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# MANAGEMENT OF THE GREEN WORLD BY PHOTOSYNTHESIS MODELING (REPORT OF THINKING AND COMPARATIVE SYNTHESIS)

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***Abstract***

*Photosynthesis is that primary reaction by which the first molecule of organic matter (glucose) from carbon dioxide and water is produced, in the presence of solar energy, in the form of photons, respectively electrons and protons (light wavelengths). Within 3 billion years, the mineral world has been partially transformed into the living world, including in green world, which works on biochemical synthesis using chlorophyll pigments, carotenoids and others. Today's biochemistry considers photosynthesis as a deterministic process, in which the chemical-mathematical equations of processes are well known, as a result of the thousands of researchers working in some of the most modern laboratories. In this paper, data are given on both the chemistry and the mathematics of the photosynthesis algorithm. Data are also presented on the efficiency of the first process of natural biochemical production at the Earth level, from which it results that the energy entered in the process of biosynthesis of photosynthesis through its acceptors is used in 100% percent, which doesn't happen with any other energy system. Researchers in quantum physics have observed this anomaly and have come to the conclusion that both the "photosynthesis" form, as well as other biochemical forms take place after a quantum morphogenesis whereby photons enter through the mass of the antenna on multiple paths, depositing as much energy as the system accepts.*

***Key words*****:** *photosynthesis, chlorophyll, photons, antenna, quantum physics*

## INTRODUCTION

Life forms of the different segments of life are almost identical, although they are found in systems and subsystems of distant life, distant from an evolutionary point of view.

We can see from Fig. 1 that human blood, plant chlorophyll, myoglobin and vitamin B12 possess almost identical chemical formulas, based on structural Heme-type skeletons, consisting of 5 pyrroles and centrally bound by a metal ion, which is usually $Fe^{+++}$ for hemoglobin, myoglobin, vitamin B12 and $Mg^{++}$ for chlorophyll. The plant and animal world are characterized by a magnificent unit. Porphyrin molecules give rise to magnesium leghemoglobin and iron hemoglobin. They are metallic multiprotein with very well-known functions, except for leghemoglobin from non-legumes. The almost identical form of the molecules structure, as well as their chemical and functional content, shows that the biological roots from which the evolution of life started were the same, identical, and also the way of using energy was almost identical.

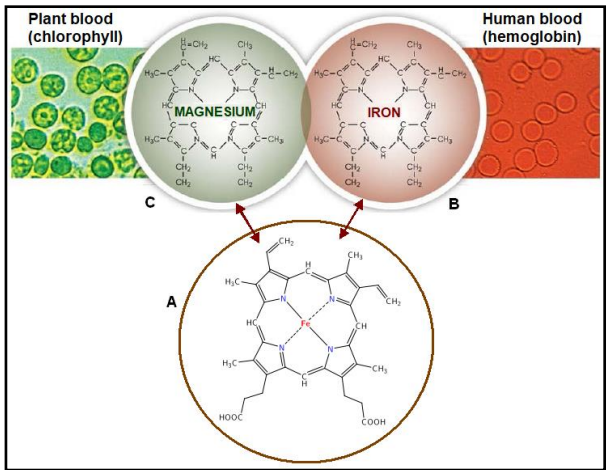


Fig. 1. Heme structural formula, expressing hemoglobin, myoglobin and leghemoglobin
Source: [8], [10].

Fig. 2 shows the transformation of the heme into hemoglobin, by adding on the radical from 2nd position of the "globin" protein complex, with the function of binding oxygen

to the lung area and transporting it into the body. Chlorophyll comes in several forms, the most important being chlorophyll a and b.

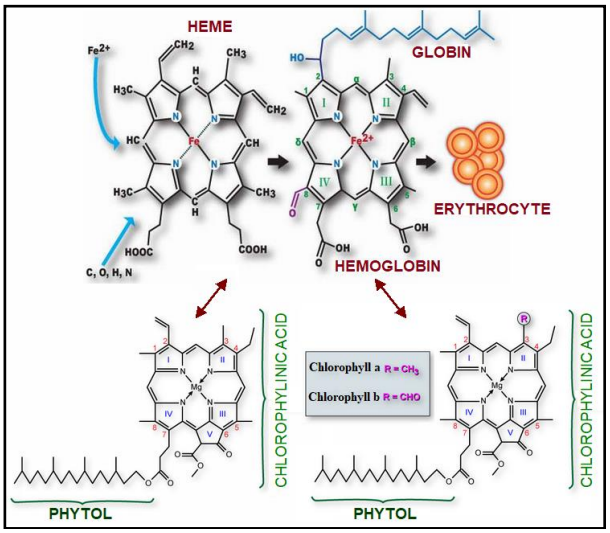


Fig. 2. Comparison between the forms of hemoglobin and those of chlorophyll
Source: [3], [9].

On the other side, an "O" radical is linked to a diterpene-alcoholic derivative product, called phytol (Fig. 3).

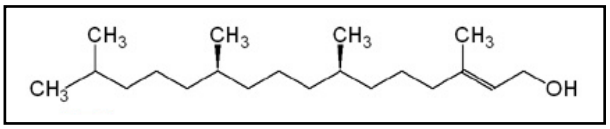


Fig. 3. Structural formula of phytol
Source: [9].

Phytol may have a longer chain, in which case it serves to stabilize the chlorophyll molecule and to facilitate the binding of H ($H^+$) protons, becoming an accelerator of this energy phenomenon in the reaction center of the antenna – the chlorophyll.

## MATERIALS AND METHODS

This is a synthesis paper, which aims to show the important role of photosynthesis for life on Earth. In this regard, a series of recent scientific studies were used, in order to emphasize all the main characteristics of chlorophyll.
Quantum physics is in the middle of everything nowadays, so it has to be extended to this area of interest.

## RESULTS AND DISCUSSIONS

It is important to know how chlorophyll is formed and which is the mathematical algorithm that supports it. Pyrroles are heterocyclic organic compounds, consisting of a ring formed by 5 elements or, mathematically, 5 forms which, together, lead to a macroform of type $C_4H_4NCH_3$, which we can call C1 (component 1). Geometrically, the mathematical macroform is distributed in space according to Fig. 4.

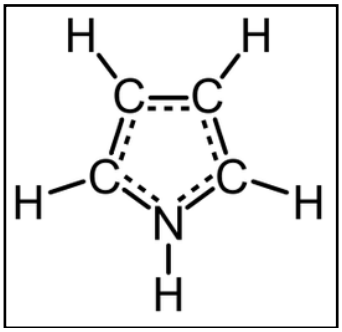


Fig. 4. Structural formula of pyrroles
Source: [14].

Pyrroles can be found in a variety of biological contexts, as parts or sub-forms of natural products. Pyrroles are in vitamin B12, in bile pigments (bilirubin and biliverdin), in the porphyrins of heme, in chlorophyll, in chlorine, bacteriochlorin (Wikipedia) and in many more. The synthesis of chlorophyll begins with this assembly of pyrol rings, which are formed from an organic acid, δ-aminolevulinic (ALA). ALA is synthesized from glycine and succinyl (CoA), by the process Knorr ALA (2 molecules) ring of hydrogenase by catalysis.
If we think mathematically, we find that the dynamic fragments that form the biochemical reactions lead to stable intermediate forms. These, under special catalytic conditions, evolve towards the heme and the chlorophyll complexes or, on the contrary, towards hemoglobin.
In its present form, except for the geometry that describes the structures of molecules in two- or three-dimensional space, any other branch of the present mathematics can't describe the nonlinear dynamics of heme and chlorophyll formation. At most, an algorithm

can be described. Chlorophyll formation has the following mathematical algorithm, simplified into a new form, called porphobilinogen (PBG) – Fig. 5.

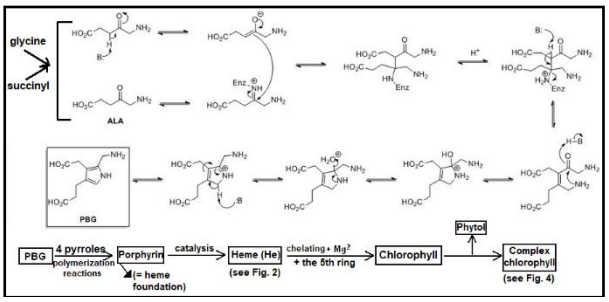


Fig. 5. Synthesis of chlorophyll and porphobilinogen (PBG)
Source: own processing [1].

The mathematical algorithm of the formation of chlorophyll (Ch) is a function of some nonlinear (chaotic) dynamic transformations – see chaos theory of Daniel Kahneman, in which the ordering is done through the intervention of quantum form theory.

$$Ch = f\left(\begin{matrix} glycine \\ \& \\ succinyl \end{matrix}\right) \xrightarrow{reaction} \underset{molecule}{ALA} \xrightarrow{DH\ (dehydrogenation)} + Enzyme \xleftrightarrow{H^+} Enzyme \rightarrow$$

$$\rightarrow Other\ nonlinear\ dynamics \rightarrow PBG\ (porphobilinogen) \xrightarrow{enzyme} Linear\ tetrapyrol \rightarrow$$

$$\rightarrow Uroporfirinogen \rightarrow Coproporfirinogen\ III \rightarrow Protoporphyrin \xrightarrow{chlorine} Protoclorofilide$$

It's all we know today. It is necessary for morphometrics, a new branch of modern mathematics or another mathematical science, which will develop soon, to be explained to us:

- → Why the starting substances in the biological synthesis of chlorophyll are succinyl glycine? Glycine is the lowest known amino acid, and succinyl is A coenzyme (succinyl - CoA).
- → Why is the citric cycle involved only for the extraction of succinyl CoA or there are other causes?
- → Why is the onset and progress of the reactions unpredictable?
- → Why the description of chlorophyll synthesis in plant chloroplasts hasn't been completely made so far? There are still many fractures in the process of biosynthesis not covered by experience and unexplained.

There are still numerous fragments, insufficiently studied forms, which correlate with thousands of environmental factors, biotic or abiotic, which modify biological reactions precisely because we lack a mathematically calculated confidence interval. The effect of chlorophyll is the photosynthesis, the greatest and most useful reaction of life [2], but it is not well known. First of all, it's impossible to explain why photosynthesis, respectively the chlorophyll, have such a high efficiency inside the system. Physicist Paul Davies [4] is very interested in the role of quantum in the living environment. In an article published in 2009 in "Physics World", based on the laws of nature, he considers that life is a miracle that cannot be conducted only after the known natural laws and that the sciences of life cannot be separated from quantum physics. Several physicists have accepted the same view, which is why:

- → It is required to be explained by contemporary biology in how and according to which mystery the prebiotic world could be transformed into life or made life over a 3-billion-year history in the absence of quantum hypothesis. Biological researchers can't explain why the enzymatic activity of cells is sometimes "down," and this phenomenon is not due to chemistry, although chemistry did not say the last word. Life is not only chemical, it is also quantum.
- → It is assumed that at the origin of life there is less or no chance, and that the miracle is in fact the permanent intervention of quantum processes, which allow molecules the possibility to find their way to life. Exit from the initial chaos to life is a quantum process.
- → It has been proven for a century that contemporary biology is a chemical biology. Huge and modern laboratories deal with biochemistry. Only a few researchers, called "dissidents", found the involvement of physics in the living environment.
- → They were marginalized.
- → The basic law with which quantum physics operates is the "law of quantum

coherence", discovered by Graham Fleming and ordered, at the level of living systems, by Gregory Scholes. Consistency is achieved when a photon interacts with at least 2 atoms in a very short interval, which limits the possibility of observing it. In this short period of time, the quantum system is in two states:

- ✓ If decoherence occurs, a real energy transfer takes place.
- ✓ If not, the proton and energy are lost.

Scholes et al. (1997) [11] used a particular protein called "antenna", extracted from cryptophytes, that is not independent of the chlorophyll universe. The antenna complex is, in fact, a protein chemical form, consisting of chlorophyll and carotenoid molecules, more developed in algae than in spinach, for example.

Protein plays a major role in chlorophyll, allowing the transfer of light energy to carboxynthesis devices. In a fraction of a second, marine algae containing the antenna can capture at least negligible and, at any rate, higher energy than standard chlorophyll and transmit it to biological forms of carbosynthesis.

To perform the operation, we can imagine that the photon needs to find its way to atoms very quickly. Otherwise, he and his energy are wasted in the environment. In conclusion, quantum coherence allows a new biological, ecological and economic horizon in capturing solar energy and introducing it into the system to increase the efficiency of photosynthesis.

Science Magazine, no. 1123/2011, argues that the significant improvement of the reactions in the chlorophyll formation process is due to the quantic, in which the catalytic enzymes are involved.

The photosynthetic capture of solar energy, its conservation and transformation at almost 100% would not be possible without quantum laws. The best solar collectors work in 20% efficiency (Fig. 6). It's about the energy coming into the system.

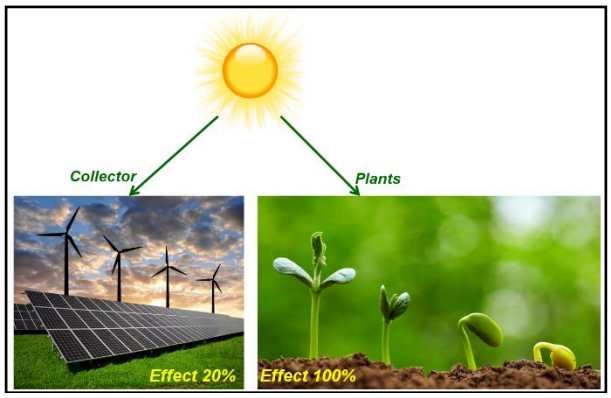


Fig. 6. Different energy effect at physical and biological collectors
Source: own processing.

Quantum laws allow the knowledge of a quantum form to have the ability to use multiple pathways at the same time, in order to optimize the transfer of light energy to cellular plants. In the quantum world an object, a form can be in several places at the same time, a superposition that allows it to use two paths at the same time. Applied to photosynthesis, it offers the faculty of excited electrons to be everywhere and to propagate in plants, using all possible pathways at the same time and without loss (Fig. 7).

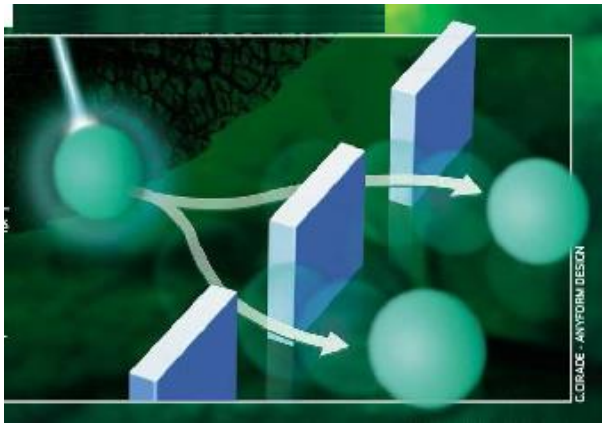

Fig. 7. Superposition of the doubling state of photosynthetic electrons
Source: Grousson M., 2011 [7].

When a photon repeats, it strikes a molecule, transmits its energy in the form of an electronic excitation and circulates transversely on and through the antenna, to a location where the reaction takes place, where 2 electrons are released to feed the chemistry of life. Chemists and biologists could not explain why, in its entirety, the photon energy comes to the reaction site, transforming the

photosynthetic system into the most efficient energy converter in the world.

In standard vision, the electronic excitation should propagate randomly into the antenna, each step being a danger of seeing a part evaporate in the form of heat or vibration. Not at all, and it has been demonstrated above. The difference between the standard knowledge and the quantum of the coherence is realized instead of the solar energy capture. This difference lies in the fact that the electronic excitation behaves as if it were using all the access paths at the same time. It is not magic, but simply quantum physics.

Due to very precise methodologies, physicists can make such overlays. It is not always certain that any plant or leaf or perhaps algae exploits this quantum magic perfectly. Experiences by Gregory Scholes suggest that this effect lasts abnormally long, namely 10-15 seconds, which is 4 times more than the coherence time observed for a single molecule. The system, however, works on the coherence model. Quantum effects are not felt on a macroscopic scale.

This intelligence of plants is one naturally accumulated by evolution, which the scientific society has only discovered in this decade of the 21st century. Practically thinking, the researchers consider it an algorithmic achievement, called the "quantum hazard market". Here is the key to the record yield of photosynthesis.

The next step after stabilizing the results is to convert the results to solar panels or other similar forms of solar energy retention and use. We note that Dugué B. (2012) [5] considers life as being described by 2 mechanisms: the process of chemical and molecular forms developed by mechanistic methodologies - which lead to good results, but cannot correctly explain the evolution of phenomena in their very small dimensions. Sheldrake R. (2007) [12] considers that these new forms appear in the morphogenetic fields and their explanation is done through a special mathematics, not yet elaborated as a way of working.

Mathematics is the science of forms, but in this case the forms become fractals and chaos [13] and they need the mathematics of quantum physics to be able to explain them. The observation and study of quantum forms uses first the theoretical thinking and only then the experimentation and results such as the existence of coherence, non-separability, tunnelling effect and interfaces. As a result, a new scientific hybrid emerges between chemists and physicists, which cannot be ignored.

In the case of photosynthesis, the antenna that purchases the photons takes care to send energy in the form of electrons ($2e^-$) or protons ($H^+$), where it is needed, either for organic synthesis or for energy conservation.

In the quantum vision, both photons and electrons are present on several pathways and on all acceptance sites, forming a cloud in which the energy utilization bodies are located. Let us not forget that the deconvolution of the proton in its energy forms takes place in chlorophyll (the reaction center) – Fig. 8.

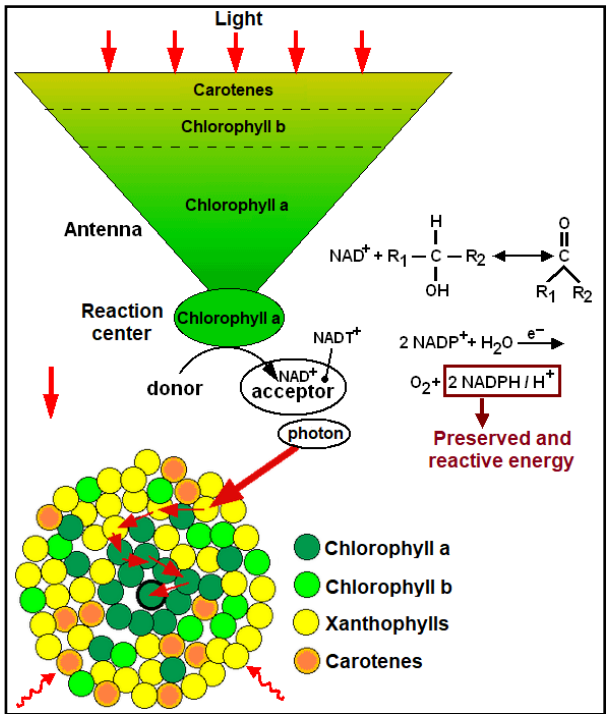


Fig. 8. Micro photosynthesis
Source: processing by CannaWeed [6].

The figure shows the role of the antenna, this mixture of various proteins and pigments to drain, through morphic resonance [12], the energy brought by the proton flow and received by several pigments, depending on the lengths of wave, and transmitted to the

chlorophyll molecule in the reaction center. In quantum interpretation, photons have several penetration pathways and therefore the efficiency of photosynthesis is 100%. The chemical form of photosynthesis is not deterministic.

## CONCLUSIONS

1.Simple stringing of photosynthesis equations according to the models of biology textbooks is a good but insufficient didactic solution.

Partial equation, reaction to light:

$$12\ H_2O \rightarrow 24\ (H) + 6O_2$$

$$6\ CO_2 + 24\ (H) \rightarrow C_6H_{12}O_6 + 6\ H_2O$$

Partial equation, reaction to darkness:

$$12\ H_2O + 6\ CO_2 + 24\ (H) \rightarrow 24\ (H) + 6O_2 + C_6H_{12}O_6 + 6\ H_2O$$

$$= 6\ CO_2 + 6\ H_2O \rightarrow C_6H_{12}O_6 + 6\ O_2$$

Concentrated equation:

$$= 6\ CO_2 + 12\ H_2O \rightarrow C_6H_{12}O_6 + 6O_2 + 6\ H_2O$$

The equations presented and many other similar ones do not explain why things happen this way and if they happen this way.

2.Starting from the high energy efficiency inside the system, the mechanistic deterministic method of research and description, as well as the acquisition of photosynthesis, becomes insufficient.

3.Quantum physics, quantum morphogenesis of the photonic superposition explains the high speed with which the operations are carried out and their high efficiency in the system. Photons circulate in different planes and so do electrons and protons. In quantum physics no one stands in line to waste time. Therefore, it is said that nature is the best engineer, mathematician, physicist and chemist. Nothing that happens in human society resembles the perfection of nature and the simpler the organisms, the greater the stability of quantum systems.

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