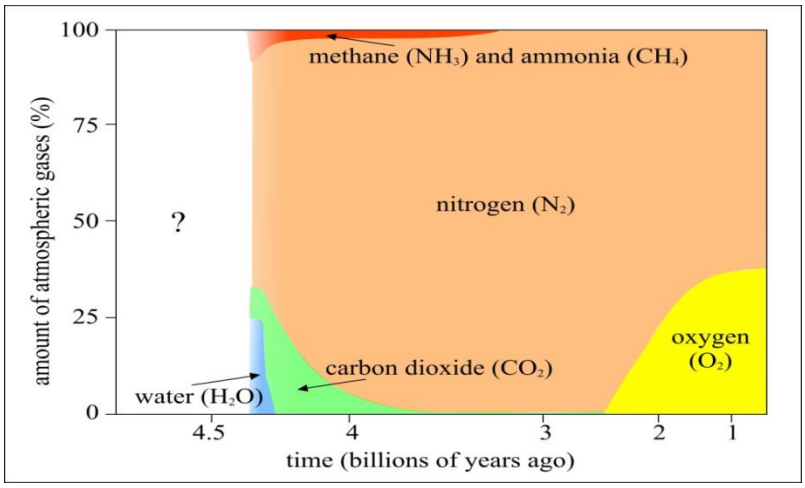

Figure 1. This diagram reflects both the prevailing ideas about the composition of the Earth's ancient atmosphere and the composition of the Earth's modern atmosphere [1-3].

Although Kate M. of Boise State University, who created this diagram, swapped the chemical formulas for methane and ammonia (see the explanations for the red bar at the top of the diagram), her vision of the evolution of the earth's atmosphere deserves attention.In any case, it this very diagram that clearly shows that atmospheric carbon dioxide could not have been the source of atmospheric oxygen, as is now believed, since the vast majority of carbon dioxide disappeared from the atmosphere long before oxygen appeared.

In particular, this means that the first cells arose in water environments that had buffering properties due to the balance between substances formed in aqueous solutions of carbon dioxide:

$CO_2 + H_2O \leftrightarrow H_2CO_3 \leftrightarrow H^+ + HCO_3^-$(theoretically likely $\leftrightarrow 2H^+ + CO_3^{2-}$)(1) [4].

Therefore, the appearance of an excess of hydrogen ions in these very environments caused their transformations aimed at neutralizing these very hydrogen ions:

$H^+ + HCO_3^- \rightarrow H_2CO_3 \rightarrow CO_2 + H_2O$ (2).

At the same time, the appearance of an excess of hydroxide ions in these same environments caused their transformations aimed at neutralizing these same hydroxide ions:

$H_2CO_3 + OH^- \rightarrow H^+ + HCO_3^- + OH^- \rightarrow HCO_3^- + H_2O$ (3).

For the sake of completeness, it should be added that the buffering properties of these same environments could be partially due to the balance that is inherent in aqueous solutions of sodium bicarbonate:

$HNaCO_3 \leftrightarrow H^+ + NaCO_3^-$ (4) [4].

One way or another, it was the derivatives of carbon dioxide that determined the buffer properties of the water environment of the first cells, assuming, of course, that they really arose in terrestrial reservoirs, as is believed [5-7]. Therefore, the root cause of the fact that the buffer systems of many organisms are still largely based on the same balances (1) – (4) [8-10] seems quite understandable, at least from an evolutionary point of view. It is probably no less clear that these same buffer systems were easily formed and restored during that period of biological evolution, during which the Earth's atmosphere contained plenty of carbon dioxide (see left corner of Figure 1). Perhaps it is also clear that the significant decrease in the content of carbon dioxide in the Earth's atmosphere (compare the left and right parts of Figure 1) significantly complicated both the formation of these same buffer systems and their restoration. As all living things were forced to overcome these complications, they looked for additional sources of carbon dioxide.

Here it is worth adding that the need for additional sources of carbon dioxide increased significantly with the appearance of atmospheric oxygen (Figure 1, yellow area at the bottom right), thanks to which the Earth's environment acquired oxidizing properties [1-3]; here it should be noted that it is in contact with gaseous oxygen that aqueous environments are enriched with uncompensated hydrogen ions [4, 11].

Over time, as could be predicted, the need for additional sources of carbon dioxide also arose in humans. To prove this, it is proposed here to discuss some weather and geophysical factors to which man becomes less sensitive due to the additional consumption of carbon dioxide; that is, it is shown here that such consumption corresponds to the intuitive desire of people to reproduce in their bodies the environment that effectively protected the first cells from adverse external factors.

2. Discussion

The influence of external factors is traditionally neglected when highlighting the composition and principles of human buffer systems [8-10]. Such neglect is not justified, because it masks the fact that buffer systems arose precisely to counteract external factors, in particular those that affected those organisms that left the aquatic environment, including humans. In addition, such neglect makes it difficult to perceive the human body as the open system that it really is. To show the falsity of such a tradition, it is worth considering those external factors that redistribute H^+ and OH^- ions in the human body, thereby additionally loading its buffer systems.

So, at present, there is no doubt that in the Earth's atmosphere, positive charges move mainly up, and negative – mainly down [12], as in clouds (Figure 2).

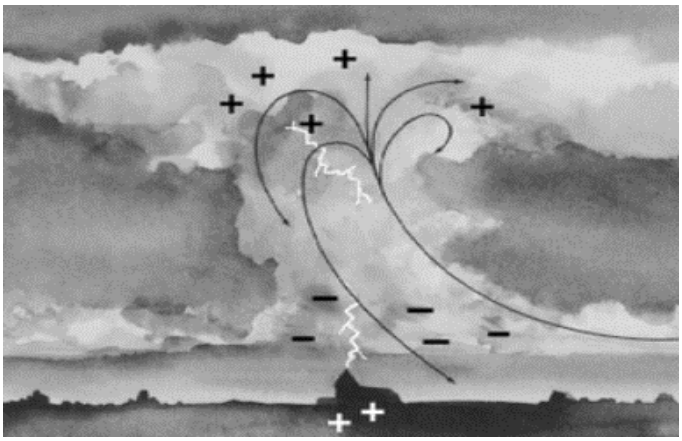

Figure 2. Polarization of clouds: the lower part of a typical cloud has a negative charge, and the upper part has a positive charge [12, 13]; the bodies of both standing and sitting people are polarized in a similar way [14].

Perhaps it should be noted here that the above-mentioned distribution of atmospheric charges is caused by the constant movement of the earth's surface relative to the geomagnetic field [13].

Given that this tendency of the distribution of near-Earth charges (Figure 2) is universal, it can be concluded that the concentration of uncompensated hydrogen ions in the heads of persons standing or sitting is greater than the concentration of these same ions in the feet of these persons; at the same time, it can be concluded that uncompensated hydroxide ions are distributed in the bodies of these individuals in the opposite way [14]. It is probably quite obvious that the general nature of this tendency (Figure 2) also means that any movement of the hands in the vertical plane is accompanied by a redistribution of those hydrogen and hydroxide ions contained in the hands. Apparently, even these considerations make it possible to realize that all buffer systems of a person, first of all, his blood, are forced to constantly level all these changes in the ratio of H^+ and OH^- ions, at least during the daytime part of the day.

At the same time, it is worth realizing that the specified distribution of these very ions in human bodies is significantly increased in cloudy weather, since the negatively charged lower sides of clouds contribute to the positive electrization of the subcloud areas of the earth, thus increasing the electromagnetic force that distributes the earth's

charges in cloudless weather (of course, this very increase occurs due to electrostatic induction [15]); the visual manifestation of this same increase is lightning, that is, a downward flow of electrons, which are attracted by positively charged areas of the Earth's subcloud surface (Figure 2, down).

It is probably clear that only a person who has sufficiently capacious buffer systems can not notice this very increase; it is also obvious that the additional consumption of carbon dioxide, the derivatives of which are important components of human buffer systems [8-10], should make a person less sensitive to weather changes (which remains relevant for many [16, 17]).

Here it is worth noting that lightning most often hits trees located in geopathic zones. This dependence, accordingly, suggests that geopathic zones are areas of the Earth with a stable positive charge, which actually attracts lightning (just like the church cross in Figure 2, below). Considering all of the above, it is quite obvious that the additional consumption of carbon dioxide should make a person less sensitive to being in geopathic zones. Apparently, the same advice should be used by the residents of the oceanic coasts of the USA, considering that these coasts are constantly enriched with hydrogen ions [18], which makes it possible to identify them with geopathic zones, at least with those parts of the earth's surface that exist under the clouds (Figure 2, down).

Probably, the previously established features of the interaction of electrized waters with oils will allow a better understanding of the mechanism of the influence of hydrogen ions on human well-being. So, it was established that emulsions formed after intensive mixing of oils with positively charged water are stable (Figure 3, left), and emulsions formed after no less intensive mixing of the same oils with negatively charged water are unstable (Figure 3, right).

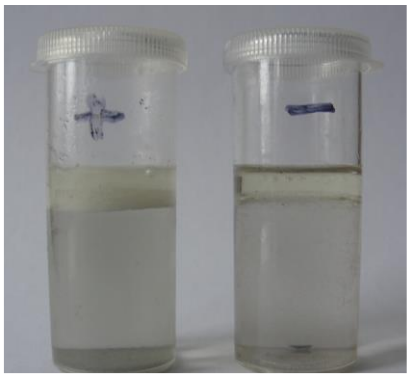

Figure 3. Suspensions formed after intensive mixing of oils with positively charged water do not stratify for hours and, accordingly, retain their milky white or yellowish color (left), unlike suspensions formed after intensive mixing of the same oils with negatively charged water, which stratify within minutes (right) [11, 19].

Taking into account all this (Figure 3), it can be assumed that it is the hydrogen ions that enter the human body with the air that contribute to the formation of fatty deposits in human blood vessels, thus slowing down blood circulation.

To better understand the basis of this assumption, it is worth comparing human blood vessels with the shark oil barometer. For this, it is worth taking into account the ability of raw shark oil, with which these same barometers are filled, to form deposits before hurricanes (Figure 4), which are preceded by intense evaporation of oceanic water [20], as well as the ability of exclusively positively charged water to evaporate, rising like clouds (Figure 2).

Thus, it is quite likely that the cause of the deposits formed in both of these vials (Figure 3, right and Figure 4) is the same, namely the positive electrization of their contents; it is equally likely that it was the accumulation of uncompensated hydrogen ions in both of these vials that caused the liquids they contained to become positively electrized. All this, in turn, suggests that it is the air enriched with hydrogen ions that contributes to the formation of fatty deposits in human blood vessels, thus slowing down blood circulation.

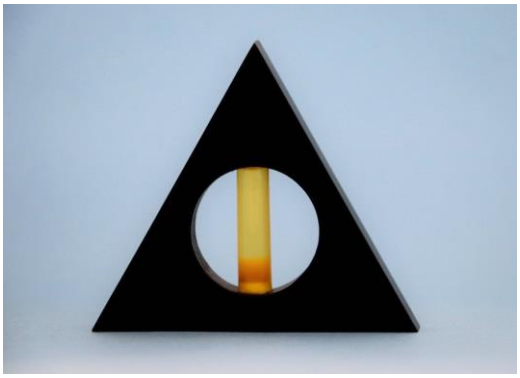

Figure 4. This is what the shark oil barometer looks like before a hurricane.

Here, perhaps, it is worth adding that air saturated with hydrogen ions probably also contributes to the destruction of the walls of blood vessels and, thus, the occurrence of hemorrhagic strokes [11, 19]. At the very least, there is reason to hope that the proposed interpretation of both of these phenomena (Figures 3, 4) will encourage residents of cloudy

countries and oceanic coasts of the USA to purposefully consume carbon dioxide, at least in view of its ability to get rid of excess fat [21-24].

At the same time, it is worth realizing that precisely due to the friction of oxygen-enriched air against water, both are enriched with hydrogen ions [4, 11]. Therefore, the return of the human organism to the conditions that were most favorable for the first cells, namely to the conditions under which the Earth's atmosphere was completely devoid of oxygen, but was rich in carbon dioxide, looks more than desirable. Thus, increasing the capacities of the buffer systems of the human body due to the purposeful use of carbon dioxide is quite justified, in any case, for the prevention of blood acidosis, mainly due to the reaction (2) [8-10].

It is also worth realizing that the same buffer systems of a person should also respond to an increase in the concentration of hydroxide ions, in particular in saturated rain dust [4], thus preventing blood alkalosis, mainly due to the reaction (3) [8-10]. Perhaps, it is worth adding here that both the water surface of the Sargasso Sea and the air above it are exceptionally saturated with hydroxide ions [25]. In particular, this means that the buffer systems of both sailors and pilots crossing the Sargasso Sea also need support in the form of additional carbon dioxide.

Perhaps even these examples are enough to understand that the original purpose of human buffer systems remains relevant, especially for weather-sensitive people. This, in turn, means that that part of the human buffer system, which is based on equilibriums (1) – (4) [8-10], must be constantly maintained by regular consumption of carbon dioxide.

3. Conclusion

Therefore, doctors should encourage the desire of people to light candles or a fireplace at home, to sit by the hearth, since all these sources of carbon dioxide can be considered as means aimed at increasing the buffer capacity of human biological fluids, and therefore at increasing human resistance to adverse external factors. It is probably also worth explaining to patients that their craving for carbon dioxide is evolutionarily determined.

Perhaps all of the above also prompts doctors to be more lenient with people who smoke and drink carbonated beverages such as beer, cola, considering that the human attraction to all these sources of carbon dioxide is also determined by evolution.

Thus, there are quite good reasons to use carbon dioxide in medical practice, at least as an auxiliary means. At the very least, it can be expected that the inclusion of carboxytherapy in the list of therapeutic agents can reduce the weather-sensitivity of patients, if any, which, in particular, can prevent both an incorrect diagnosis and an incorrect assessment of the effectiveness of the applied treatment. At the same time, the successful use of carbon dioxide by dermatologists and cosmetologists [26-28] allows expecting that this very inclusion can improve the appearance of patients and, thus, improve their well-being.

At the same time, the ability of carbon dioxide to cause cerebrovascular and ventilation effects in blood vessels, in particular in cerebral vessels [29, 30], may be no less important for patients. In particular, both of these effects allow expecting that the use of carbon dioxide by patients will facilitate blood circulation in their bodies and thus contribute to their recovery. Of course, the antibacterial properties of carbon dioxide [31] can also contribute to the recovery of patients.

At the same time, it is worth realizing that the consumption of carbon dioxide will not give the desired health effect with low activity of carboxyhydrases, which catalyze reaction (2), in particular, in human blood [8-10]. In view of this, it is advisable to combine the consumption of carbon dioxide with the use of carboxyhydrase activators, primarily zinc ions [32]; since yeasts are a natural source of zinc ions and at the same time active producers of carbon dioxide, they deserve primary attention as such activators [33] (apparently, it is this combination that allows yeast to be perceived as one of the means of carboxytherapy).

Of course, activation of the Krebs cycle, which is the main source of carbon dioxide in the human body, is equally important [8, 9]. Thus, a person's desire for additional sources of carbon dioxide can be considered as a diagnostic indicator that reflects the insufficient activity of the Krebs cycle. At the same time, people's increased craving for sweet and fatty food, the final consumer of which is the Krebs cycle, can be seen as an indicator of the insufficient capacity of their buffer systems. On the other hand, this urge should be considered not as a kind of human depravity, but as a message about the insufficient activity of this very cycle. (With this in mind, the results of T. Ozawa, who showed that oxidative damage to mitochondrial DNA is fatal for humans [34], deserve special attention.)

Obviously, all of the above gives grounds for revising the traditionally positive perception of plants, since they, first of all, deplete the air of carbon dioxide, which is necessary for the reproduction of human buffer systems, and, secondly, enrich the air with oxygen, a precursor of ROS, which are the sources of numerous human diseases [35-38]. At the same time, it is worth considering the fact that plants are sources of starch, and therefore of glucose, upon final oxidation of which the human body receives carbon dioxide; this, in turn, forces us to be condescending to plants (perhaps the fact that plants are a source of wood for fireplaces and bonfires, and therefore carbon dioxide, also justifies this condescension}.

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