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Article 6-6. The Parameterization of Time-varying Electromagnetic Field for Biophysics Simulation/生物物理模拟实验中时变电磁场参数的确定方法

Author: Liu Huan (1983-), Master of Science (First Class Honours, 2009), The University of Auckland.

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Abstract

Method of generating time-varying electromagnetic waves is designed to simulate the bio-electromagnetic waves, which is applied to cultivate the host cells' immunology.

Key words: Time-varying Electromagnetic Waves, Biophysics Simulation, Bio-electromagnetic Waves, Qigong Health Preservation and Physiotherapy, Immunology.

Method：

This section presents a novel method to determine the parameters of time-varying electromagnetic field, on the basis of 'Skin Effect' equations in combination with 'Maxwell' equations:

1.Skin effect equations:

$I(t) = \sqrt{2}\ I \sin(wt)$; $w = 2\pi f$;

2.Maxwell's equations:

$I(t) = j\,H(t)$

$S = I(t) * H(t)$

I is the effective intensity of electric field, t is the varying time, w is the angular frequency (rad/s), f is the frequency, H is the intensity of magnetic field, j is the conductivity, and S is the energy of wave (or the electromagnetic wave intensity) [1]. This time-varying electromagnetic field can be used for biophysical training, and the biophysical training method by simulation of bio-signals is designed in my previous journal article [2]. For the simulation of bio-signals by time-varying electromagnetic field, the frequency is constant with time change, which is pre-determined as F1,

F2, ..., Fn designed in previous article [2], whereas the intensity of electromagnetic wave (S) is the time-varying one. Consequently, the new procedure is designed below for time-varying simulation:

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 [3];

Step 4. Under each simulated frequency of electromagnetic wave, different intensities of electric field (different from the electromagnetic wave intensity in article [2]) are simulated, and labeled as I1, I2, ..., and In; Then different time-varying electromagnetic wave intensities are simulated correspondingly as S1(t), S2(t), ... and Sn(t).

Step 5. Metabolomics test is conducted individually after cultivation in S1(t), S2(t), ... and Sn(t) respectively. The amount of n×n metabolomics tests are conducted in total.

For the blood cells' cultivation, the frequency range of biophysics simulation must include two key ranges: one is the frequency range of bio-electromagnetic waves released by human species, and the other is the frequency range of UV light waves [2]. The first frequency range is the simulation of intrinsic bio-signals released by human species, which regulates the life activity of cells (to initiate gene expression); The other frequency range is the indicative bio-signals for the evolution of all the cell creatures in original earth ecosystem (NOT exotic creatures to earth ecosystem - all the virus are the exotic creatures against original earth ecosystem). The method designed above allows the simulation of different bio-signals by adjusting two parameters only: the frequency (f) and conductivity (j), which is convenient to implement in experiment. This biophysics simulation of bio-signals is also the simulation of Qigong Health Preservation and Physiotherapy.

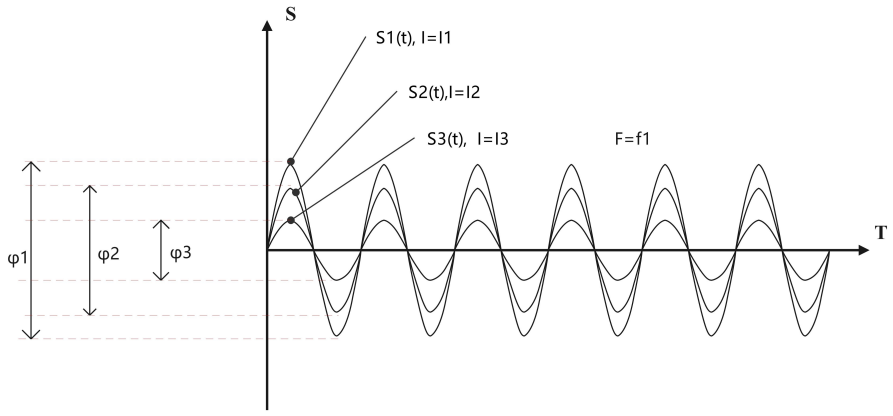


Fig 1. Bio-signal simulation functions when frequency (F) is set to be f1: when I = I1, time-varying electromagnetic wave intensity S = S1(t). φ1 is the phase distance between wave peak and bottom point; When I = I2, time-varying electromagnetic wave intensity S = S2(t). φ2 is the phase distance between wave peak and bottom point; When I = I3, time-varying electromagnetic wave intensity S = S3(t). φ3 is the phase distance between wave peak and bottom point.

The above figure illustrates the function of time-varying electromagnetic wave intensity under each intensity of electric field (I1, I2, ...In) when the frequency is set to be f1. The phase distance between wave peak and bottom points (φ) changes correspondingly when electric field is changed from I1, I2, ... to In. This article has further modified the Skin effect equations into

$I(t) = Pk \times I \times \sin(wt)$; $w = 2\pi f$;

Pk is the parameter of physiology which influences the effectiveness of simulated bio-signals that are capable of being identified by cells.

As simulation of bio-signal waves, the shortage of artificially simulated bio-signals is that the frequency of simulated waves can not vary continuously without breaking points like the real bio-signals, which has been discussed in my previous article [4].

Discussion:

As discussed in previous article [5], it is deduced that the biochemistry dynamics of the first three isozyme families, which show the highest variation by PCA, determines the conclusion of the whole biochemistry dynamics in this research. Consequently, three different and dominant frequencies of electromagnetic wave are applied concurrently on this biophysical training of host cells for enhancing immunology, which requires three emitters (or launchers) of electromagnetic wave to work concurrently. However, the receptors (or cells) of electromagnetic wave can NOT

identify more than three different and dominant frequencies of electromagnetic wave concurrently (This is the environmental pollution of electromagnetic wave), which is similar to the limitation of three spatial dimensions in direct perception capacity of human species (The cell is not so clever to deduce the equations at more than three dimensions like me!). Additionally, the significance of each dominant frequency must be different rather than even significance in PCA analysis.

Pathogen 'army' behaves as camouflage, ambush, or other intelligence strategy for invasion, and host cells need to defend punctually and effectively by training for survival (host cells adjust their skills by themselves on the basis of biophysical learning during this 'war' until invasive enemy dies).

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