

Effect of Emitted Bioenergy on Biochemical Functions of Cells

Chin-Hsiang Chien*, Julia J. Tsuei**, Si-Chen Lee***,
Yu-Chih Huang*, and Yau-Huei Wei*

Department of Biochemistry and Research Institute of Traditional Chinese Medicine**,
National Yang-Ming Medical College, Taipei, Taiwan 11221
and Department of Electrical Engineering***, National
Taiwan University, Taipei, Taiwan*

(Accepted for publication February 11, 1991)

Abstract: The 3-5 μm infrared spectra of the external "Qi" generated by a "Qigong" master from his palm was measured using a III-V compound semiconductor InSb detector. It was found that certain Qigong master can emit two opposite kinds of "Qi": the "facilitating" (beneficial) and "inhibiting" (destroying) "Qi". During the facilitating "Qi" emission, large amount of infrared wave were detected by a temperature rise of the air in the vicinity. When the inhibiting "Qi" was emitted, the infrared wave was absorbed from the environment resulting in a cooling of the air. The temperature rise or drop possibly reflects the fact that the blood flow to the palm was increased or decreased by dilating or constricting the blood vessels through parasympathetic or sympathetic nerves. The biochemical effects of emitted "Qi" from the same Qigong master on the human fibroblast FS-4 were investigated. The facilitating "Qi" caused 1.8% increase of the cell growth in 24 hrs, 10-15% increase of DNA synthesis and 3-5% increase of protein synthesis of the FS-4 cell in a 2-hr period; while inhibiting "Qi" caused 6% decrease of cell growth in a 24 hr period, 20-23% decrease of DNA synthesis and 35-48% of protein synthesis in a 2-hr period. In addition, we found that the respiration rate of boar sperm increased 12.5-13.0 % after receiving 5 min exposure in facilitating "Qi," and a decrease to 45-48% by exposure to 2-min of inhibiting "Qi." The results could be attributed to the effects of emitted "Qi" or energy containing infrared light (wave) and possibly some other types of energy.

The bioenergy emitted by the "Qigong" master is called external "Chi" or "Qi", which means breath or energy, and "gong" means work. The term "Qigong" implies "energy at work" (1,2). It has been employed for treating chronic illness in China. The physiological effect of "Qi" on Qigong practioners has been investigated (3). A gradual decrease in heart and respiratory rates, 30% of oxygen consumption and 20% of metabolic rate have been

detected as reported in Qigong practioners who claimed to have emitted "Qi under the facilitating consciousness or emitted facilitating Qi (3). The Chinese term for this state is called "Yang Qi" which literally can be translated to "nourishing Qi." It has been claimed that such "Qi" could "cure" gastric ulcers, hypertension, anxiety neurosis, otitis media, and cancer(4). Naturally these are only anecdotes. The process to generate such energized state necessitates a slow rhythmical movement of the arms at a low frequency (5) controlled by the central nervous system (6). It was also reported that the emitted bioenergy resembled infrared radiation from the finger tips the tmperature, which could increase from 37.4°C to 38.6°C, accompanied by a 20% increase in the microcirculation of the fingers during the process of emitting this energy (7). The effects of such emitted bioenergy on biochemical reactions of the cell have, so far, not been investigated.

In this paper, the infrared spectrum of the external "Qi" generated from the palm of a Qigong master (Mr. Fung-Sung Lee) under "facilitating" or "inhibiting" conditions was measured. The detector used was a compound semiconductor with InSb pn junction. The rate of cell growth, synthesis of DNA and protein of human fibroblast FS-4 cells, as well as the "respiration rate" of boar sperms after receiving emitted "Qi" under different energetic states from the Qigong master were investigated.

Materials and Methods

Cell culture and counting

A human fibroblast cell line FS-4 was cultured in DMEM medium (pH 7.0-7.2) containing 4 mL-glutamine and 10% fetal calf serum under 5% CO₂ and 95% O₂. Cell numbers were counted by using trypan blue dye exclusion and hemocytometer.

Measurement of infrared spectra of bioenergy generated by a Qigong master

The external "Qi" was generated through the "Lou-Qong" P8, (located between the second and third metacarpal bones where the tip of mid finger touches when the hand is clinched in a fist) in the palm of the Qigong master. During the experiment, his "Lou-Qong" point faced the detector directly at a distance of 5 cm, 15 cm, 30 cm or 40 cm. The hand was not allowed to tremble or move. During the experiment, the InSb detector was cooled to 77 degree °K by employing liquid nitrogen. A chopper was installed in front of the detector to "chop" the incidental external "Qi" to ac signal. The output signal from the detector was amplified by first sending to a preamplifier and then to a locking amplifier where the ac signals were extracted and converted to a dc voltage. The output voltage was analyzed directly by an IBM computer.

Treatment of cells with "Qi"

FS-4 cells and boar sperm were placed in front of the palm of the Qigong master at a distance of 15 cm. Cells were subjected to the "facilitating or inhibiting" "Qi" for 5 and 2 min respectively. The control experiment was performed by a normal male laboratory assistance who was not capable of emitting "Qi." The same series of samples located at the same

QIGONG AND CELL FUNCTIONS

distance were treated in the same length of time.

Assay of protein synthesis

After being treated with "Qi", FS-4 cells in multiwell dishes with 10^5 cells per well were labeled with $1 \mu\text{Ci/ml}$ ^{35}S -methionine for 0-2 hrs at 37°C in 0.5 ml of methionine-free DMEM medium. The cells were washed with 1 ml PBS and lysed with 200 μl of a lysis buffer, which contained 1 mM EDTA, 1% NP-40, 0.1% SDS, 1 mM PMSF and 0.02 M Tris-HCl, pH 7.4. Then 1 ml of a 10% trichloroacetic acid was added to the cell lysates. The precipitates generated were filtered through a piece of GF/C filter, washed with 10% trichloroacetic acid and counted for radioactivity by using a scintillating counter (Beckman, Model L3801).

Assay of DNA synthesis

DNA synthesis was measured according to the method described by Nistey *et al* (9). 10^5 FS-4 cells were plated in a multiwell dish and 2 μCi of ^3H -thymidine were added to each culture medium. Cells were incubated for 2 hrs and lysed with the aforementioned lysis buffer. The lysates were extracted with phenol and the aqueous fraction was counted for radioactivity.

Respiration rate measurement

The succinate-supported respiration rate of boar sperm was determined polarographically with an oxygraph equipped with a Clark oxygen electrode (5/6 Oxygraph, Gilson Medical Electronics, France) (10). An aliquot of 10^8 boar sperm was incubated in the thermostated reaction chamber containing 1.5 ml of an assay mixture, which contained 1 mM EDTA, 0.1 M Na-K-phosphate buffer, pH 7.4, 50 mM KCl, 6 mM MgCl_2 , and 20 μM cytochrome *c* before addition of the substrate. The rate of oxygen consumption was measured right after the addition of 20 mM succinate.

Analysis of experimental data

One-way analysis of variance ($p < 0.05$ was considered significant) and the least significant difference (LSD) were used to analyze the experimental data (11).

Results

The infrared spectra of the emitted "Qi"

The bandgap of InSb is 0.22eV at the temperature of 77°K . It can detect the infrared spectra at the range of 3 to 5.6 μm . Since every object at room temperature (300°K) generates black body radiation with a maximum wavelength of around 10 μm , the measurement of 3-5.6 μm infrared spectra is equivalent to the measurement of the temperature of the air near the palm. Fig. 1 shows the variation of infrared spectra during emission of "facilitating Qi" at a distance of 15 cm. Apparently after 10 sec from the start, the intensity of the infrared increased

significantly indicating that the temperature of the palm was elevated. As the Qigong master stopped emitting "Qi" but with his palm fixed at the same position, the signal did not undergo significant change. This was possibly a reflection of the temperature of his palm that was not changed and the infrared spectra at the 3-5.6 μm range was indeed a measurement of the temperature near his palm. As he moved his palm away from the detector, the signal immediately dropped to zero.

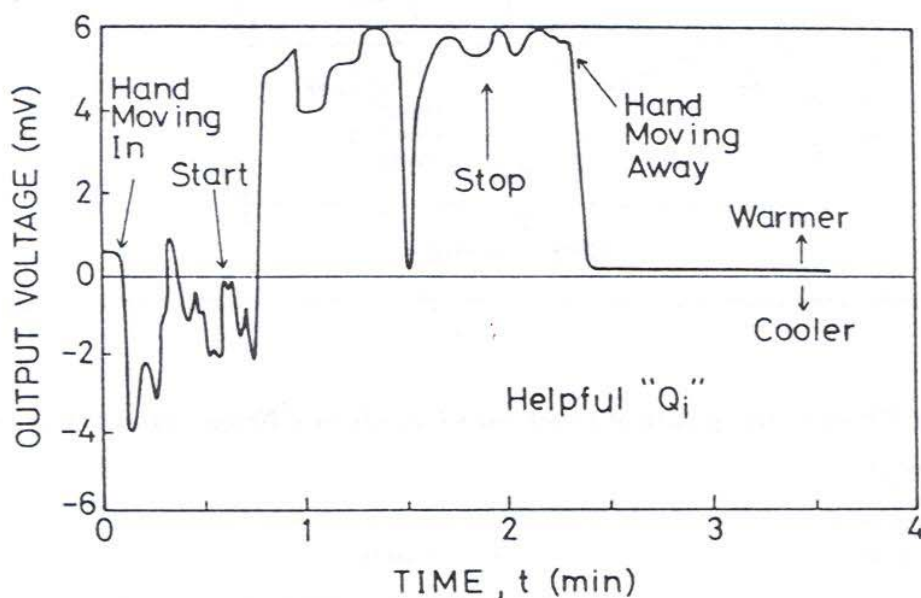


Fig 1. The measured variations of the output voltage of the InSb detector during the emission of "facilitating Qi" by a Qigong master

Figure 2 shows the variation of infrared intensity during the emission of strong "destroying Qi" or "killing Qi." The signal measured at the distance of 15 cm was negative. The result indicated that the temperature of the palm of the Qigong master dropped even below that of the environment. Therefore, it seemed that he was absorbing the environmental infrared energy and thus lowered the background photocurrent of the detector. This condition was maintained up to the moment that the Qigong master stopped the emission of the "killing Qi," and suddenly the infrared intensity increased until his hand was moved away from the detector.

The detector showed weak or no signal at the distance of 5 cm and 30 cm away from the palm. Therefore, it seemed that the biochemical effects of the "Qi" were monitored by placing the cells at a distance of 15 cm from the palm of the Qigong master.

Growth rate of cells subjected to the two different types of "Qi"

QIGONG AND CELL FUNCTIONS

After receiving a 5 min of the "facilitating Qi" at 15 cm distance and an incubation for 24 hrs, the growth rate of FS-4 fibroblasts increased 1.8% ($p < 0.05$); while that growth rate was decreased 6% under the treatment of "inhibiting Qi" for 2 min followed by 24 hr of incubation. The results are summarized in Table 1.

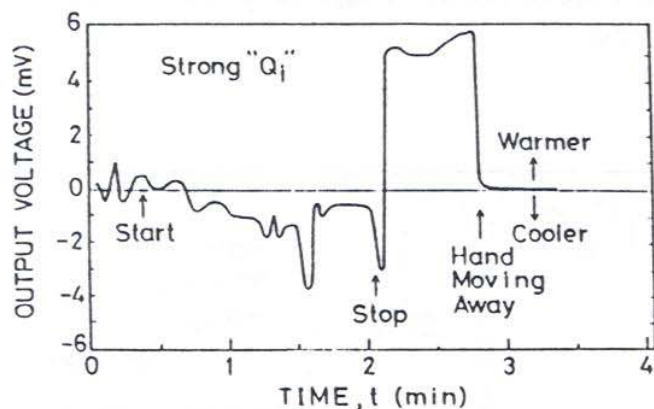


Fig. 2. The measured variation of the output voltage of the InSb defector during the emission of inhibiting Qi" by a Qigong master.

Table I. Effect on the growth of fibroblast FS-4 cells by different states of bioenergy fields, "Qi"

Distance, cm	Cell numbers		
	control ^a	inhibiting minded ^b 2 min	facilitating minded ^c 5 min
5	1.10×10^6	1.06×10^5 , $p < 0.05$	1.10×10^6
15	1.10×10^6	1.03×10^5 , $p < 0.05$	1.12×10^6 , $p < 0.05$
30	1.10×10^6	1.09×10^5 , $p < 0.05$	1.10×10^6
40	1.10×10^6	1.10×10^6	1.10×10^6

Bioenergy field was exerted on the cultured fibroblast FS-4 cells at various distance. Cells were counted after 24 hr of incubation using dye-exclusion hemocytometer method. Each experiment was performed at room temperature and repeated 10 times. p-value was calculated between a vs b and a vs c.

DNA synthesis

We detected a 10-15% increase of DNA synthesis in "facilitating Qi" at 15 cm from the palm; 20-23% decrease of DNA was observed under 2 min of "inhibiting Qi." The results of these effects are shown in Figure.3 .

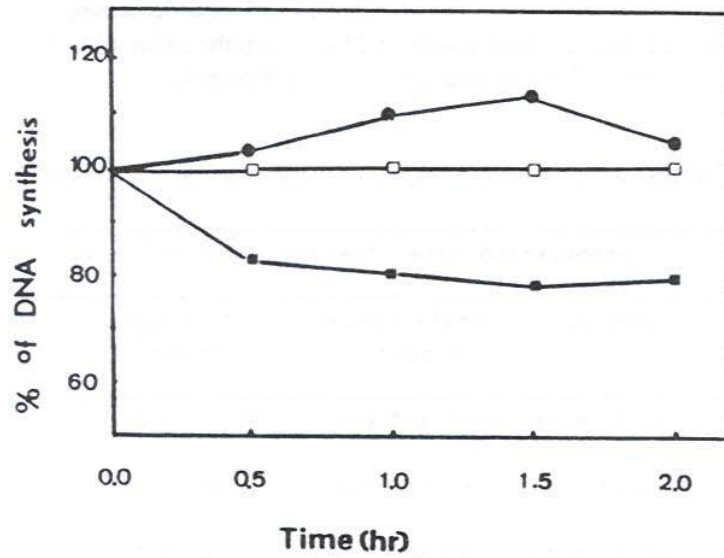


Fig 3 Effects of emitted "Qi" on DNA synthesis of FS-4 cells. (open square) controlled group without treatment of Qi. (solid circle) cells receiving 5 min "facilitating Qi," and (closed square) cells treated with 2 min of "destroying Qi," all were incubated and measured for the rate of DNA synthesis. Cells were placed at 15 cm distance from the palm of the Qigong master.

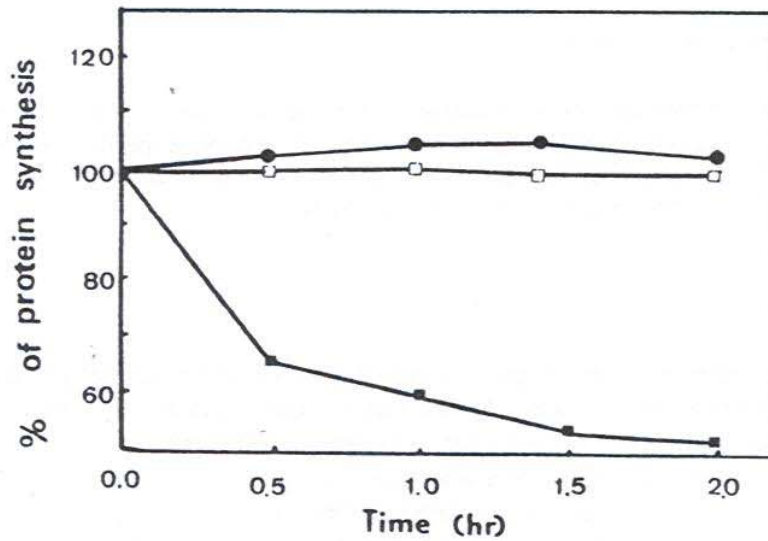


Fig. 4. Effect of emitted "Qi" on protein synthesis of FS-4 cells; control cells (open square), cells receiving 5 min of "facilitating Qi" (solid circle); and cells treated with 2 min of "inhibiting Qi" (solid square), all were incubated for 2 hr, and the rate of protein synthesis were measured. Cells were placed at 15 cm distance from the palm of the Qigong master.

QIGONG AND CELL FUNCTIONS

Protein synthesis

The rate of protein synthesis of the cell was increased 3-5% and decreased 35-48% during a 2-hr period after being treated at the distance of 15 cm from the palm with "facilitating and inhibiting Qi" respectively. These results are shown in Figure 4.

Table II Effect of emitted "Qi" on the respiration rate "of the boar sperms

Time (min)	Respiration rate (nmol O ₂ /min/ 10 ⁸ cell)		
	Control	Facilitating minded	Inhibiting minded
0.5	87.5 ± 0.01	98.4 ± 0.4	42 ± 0.2
1	87.5 ± 0.01	99.5 ± 0.5	40 ± 0.3
1.5	87.4 ± 0.01	98.8 ± 0.3	40 ± 0.2
2	87.0 ± 0.01	98.0 ± 0.3	39 ± 0.2

Oxygen consumption was monitored for 2 min after the addition of 20 mM succinate to 1.5 ml of the reaction mixture containing $4.0-8.0 \times 10^8$ cells. The components of the reaction mixture was described in the Material and Methods.

Effect on respiration rate of sperm cells

The respiration rate of boar sperms was measured after the substrate (succinate) was added to the assay mixture. As shown in Table II, the respiration rate of boar sperm increased 12.5-13% in 1-2 min of incubation period after receiving 5 min of "facilitating Qi," while it was decreased to 45-48% by receiving 2 min of "inhibiting Qi."

Discussion

The rising or dropping of the palm temperature possibly reflected the fact that the blood flow to the palm was increased or decreased. Temperature changes could be achieved by dilating or constricting the blood vessels through parasympathetic and sympathetic nerves. Therefore, it might be justifiable to suggest that when the Qigong master emitted the "facilitating Qi," he somehow "stimulated" his parasympathetic nerves to dilate the blood vessel, which in turn increased the palm temperature. When he emitted the "inhibiting Qi," the effect was just the opposite.

The altered biochemical reactions of cells under the influence of emitted "Qi" could be partly attributed to the influence of the emitted infrared energy. The bioenergy acted as

“facilitating Qi” was sensed by the cell membrane of FS-4 cells. The “sensed” energy could be mediated through cytoplasmic fluidity and act as a signal to induce the transduction reactions of the cell, resulting in an increase of DNA and protein synthesis of the cells. Cells which were under the influence of electromagnetic energy also showed an increase in DNA synthesis as reported previously by Norland (12).

The increase of the respiration rate of boar sperms by “Qi” generated bioenergy may be due to its effect on the fluidity of mitochondrial membranes.

Cells which were treated with “inhibiting Qi” showed a decrease of the biochemical reactions dramatically. The temperature drop of the air as well as other undetectable forms of bioenergy exerted by the “Qi” might have damaged the cells. The results of this study raised the possibility that cancer cells might be destroyed by the same emitted external bioenergy generated from a person practicing Qigong.

Acknowledgement

This work was supported by a grant from the National Science Council (NS -78-0412-B010-52 R) and the Foundation of East-West Medicine (FEWM 79-0201-C-1), Taipei, Taiwan.

References

1. Editorial, “Qigong”, Traditional breathing exercise. *China Sport* 6: 4- 6, 1980.
2. Siou, L., *Chi kung*, The Charles E. Tuttle Co. Inc., Rutland 1972, USA.
3. Shu chi., Revealing the mystery of life, *China Sport* 6:2-3, 1 9 8 0
4. Lai Zeng, “Qigong” benefits cancer patients, *China Sports* 6: 22 -23, 1981
5. Ma J., The mechanism of Chikung. Abstracts of International Conference on Bioenergetic Medicine, Past, Present and Future. p. 63, Sept. 30 - Oct. 7, 1989. Honolulu, Hawaii, USA.
6. Liu GL, Effect of Chigong and emitted Chi on the human nervous system. *AbstrPresent and Future*. p.71, ept. 30-Oct.7, 1989, Honolulu, Hawaii, USA.
7. Koh TC, Qigong-Chinese Breathing Exercise. *American Journal of Chinese Medicine*. Vol. X, No. 1-4, 86-91, 1982.
8. Dunbar BS, Isotopic labeling of proteins for electrophoretic analysis. In: *Two-dimensional Electrophoresis and Immunological Techniques*. Plenum Press, New York, pp. 103, 1987.
9. Nister M, Heldin, CH, Wasteson, A and Westermarck, B. A glioma-derived analog to platelet-derived growth factor: Demonstration of receptor competing activity and immunological cross reactivity. *Proc. Natl. Acad. Sci.* 81: 930, 1984.
10. Estabrook RW, Mitochondrial respiratory control and the polarographic measurement of ADP: O ratio. In: *Methods in Enzymology*. V. 10 (Estabrook RW, Pullman ME, eds.) Academic Press, New York, NY. pp. 41-47. 1967.
11. Rimm AA, Hartz AJ, Kalbfleisch JH, Anderson AJ, Hoffmann RG. Z and t test-comparing two or more groups. In: Rimm AA. ed. *Basic Biostatistics in Medicine and Epidemiology*. Appleton-Century-Crofts, New York, pp. 207-228, 1980.
12. Noland, D. Power play. *Discover* 62:63-68, 1989