



## Spatial distribution of invisible power around a healer: advanced application of gas measurement method using cucumber as bio-sensor\*



Distribuição espacial de poder invisível ao redor de uma curadora: aplicação avançada do método de medição de gás utilizando-se um pepino como bio-sensor.

Hideyuki Kokubo<sup>1,3(Picture)</sup>, Osamu Takagi<sup>1</sup>, Satoshi Koyama<sup>2,1</sup> and Mikio Yamamoto<sup>1</sup>

<sup>1</sup>Institute for Living Body Measurements, International Research Institute (Chiba, Japan)

<sup>2</sup>Meiji University, Graduate School of Information and Communication (Tokyo, Japan)

<sup>3</sup>Meiji University, School of Information and Communication (Tokyo, Japan)

kokubo@a-iri.org - <http://homepage2.nifty.com/anomalousphenomena> - [www.soc.nii.ac.jp/iri](http://www.soc.nii.ac.jp/iri)

\* This paper is based on Kokubo H, Takagi O, Koyama S and Yamamoto M: Spatial distribution of potential of controlled healing power – Exploratory measurement using cucumber as a bio-sensor –. Journal of International Society of Life Information Science, 28(2), 2010 (in press).

**Abstract:** The authors tried to measure a spatial distribution (X-Y plane) of controlled healing power around a healer by a gas measurement method using cucumber (*Cucumis sativus* 'white spin type') as a bio-sensor. The healer was W003 (a 41-year old female) who is well known as a psychic. After being seated in a chair, the healer then did non-contact healing (laying-on-of-hands) for 30 min to increase the odor of the target cucumber pieces in 2 experimental Petri dishes which were set on a table (67 cm height). To measure the distribution of potential around her body, cucumber pieces were next set at 20 points (70 cm height) around her: 4 points at 50 cm intervals in forward, backward, rightward and leftward directions from the healer; and 4 points at 45-degree angles between the four directions (about 2.5 m distant from her). Two healing trials were done with a 15-min rest between them. During trials, control pieces were kept in another room (with a straight distance of 12 m between the healer and controls). After 24 h, gas concentrations of each cucumber sample were measured with gas detection tubes for ethyl acetate (141L, Gastec), and J values (the natural logarithm of the ratio of gas concentrations of experimental and control samples) were calculated at every point. The results suggested that a specific potential was generated around the healer which was not the Coulomb potential, and this potential had anisotropy between the front-backward and right-leftward directions.

**Keywords:** potential, spatial distribution, non-contact healing, laying-on-of-hands, *Cucumis sativus* 'white spin type', gas measurement method

**Resumo:** Os autores tentaram medir a distribuição espacial (plano X-Y) do poder controlado de cura ao redor de uma curadora pelo método de medição de gás usando um pepino (*Cucumis sativus* tipo spin branco) como um bio-sensor. A curadora era W003 (uma mulher de 41 anos de idade) que é muito conhecida como paranormal. Depois de se sentar em uma cadeira, a curadora fez uma cura à distância (imposição de mãos) por 30 minutos para aumentar o odor de pedaços do pepino alvo em duas placas de Petri experimentais que haviam sido colocadas sobre uma mesa (67 cm de altura). Para medir a distribuição do potencial ao redor do corpo dela, os pedaços de pepino foram colocados em seguida a 20 pontos (70 cm de altura) ao redor dela: 4 pontos a intervalos de 50 cm à frente, atrás, à direita e à esquerda da curadora; e quatro pontos em ângulos de 45 graus entre as quatro direções (cerca de 2,5 de distância dela). Duas tentativas de cura foram feitas com um intervalo de 15 minutos entre elas. Durante essas tentativas, pedaços-controle foram mantidos em uma outra sala (com uma distância de 12 metros entre a curadora e os controles). Após 24 horas, as concentrações de gás de cada amostra de pepino foram medidas com tubos de detecção de gás para acetato de etila (141, Gastec) e valores J (logaritmo natural da razão das concentrações de gás das amostras experimental e de controle) foram calculadas em cada ponto. Os resultados sugerem que um potencial específico foi gerado ao redor da curadora que não o potencial Coulomb, e esse potencial tinha anisotropia entre as direções frente-atrás e direita-esquerda.

**Palavras-chave:** potencial, distribuição espacial, cura à distância, imposição de mãos, *Cucumis sativus* "tipo spin branco", método de mensuração de gás.

### 1 INTRODUCTION

Since 2006, the authors have estimated controlled healing power of about 50 healers by the biophoton and gas measurement methods using cucumber pieces (*Cucumis sativus* 'white spin type') as a bio-sensor<sup>1-19</sup>. In both the authors' biophoton and gas measurement methods, healing effects cannot be detected if there is no difference of power between places where experimental and control samples are set because healing power is calculated through comparison with samples<sup>1,16</sup>. Based on the authors' studies, many healers could concentrate their power on the target samples just in front of them and make a difference on condition that the distance between experimental and control samples was 3 m. However, many issues were unknown; for example, width of the healers concentrated fields, the relationships between magnitude of power, directional properties, stability in time, etc. Moreover, the authors had speculated that the potential around the healers was not similar to the Coulomb potential, but its actual shape was unknown.

The authors developed a gas measurement method in 2009<sup>16-19</sup>. This gas method has several merits; for example, it is inexpensive to use relative to their biophoton method and it is easy to execute multiple-point measurements.

In the present study, the authors arranged many cucumber pieces around a healer, and tried to measure the spatial distribution of potential of controlled healing power which is expected to be generated around the healer when doing healing. In this paper, both the terms of "power" and "potential" are used only for convenience, the examination of the physical validities of these terms is a future subject.

## 2 METHODS

### 2-1 Principle of Gas Measurement Method

The details of the method have already been described in a previous paper<sup>17)</sup> and a textbook<sup>18)</sup>. Therefore, here, the authors summarize their gas measurement method using cucumber pieces as a bio-sensor for readers.

The authors' gas measurement method was developed from their biophoton (visual light) method<sup>1-15)</sup>. The authors' biophoton measurement method can estimate a healer's controlled healing power in just one or two trials. However, the expensiveness of the biophoton measurement equipment has obstructed widespread application of the method. Therefore inexpensive and easy-to-use methods should be developed to promote further studies. The authors took notice of green odor generated from cucumber. Biophotons from cucumber pieces are generated on process of generating green odor which is a biosynthesis of C9/C6 aldehyde and alcohol<sup>6)</sup>. Because the amount of gases will correspond to the intensity of biophotons, a healer's controlled healing power can be estimated by measuring the amount of gas released. The authors tested this hypothesis and succeeded in developing an easy-to-use and inexpensive measurement method using the gas-measuring detector tube for ethyl acetate (141L, Gastec, Japan).

**Cucumber:** Cucumber (*Cucumis sativus*, 'white spin type') is used as a bio-sensor for non-contact healing. Cucumbers were selected according to the standard method: green color is good, shape is straight and round (length 17-24 cm, maximum diameter 2-3 cm and the cross section larger than 4 cm<sup>2</sup>), and there is no large scar on the surface. Cucumbers were purchased on the experimental day and kept at room temperature (24°C) in the absence of sunlight. One hour before the experiment, the surface of the cucumber was disinfected with ethanol.

**Making samples (Basic way):** The way of making samples was the same as in the biophoton measurement method<sup>17)</sup>. Four circular slices (thickness: 2 cm) are cut from a cucumber. Each slice is cut again into 2 slices (thickness: 1 cm); this gives 8 paired pieces. One of each paired pieces is the experimental sample and the other (follower side) is the control (Fig. 1). Four pairs of targets are made from one cucumber. Controls and experimental samples were placed symmetrically in two glass Petri dishes (diameter 91 mm, height 21 mm) which have been previously wrapped with a plastic wrap sheet. Both Petri dishes are covered with glass lids.

**Making samples (SCAT):** To obtain data with better accuracy, simultaneous calibration technique (SCAT) is used. SCAT is a calibration way of J values (see next section); a half of sample dishes are used for a main test and the others are used for a simultaneous blank test, and then J values of the main test are calibrated with an average of J values of the simultaneous blank test. Four cucumbers (4 pairs of sample dishes) are used for one measurement of SCAT. Sample pieces are set symmetrically in 4 pairs of Petri dishes (totally 8 dishes) using a rotating order as in Fig. 2. Next, Two pairs of dishes are selected at random for the simultaneous blank test and the other pairs were used for the main test (healing test). Labels are set in dishes and each dish is covered by a glass lid.

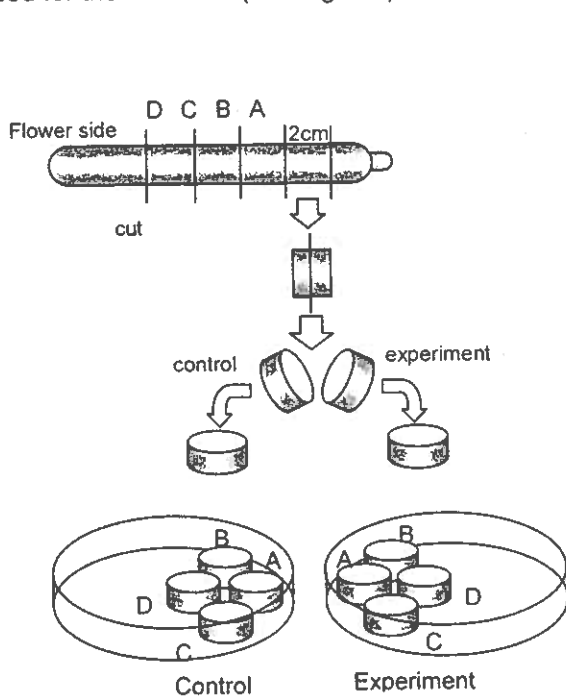


Fig. 1 Basic Way

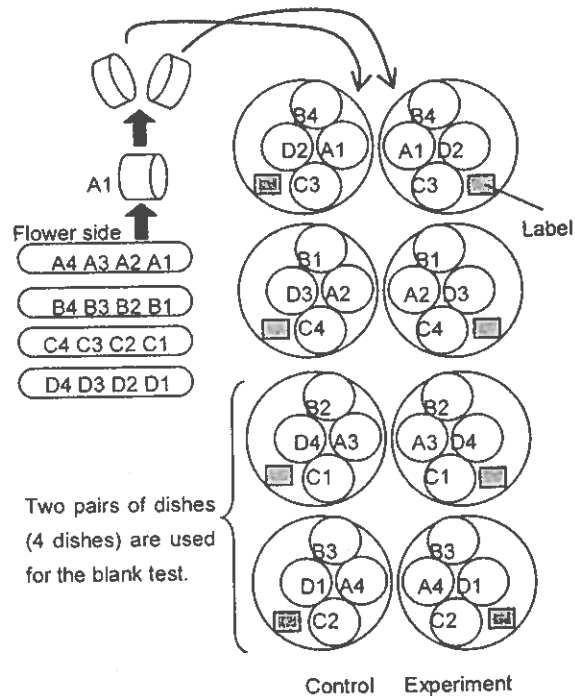


Fig. 2 Preparation of Sample Dishes in SCAT

**Gas measuring operation:** Experimental dishes are treated by non-contact healing for 30 min, while controls and all dishes of the simultaneous blank test are set at a different place where non-contact healing is considered to not reach. After treatment, the lids are removed from all Petri dishes, and the dishes are put into separate 2.2 L sealed plastic polypropylene containers with a polyethylene lid are used which were designed for food storage (B-1716FL Foods Case XL, Iwasaki Industry, Japan). (Fig. 3)<sup>16,18)</sup>.

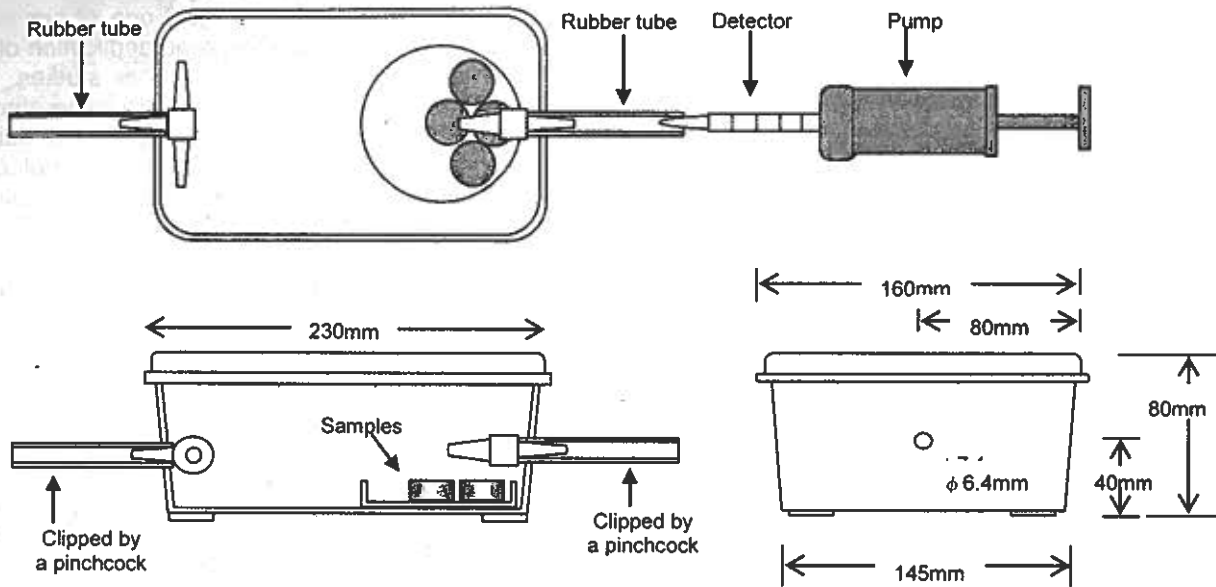


Fig. 3 Container

Containers are kept in a room at 24 °C for 24 hours, without exposure to sunlight. Biosynthesis of green odor products gases proceeded using oxygen in the air in the container. After 24 h, 100 mL samples of gas are taken 3 times (totally 300 mL) from each pair of containers using the short-term gas-measuring detector tube for ethyl acetate (141L) and the sampling pump (GV-100, Gastec, Japan). At that time, an activated carbon filter<sup>18)</sup> is attached to the inlet of each container (Fig. 4). And also, to cancel system biases of gas-measuring operations, places of experimental and control containers are exchanged between 1st and 2nd SCAT measurements.

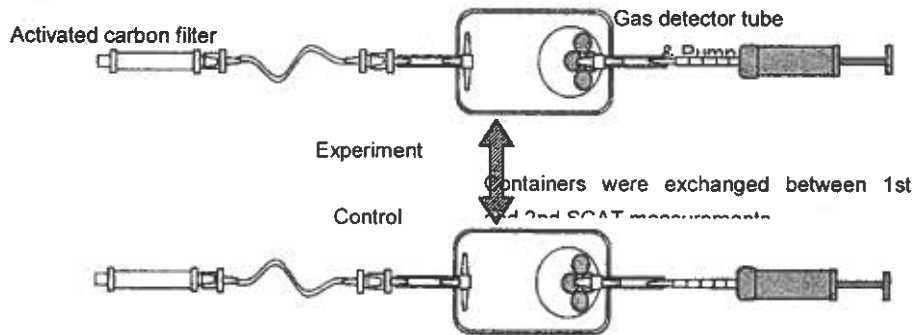


Fig. 4 Gas Measuring Operation for Cancelling System Biases

**J value:** The same as in the biophoton method, the *J* value (*J*-gas) which is the natural logarithm of the ratio of gas concentrations of experiment  $C_E$  and control  $C_C$ , is introduced as an index of the effect of non-contact healing. Here, *k* is a coefficient and  $k = 1$ . The left term of this equation means healing power (a kind of PK power), and the right term is consist of physical values only. In other words, psi can be connected to modern physics through this equation.

$$J = k \ln(C_E / C_C)$$

*J* value shows magnitude of a healer's controlled healing power (*J* value is not an index of the degree of skills of healing). Based on that 95% confidence interval of average *J* value ( $n = 4$  to 16) is about 0.1, the authors classify controlled healing power tentatively as  $J < 0.1$ ; novice,  $0.1 < J < 0.2$ ; middle,  $0.2 < J$ ; expert,  $0.3 < J$ ; psychic. For example, through the authors' experiments of about 50 healers since 2006, many healers showed  $J < 0.2$  and 4 healers (about 10%) showed  $J > 0.2$ . Only 2 healers, who were famous psychics, showed  $J > 0.3$ .

J value is an empirical equation which connects psi with modern physics because the left term of this equation means "power" (or effect) of non-contact healing (or psi, ki/qi) and the right term is constructed by physical values only. Physical values are not limited on gas concentration. We can use photon intensities and other physical values in calculation of J values. If we design the experiments using sample pairs of experiments/controls and J values, we can discuss many results of bio-PK experiments quantitatively and easily. Also in the present study, using J values, the author discuss a spatial distribution of potential of controlled healing power around a healer.

### Calibration of J values

Calibration of J values can be done by comparing J values of the main test and the blank test, for example, using SCAT. At that time, many factors also can be cancelled; for example, effects by circumstances where samples are set or kept; a difference of amount of gases between growth directions (flower side or not) of samples. Here, in a blank test,  $C_E$  is the concentration of gases of the experimental samples and  $C_C$  is the concentration of gases of the control samples. It is assumed as  $C_E = \alpha C_C$ .

$$J\text{-blank} = \ln(C_E/C_C) = \ln(\alpha C_C/C_C) = \ln \alpha$$

In a main test, if healing effects are given to the experimental sample and then its concentration of gases is multiplied  $\beta$  times, the concentration of gases of the experimental sample is described as  $\alpha\beta C_C$ . Therefore,

$$J\text{-main} = \ln(\alpha\beta C_C/C_C) = \ln \alpha + \ln \beta$$

At the last, we can know actual effects of healing through calculation with J-blank and J-main.

$$\begin{aligned} J\text{-main} - J\text{-blank} &= \ln \alpha + \ln \beta - \ln \alpha \\ &= \ln \beta \end{aligned}$$

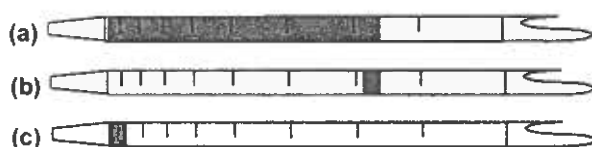
Usually,  $\ln \alpha$  is nearly equal to zero if experimental conditions are suitable.

**Gas-measuring detector tube for ethyl acetate 141L:** 141L tube can show color reaction for cucumber gas although there is no ethyl acetate in cucumber gas<sup>16)</sup>. (141L can detect 2-hexanol. Color reaction of 141L may be caused by that cucumber gas includes small amount of hexanol). The color reaction of the 141L tube uses the reduction reaction of chromic acid.



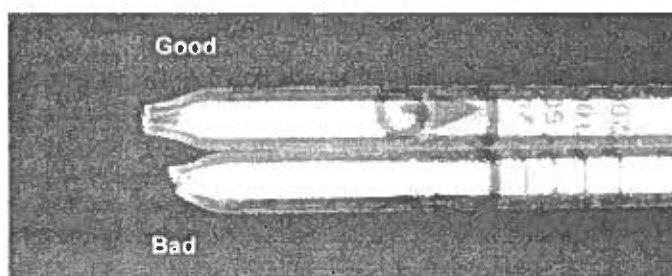
The 141L tube has 0.34 mg of  $\text{Cr}^{6+}$ . Therefore waste tubes should be kept in a safe way until then can be collected by professional handlers of toxic wastes.

The 141L tube usually shows the color reaction given in Fig. 5(a), but for cucumber gas it is as shown in Fig. 5(b). If wet paper filters are put into the container and humidity reaches 100%, the 141L tube gives a value of 20ppm (minimum value) as shown in Fig. 5(c). High moisture content influences the 141L. However, the reasons for the color reaction of (b) are unknown presently.



**Fig. 5 Color Reaction of 141L**  
 a) Normal, b) Cucumber gas, c) Air at 100% humidity

Before measurements, the experimenter makes a pair of gas detector tubes. The pair is made so that each tube has the same length from the top of the column to the top of reagent. All gas detector tubes should be chosen from the same lot group. All tubes should be labelled before gas-measuring operations. Tips of tubes should be cut carefully (Fig. 6).

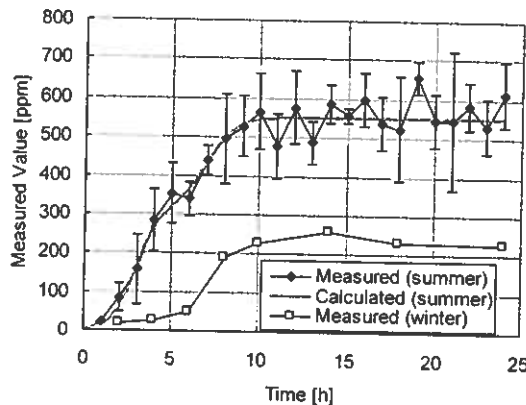


**Fig. 6 Tips of Tubes**

### Time of gas sampling

Biosynthesis of green odor is a kind of self-protection mechanisms of green plants<sup>8)</sup>. The generated cucumber gases are disinfectants and the container is full with them. And the injured surfaces of cucumber pieces are covered by 8-holmyl octanoic acid and 11-holmyl undecenoic acid (traumatic acid) which are also disinfectants generated on process of biosynthesis of green odor. Therefore, pieces of cucumber don't decompose usually for several days at room temperature and they are dried gradually to a stable state after generating gases.

Fig. 7 shows time transition of measured values of 141L of blank tests at room temperature 24 °C. The measured value becomes stable about 10 h after<sup>19)</sup>. However, in the previous biophoton studies<sup>6,19)</sup>, healing effects occur 5 h after healing and the intensity of biophotons becomes stable about 16 h after healing. Therefore it is considered that time of gas sampling should be done more than 16 h after healing. 24 h is used as a standard time because it is considered to be convenient for measurements and also the authors have already repeated many tests at 24 h.



**Fig. 7 Measured and Approximated Values of 141L**  
 Error bars are SDs. Approximated equation is described in Ref. 19).

### Reference data or reference place

An important point of the gas measurement method is to adjust conditions before experiments so that the average J value of the blank test becomes zero<sup>17,18)</sup>. Table 1 is an example of excellent results, but if the average J value is within about  $\pm 0.1$  at  $n = 4$ , it is acceptable in usual blank tests because of variance in the quality of cucumbers.

The authors usually set control dishes at 3 m distant from experimental dishes in both biophoton and gas methods. Many healers took effort to concentration their power on the target pieces of cucumber in front of them, and succeeded to show significant results. However, it is not confirmed whether 3 m is always enough.

**Table 1 Example of Blank Test**

Lot No.: 90831	Experiment [ppm]	Control [ppm]	J value
25/10/2009 Harvest from Gumma.	400	410	-0.025
	410	410	0.000
	400	400	0.000
	390	400	-0.025
Average	400	405	-0.013
SD	7	5	0.013

### Heat of hands

Generally, the speed of chemical reactions depends on temperature. It is needed to examine whether gas concentration can be changed by infrared ray from healer's hands and warm effects of air around hands. The authors have already confirmed that heat of hands does not influence to results in biophoton experiments<sup>6)</sup>. Unless a healer touches dishes directly, it has almost no influence of heat of hands.

a heat test of the gas measurement method, a kettle with 2 L water at 40 °C was set 1 cm above experimental dishes for 30 min instead of non-contact healing. The test was done using SCAT. Average J values (before and after calibration) of the heat test were nearly equal to zero. In 30 min practice of healing, heat of hands is not considered to influence gas concentration.

**Table 2 Raw Data of Heat Test (40 °C water)**

Gas concentration [ppm]		July 4, 2010		July 11, 2010		Average
		1st	2nd	3rd	4th	
Heat test	E1	600	800	480	610	623
	C1	590	800	530	600	630
	E2	800	600	605	680	671
	C2	800	550	630	605	646
Blank test	E3	700	710	605	550	641
	C3	650	690	650	590	645
	E4	600	900	530	600	658
	C4	620	720	600	680	655

E: Experiment C: Control  
 Lot No. 00437. Harvest from Iwate

**Table 3 J values of Heat Test (40 °C water)**

	J value		Calibrated J value	
	Heat	Blank	Heat	Blank
1st	0.017	0.074	-0.004	0.053
	0.000	-0.033	-0.021	-0.053
2nd	0.000	0.029	-0.126	-0.097
	0.087	0.223	-0.039	0.097
3rd	-0.099	-0.072	-0.001	0.026
	-0.040	-0.124	0.057	-0.026
4th	0.017	-0.070	0.114	0.027
	0.117	-0.125	0.215	-0.027
Average	0.012	-0.012	0.024	0.000
SD	0.068	0.118	0.104	0.063

\* In summer, values of concentration sometimes reach over the maximum of scale on the tube (800 ppm) if the room temperature is high. Control of room temperature is also important. If to keep room temperature at 24 °C is difficult, experimenters should set room temperature at 23 or 22 °C. In addition, if room temperature is lower, maximum of gas concentration will become low and error bars of J values will become large because J values are calculated using the ratio of concentrations.

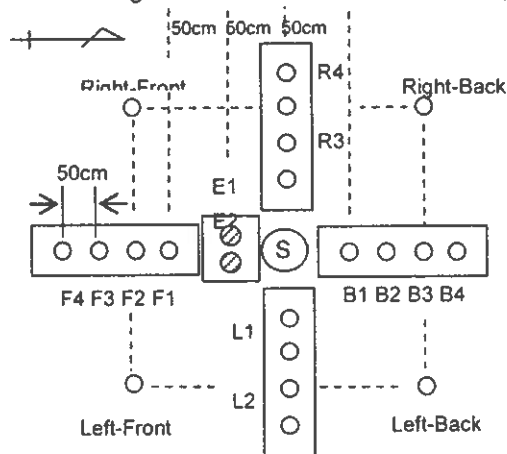
**2-2 Measurement of Spatial Distribution of Potential**

**Date & Place:** Healing trials were done on June 21 (Monday) in 2010 at Rooms A & B of the Institute for Living Body Measurement of the International Research Institute (IRI) (Inage, Chiba).

**Subject:** W003 (female, 41 y). She was a well known Chinese psychic who has highly abilities<sup>20-22</sup>. She claimed that she sometimes had practiced healing.

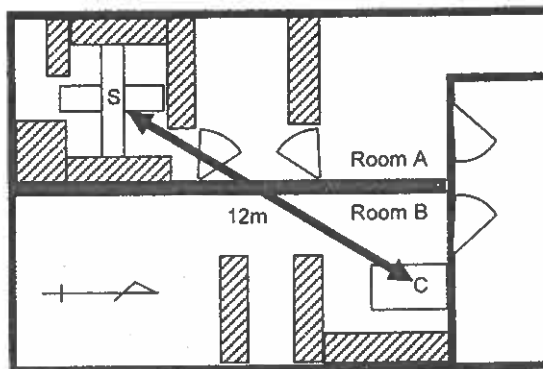
**Arrangement of data points:** Fig. 8 shows the arrangement of data points in the room A: 2 dishes for the healing test (E1 and E2) and 20 dishes for the potential measurement. All dishes were covered by glass lids during trials.

The healer sat on a chair and tried to do non-contact healing (laying-on-of-hands) toward the experimental dishes (E1 and E2), set on a table (67 cm height), for 30 min to increase the odor of the cucumber pieces (i.e., to increase the gas concentration of cucumber pieces).



**Fig. 8 Arrangement of Data Collection Points**

F: front, B: back, R: right, L: Left



**Fig. 9 Subject (S) and Controls (C)**

Dishes for the potential measurement were set at 4 points at 50 cm intervals in forward, backward, rightward and leftward directions from the healer; and 4 points at 45-degree angles between the four directions (about 2.5 m distant from her; designated as oblique). Those dishes were set at a 70 cm height. Moreover, they were covered with paper towels so that the healer never saw them directly during trials.

During trials, control dishes and all dishes of the simultaneous blank test (described in the next item) were kept in at Point C in Room B (Fig. 9). The straight distance between the subject and them was 12 m.

**Making samples:** 24 cucumbers (harvest from Southern Akagi) were used for one healing trial, and 24 pairs of experiment-control dishes were made (totally 48 dishes. **Fig. 10**).

Sample dishes for the healing test were made in the way of simultaneous calibration technique (SCAT)<sup>17,18</sup>. First, 16 pairs of experimental and control round slices (thickness: 1 cm) were cut from 4 cucumbers. Next, each 4 pairs were set into 4 pairs of experimental and control Petri dishes (4 slices were set into each dish). Two pairs of dishes were selected at random for the healing test and labelled as E1, C1, E2 and C2 (E is the experimental dish, C is the control dish), and the others were used for the simultaneous blank test and labelled as E3, C3, E4 and C4. Then, all dishes were covered by glass lids.

For the potential measurement, sample dishes of each series of front, back, left, right and slant were made in the same way of SCAT. Four pairs of dishes were made from 4 cucumbers for the front series, and labelled at random as F1E, F1C, ..., F4C (F is front. E is the experimental dish, C is the control dish.). Dishes of the other series were made in the same way. Then, all dishes were covered by glass lids.

**Instructions:** The following instructions were given verbally to the healer. Start of trials. *"These cucumber pieces have been recently made. There is more odor for fresh and vivid cucumber pieces. Please do non-contact healing to try to increase the vitality of the cucumber pieces and their odor. Please concentrate on the experimental pieces just in front of you. Do not pay attention to other pieces. Fifteen minutes after the start, a sign will be given to you. However, please make an effort to do non-contact healing for a full 30 minutes."*  
After 15 min. *"Fifteen minutes have passed. Please continue to do non-contact healing to try to increase the vitality of the cucumber pieces and to increase their odor."*

**Procedure:** Before experiments, at a reception room, Experimenter MY explained the present study and the subject signed her signature on a document of agreement. While, Experimenters HK & SK made sample dishes (48 dishes) for the 1st trial at room B. After making samples, experimenters brought test dishes (22 dishes) into an experimental room and arranged dishes (**Fig. 8**). All dishes, except E1 & E2, were covered by paper towels for the purpose that the subject never see them. Control dishes and all dishes for the blank test were kept at Point C in the room B (26 dishes totally) (**Fig. 9**).

After preparation, the subject entered into the experimental room and sat on a chair. HK gave her instructions, and all experimenters went from the room. Fifteen min after, MY entered into the experimental room and gave a sign to her, and then he went out again. One healing trial was 30 min (**Fig. 11**). Whole process of the trial was monitored and recorded by a video system. Simultaneously, HK and SK made sample dishes of the 2nd trial at room B. Dishes of the 2nd trial were marked by labels with different color from the 1st trial.

After the 1st trial, the subject went out the experimental room and waited next trial at the reception room. Experimenters collected all dishes and kept them at the room B. Next, they brought dishes of the 2nd test into the experimental room, and set them in the same way of the 1st trial.

Fifteen min after the 1st trial, the subject entered into the experimental room again, and did non-contact healing for 30 min as same as the 1st trial.

After the subject finished the trials and came back to her home, experimenters brought sample dishes and gas containers into the experimental room. They removed all lids of Petri dishes (96 dishes) and put dishes into 96 containers separately, and then kept sealed containers into a shelf (**Fig. 12**). The front of the shelves was covered by a thick cloth to avoid winds from an air conditioner.



**Fig. 10 Making Sample Dishes**



**Fig. 11 W003 in Healing Trial**



**Fig. 12 Gas Containers Stored on Shelves**



Petri dishes for potential measurements were covered with papers.

Containers were kept at room temperature 24 °C for 24 hours. At gas measurements, containers were separated into groups as front/back, left/right and slant/SCAT groups, and three experimenters (SK, OT and HK) measured gases of those groups. After attaching activated carbon filters to inlets of containers (Fig. 4), each experimenter measured pairs of experimental and control containers of all data points. Pairs of gas-measuring detector tubes (141L, Lot No. 00437), made in advance<sup>17,18)</sup>, were used. 100 mL samples of gas were taken 3 times (totally 300 mL) from each container, and those values were recorded.

For gas measurements of the 2nd trial, the same experimenter measured the same group of containers of 1st trial. And, they cancelled system biases of gas measurements by exchange of places of experimental and control containers in gas measuring system (Fig. 4).

Gas measuring operations were needed 2 h and 20 min for 2 trials (totally 96 containers).

### 3 RESULTS

#### 3-1 Healing Test

Table 4 shows calibrated J values. Average J value of the healing test was -0.119, and it means that healing effects decreased gas generation. There was a significant difference between average J values of the healing test and the simultaneous blank test ( $p = 0.015$ , t-test, two tails).

Table 4 Calibrated J Values

Lot No. 00437	Healing	Blank
1st trial	-0.161	-0.029
	-0.102	0.029
2nd trial	-0.033	-0.006
	-0.181	0.006
Average	-0.119	0.000
SD	0.067	0.024
p (two tails)	0.015	

#### 3-2 Potential Measurements

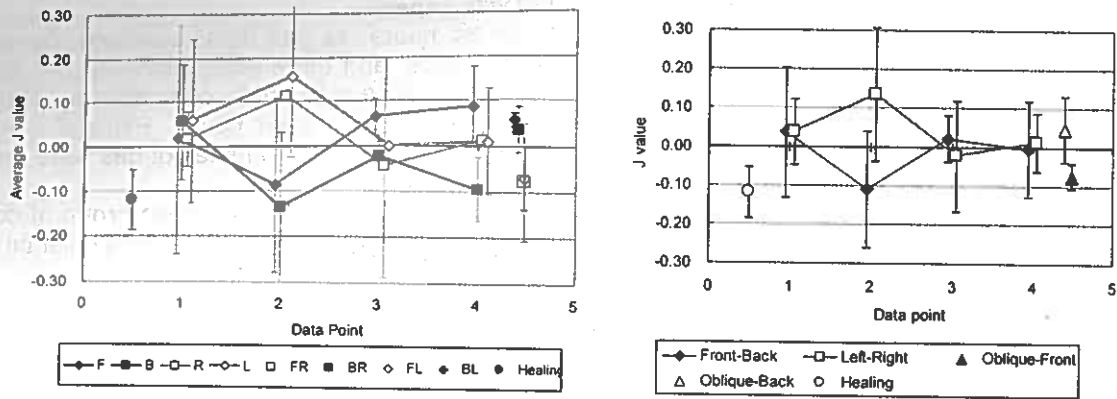
Table 5 and Fig. 13 show average J values of each data point. The potential was symmetric in the left-rightward direction (the subject as the center). Also, the potential was almost symmetric in the front-backward direction, but it differed from that of the left-rightward direction. It was considered that the potential had an anisotropy corresponding to the direction of the healer's body. For both directions, the potential was not similar to the Coulomb potential.

Table 5 J values at Data Points

	1st	2nd	Average		1st	2nd	Average
F1	-0.164	0.201	0.018	R1	0.059	-0.027	0.016
F2	-0.223	0.051	-0.086	R2	0.110	0.113	0.112
F3	0.036	0.094	0.065	R3	-0.218	0.127	-0.045
F4	0.024	0.149	0.086	R4	0.000	0.025	0.013
B1	-0.036	0.147	0.055	L1	-0.072	0.190	0.059
B2	-0.252	-0.019	-0.136	L2	0.028	0.288	0.158
B3	0.000	-0.047	-0.023	L3	0.000	0.000	0.000
B4	-0.145	-0.045	-0.095	L4	-0.072	0.093	0.010
FR	0.012	-0.169	-0.078	BR	0.000	0.072	0.036
FL	-0.118	-0.021	-0.069	BL	0.069	0.047	0.058

Lot No. 00437. The average J value of 2nd trial is larger than one of 1st trial. However, they include system biases of the operation of gas measurements, for example, the difference of abilities of activated carbon filters. Such system biases can be cancelled by replacement of containers like Fig. 4. In other words, the true value of a data point is the average of 1st and 2nd trials, not individual data of each trial.





**Fig. 13 Average J values**

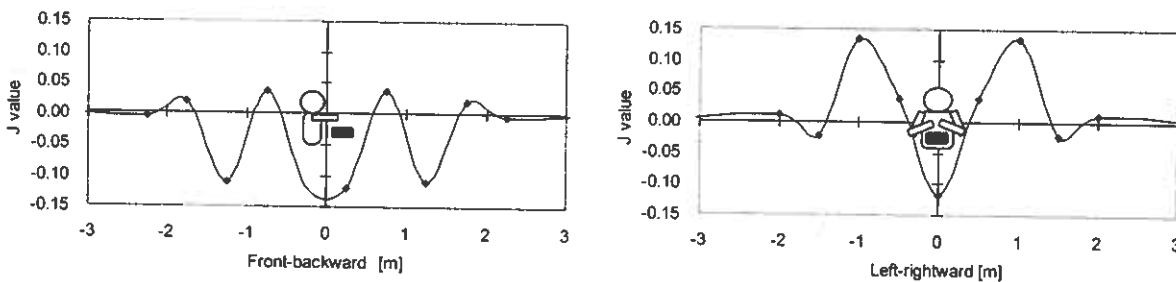
Left: Data of each series (n=2) and healing data (n=4).

Right: Average of front-back, left-right, oblique-front and oblique-back. All data points including healing are n=4. Error bars are SDs. Low number data points were nearby the subject. Intervals of data points were 50 cm. Oblique points are plotted at calculated distant points.

## 4 DISCUSSIONS

### 4-1 Spatial Distribution of Potential

In the present study, the 4th points of each direction and the 4 oblique points were near lab fixtures or equipment because of the size of the room. So, there was a possibility that these 8 data were influenced by the room circumstances. Based on the possibility, the authors assume a spatial distribution of potential (Fig. 14) with the condition that the original potential is symmetric in both front-back and left-right directions. It was considered that there was a potential area, with a radius of about 2 m, in the X-Y plane around the healer. Moreover, it is expected that this potential can be calculated from fundamental properties in the future.



**Fig. 14 Estimated Spatial Distribution of Potential (Averaging for 60 min)**

After averaging front and backward data (or right and leftward data), they are plotted symmetrically and connected with spline curves. The zero point of front-backward data is shifted to the center between the healer and experimental dishes of the healing test.

There is no study to measure a spatial distribution of potential around a healer except the present study. The present study has been the first challenge for the authors. Therefore they could not forecast anything and did not have firm belief of success of their experiments. Of course, further studies are needed, for example, increase of number of data collection points; measurements of vertical direction.

Here, the authors try to discuss various possibilities ambitiously although the present study is preliminary.

#### 4.1.1 Interaction with Circumstance

The potential area spreads with a radius of about 2 m around a healer. All things within the potential area can interact with the healer possibly. In other words, there is a possibility that an apparatus interacts with healing effects if it is set at a specific place in an experimental room.

#### 4.1.2 Frontal Polar Point (P-point)

There is a "polar" point (p-point) at about 1 m distance in front of the healer. There is a possibility that a healer give effects to a client at about 1 m distance in front of her if she do self-healing or do healing for a target at several cm distance in front of her.

#### 4.1.3 Control of Position of P-point

Healers may be able to control the position of the frontal p-point. Hasted<sup>24</sup> reported that; psychics (metal benders) tried to give their power to strain gauges (arranged at about 10 cm intervals) from about several meters away, and then synchronized signals were observed from strain gauges. Thus, psychics can give anomalous effects on the place several meters away. It may relate to the control of the position of the frontal p-point. In other words, there is a possibility that psychics move the position of the frontal p-point to a distant place and then cause anomalous phenomena there.

Furthermore, the existence of the back p-point has not been known until the present day. The position of the back p-point may also be changed according to the frontal p-point if geometrical symmetry of the potential distribution is conserved, although details are uncertain yet.

#### 4.1.4 Roles of P-point and Central Point

Ogawa and Sasaki<sup>25</sup> reported that they tested thoughtography against a photo sensor in a dark case and observed anomalous signals with 100 Hz signals which were presumed as flicker of room light. Moreover, researchers of Fudan University<sup>26,27</sup> (Shanghai, China), reported that they wrote color-letters on a transparent sheet as clairvoyance targets, and piled the sheet with color filters and a photo printing-paper, then sealed them. When clairvoyance was succeeded, the photo printing-paper was sensitized as if it irradiated with room light. And when the whole process of the experiment was conducted in a darkroom, sensitization was not observed even if clairvoyance was succeeded. Moreover, they also reported that similar phenomena were observed in tests of psychokinesis. If the p-point and the central point (place of a healer) have important roles essentially in phenomena of clairvoyance and psychokinesis, above studies can be interpreted as that circumstance around a healer can influence to the p-point and that information is transferred from the p-point to the central point.

#### 4.1.5 Anisotropy

In healing tests with authors' biophoton method, a control sample dish is set at 3 m distance in left-side of a healer usually, and there is few case that the control dish has been set in front of a healer. Exceptionally, healer M005 (male, 39 y), who claimed to be able to emit ki towards a far place, was tested on condition that a control sample dish was set at 3 m distance in front of him. He did non-contact healing for an experimental sample dish set at 15 cm in front of him, and showed  $J = 0.044$  ( $n = 4$ ) which was nearly equal to zero. However, when he changed his body's direction to slant direction like that ki never reach to the control dish, he showed a large  $J$  value ( $J = 0.174$ ,  $n = 8$ ). The authors considered that it was caused by his healing ways at that time. However, it may have been a typical occurrence caused by potential anisotropy.

#### 4.1.6 Reverse Areas of Potential

We have not known the existence of reverse areas of potential in the right-left direction, except the present study. Many issues are unknown yet, for example, is it a general phenomenon or a characteristic phenomenon of W003?

### 4-2 Healing Test

The healer was given instructions to increase the odor of the cucumber pieces (to increase gas concentration), but in fact, healing effects acted to decrease odor. Moreover, the absolute value of  $J$  was smaller than the  $J$  value (about  $J = 0.3$ ) in the authors' previous experiment<sup>17</sup>.

There is a possibility that W003 missed the control of the direction of healing effects because she was unfamiliar with cucumber tests. Usually, healers can obtain visual and verbal feedback information from their clients in their healing practices. Therefore they can adjust their healing ways based on feedback information. However, in the cucumber tests, it is difficult to obtain feedback information from cucumber pieces and healers sometimes miss the control of the direction of healing effects even if they are veterans<sup>14</sup>. In the present study, such miscontrolling occurred possibly.

W003 did not feel comfortable at the experimental room and her elder sister (W004) was absent at the present experiment. These are considered as reasons of smaller  $J$  value. In the pervious experiment<sup>17</sup>, W004 sat next to her and W004 did healing simultaneously with W003. W004 is also a strong psychic<sup>17,20-23</sup>, and it is said that W003 has a tendency to show good results if her elder sister W004 does experiments together with her. One of reasons of the present results may be because the present test was done by W003 alone.

## 5 CONCLUSION

Results obtained by a multiple-point measurement with the authors' gas measurement method suggested that a specific spatial distribution of potential, not a Coulomb potential, was generated around a healer, and that the potential had anisotropy between front-backward and left-rightward directions of the healer.

### Acknowledgements

The authors express special thanks to Mrs. Bing Wang. A part of the present study was supported by scientific program of Bial Foundation (Portugal).



## 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(2): 320-327, 2006.
- 2) Kokubo H, Yamamoto M and Kawano K.: Study of non-contact healing using biophotons. *Japanese Journal of Parapsychology*, 11(1&2): 21-28, 2006. [in Japanese]
- 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(1): 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(1): 40-62, 2007.
- 5) Kokubo H and Yamamoto M: Comparing non-contact healing with thermal and lighting conditions. *Thesis-The World Qigong Forum 2007*, pp.24-27, 2007.
- 6) 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(2): 219-232, 2007.
- 7) 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(1&2): 32-39, 2007. [in Japanese]
- 8) Kokubo H and Yamamoto M.: Research on emission mechanisms of biophotons from cucumber. *Journal of International Society of Life Information Science*, 26(1): 53-58, 2008.
- 9) Kokubo H: Biophotons reveal properties of non-contact healing – New perspective from quantitative index -. *Proceedings of 4th Psi Meeting*, Curitiba, Brazil, pp. 171-187, 2008.
- 10) Kokubo H and Yamamoto M: Quantitative measurements of non-contact healing using biophotons. *Proceedings of 51st Annual Convention of Parapsychological Association*, 348-351, 2008.
- 11) Kokubo H, Yamamoto M and Kawano K: Magnetic stimuli for pieces of cucumber -Quantitative measurement using biophotons-. *Journal of International Society of Life Information Science*, 26(2): 213-222, 2008.
- 12) Kokubo H, Yamamoto M and Kawano K: Kyuuri no baiofoton-hakkou ni ataeru jiki-sigeki to hi-sesshoku hi-ringu no eikyou (Magnetic and healing effects on biophotons from cucumber). *Journal of Japan Medical Conference on Magnetism*, 33: 19-24, 2008. [in Japanese]
- 13) Kokubo H and Yamamoto M: Electromagnetic stimuli for cucumber -Quantitative measurements using biophotons-. *Japanese Journal of Parapsychology*, 13(1&2): 27-35, 2008. [in Japanese with an English abstract]
- 14) Kokubo H and Yamamoto M: Wave Length and Photon Emission from Cucumber - Effects of 70GHz extremely high frequency (EHF) and non-contact healing. *Journal of International Society of Life Information Science*, 27(1): 78-89, 2009
- 15) Kokubo H and Yamamoto M: Controlled healing power and ways of non-contact healing. *Journal of International Society of Life Information Science*, 27(1): 90-105, 2009.
- 16) Kokubo H, Takagi O and Yamamoto M: Development of a gas measurement method with cucumber as a bio-sensor. *Journal of International Society of Life Information Science*, 27(2): 200-213, 2009.
- 17) Kokubo H, Takagi O and Koyama S: Application of a gas measurement method – Measurement of ki fields and non-contact healing-. *Journal of International Society of Life Information Science*, 28(1): 95-112, 2010.
- 18) Kokubo H and Takagi O: *Gasu Sokutei-hou no Jissai (How to Gas Measurement Method) – Textbook of Seminar*. International Research Institute: Chiba, 2010. [in Japanese]
- 19) Kokubo H, Koyama S and Takagi O: Relationship between biophotons and gases generated from cucumber pieces. *Journal of International Society of Life Information Science*, 28(1): 84-94, 2010.
- 20) Machi Y, Liu C, Wang C and Wang B: Physiological analysis for consciousness Power (Non-visible recognition and pill moving through glass bottle without any physical touch). *Journal of International Society of Life Information Science*, 20(2):345-372, 2002.
- 21) Machi Y: Physiological measurement of clairvoyance and psychic writing. *Journal of International Society of Life Information Science*, 14(2):206-216, 1996.
- 22) Kokubo H, Yamamoto M, Usui T and Yoichi H: Brain blood flow during psychokinesis tasks - Biophysical and psychophysiological study on a psychic. *Journal of International Society of Life Information Science*, 26(2): 223-246, 2008.
- 23) Sako Y and Homma S: Tousi no kanou-sei ni tuite (On a possibility of clairvoyance). *Journal of Mind-Body Science*, 5(1):57-65, 1996. [in Japanese]
- 24) Hasted J: *The Metal-benders*. London: Routledge, 1981.
- 25) Ogawa Y and Sasaki S: Some aspects of nen-field as paranormal phenomena in the darkened box during nen-graphy process - Analysis of wave form - Part 1, *Journal of Psi Science Institute of Japan*, 4(1): 2-9, 1979. [in Japanese with an English abstract]
- 26) Shao L, Zhao Z, Zhang L, Zhang M, Zhou Y et al: Quang cahnyu renti teyigongneng zuoyong de shiyan yanjiu (Experimental studies on human psi ability relating to light). in Somatic Information Research Group, Dept. of E.E., Fudan University ed.: *Renti Teyigongneng de Shiyan Yanjiu yu Youfa Xunlian (Experimental Research*

for *Human Psi Ability and Conducive Training*), pp.86-93, Shanghai: Fudan University Publisher, 1995. [in Chinese]

- 27) Shao L, Zhao Z and Fang L: Quang jianjie cahnyu renti teygongneng zuoyong de shiyan baogao (Report of experiments on human psi ability with indirect relationship of light). in Somatic Information Research Group, Dept. of E.E., Fudan University ed.: *Renti Teyigongneng de Shiyan Yanjiu yu Youfa Xunlian (Experimental Research for Human Psi Ability and Conducive Training)*, pp.94-100, Shanghai: Fudan University Publisher, 1995. [in Chinese]

#### Appendix

The authors' gas measurement method is used on biosynthesis of green odor of green plants. *Cucumis sativus* 'white spin type' is a horticultural vegetable in Japan. Therefore, there is no similar cucumber outside of Japan probably. However, biosynthesis of green odor is a common system of green plants, and almost all green plants have it. Brazilian cucumber also should be tested.

Products of Gastec can be purchased through an agent company in Rio de Janeiro. Contact address is shown below,

Hideo Nakayama Importacao Exportacao Comercia e Industria Ltda (Nakayama - Riken Keiki)  
Rua Pacheco Teles, 32 - Ramos Rio de Janeiro - RJ Cep 21.031-200  
Tel.: (21) 2590-3496/ 2590-3188/ 2270-6390  
<http://www.nakayama.com.br>  
[nakayama@nakayama.com.br](mailto:nakayama@nakayama.com.br)