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Article 6-5. Bio-signal Simulation of Electromagnetic Wave and Its Specificity on the Isozyme Expression/电磁波的生物信号模拟及同工酶表达的专一性

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Abstract

This article designs the biophysics method to simulate the bio-electromagnetic waves for the cultivation of cell immunology, and subsequently the underlying hypothesis and theories are discussed.

Key words: Bio-electromagnetic Wave, Bio-signals, Isozyme Expression, Immunology, Biophysics Simulation.

Introduction

In previous article [5], the specificity of electric potential to the host cells with apparent antibody/antibiotics against the specific invasive virus (or bacteria) is determined. However, this method is relatively broader, so that the accuracy of this biophysical training is not sufficient for the synthesis of antibody/antibiotics in host cells against the specific phenotype of an invasive virus (or bacteria).

Consequently, this article presents a novel method to train the specific isozyme families catalyzing the synthesis of antibody/antibiotics in cells against the specific phenotype of an invasive virus (or bacteria):

Method

Step 1. Host cells (such as blood cells) are cultivated during simulation of electromagnetic wave conditions;

Step 2. Different frequency (or different wavelength) of electromagnetic wave are simulated, and labeled as F1, F2, ..., Fn;

Step 3. Metabolomics test is conducted individually after cultivation in F1, F2,..., Fn, respectively, and the method of metabolomics test is designed by my another article [1];

Step 4. Under each simulated frequency of electromagnetic wave, different intensities of electromagnetic wave are simulated, and labeled as I1, I2, ..., and In;

Step 5. Metabolomics test is conducted individually after cultivation in I1, I2,...In, respectively. The amount of n×n metabolomics tests are conducted in total.

Hypothesis:

The specific frequency of electromagnetic wave simulates the bio-signal regulating gene expression as a specific isozyme family, and the specific electromagnetic wave intensity (AND amplitude) corresponds to the bio-signal regulating gene expression as a specific enzyme species within an isozyme family, which can be measured by metabolomics tests. Consequently, the immunology against the specific phenotype of an invasive virus (or bacteria) can be trained according to the specific zymograms identified among those N×N samples, which can be achieved by the simulation of host-invasion experiment described in my previous articles of this journal [6]. Please note: the intensity is adjusted and controlled by the amplitude instructed in the next article.

Discussion

This experiment is similar to another plant article of this journal (UV-B radiation is one of electromagnetic waves) [2]. Let's re-discuss this article on the basis of plant cell data: As discussed in this plant article, UV-B significantly ($P<0.001$) affected the net photosynthesis (A) (Table 1). Nevertheless, for Tienshan clover and Caucasian clover, there was no significant UV-B induced difference in the total aerial biomass yield, under well-water conditions, and there was no significant effect of UV-B on the relative chlorophyll content, whereas enhanced UV-B apparently decreased the biomass of Kopu II. Further more, the water deficit did not influence the relative chlorophyll content as comparison to the well-water condition (Table 1) [2].

There are two reasons to explain this science discovery: firstly, the Light Use Efficiency (LUE) already exceeded the saturation point of LUE under well water condition without enhanced UV-B treatment, so that the reduction of net photosynthesis under enhanced UV-B treatment did not influence the total aerial biomass yield; Secondly, enhanced UV-B treatment effectively triggered the gene expression of enzyme species within the isozyme families involving in the chlorophyll synthesis in plant cells, which revealed that the isozyme families involving in the chlorophyll synthesis could express effectively under a broader range of UV-B intensity especially for Caucasian clover, but the relevant gene of Kopu II

was not effectively expressed as enzyme species within the isozyme families involving in the chlorophyll synthesis under enhanced UV-B. Please note: within the isozyme families involving in the chlorophyll synthesis in plant cells, the enzyme species under enhanced UV-B is different from the one without enhanced UV-B. The treatment without UV-B in this experiment was not without any UV-B radiation, and was just lower intensity of UV-B treatment. However, drought condition did not influence the synthesis of chlorophyll, which showed different metabolic pathway in response to the environmental stress. Although previous articles explained that 'these results indicated that these clovers might have adequately photo-protective mechanism, such as enhancing the synthesis of UV-B screening secondary metabolites [3][4],' this explanation is consistent with the above explanation in this section, because the synthesis of UV-B screening secondary metabolites as photo-protective mechanism is also the phenomenon utilizing the light energy effectively, adjusting the photo-metabolic pathways in response to the change of UV-B intensity. It is deduced that UV-B is also the utilizable light energy in photosynthesis rather than only visible light, which can be proven by the result that Caucasian clover shows increased biomass during enhanced UV-B of well water treatment as compared to the well water condition without UV-B enhancement, although the main utilizable energy is from the visible light --- without visible light, photosynthesis can not only rely on UV-B to happen too. As discussed in the next article, the receptors (or cells) of electromagnetic wave can NOT identify more than three different frequencies of electromagnetic wave concurrently, it is hypothesized that plant cells themselves select three dominant frequencies of light waves with the highest intensity for photosynthesis, and Caucasian clover selects UV-B frequency for photosynthesis whereas Kopu II can not, this is definitely the environmental adaptiveness evolved from its origin. Consequently, it is further deduced that Caucasian clove effectively evolves into the genes expressed as the different isozyme family under the inducing UV-B light, in comparison to the corresponding genes' expression under visible light, which causes Caucasian clove to utilize the UV-B as the utilizable light energy in photosynthesis.

Please note: for the identification of specific zymograms of host cells with specific immunology against specific invasive pathogen, then invasive simulation of specific pathogen is added after the process of biophysics simulation above, to identify the specificity of host-invasion interaction (under which frequency and which intensity of cultivation condition, the host cells show effective immunology against the specific pathogen).

Nevertheless, for the virus (or bacteria) with dormant characters (such as HIV), it is expected that long-term observation is required for this specificity examination after biophysics simulation stops, because this virus would become dormant in host cells after puncturing cell membrane during biophysics simulation, so that the host cells with effective immunology against the dormant virus are NOT specifically identified during biophysical simulation. In this case, the host cells with really effective

immunology against the dormant virus kill the invasive virus during biophysical simulation, whereas the host cells with dormant virus would be re-infected after biophysical simulation stops. After long-termly observing if dormant virus re-starts pathogenetic metabolism in host cells, the identified host cells with really effective immunology against the dormant virus would be screened and become more specific. The more specific, the more punctual to kill the invasive virus.

Please note: the intensity of electromagnetic waves is preliminarily set to be 1.6 H (1H = 1 A/m) for blood cells in this research, three times than earth magnetism fields. If the intensity of electromagnetism is more than 5 times than earth magnetism fields, blood cell division rate of rats starts to decline apparently, 'looking nervous.' They are unlike microbes who can survive long-termly under sunshine intensity. However, the frequency of electromagnetic waves is preliminarily set to be around UV-B frequency, the sunshine one. Actually, blood cells still function (such as oxygen-carrying capacity) effectively under exposure to sunshine radiation, but the blood cell division only occurs when sunshine radiation is shielded. This is why hematopoietic function of blood cells mainly occurs in marrow! and blood cells division rate actively increases during evening as well! Consequently, the biophysics simulation frequency range of F1, F2, ..., Fn above must also cover the range of bio-electromagnetic waves released by human species as to simulate the bio-signals of human species.

References:

[1]. Liu Huan. Metabolomics (1) --- The Systematic Chemistry Fingerprints Between Genotype and Phenotype and its Application on the Conservation Genetics. Journal of Environment and Health Science. Feb. 2021.https://doi.org/10.58473/JBS0005
[2]. Liu Huan. Inter-specific and intra-specific comparison in the responses to UV-B radiation and to water deficit in Trifolium (Leguminosae). Journal of Environment and Health Science. Feb. 2021.https://doi.org/10.58473/JBS0004
[3].Hofmann, R.W., Campbell, B. D., Bloor, S. J., Swinny, E. E., Markham, K. R., Ryan, K. G., & Fountain, D. W. (2003). Responses to UV-B radiation in Trifolium repens L.– physiological links to plant productivity and water availability. Plant Cell and Environment (2003) 26, 603-612.https://doi.org/10.1046/j.1365-3040.2003.00996.x
[4].Hofmann, R. W., Campbell, B. D., & Fountain, D. W. (2003). Sensitivity of white clover to UV-B radiation depends on water availability, plant productivity and duration of stress. Global Changes Biology (2003) 9, 473-477.https://doi.org/10.1046/j.1365-2486.2003.00578.x
[5].Liu Huan. (2021). Bio-magnetic field of Cell and Its Application on Separation of Blood Cell Communities along Environmental Gradient. Journal of Environment and Health Science (ISSN 2314-1628), 2021(02).https://doi.org/10.58473/JBS0011
[6].Liu Huan. (2021). Metabolomics and Application on The Specificity of Host-Invasion Interaction. Journal of Environment and Health Science (ISSN 2314-1628), 2021(02). https://doi.org/10.58473/JBS0006