

## Magnetic Stimuli for Pieces of Cucumber - Quantitative Measurement Using Biophotons -

Hideyuki KOKUBO, Mikio YAMAMOTO and Kimiko KAWANO

*Institute for Living Body Measurements, International Research Institute (Chiba, Japan)*

**Abstract:** After treatment by non-contact healing for pieces of cucumber, the intensity of biophotons from the cucumber increases. To study the details of physical and chemical mechanisms of non-contact healing, the authors gave magnetic stimuli to cucumber samples and compared biophoton data with data of non-contact healing. Magnetic treatments were done for 30 minutes by static magnetism (180mT), alternating magnetism (80mT, 50Hz) or pulse magnetism (maximum 0.6T, pulse width 2.5ms). Results showed that there was no change of biophoton intensities under conditions of static and alternating magnetic stimuli. Pulse magnetic stimuli decreased biophoton intensity ( $p=0.047$ , Wilcoxon, two tails), but the time transition differed from non-contact healing. Effects of magnetic stimuli were considered as different from those of non-contact healing.

**Keywords:** cucumber, biophoton, magnetic stimuli, non-contact healing

### 1. Introduction

Through previous studies by the authors, the effects of non-contact healing such as laying-on-of-hands were confirmed as able to change the intensity of biophotons from pieces of cucumber, the change occurred for 5 hours after treatment, and the phenomenon was not caused by thermal effects of healers' hands<sup>1-7)</sup>. However, the details of the effects are unknown yet.

To first discuss the details of physical mechanisms of non-contact healing, effects of magnetic stimuli should be compared; there are reports in which effects of "qi/ki" are similar to those of magnetic stimuli, for example, Takeshige and Aoki<sup>8)</sup>. Using lower order animals as their subjects, they examined the possibility that an EEG could be changed by an increment of serotonin as a reaction to external qi of the pineal body. They used a micro electrode to measure electric pulses from the cells in the pineal body of a rat under urethane anesthesia; these pulses were used as indices of activities of the pineal body. Some interesting results were obtained: (a) The pineal body cells, which react to geomagnetism, showed a decrease in the number of pulses when the body of the rat was turned around, and the number of pulses similarly decreased when a medal, in which external qi was claimed to have been charged by a qigong master, was put above the head of

the rat. (b) When the medal or a static magnetic field (150 Gauss) were given to a rabbit from above, EEGs in the 3.5-6Hz range showed an increment or no variance while those at other frequencies were suppressed. After a pinealectomy of the rabbit, such EEG changes were not observed. (c) When 5HTP, a precursor of serotonin, was injected into the rabbit at 5-8 mg/kg, EEG changes were observed which were similar to those observed when external qi had been given. (d) EEGs in all bands of frequency were suppressed when methysergide (3-6 mg/kg), antagonistic to serotonin, was administered to the rabbit. When the medal was used or 5HTP (5-8 mg/kg) was given under the same conditions, an increase of EEGs in the 3.5-6Hz range was observed again.

Takeshige and Aoki concluded that qi might hamper N-acetyltransferase, increase the secretion of serotonin from the pineal body, and accordingly EEG might be changed through the serotonin receptor which is not antagonistic to methysergide.

In contrast of their study using animals, the target samples are plants (cucumber) in the present study. The effects of magnetic stimuli for plants are not considered as equal to those for animals, but the authors could not ignore the possibility that magnetic stimuli affect the intensity of biophotons from plants. Therefore, the authors tested effects of magnetism for cucumber using static, alternating and pulse magnetic stimuli.

### 2. Methods

The methods for preparing samples and measuring biophotons were the same as the standard

---

Hideyuki KOKUBO kokubo@a-iri.org  
International Research Institute  
40A, Yuuki Bldg., Sonno 1108-2, Inage, Chiba 263-0051, Japan.  
Phone: +81-43-255-8851 FAX: +81-43-255-8852

evaluation method for non-contact healing<sup>1-3, 5)</sup>.

Three kinds of magnetic stimuli were used; static magnetism (180mT, Pip-Eleki-ban EX, Pip-Fujimoto Co. Ltd., Japan); alternating magnetism (80mT, 50Hz, Soken Medical Co. Ltd., Japan); and pulse magnetism (maximum 0.6T, rising time 1.0μs, pulse width 2.5ms, Magnetic Pulser Model MP5, Sota Co. Ltd., Canada). Both Pip-Eleki-ban and Soken are authorized as home medical devices by the Ministry of Health, Labour and Welfare, Japan, but the Magnetic Pulser is not authorized by any Japanese government agency.

In the static magnetism test, a Petri dish of experimental samples of cucumber was inserted between two sheets which were set vertically. Each sheet had 6 magnets which were arranged in a lattice shape at intervals of 25mm, and each magnet was 6mm in diameter and 2.5mm thick. N poles of all magnets were set upward. The distance between control and experimental dishes was 30cm. Moreover, lighting screens were set on both dishes.

In the alternating and pulse magnetism tests, the Petri dish of experimental samples was set on a coil on a wooden chair. The Petri dish of control samples was set at 3m from the experimental dish in the same room.

All magnetic treatments were done for 30 minutes at 24°C under room lighting.

### 3. Measurements and Analyses

Biophoton measurements were done 4 times (total: 16 samples) for each test. However, 4 additional measurements had to be done for the alternating magnetism condition because intensities of biophotons were very low and not stable since the experiments were done in winter (the absolute intensity of biophotons of cucumber is dependent on seasons). Analyses of alternating magnetism were done by using 4 suitable measurements from among the 8 measurements.

Moreover, if the accumulation of biophotons for 18 hours was less than 10000 counts/10000pixels, the data were omitted from analyses.

### 4. Results

Just after a 30-min stimulation by pulse magnetism, the experimental Petri dish became warm and it was possible to feel its heat by the hand. In other conditions, there was no heat which could be felt by the hand.

**Table 1** shows the experimental ( $I_E$ ) and control ( $I_C$ ) intensities of biophotons from samples and J values ( $=\ln[I_E/I_C]$ ). In the static and alternating magnetism tests, there was no significant difference in intensities between experiment and control samples, and their J values were nearly equal to zero. In the pulse magnetism test, the biophoton intensity of experiment samples was smaller than control ( $p=0.047$ , Wilcoxon signed-rank test, two tails), and the J value was estimated as about -0.1.

**Fig. 1** shows time transitions of intensities of biophotons and differences between experiment and control samples. There was no difference between them in the static and alternating magnetism tests. But in the pulse magnetism test, the intensity of experiment samples was larger in the first 2 hours and smaller at 4-9 hours than the control.

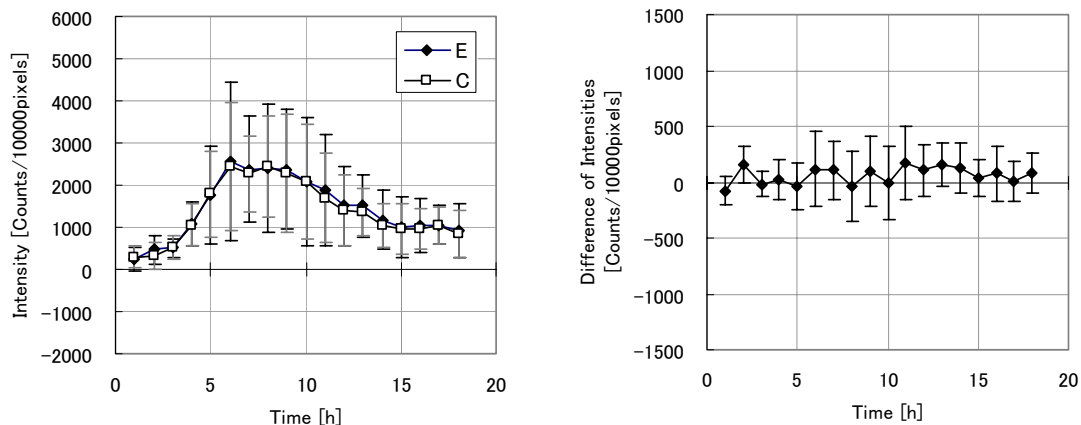
### 5. Discussions

Biophoton intensity from cucumber was not influenced by static and alternating magnetic stimuli. It is considered that static and alternating magnetism did not significantly affect chemical reactions associated with biophoton emission of cucumber.

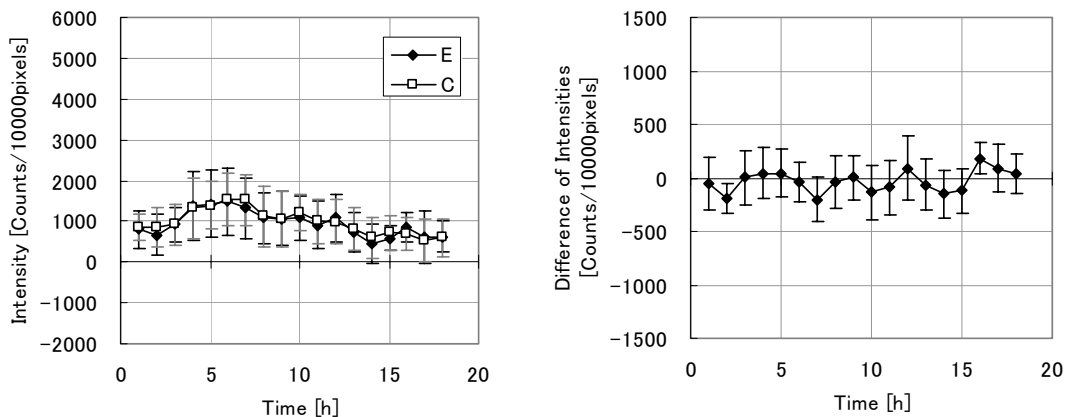
The experimental Petri dish was warmed just after pulse magnetic stimuli. This suggests the chemical reaction systems of biophotons were very much affected by heat generated by the induced current. Moreover, time transition of photon intensities was different from that of non-contact healing. In non-contact healing, there was no difference in intensities between experiment and control samples during the first 4 hours; a difference occurred after 5 hours<sup>5)</sup>. In the pulse magnetism test, the difference in photon

**Table 1 Results of Magnetic Stimuli**

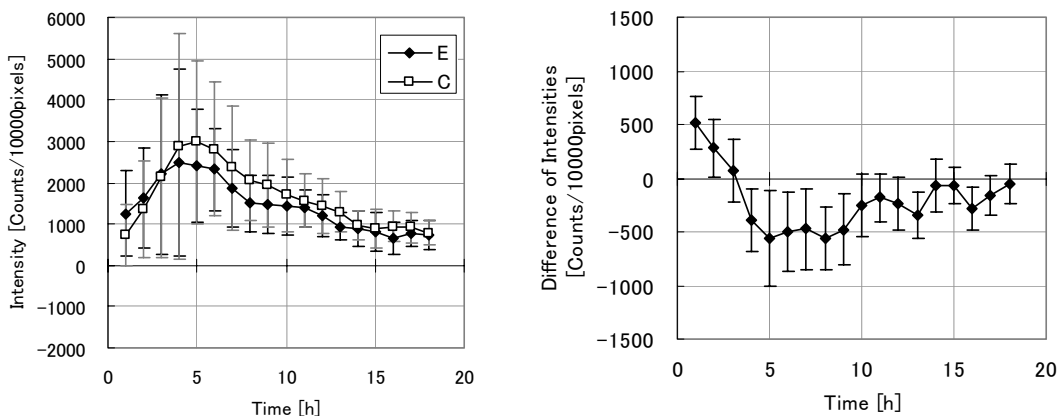
	n	Photon intensity and SD [Counts/10000pixels]		$I_E - I_C$	p value (Wilcoxon, two tails)	$I_E / I_C$	J value and 95% confidential interval
		Experiment $I_E$	Control $I_C$				
Static	15	27106 (13693)	25756 (10891)	1349	0.609	1.020	0.002 ± 0.097
Alternating	15	17125 (7260)	18246 (6978)	-1119	0.212	0.947	-0.067 ± 0.083
Pulse	15	27101 (10123)	31029 (13835)	-3928	0.047	0.921	-0.101 ± 0.103



Static magnetism Left: Intensities and SD. Right: Difference between intensities and 95% confidential interval.



Alternating magnetism Left: Intensities and SD. Right: Difference between intensities and 95% confidential interval.



Pulse magnetism Left: Intensities and SD. Right: Difference between intensities and 95% confidential interval.

**Fig. 1 Photon intensities in experimental (E) and control (C) samples and difference of intensities**

intensities occurred from the first 1 hour. The maximum photon intensity of experimental samples was smaller than that of control samples. This suggests more chemical substances were consumed during pulse magnetic stimuli. However, it is not considered that all chemical reactions were merely accelerated forward 30 minutes because both peaks of photon intensities of experiment and control samples appeared at the same time (4-5 hours after the start of measurement) and the difference of intensities clearly changed at 5 hours. This suggests that the chemical reactions after 5 hours (Phase II) included certain chemical reaction systems which were dependent on the time lapsed after preparing the samples.

At present, the authors have not confirmed candidates for such chemical reaction systems. One possible chemical reaction system is the defense reactions which are induced by the biosynthesis of green order <sup>7)</sup>. If DNA molecules involved in the defense reactions are activated by the biosynthesis of green order, and then the reactions emit photons during Phase II, that may explain why the change of photon intensity occurred at 5 hours.

The increase of photon intensity by non-contact healing <sup>5)</sup> suggests there is an increase in the amount of chemical substances which are related to photon emission. However, in the pulse magnetism test, the amount of all chemical substances of Phase II possibly decreased (**Table 2**). In this point, the effects of pulse magnetic stimuli are different from non-contact healing.

**Table 2 Photon Intensity after Phase I**

Sample	Intensity [Counts/10000pixels]
Control [5-18 hours]	22625
Experiment [4.5-17.5 hours]	19275

From the above discussions, the effects of magnetic stimuli for cucumber are considered as different from the effects of non-contact healing.

What physical mechanisms are possible for non-contact healing? The present plant experiments did not have similar results to those in the animal experiments of Takeshige and Aoki<sup>8)</sup>. This suggests that magnetic fields were not just a physical mechanism of non-contact healing although the magnetic fields have some relationship to non-contact healing. One possible mechanism is based on vector potential which is the origin of magnetic and electric fields <sup>9-12)</sup>. Another possibility is that the electric connection between healer and target samples is the cause of non-contact healing. In any case, it is necessary to conduct various

physical stimulus experiments from now on.

## 6. Conclusions

Intensities of biophotons of control and experimental samples of cucumber were measured for 18 h after 30-min treatments of static, alternating or pulse magnetic stimuli. There was no significant difference in intensities between control and experiment samples for both static and alternating magnetic stimuli. Photon intensity of experimental samples decreased under the pulse magnetic condition, but it was considered as the effect of heat generated by the induced current. Effects of magnetic stimuli were not the same as those of non-contact healing although there may be some relationship. It is necessary to conduct further studies with various physical stimuli.

## Acknowledgement

A part of the present study was supported by a grant from the MOA Health Science Foundation; "Research on Magnetic Stimuli and Non-contact Healing for Plants Using Biophotons" (Representative: Hideyuki KOKUBO)

## References

- 1) Kokubo H, Yamamoto M and Kawano K: Evaluation of non-contact healing using biophotons. *Journal of International Society of Life Information Science*, **24**, 320-327, 2006.
- 2) Kokubo H, Yamamoto M and Kawano K: Study of non-contact healing using biophotons. *Japanese Journal of Parapsychology*, **11**, 21-28, 2006. [In Japanese with an English abstract]
- 3) Kokubo H, Yamamoto M and Kawano K: Standard evaluation method of non-contact healing using biophotons. *Journal of International Society of Life Information Science*, **25**, 30-39, 2007.
- 4) Kokubo H, Yamamoto M and Kawano K: Aging develops a person's spiritual healing ability for pain - Application of standard evaluation method of non-contact healing using biophotons. *Journal of International Society of Life Information Science*, **25**, 40-62, 2007.
- 5) Kokubo H and Yamamoto M: Discussion on standard evaluation method of non-contact healing using biophotons -Normality of J value, and comparing non-contact healing with thermal/lighting

conditions-. *Journal of International Society of Life Information Science*, **25**, 219-232, 2007.

- 6) Kokubo H and Yamamoto M: Discussions on characteristic points of healers and ways - Study of non-contact healing using biophotons -. *Japanese Journal of Parapsychology*, **12**, 32-39, 2007. [In Japanese with an English abstract]
- 7) Kokubo H and Yamamoto M: Research on Emission Mechanisms of Biophotons from Cucumber. *Journal of International Society of Life Information Science*, **26**, 53-58, 2008.
- 8) Takeshige C and Aoki T: Effect of artificial and human external qigong on electroencephalograms in rabbit and spontaneous electrical activity of the rat pineal gland. *Acupuncture and Electro-therapeutics Research*, **19**, 89-106, 1994.
- 9) Aoki T, Adachi T, Yoshifuku S and Yoshida K: Influences of irradiation by interference DC opposed-fields on electrodermal activities. *Journal of International Society of Life Information Science*, **22**, 349-361, 2004.
- 10) Aoki T: Influences of an interference-offset field produced by a shield line non-induction coil on skin electrodermal activities and carrageenin-induced edema. *Journal of International Society of Life Information Science*, **19**, 339-350, 2001.
- 11) Aoki T, Yoshifuku S and Adachi Y: Influences of gauge field on living bodies. *Journal of International Society of Life Information Science*, **17**, 385-391, 1999.
- 12) Aoki T: Influence of gauge field and weak magnetic field on electrical conductivity of skin surface. *Journal of International Society of Life Information Science*, **16**, 324-331, 1998