Detailed Information to Supplement Slides

Paper #1 **"The Diagnosis and Therapy of EM Hypersensitivity"**

Paper #2 **"EM Fields in Health, in Therapies, as Hazards"**

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The following Notes, Graphs and Tables are intended as a supplement to what it will be possible to show during presentation of the above papers. The Tables contain much detailed material of value for future reference.

1. Some Definitions

Waves - Regular or periodic variations or pulsations in space and/or time; their shape is the waveform (e.g. sinusoidal, rectangular, triangular, pulse).

Frequency - The number of cycles of regular or periodic variations per second of some parameter. An oscillator is a generator of frequency.

Period - The time between two adjacent corresponding points on a waveform, the reciprocal of the frequency is the period.

Wavelength - The distance in space between two adjacent corresponding points on a waveform.

Amplitude - The maximum, zero-to-peak, value of the oscillating parameter. Amplitude squared is the intensity and is proportional to power. The root-mean-squared (r.m.s.) value is $1/\sqrt{2}$ of the peak value, it delivers the same power as a steady current or voltage having numerically the r.m.s. value.

Phase - The fraction of a complete cycle measured in degrees or radians (1 cycle = 360º or 2π radians).

Velocity of a wave Velocity equals frequency times wavelength (metres/sec = cycles/sec × metres/cycle).

Coherence - An expression of the degree of constancy of phase, as for example between two oscillators or waves of nominally the same frequency, a measure of the extent to which perfect coherence is achieved in a practical situation.

Coherence Length - The distance over which the coherence is maintained.

Coherence Time - The time for which the coherence persists.

Electric Charges and Electromagnetic Waves

Electrostatics describes the properties of electric charges (e.g. electrons or ions) at rest. These charges arise from the structure of matter and the chemical bonds by which matter is condensed from gas to form a solid or liquid. The force on a given charge due to other nearby charges is the measure of the *electric field* in which it is situated. The work done by this force if the charge moves is its *electric potential*. Magnetic fields have an analogous set of parameters, they occur when electric charge is in steady motion. If electric charge is accelerated or decelerated, the changes in the associated fields travel out into space at the velocity of light, this is *electromagnetic radiation*. If these changes are periodic at some frequency, a wave of oscillations at this frequency travels out into space with the separation between cycles being the *wavelength*.

Energy in an Electromagnetic Wave

The energy per unit volume of the space occupied by electric and magnetic fields is proportional to the square of the field strength. The power density is that power (energy/sec) crossing one square metre, it is called the "Poynting Vector" and is proportional to the product of the electric and magnetic fields. This applies to most technological oscillations, and it is these electric and magnetic fields which give rise to mechanical effects (electric motor) and thermal effects (electric kettle, microwave cooker). There is a critical volume of a field above which it will contain enough energy to overcome thermal perturbations and create a stable situation.

"Quantum Effects"

Heisenberg's Uncertainty Principle - Just as any material object cannot be sub-divided indefinitely since one must eventually come to its constituent molecules and atoms, energy ultimately is packaged into so-called quanta. For a single quantum of energy, the product of its position and momentum or, the product of its energy and time, both have a fundamental uncertainty associated with them. These products must be at least be equal to Planck's Constant ($h = 6.6 \times 10^{-34}$ joule-sec) divided by 4π. They can only be determined with limited accuracy. The quantum can be in more than one place or energy state at the same time! It has a certain probability associated with being found in each condition. This representation of time and position unites and constrains microscopic and macroscopic phenomena within the limits of the *uncertainty* and opens a vista of novel and unexpected effects in coherent systems.

These effects involve small probabilities which may only become significant if the frequency is very high, the distances are very small, or perturbing random fields from thermal vibrations are made very weak by extreme cooling. The energy of the quantum is proportional to its frequency (energy = frequency × Planck's constant). If a system is sensitive to a single quantum of energy, then it may also be sensitive to a single quantum of magnetic

flux (approx. 2 x 10^{-15} Wb) and also to the magnetic vector potential component of the magnetic field (which cannot be shielded by iron), and have the 'Josephson Effect' available; this offers the possibility of frequency/voltage inter-conversion at 500 MHz/μV. All these can give rise to so-called "non-thermal" effects.

2. Summary of Research

Since 1974 – The writer has been involved since 1974 in research on the 'Interactions of Electromagnetic Fields with Bio-Materials and Living Systems'. He cooperated in this with the late Professor Herbert Fröhlich. An early conclusion of this work was that there were anomalous magnetic field effects in water and living biological systems and that these were only explicable in terms of coherence phenomena.

Since 1982 The writer first became involved in the diagnosis and therapy of patients 'Hypersensitive to their Electromagnetic Environment' in 1982 at the request of Dr. Jean Monro. Work with her electrically hypersensitive patients and those of Dr. W.J. Rea has given an insight into the extremes of sensitivity of which living systems are capable as evidenced when their regulatory control mechanisms fail.

Electromagnetic Hypersensitivity

These patients have a history of existing hypersensitivity to many chemicals, and/or foods and particulates. The autonomic nervous system appears to be the first body system to become involved. Patients may react within seconds to something in their environment, they can readily distinguish *verum* from *placebo*. The frequency and its coherence (precision) is the clinically important parameter. There is a threshold for the intensity or amplitude of the field at the patient for the onset of any effects but, once this is exceeded its value usually matters little until the onset of thermal effects; it is the frequency which is important. The effects of frequencies are unique to each individual. Some frequencies are therapeutic and these usually alternate with stressful frequencies. This alternation of the stimulatory-depressive effect of frequencies is a general phenomenon with few exceptions. The clinically effective frequencies range from below 1 milliHertz (1000 sec/cycle) to far above 1 GigaHertz (10^9 Hz). Identical reactions can be triggered in a patient by chemical means and neutralised electrically, or triggered electrically and neutralised chemically. The clinical effects of environmental frequencies or chemicals can be reproduced by water contained in sealed glass ampoules after its exposure to coherent frequencies of an alternating magnetic field ***without any chemical contact.*** The unexposed water produces no clinical effects.

Chemical toxicity in these patients and also in cells cultured *in vitro* is manifest through the appearance of the chemicals' frequency signatures in the living systems. It has been possible to re-program the frequency imprints of a cell culture and have these frequencies transmitted correctly to cultured daughter cells which demonstrates that lasting effects are possible with allergen dilution and homoeopathic therapy. The presence of frequencies which fluctuate to a limited extent over time is a sign of a normal healthy biological system. Chemical contamination restricts this activity by imprinting a chemical signature frequency. After a patient has been chemically detoxified, a "memory" of the toxin may remain in the body and this needs to be removed electrically or homoeopathically.

3. "Water Memory"

Clinically significant information can be imprinted into a vial of water by succussion in contact with a chemical or a homoeopathic "mother tincture". It is this *succussion* or sharp banging process of homoeopathic remedy preparation that creates a *potency*. Information from the patient can be collected likewise if the patient holds and succusses a vial of water. This then contains an imprint of body frequencies and can then be wrapped in aluminium foil and mailed away for measurement. The information thus imprinted in water and homoeopathic potencies appears to be retained indefinitely unless it is heated to >70°C or, the geomagnetic field (nominally 50μT) is reduced by magnetic steel shielding to a little less than 400 nT. An "Erased" potency is a useful "Control" or "Placebo" since it is chemically still the same material.

In general, water is like a blank sheet of paper, it can take up many frequencies successively imprinted by succussion. However, certain imprinting methods will only imprint a single frequency and erase all previous imprints in the process (winner-takes-all!).

3.1 Techniques for Writing Frequencies into Water

Contact through the glass of a vial of water immersed in a liquid containing the required frequencies; the high frequencies potentise quickly, the low frequencies may take hours or even days to imprint.

Proximity to a source of the frequencies (e.g. a chemical, "mother tincture", or potency) and mechanical succussion or, the application of a magnetic field from a strong permanent magnet will imprint the frequencies into the water. Each successive dilution and succussion of a potency will in general introduce more frequencies.

Toroid Placing a ferrite (magnetic ceramic) toroid between the source of frequencies and the water will expose it to the frequencies with their stimulatory and depressive effects interchanged. Using a second toroid gives a second reversal and hence makes an exact copy of the frequencies. The water can be succussed to effect an imprint but, strangely enough this will also happen if a toroid is succussed. There is something going on in time and space which is not understood.

Electric Pulses A sequence of 7-unidirectional electric pulses will copy a potency to a water ampoule inside a metal beaker. Reversing the polarity of the pulses reverses the phase of the effect. Because of the need for the beaker, this seems to be an electric potential effect rather than an electric field effect since an experiment using the very high electric field at a sharp metal point did not imprint water.

Magnetic Fields This requires an alternating current in a coil at the required frequency giving sufficient alternating magnetic field. If a toroidal coil is used, an additional magnetic field or succussion is also required. The toroid contains the magnetic field within itself but

radiates the magnetic vector potential which may appear as a change in chemical potential in the wave function.

Windows for Imprinting There seem to be some very narrow windows of electric and magnetic field and radiation through which the frequency of an alternating field of that field strength is imprinted into water with a latency period of about 5 seconds while at the same time erasing all previous imprints.

3.2 Techniques for Reading a Water Imprint

This presents a very great measurement problem because the coherent frequencies in living systems may be anywhere in the spectrum from below milliHertz to beyond GigaHertz and do not seem to be classical electric or magnetic fields but rather quantum fields which for instrument measurement must be converted to the former. Presently available techniques include:

1. Homoeopathic "Proving-Symptoms" and clinical results for electrically sensitive patients.

2. Dowsing (radiesthesia) detection of resonances in water, allergen dilutions and homoeopathic potencies excited by a coherent alternating magnetic field or vector potential. Imprinted frequencies are correctly detected. Characteristic coherent frequency signatures can be measured in most chemicals containing traces of water. These disappear after thorough drying but return when traces of water are added. No chemical signatures were found in the case of 100% halogen saturated molecules which have no H-bonds available to couple to the water.

3. Electrodes immersed in frequency imprinted water and connected to the input of a very sensitive, low-noise and narrow band amplifier can be made to detect the imprinted frequencies in the kilohertz region when the water is excited by that frequency. This technique is very difficult to implement consistently although imprinted frequencies have been correctly detected. The possible physical mechanism is one whereby charges entering coherent water domains must do so as pairs; this depletes the charge density at the water/electrode interface resulting in an increased electrical resistance which in turn is converted to an input voltage by the small input current of the head amplifier.

4. Coherent Frequencies and Hypersensitive Patients

In 1982, the possibility of producing a clinical effect from previously inactive water (or saline or alcohol) in a sealed glass ampoule by exposing it to an external magnetic field of a patient specific frequency was the first direct evidence that the scientific basis of homoeopathy must be sought in physics and not through chemistry.

In one case, involving an electrically hypersensitive patient, the frequencies of a prescribed homoeopathic potency were exactly those frequencies which the writer had independently found the patient needed to have stimulated. In this case, the patient needed stimulation at: 1.5 Hz, 5.6 Hz and 1.6 kHz. The homoeopathic potency Calc. Carb. 10M had been prescribed by a homoeopath. Measurements showed that only the 10M potency of Calc. Carb. contained exactly these frequencies.

As another example, the following Table 4.1 shows the coherent frequencies imprinted into water by a patient having problems with *Candida albicans.* The frequencies of *Candida albicans* in serial dilutions #2, #3, and #4 (made as fivefold dilutions [1+4] by syringe) are compared. It is seen that only #3 contains frequencies that the patient needed to have stimulated and this was the clinically acceptable dilution.

Table 4.1 Coherent Frequencies and *Candida albicans* Dilutions

Frequencies are in Hz and the dilution # were made fivefold (1+4) by syringe

Patient Imprinted Frequencies	Serial Dilutions of *Candida albicans*		
	#2	#3	#4
0.13		**0.13**	0.14
0.17			
0.23		**0.23**	
0.35	0.32		
0.56	*0.52*		
0.62	0.62	**0.62**	0.62
0.71		**0.71**	
0.76			0.75
0.86			
0.94	0.92		
0.99		**0.99**	0.99
1.1			
3.7			
3.4			
4.3			
4.7		**4.7**	
5.3			
6.2		**6.2**	
6.4			
6.6	6.6		6.9
7.6			
7.9		**7.9**	7.8
8.2			*8.4*
8.8			
9.3			
9.9			
10.4		**10.4**	
22			

32
46
52
63

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5. Coherent Frequencies in Acupuncture

5.1 Endogenous Coherent Frequencies on Chakras and Acupuncture Points

The acupuncture meridians are envisaged as communication paths or lines along which there are coherent endogenous frequencies. These are postulated to originate from coherence established as the organism develops from the embryo where the ectoderm, endoderm and mesoderm are in close proximity. Meridians of coherence could persist and grow as the organism develops until they link the acupuncture points to the target organs in the mature organism.

Frequency is the common factor linking acupuncture and homoeopathy. It was first observed that certain specific and highly coherent frequencies would stimulate the chakras; these are listed in Table 5.1.

Table 5.1 Range of Frequencies Stimulating Chakras

Chakras		Hz	to	Hz	Hz	± Hz
Top of Head	Sahasrara	0.245	-	0.265	12.3M	± 0.2 M
Forehead	Ajna	2.88	-	3.04	148M	± 2 M
Thyroid	Vishudda	79.9	-	82.4	3.9G	± 0.1 G
Heart	Anahata	7.68	-	7.92	384M	± 2 M
Umbilical	Manipura	21.8	-	24.4	1.13G	± 0.01 G
Pubic	Svadhisthana	79.9	-	82.4	3.9G	± 0.1 G
Base of Spine (coccyx)	Maladhara	79.9	-	82.4	3.9G	± 0.1 G

Mean High Band/Low Band Frequency Ratio: 48.76 ±0.74 x10E6 (±1.5%)

Mean Low Band Sensitivity Window: 2.5 ± 1.8 %
Mean High Band Sensitivity Window: 1.7 ± 0.9 %

The Ting acupuncture points on the hands and feet as used in electroacupuncture are listed in Table 5.2. The frequencies which stimulate these points were measured on the writer, by the

writer and are listed in Table 5.3. Closely similar endogenous frequencies seem to be present on these acupuncture points, and these are also listed for comparison with the stimulating frequencies. Table 5.4 compares the frequencies on the all the Ting points for two persons. The statistics of these four Tables are more like those expected of physics than biology or medicine.

5.2 Frequencies at other Acupuncture Points

There are meridians which do not terminate at the Ting points on the nail beds of the fingers and toes. The Pericardium (Pe) channel terminates at the tip of the middle finger (Pe9). The Du Mai (Governing Vessel – GV) and Ren Mai (Ren) channels do not correspond directly to any internal organ. The following frequencies have been measured on these meridians.

Pe 9	0.25 Hz and 13.4 MHz
GV14	4.3 Hz and 149 MHz
Ren24	14.3 Hz and 730 MHz (synchronises: 11.4-17.6 Hz, 590-920 MHz; entrains: 7.9-18.6 Hz, 460-1070 MHz).

5.3.1 Entrainment of Environmental Frequencies

There is a surprising degree of interaction with external frequencies. Although the bandwidth on a meridian is only about ±2% of its mean frequency the latter can be 'entrained' or 'pulled' by an external oscillation such as from an electrical oscillator or environmental source of radiation such as a computer, TV, mobile phone, etc. This entrainment may be up to ± 30% before the acupuncture point frequency jumps back to its normal endogenous value. Table 5.5 shows this entrainment at the heart acupuncture meridian (He9) for which the endogenous frequencies were 7.768 Hz and 382 MHz. It should be noted that the 7.8 Hz endogenous frequency of the heart chakra and acupuncture point He9 is exactly 6-times the heart-beat frequency 78/min; integer relationships do not occur by accident in a quantum system.

For Table 5.5, the subject was exposed to the high frequency band only by sitting in front of the output loop of a microwave oscillator for 3 minutes after which the frequencies on acupuncture point He9 were immediately imprinted into water and measured. The microwave power density at the subject was estimated to be of the order of mW/m^2. The frequency measurements took about 5 minutes following the exposure by which time the acupuncture point frequency had reverted to the unexposed value. Table 5.5 shows that at 260 MHz and at 500 MHz there was no entrainment. From 270 MHz to 480 MHz, the frequencies measured on He9 had entrained to the exposure frequency and the low band frequencies had also shifted in proportion.

Table 5.6 lists the ranges of entrainment for the high and low frequency bands at all the Ting acupuncture points. The frequencies on the St45 points differed by a factor of about ten between the left and right foot. This unexplained effect is also to be seen in the other Tables.

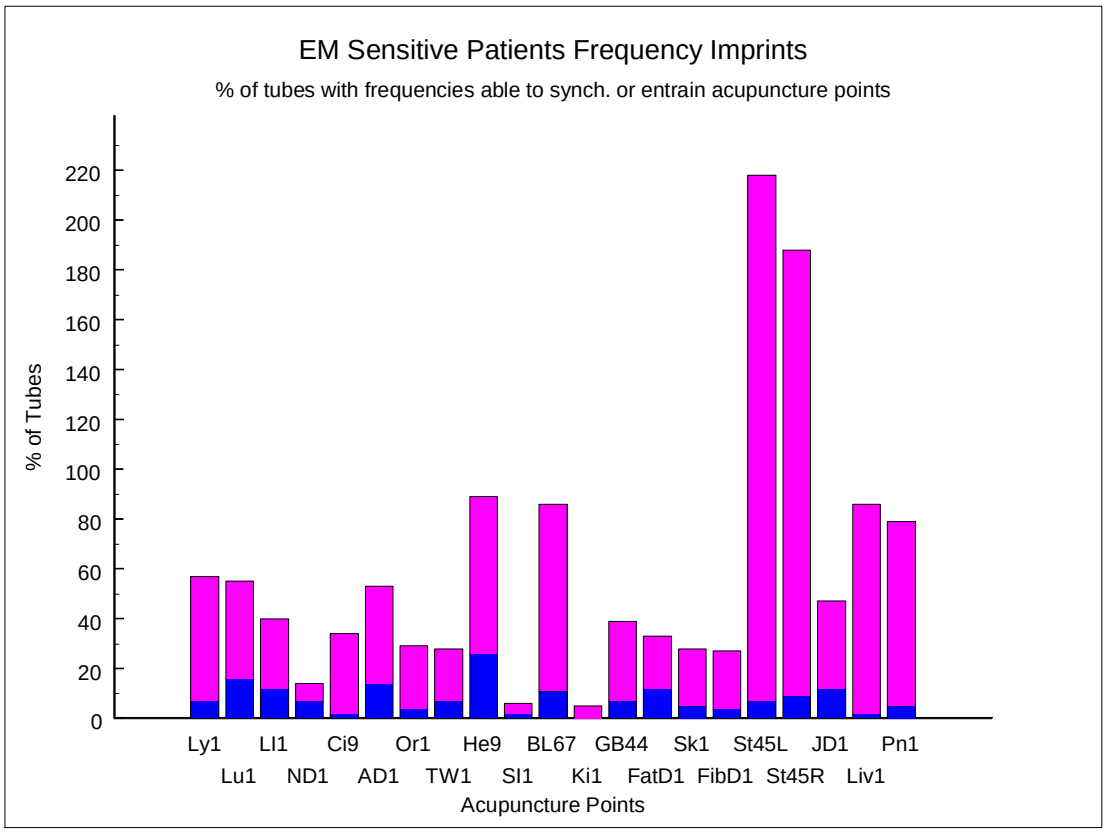

Figure 5.1
(entrainment – red/grey; synchronisation – blue/black)

Figure 5.1 summarises the frequency imprinting by 12 electrically hypersensitive patients who during the course of their therapy had imprinted a total of 57 tubes of water with a total of 726 frequencies. Of these, 167 would have been capable of synchronisation at a Ting acupuncture point, and 655 would have been capable of entrainment. Many tubes had more than one frequency capable of entraining at St45, hence the >100% values. There were only 49/726 frequencies outside any entrainment range.

The 10 patients who lived in the EU imprinted 19/54 tubes with 50.00 Hz, the power supply frequency. The two patients who lived in N. America imprinted 3/5 tubes with their 60.00 Hz power supply frequency and nothing at 50.00 Hz. It appears that power supply frequency entrainment is quite common among such patients.

These results show that water imprinted by holding and succussing a tube gives a very good coverage of the Ting meridians and indicates which are under stress and which need stimulation.

5.3.2 Frequency Entrainment at the Du Mai Meridian - GV14

The acupuncture point GV14 is at the back of the neck, below the spinous process of the vertebra prominens. It reflects the status of the cerebro-spinal fluid and appears to be very sensitive to environmental frequencies. The natural or endogenous frequencies measured at GV14 were 4.301 Hz and 148.5 MHz. However, the range of frequency entrainment is enormous. Entrainment of the high frequency band extends downwards from 140 MHz to 10 Hz. The entrainment stops just before the lower endogenous frequency band is reached at 4.3 Hz. This forces the lower frequency band down from 4.080 Hz to 0.1760 mHz. Entrainment persists at least to the highest frequency tested namely 2 GHz [now tested up to 4.2 GHz - Sept 2000], when the low frequency band has moved to 10.65 Hz. It was confirmed that GV14 would entrain mobile phone frequencies from an actual handset. However, GV14 will only entrain a single frequency; if two frequencies are presented by the environment, only the stronger signal is entrained (suggesting that a Bose Condensation is involved in the entrainment process whereby all the Fröhlich modes condense to a single giant mode).

Table 5.7 lists the frequencies measured in the vicinity of a TV and computer (486DX, with 33MHz clock frequency). Those Ting acupuncture points which could be entrained by these frequencies are also listed. Whichever of all these frequencies was the strongest would have been entrained by GV14.

Table 5.2 Ting Acupuncture Points (after Voll)

These points are located on the skin at either corner of the nail bed

Hands	Target Organs	Acupuncture Point
Thumb		
Outside	Lymphatic tissue, Lungs	Ly1
Inside	Lungs	Lu1
Index Finger		
Outside	Large intestine	LI1
Inside	Nerve degeneration	ND1
3rd. Finger		
Outside	Circulation, Pericardium	Ci9
Inside	Allergy	AD1
4th. Finger		
Inside	Organ degeneration	Or1
Outside	Triple Warmer, Endocrine	TW1
Little Finger		
Inside	Heart	He9
Outside	Small intestine	SI1
Points on Feet		
Big Toe		
Inside	Spleen, Pancreas	Pn1
Outside	Liver	Liv1
2nd. Toe		
Inside	Joint degeneration	JD1
Outside	Stomach	St45
3rd. Toe		
Inside	Fibroid degeneration	FibD1
Outside	Skin degeneration	Sk1
4th. Toe		
Inside	Fatty degeneration	FatD1
Outside	Gall bladder	GB44
Little toe		
Inside	Kidney	Ki1
Outside	Bladder (urinary)	BL67

Table 5.3 Comparison of Stimulating and Measured Frequencies

Acupuncture Points		Stimulating Frequencies		Measured Frequencies	
	Hands	Hz	Hz	Hz	Hz
Lymphatic tissue, Lungs	Ly1	6.00E-02	2.95E+06	6.071E-02	2.920E+06
Lungs	Lu1	4.80E-01	2.36E+07	4.680E-01	2.120E+07
Large intestine	LI1	5.50E-02	2.70E+06	5.550E-02	2.750E+06
Nerve degeneration	ND1	5.50E-04	2.70E+04	5.524E-04	2.758E+04
Circulation, Pericardium	Ci9	5.00E-02	2.46E+06	5.230E-02	2.480E+06
Allergy	AD1	2.00E+00	9.84E+07	2.050E+00	9.400E+07
Organ degeneration	Or1	7.80E-02	3.85E+06	7.625E-02	3.800E+06
Triple Warmer, Endocrine	TW1	6.00E+03	* 2.95E+11	6.020E+03	>>
Heart	He9	7.80E+00	3.84E+08	7.770E+00	3.830E+08
Small intestine	SI1	2.50E-02	1.23E+06	2.507E-02	1.220E+06
	Feet				
Bladder (urinary)	BL67	5.50E+00	2.71E+08	5.538E+00	2.700E+08
Kidney	Ki1	9.50E-04	4.67E+04	9.502E-04	4.701E+04
Gall bladder	GB44	5.00E-02	2.46E+06	5.104E-02	2.430E+06
Fatty degeneration	FatD1	7.40E-01	3.64E+07	7.450E-01	3.620E+07
Skin degeneration	Sk1	3.50E-03	1.72E+05	3.582E-03	1.730E+05
Fibroid degeneration	FibD1	8.00E+02	** 3.94E+10	8.103E+02	>>
Stomach (right foot)	St45	4.40E-02	2.16E+07	4.425E-02	2.220E+07
Stomach (left foot)	St45	4.40E-01	2.20E+06	4.454E-01	2.250E+06
Joint degeneration	JD1	3.00E-01	1.48E+07	2.824E-01	1.450E+07
Liver	Liv1	4.80E+00	2.36E+08	4.648E+00	2.250E+08
Spleen, Pancreas	Pn1	5.50E-02	2.70E+06	5.606E-02	2.760E+06
Mean High Band/Low Band Frequency Ratio:		49.185 ±0.075 x10E6 (±0.15%)		48.61 ±1.47 x10E6 (±3.0%)	

* Frequency calculated from wavelength of stimulating resonator = 1.02 mm
** Frequency calculated from wavelength of stimulating resonator = 7.6 mm

Coefficient of Correlation Stimulated to Measured, Low Band: 0.99999920
Coefficient of Correlation Stimulated to Measured, High Band: 0.99977634

Table 5.4 Comparison of two persons' acupuncture points frequencies

Person		CWS	EDS	CWS	EDS
Meridian	Hands	Hz	Hz	Hz	Hz
Lymphatic tissue, Lungs	Ly1	6.071E-02	5.831E-02	2.920E+06	2.700E+06
Lungs	Lu1	4.680E-01	4.246E-01	2.120E+07	1.820E+07
Large intestine	LI1	5.550E-02	5.204E-02	2.750E+06	2.450E+06
Nerve degeneration	ND1	5.524E-04	5.272E-04	2.758E+04	2.400E+04
Circulation, pericardium	Ci9	5.230E-02	5.302E-02	2.480E+06	2.650E+06
Allergy	AD1	2.050E+00	1.972E+00	9.400E+07	9.200E+07
Organ degeneration	Or1	7.625E-02	7.303E-02	3.800E+06	3.600E+06
Triple Warmer, endocrine	TW1	6.020E+03	5.872E+03	>>	>>
Heart	He9	7.770E+00	7.705E+00	3.830E+08	3.740E+08
Small intestine	SI1	2.507E-02	2.442E-02	1.220E+06	9.900E+05
	Feet				
Bladder (urinary)	BL67	5.538E+00	5.330E+00	2.700E+08	2.570E+08
Kidney	Ki1	9.502E-04	9.205E-04	4.701E+04	4.565E+04
Gall Bladder	GB44	5.104E-02	4.950E-02	2.430E+06	2.040E+06
Fatty Degeneration	FatD1	7.450E-01	7.504E-01	3.620E+07	3.700E+07
Skin Degeneration	Sk1	3.582E-03	3.603E-03	1.730E+05	1.800E+05
Fibroid Degeneration	FibD1	8.103E+02	8.020E+02	>>	>>
Stomach (right foot)	St45	4.454E-02	4.302E-02	2.220E+07	2.020E+07
Stomach (left foot)	St45	4.454E-01	4.412E-01	2.250E+06	2.100E+06
Joint Degeneration	JD1	2.824E-01	2.543E-01	1.450E+07	1.340E+07
Liver	Liv1	4.648E+00	4.410E+00	2.250E+08	2.170E+08
Spleen, Pancreas	Pn1	5.606E-02	5.520E-02	2.760E+06	2.530E+06

CWS: Mean High Band/Low Band Frequency Ratio: 48.54 ±1.46 x10E6 (±3.0%)
EDS: Mean High Band/Low Band Frequency Ratio: 47.22 ±3.28 x10E6 (±6.9%)
CWS/EDS Low Band Correlation Coefficient: 0.99999806
CWS/EDS High Band Correlation Coefficient: 0.99989970

Table 5.5 Effect of Environmental Exposure on Frequencies at Heart Meridian He9

Exposure Frequency Hz	He9 Low Frequency Hz	He9 High Frequency Hz
None	7.768E+00	3.820E+08
2.600E+08	7.718E+00	3.820E+08
2.700E+08	5.245E+00	**2.700E+08**
3.700E+08	7.652E+00	**3.700E+08**
3.900E+08	7.864E+00	**3.900E+08**
4.000E+08	7.933E+00	**4.000E+08**
4.500E+08	9.830E+00	**4.500E+08**
4.800E+08	9.657E+00	**4.800E+08**
5.000E+08	7.660E+00	3.820E+08

Table 5.6 Range of Frequency Synchronisation at Acupuncture Points

Acupuncture Points	Synchronising Frequency Ranges			
	Low Band		High Band	
Hands	Hz	to Hz	Hz	to Hz
Lymphatic tissue, Lungs,Ly1	5.80E-02	6.60E-02	2.85E+06	3.15E+06
Lungs, Lu1	4.20E-01	5.30E-01	2.20E+07	2.40E+07
Large intestine, LI1	5.10E-02	6.80E-02	2.50E+06	2.90E+06
Nerve degeneration, ND1	4.90E-04	5.20E-04	2.50E+04	2.90E+04
Circulation, Pericardium, Ci9	4.90E-02	5.30E-02	2.33E+06	2.60E+06
Allergy, AD1	1.90E+00	2.40E+00	9.40E+07	1.03E+08
Organ degeneration, Or1	7.60E-02	7.90E-02	3.60E+06	4.05E+06
Triple Warmer, Endocrine, TW1	5.70E+03	6.40E+03	>>	>>
Heart, He9	7.40E+00	8.20E+00	3.75E+08	3.95E+08
Small intestine, SI1	2.20E-03	2.70E-02	1.15E+06	1.29E+06
Feet				
Bladder (urinary), BL67	5.30E+00	5.80E+00	2.65E+08	2.75E+08
Kidney, Ki1	9.30E-04	9.80E-04	4.20E+04	5.00E+04
Gall bladder, GB44	4.60E-02	5.70E-02	2.33E+06	2.70E+06
Fatty degeneration, FatD1	7.30E-01	7.80E-01	3.45E+07	3.80E+07
Skin degeneration, Sk1	3.20E-03	3.60E-03	1.72E+05	1.90E+05
Fibroid degeneration, FibD1	7.80E+02	8.20E+02	>>	>>
Stomach (right foot), St45	4.20E-02	4.70E-02	2.02E+07	2.24E+07
Stomach (left foot), St45	4.30E-01	4.70E-01	2.00E+06	2.20E+06
Joint degeneration, JD1	2.80E-01	3.30E-01	1.40E+07	1.55E+07
Liver, Liv1	4.50E+00	5.20E+00	2.30E+08	2.40E+08
Spleen, Pancreas, Pn1	5.20E-02	5.50E-02	2.60E+06	2.85E+06

Frequencies represent the limits between which an acupuncture point can become synchronised to an external oscillator.

Table 5.7 Range of Frequency Entrainment at Acupuncture Points

Acupuncture Points		Entraining Frequency Ranges		Entraining Frequency Ranges	
	Hands	Hz to	Hz	Hz to	Hz
Lymphatic tissue, Lungs	Ly1	3.20E-02	8.50E-02	2.30E+06	3.70E+06
Lungs	Lu1	2.50E-01	7.50E-01	1.40E+07	3.30E+07
Large intestine	LI1	3.80E-02	7.00E-02	1.85E+06	3.60E+06
Nerve degeneration	ND1	4.20E-04	7.00E-04	8.00E+03	6.60E+04
Circulation, Pericardium	Ci9	3.20E-02	7.20E-02	1.30E+06	3.40E+06
Allergy	AD1	8.00E-01	3.80E+00	6.40E+07	1.58E+08
Organ degeneration	Or1	5.50E-02	1.50E-01	2.85E+06	5.50E+06
Triple Warmer, Endocrine	TW1	2.20E+03	1.50E+04	>>	>>
Heart	He9	4.50E+00	1.20E+01	2.60E+08	5.00E+08
Small intestine	SI1	5.00E-03	6.00E-02	7.90E+05	1.78E+06
	Feet				
Bladder (urinary)	BL67	3.00E+00	8.50E+00	1.20E+08	3.65E+08
Kidney	Ki1	7.40E-04	1.20E-03	1.80E+04	8.20E+04
Gall bladder	GB44	3.00E-02	7.00E-02	1.25E+06	5.00E+06
Fatty degeneration	FatD1	6.00E-01	9.00E-01	2.20E+07	6.00E+07
Skin degeneration	Sk1	2.00E-03	5.00E-03	6.50E+04	3.30E+05
Fibroid degeneration	FibD1	6.50E+02	9.50E+02	>>	>>
Stomach (right foot)	St45	1.00E-03	8.00E-01	1.00E+06	1.05E+08
Stomach (left foot)	St45	1.00E-02	1.50E+01	1.00E+05	2.65E+07
Joint degeneration	JD1	1.50E-01	4.50E-01	1.00E+07	2.00E+07
Liver	Liv1	1.50E+00	9.00E+00	1.50E+08	3.00E+08
Spleen, Pancreas	Pn1	1.00E-02	1.50E-01	1.56E+06	4.00E+07

Frequencies represent the limits of entrainment possible once an acupuncture point has been synchronized to an external oscillator.

Table 5.8 Computer & TV Frequencies Capable of Stimulating Acupuncture Points

Computer Frequencies Hz	UK TV Frequencies Hz	Acupuncture Points Stimulated
	2.50E+01	
5.00E+01	5.00E+01	
7.00E+01	7.50E+01	
1.00E+02	1.00E+02	
1.50E+02		
2.00E+02		
2.50E+02		
3.00E+02		
3.50E+02		
4.00E+02		
4.50E+02		
5.00E+02		FibD1
1.85E+03		
6.00E+03		TW1
1.20E+04		
1.80E+04	1.60E+04	
1.00E+05		
1.50E+05		Sk1
2.25E+05		
3.00E+05	3.20E+04	ND1, Ki1
4.50E+05		
5.00E+05		
6.00E+05		
1.00E+06		SI1
1.50E+06		
2.00E+06		
2.50E+06		LI1, Ci1, GB1, Pn1
3.00E+06		Ly1
3.50E+06		Or1
4.00E+06	5.00E+06	Or1
1.00E+07		JD1
2.00E+07	2.25E+07	St45, Lu1, JD1
2.50E+07		Lu1
3.00E+07		
3.30E+07	4.50E+07	FatD1
6.60E+07		

Table 5.9 Effect of Chemical Signatures on Acupuncture Points

Acupuncture Point	Initial Freq. of A/Pt.	Freq. of NaCl	Freq. Holding NaCl	Freq. Holding "Hidden" NaCl	Freq. Holding "Recovered" NaCl
(1)	(2) MHz	(3) MHz	(4) MHz	(5) MHz	(6) MHz
SI1, small intestine	1.23	1.24	1.24	1.23	1.24
Or1, organ degeneration	3.80	5.1	5.1	3.85	5.1
FatD1,fatty degeneration	36.5	40	40	36.5	40

5.4 Entrainment of Frequency Signatures of Chemicals

The frequency signatures of chemicals in contact with the body are as effective in producing frequency entrainment at an acupuncture point as those from an external oscillator should they happen to come within the entrainment range. Holding a glass bottle containing a chemical for just one minute is sufficient to entrain an acupuncture point from a nearby frequency to that of the chemical; it takes about 10 minutes for the point to relax back to its endogenous frequency.

The writer's personal sensitivity threshold for detecting the chemical frequency signature of sodium chloride as its solution is successively diluted comes at a concentration of about 0.3 ppm by weight using the dowsing method of measurement.

The first column of Table 5.9 lists the acupuncture points within the entrainment range of the chemical frequency signatures of sodium chloride as listed in the third column. The second column lists the endogenous frequencies at those acupuncture points. When holding a tube containing sodium chloride solution the frequencies on these meridians entrained to those for sodium chloride as shown in the fourth column.

It is possible to "hide" the chemical frequency signature of a dilute solution so that it no longer entrains (Column 5). This is done by succussing it on one side (depending on the relative direction of the geomagnetic field) of an oscillator output coil at a particular frequency. One such frequency having this property is 1.42 GHz, this is the 21cm resonance of the hydrogen molecule. Succussion at the other side of the coil "recovers" the frequency signature and entrainment effects return (Column 6). Since this effect only happens with dilute solutions, it is possible that the sodium chloride molecules move inside the coherence domains where they would be screened from external fields.

Similar entrainment effects are to be found in cell cultures prepared in the presence of toxic environmental chemicals.

6. Changes in the Peripheral T-Lymphocyte Cell Cycle Induced by Chemical and Electrical Challenges and Frequency Re-Programming of Connective Tissue

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This work is a result of collaboration at the Environmental Health Center, Dallas, Texas, where one of the ongoing research programs is concerned with the development of a laboratory technique to correlate the clinical diagnoses of organo-chemical toxication in patients with the progress and outcome of the treatment programs for these environmentally induced illnesses.

In this work, the pattern of occcupancy of the various phases of the normal cell cycle for peripheral T-lymphocytes is determined through flow-cytometry measurements. The effect on this pattern of challenge with common organo-chemicals is to interrupt the ordered and orderly progression of the cell cycle by entrainment of cell frequencies from their normal pattern of fluctuation and synchronizing them to coherent electrical or chemical signature frequencies.

This developmental technique uses *in vitro* cultured peripheral T-lymphocytes from blood taken by vena puncture from the patients. The cell cycles are observed using a flow cytometer. The normal cell cycle profile is compared with that obtained following incubation in the presence of one of the organo-chemicals under investigation usually at a concentration of 400 ppm or in the presence of water imprinted with the frequency spectrum of a corresponding chemical.

6.1 Normal Frequency Activity of T-lymphocytes

Table 6.1 shows the way the typical frequency pattern of the normal T-lymphocytes varies with time. These cells were separated from the blood of a healthy person and cultured according to the protocol described above. The quasi-periodic variations in the frequencies seen here are typical of a normal healthy living system, whether a single cell such as *Acetabularia*, or the human cell complex.

6.2 Frequency Characteristics of some Environmental Organo-Chemicals

Table 6.2 shows the frequency signatures measured for some common environmental chemicals which were investigated for these tests on the T-lymphocyte cultures. Table 6.3 lists the frequencies measured for the *in vitro* cultures of T-lymphocytes challenged with the organo-chemicals by incubation at the concentrations shown. The cell profiles were subsequently measured by flow-cytometry.

6.3 Frequency Entrainment by Environmental Organo-Chemicals

Comparison of Tables 6.2 and 6.3 shows that certain frequencies in the patterns for these challenged T-lymphocytes which are no longer free to fluctuate have become entrained by some of the frequencies of the corresponding to the challenging chemical. These frequencies are shown underlined in Table 6.3. This entrainment restricts the typical normal frequency fluctuation pattern as shown in Table 6.1 This is also the effect that a "depressing" electrical frequency has on a living system and it represents a biological stress. The number of degrees of freedom available to the living system to react to its environment are correspondingly reduced.

In respect of the Trichloroethylene challenge, two separate T-lymphocyte cultures taken from different patients were available. From these, the entrainment effect is very clearly demonstrated where the underlined frequencies for each culture are exactly those found for trichloroethylene while the other frequencies show the expected biological variability.

All the organo-chemicals tested were found to modify the normal cell cycle profile of T-lymphocytes. Therefore, it must be concluded that these incitants which are capable of interrupting the ordered and orderly progression of the cell cycle are futhermore capable of:

1. The destruction of specific proteins (cyclines) and enzymes (CDK's)

2. The prevention of apoptosis from taking place with the result that wrong translations are made from the DNA and wrong signals are sent for the control of cell progression.

3. The compromise of the immune system leading to multiple manifestations including cancer.

Table 6.1 Control T-Cells

Normal variation of frequencies with time

Time (hours)	**0.0**	**2.5**	**3.0**	**4.0**	**4.5**
Frequency (Hz)	0.63	1.4	6.4	0.44	3.5
	0.84	4.4	15	1.3	6.6
	9.5	9.5	93	74	250
	76	650	900	660	6.6k
	93k	550k	5.2M	2.7M	480k

Table 6.2 Frequencies of some Common Environmental Chemicals (frequencies in Hz)

Toluene **Mallinckrodt Spect. AR**	**Xylene** **Mallinckrodt**	**Phenol** **Spectrum Chem. Co.**
570	92	2.5
86k	7.5k	57
550k	69k	540
	1.2M	
	2.7M	

Methyl ethyl ketone **Mallinckrodt**	**Ethanol** **USI Chem. Co.**	**Pyrethrin** **Natural Guard 1%**
290	85	9.8
7.7k	3.0k	25
78k	35k	86
	89k	860
	660k	1.4M
	3.4M	

1,2,4-Trimethylbenzene **Aldrich 98%**	**1,1,1-Trichlorethane** **EM Sci. (Merck) 98%**
54	38
260	290
68k	290k

Trichloroethylene **Mallinckrodt AR 98%**	**1,5-Diaminopentane** **Aldrich**
340	85
3.8k	1.4k
86k	1.6M

Table 6.3

Frequencies for T-cell cultures challenged with some common environmental chemicals

The T-cells were challenged with the concentrations of the chemicals as shown. Certain of the cell frequencies were entrained by nearby frequencies of the chemicals which are listed in Table 1. These frequencies are underlined. All frequencies in Hz (k =×1000, M=×1,000,000).

TLV-TWA = Threshold Limit Values, Time Weighted Average Concentration for a normal 8-hour work-day and 40-hour work-week, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect.

Toluene **Conc. 400 ppm** **(TLV-TWA 100 ppm)**	**Xylene** **Conc. 400 ppm** **(TLV-TWA 100 ppm)**	**Phenol** **Conc. 400 ppm** **(TLV-TWA 5ppm)**
9.4	8.2	0.46
57	92	2.5
570	69k	57
4.8k	1.2M	540
86k	3.3M	76k
550K		
4.8M		

Methyl ethyl ketone **Conc. 400 ppm** **(TLV-TWA 200 ppm)**	**Ethanol** **Conc. 4000 ppm** **(TLV-TWA 1000 ppm)**	**Pyrethrin** **Conc. 400 ppm** **(TLV-TWA 5 ppm)**
6.8	45	9.4
290	85	25
7.7k	3.0k	86
78k	89k	860
1.6M	3.4M	35k
		640k
		4.8M

Sodium hypochlorite
Conc. 400 ppm

92k

1,2,4-Trimethylbenzene Conc. 400 ppm (TLV-TWA 25 ppm)	**1,1,1-Trichloroethane Conc. 400 ppm (TLV-TWA 100 ppm)**
9.4	9.4
14	38
54	290
260	5.7k
1.4k	290k
68k	950k
4.8M	4.8M

Trichloroethylene Conc. 400 ppm (TLV-TWA 50 ppm)		**1,5-Diaminopentane Conc. 400 ppm (TLV-TWA 0.02 ppm)**
9.4	5.6	3.4
44		85
340	340	6.5k
3.8k	3.8k	480k
86k	86k	1.6M
830k	680k	
4.8M		

6.4 Frequency Entrainment Persisting in Re-Programmed Daughter Cells

Pischinger's work (see: Heine, 1999) demonstrates the importance of connective tissue in the body's regulatory systems. Measurement of the coherent frequency pattern of samples of connective tissue taken from healthy regions of breast tissue excised for biopsy following surgery showed a pattern of frequencies akin to the brain-wave spectrum. An example is shown in Column 1 of Table 6.4. This specimen was then tested by placing in a steel box to shield it from the geomagnetic field which would erase any frequencies imprinted into the water but, not frequencies due to a chemical constituent (the 'chemical signature'). Column 2 shows that only frequencies from 250 Hz to 15 kHz in this connective tissue could have been due to structural chemicals. The remaining frequencies endogenously imprinted in the cell water were erased as indicated by 'x'.

A binary sequence of frequencies was then imprinted into this erased connective tissue, a pattern most unlikely to occur naturally. The result is shown in Column 3. These frequency imprinted cells were then cultured and by the following week, the daughter cells had picked up all the imprinted frequencies. The other frequencies representing chemical activity had changed somewhat but, were clearly distinct from the imprinted frequencies all of which were present in the daughter cells. This demonstrates how frequency imprinted water, the equivalent of a homoeopathic potency, is capable of permanently modifying a pattern of coherent frequencies in an *in vitro* connective tissue culture so as to persist into the next generation.

Table 6.4

Frequencies for Connective Tissue (from right breast)

Date & Time			
17Aug 95 1200-1700	17-18 Aug 95 1700-0900	18 Aug 95 0915	25 Aug 95
Original Tissue	Hypomagnetic Erasure	New Frequency Pattern Imprinted	Cultured Daughter Cells
All frequencies in Hz			
0.11	x	0.1	0.1
0.19	x	0.2	0.2
2.8	x	0.4	0.4
6.5	x	0.8	0.8
			1.05
7.2	x	1.6	1.6
8.6	x	3.2	3.2
9.7	x	6.4	6.4
18	x	12.8	12.8
24	x	25.6	25.5
45	x	51.2	51
58	x	102.4	102
66	x		
76	x		
98	x		
250	250		
380	380		350
650	650		530
950	950		1,500
15,000	6,700	15,000	15,000

7 Coherent Frequencies and Homoeopathy

7.1 Effect of Homoeopathic Potencies on Acupuncture Point Frequencies

Having found that both oscillator frequencies and chemicals can entrain the frequencies of the acupuncture points, the next step was to use the frequency imprints of a homoeopathic potency instead of a chemical signature to see whether the body responded in a similar manner using the same protocol.

Three homoeopathic remedies all in the 6X (D6) potency were selected using Boericke's Repertory to find remedies relating to symptoms corresponding to any target organs for the Ting acupuncture points. The first column of Table 7.1 lists the frequencies found for each potency. The second column (from Table 5.3) lists those acupuncture points having a stimulating frequency (Column 3) within their entrainment range. There seemed to be a single frequency in each potency which did not correspond to any Ting Point and there was no entrainment by this frequency. All the points selected were checked for entrainment while holding the potency.

These measurements were made by placing the tip of a water filled pipette against the appropriate acupuncture point on the right hand and imprinting the water by bringing a strong permanent magnet close up. The first measurement (Column 4) was made to check the state of the meridian and to confirm that no effect remained from previous measurements; the correlation between Columns 3 and 4 is very good. The second measurement (Column 5) was then made with a tablet of the potency inside a glass vial which was clasped in the palm of the left hand. This was repeated down the list of acupuncture points. The potency was only held for long enough to be able to make a frequency imprint into water at the acupuncture point. There was negligible bio-information retention and the following measurement could be made as soon as the experimenter was ready.

Comparing Columns 1 and 5, it is seen that the acupuncture point frequency moved quickly from its initial value to that of the potency being held. *This is evidence that the formal link between acupuncture and homoeopathy is in the commonality of the frequencies and changes in frequency involved in the potencies and the meridians.*

Table 7.1

Effect of Homoeopathic Potencies on Acupuncture Point Frequencies

Kali Bichromicum

Column 1	Column 2	Column 3	Column 4	Column 5
Measured Frequencies Hz	Acupuncture Point	Stimulating Frequency Hz	Initial Frequency Hz	Frequency holding potency Hz
2.40E+00	AD1	2.00E+00	2.236E+00	2.406E+00
1.60E+05	Sk1	1.72E+05	1.720E+05	1.610E+05
2.80E+05				
1.30E+07	JD1	1.48E+07	1.480E+07	1.300E+07
9.60E+07	AD1	9.84E+07	9.850E+07	9.600E+07

Vanadium

Measured Frequencies Hz	Acupuncture Point	Stimulating Frequency Hz	Initial Frequency Hz	Frequency holding potency Hz
2.23E-02	SI1	2.50E-02	2.516E-02	2.282E-02
4.80E+00	Liv1	4.80E+00	4.780E+00	4.802E+00
"	BL67	5.50E+00	5.520E+00	4.802E+00
5.40E+05				
1.24E+06	SI1	1.23E+06	1.230E+06	1.240E+06
3.30E+06	Ly1	2.95E+06	2.940E+06	3.300E+06
"	LI1	2.70E+06	2.700E+06	3.300E+06
"	Ci9	2.46E+06	2.440E+06	3.300E+06
"	GB44	2.46E+06	2.460E+06	3.300E+06
"	Or1	3.85E+06	3.850E+06	3.300E+06
"	Pn1	2.70E+06	2.720E+06	3.300E+06

Petroleum

Measured Frequencies Hz	Acupuncture Point	Stimulating Frequency Hz	Initial Frequency Hz	Frequency holding potency Hz
4.24E-03	Sk1	3.50E-03	3.532E-03	4.617E-03
4.70E-02	St45	4.40E-02	4.450E-02	4.820E-02
"	GB44	5.00E-02	5.006E-02	4.704E-02
"	LI1	5.50E-02	5.530E-02	4.734E-02
4.80E+00	Liv1	4.80E+00	4.805E+00	4.780E+00
"	BL67	5.50E+00	5.484E+00	4.780E+00
2.95E+02				
6.04E+03	TW1	6.00E+03	6.014E+03	5.902E+03
1.75E+06	SI1	1.23E+06	1.230E+06	1.720E+06
3.60E+07	FatD1	3.64E+07	3.640E+07	3.580E+07

Correlation Coefficients:

Col. 3 & 4 = 0.99999989; Col. 1 & 5 = : 0.99999814

8 Acupuncture Point and Histological Tissue Frequencies

This link between frequency and an acupuncture meridian can be followed right through to the target organ tissue itself. Table 8 compares the frequencies measured at the Ting acupuncture points with those frequencies measured on histological slides of the corresponding tissues, where these were available. The labelling as given on each slide is cited as the target organ material. Enough water remains in such a specimen after staining and fixing for a measurement to be made through the glass of the slide. Again, the correlation is very good and is evidence that there are coherent frequencies linking the acupuncture points to the target organs.

Table 8 Comparison of Acupuncture Point and Target Organ Frequencies

Measured Frequencies (Hz)

Acupuncture Points			Histological Slides		
Hands					
Lymphatic tissue, Lungs, Ly1	6.071E-02	2.920E+06	Lymph gland	6.110E-02	3.040E+06
Lungs, Lu1	4.680E-01	2.120E+07	Lung	4.494E-01	2.420E+07
Large intestine, LI1	5.550E-02	2.750E+06	Large intestine	5.440E-02	2.670E+06
Nerve degeneration, ND1	5.524E-04	2.758E+04	Nerve cell	5.510E-04	2.760E+04
Circulation, pericardium, Ci9	5.230E-02	2.480E+06	Pericardium & Epicardium	5.500E-02	2.450E+06
Allergy, AD1	2.050E+00	9.400E+07	Autonomic ganglia & nerve	2.131E+00	1.220E+08
Organ degeneration, Or1	7.625E-02	3.800E+06	Secondary deposits in gland	6.144E-02	3.250E+06
Triple Warmer, TW1	6.020E+03	>>	Testes, placenta, prostate, endocrine, ovary, thyroid & pancreas (mean value)	5.978E+03	
Heart, He9	7.770E+00	3.830E+08	Heart muscle	7.811E+00	4.050E+08
Small intestine, SI1	2.507E-02	1.220E+06	Small intestine	2.200E-02	1.040E+07
Feet					
Bladder (urinary), BL67	5.538E+00	2.700E+08	Bladder	5.610E+00	3.900E+08
Kidney, Ki1	9.502E-04	4.701E+04	Kidney	9.551E-04	4.741E+04
Gall Bladder, GB44	5.104E-02	2.430E+06	Gall bladder	5.126E-02	2.380E+06
Fatty Degeneration, FatD1	7.450E-01	3.620E+07	N/A		
Skin Degeneration, Sk1	3.582E-03	1.730E+05	Skin	3.551E-03	1.820E+05
Fibroid Degeneration, FibD1	8.103E+02	>>	N/A		
Stomach, St45 (right)	4.425E-02	2.140E+07	Duodenum junction	4.450E-02	2.200E+07
Joint Degeneration, JD1	2.824E-01	1.450E+07	Intervertabral disk	3.322E-01	1.440E+07
Liver, Liv1	4.648E+00	2.250E+08	Liver	4.733E+00	7.100E+08
Spleen, Pancreas, Pn1	5.606E-02	2.760E+06	Spleen	5.601E-02	2.700E+06

Mean High Band/Low Band Frequency Ratio: 48.61 ±1.47 x10E6 (±3.0%)

9. Theory of Coherence in Water

Coherence must be involved in the "memory" of water for coherent frequencies. Del Giudice and Preparata have considered the quantum field interactions of endogenous ultraviolet radiation (12.06 eV, 103 nm) in liquid water. They were able to show that a permanent coherence can become established and give rise to a long-range-order within domains 75 nm in size. This coherence is in the ground (unexcited) energy state of water. It is a fundamental property of liquid water; unlike the laser no energy pumping is required to establish this coherence.

At 300K, water is calculated to be a mixture of 28% coherent water in its 75 nm domains interspersed with the remaining 72% as incoherent or vapour-like water. It is the coherent water that has the "memory" properties. The incoherent water is responsible for the normal thermodynamic properties of water. The correct latent heat of evaporation and the correct dielectric constant are calculated only from this theory.

External radiation will interact with an entire coherence domain, not with individual molecules. In a coherent system the coherence length is constant, the velocity is proportional to the frequency, thus imprinting coherent frequencies must result in a pattern of coherent velocities being set up.

9.1 Trace Water in n-Alkanes Points to Water Memory Mechanism

In 1991, the writer had to close his university laboratory following retirement. Before this, he measured the signature frequencies of all the chemicals in stock. In the course of this, ELF resonances were found in the n-alkanes only when there was a trace of water present. In n-hexane, these resonances disappeared below about 14ppm of trace water.

If there are interactions involving the spectra of coherence domains in water and the characteristic molecular spectra of n-alkanes, these must be in the far-infra-red (FIR) rotational spectrum because this is only where n-hexane has any spectrum, it is widely used as a solvent in spectroscopy because of its clean spectrum.

There needed to be some arbitrary restriction on the hundreds of rotational water lines which might otherwise have had to be considered. It was noted that the water lines at 28 μm (357 cm^{-1}), 47 μm (213 cm^{-1}) and 78 μm (128 cm^{-1}) can become coherent enough for use in a water vapour laser and hence these should also provide the necessary coherence for water "memory".

The wave numbers of the above three spectral lines for water and those for the tabulated FIR spectra for the n-alkanes were considered. It was postulated that the energy gap for the observed water resonances might be related to their differences. These were compared to the measured ELF resonances in n-pentane and n-hexane as shown in Table 9.1. The mean of the FIR/ELF ratios given at the bottom of Table 9.1 is again remarkably constant.

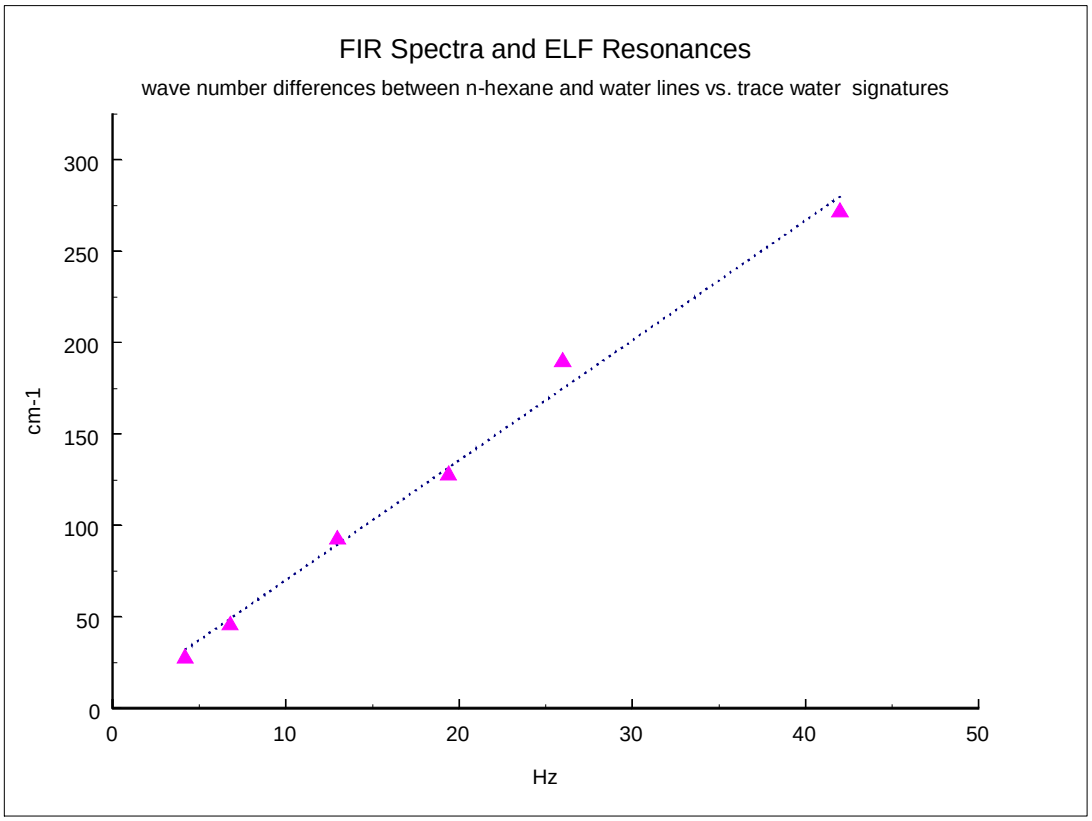

Figure 9

Figure 9 shows this comparison as a graph. It is emphasised that the ordinate is derived from spectral tables and only the abscissa is a subjective measurement.

Table 9.1 Relation Between Far-Infra-Red Spectra and ELF Resonances for Trace Water in n-alkanes

Wave Numbers from Spectral Tables				Measured Values for Resonances			
n-Hexane Year Measured	Water-Laser	Differences		FIR (1999)	ELF (1991)	ELF (1999)	Hi/Lo Ratio (1991)
cm^{-1}	cm^{-1}	cm^{-1}	cm^{-1}	cm^{-1}	Hz	Hz	Hz_{FIR}/Hz_{ELF}
385	357	28	357	358	4.2	4.141	2.00×10^{11}
403	357	46	217	218	6.8	6.793	2.03×10^{11}
450	357	93	107	108	13	13.11	2.15×10^{11}
485	357	128	78	80	19.4	19.16	1.98×10^{11}
403	213	190	53	52	26	26.51	2.19×10^{11}
485	213	272	37	38	42	42.52	1.94×10^{11}

Mean Ratio: $1.97 \times 10^{11} \pm 0.16$ Hz_{FIR}/Hz_{ELF} or 6.57 cm^{-1} per Hz_{ELF}

9.2 Frequencies and Velocities in Bulk Water

The above relates to effects in trace water in n-alkanes. The next question is whether the same arguments can be applied to bulk water and by implication to the interaction between a homoeopathic "mother tincture" and water.

To investigate this, water was imprinted at frequencies between 0.001 Hz and 0.01 Hz (chosen for reasons of available frequency coverage). This water also showed corresponding resonances between 200 MHz and 2GHz giving a mean frequency ratio = $1.98 \pm 0.07 \times 10^{11}$ Hz_{FIR}/Hz_{ELF} .

For the converse experiment, water was imprinted at frequencies between 200 MHz and 2GHz. This showed resonances between 0.001 Hz and 0.01 Hz with a mean frequency ratio = $2.09 \pm 0.43 \times 10^{11}$ Hz_{FIR}/Hz_{ELF}. The worse standard deviation reflects the greater difficulties associated with the measurement of very low frequencies. There must be a phase comparison taking place since a measurement takes less than a single cycle of oscillations having periods between 1000 sec/cycle and 100 sec/cycle.

9.3 The Mechanism of "Water Memory"

The crucial question is whether there are any measurable frequencies corresponding to differences between the FIR water lines alone and in the absence of the chemical spectra of n-hexane. The likely frequencies to look for were calculated as follows:

Table 9.2

Resonances Calculated for Water

The difference between the water laser lines, 357 cm^{-1} - 213 cm^{-1} = 144 cm^{-1} (69 μm).
Dividing this by the ratio 6.57 cm^{-1}/Hz_{ELF} gives: **22.6 Hz**.

Likewise, the difference 213 cm^{-1} - 128 cm^{-1} = 85 cm^{-1} (117 μm)
Dividing this by the ratio 6.57 cm^{-1}/Hz_{ELF} gives: **13.3 Hz**.

The difference 357cm^{-1} - 128 cm^{-1} = 229 cm^{-1} (44μm) gives: **34.8 Hz.**

Table 9.3

Resonances Measured in Water*

Frequencies	Interpretation
21.97 Hz and 13.66 Hz (34.8 Hz also detected)	- interaction with the entire coherence domain
2.65 GHz and 1.42 GHz	- no domain interaction, free space velocity.
Wavelength (Wave Number)	**Interpretation**
68 µm (~147 cm^{-1})	- the fundamental molecular resonances as
116 µm (~86 cm^{-1})	energy differences between FIR water lines.

*boiled, filtered tap water which had been "erased" in a mumetal box

The mean ELF/RF frequency ratio = 1.123×10^8 gives a coherence velocity for the water used = 2.49 m/s. The measured velocity in 'Volvic' mineral water was 2.6 m/s. Note that 1.42 GHz corresponds to the 21 cm spectral line molecular hydrogen.

9.4 Effect of a Frequency Imprint

The next experiment was to determine what happened to all these frequencies if an ELF was imprinted into the water by succussion. When water was imprinted by succussion with 10 Hz the frequencies in Tables 9.2 & 9.3 were replaced by those shown in Table 9.4. where it is seen that imprinting at ELF splits the water line energy differences in the ELF, the RF and FIR. For this to happen, the FIR lines must be extremely coherent. In this case, the mean RF/ELF frequencies ratio = $0.991 \pm 0.016 \times 10^8$ gives a coherence velocity in the imprinted water of 3.03 m/s.

The limited accuracy of measurements in the FIR makes it difficult to assign wave numbers. The measured 364 cm^{-1} is probably the 357 cm^{-1} line and the measured 239 cm^{-1} is probably the 213 cm^{-1} line. If the imprint frequency was greater than the endogenous frequency, only the sum frequency was detected.

Table 9.4

Effect of Imprinting Frequencies by Succussion

Frequency Imprinted	10 Hz
Frequencies Measured	32.15 Hz and 12.78 Hz = 22.6 ± 10Hz
	22.21 Hz and 3.196 Hz = 13.3 ± 10 Hz
	3.215 GHz and 1.25 GHz = 2.23 ± 0.98 GHz
	2.17 GHz and 0.322 GHz = 1.25 ± 0.92 GHz

FIR Resonances Measured

24 µm (416 cm^{-1}) and 32 µm (312 cm^{-1}) = 364 ± 52 cm^{-1}

32 µm (312 cm^{-1}) and 60 µm (166 cm^{-1}) = 239 ± 73 cm^{-1}

9.5 The Synthesis of a Potency with Frequencies

Water was potentised by succussion adjacent to a coil connected to an oscillator set to the frequencies previously determined for thyroxin D15. It was subsequently further potentised by serial dilution and succussion as far as D20. The frequencies measured for each potency from D15 to D20 were exactly the same as those measured for those potencies previously prepared from a "mother tincture" by Dr. P.C. Endler of the Ludwig Boltzmann Institute for Homoeopathy in Graz, according to conventional homoeopathic procedures.

9.6 The Frequency Effects of Dilution and Succussion

Water was imprinted by succussion at the simple basic frequency of 1 Hz. It was then serially diluted tenfold (1+9). The 1 Hz remained. When it was then succussed the 1 Hz disappeared and was replaced by 10 Hz. This happened for the other frequencies and dilutions tested. In general: the original 1 Hz disappeared and was replaced after succussion by a frequency = 1 Hz × the dilution factor.

In allergy therapy, potentisation is done with a syringe. In this case, effective succussion as detected by a change in frequency only took place when the dilution was sucked up through the needle ready for the next dilution. This must be where and when the vortex succussion process is taking effect.

If potentisation is a quantum phenomenon, it is not likely to be a linear process. To determine whether the potentising effect is linear or discontinuous, water was imprinted by succussion at 1 Hz. Then, 10 ml aliquots were diluted in 10% steps and succussed individually.

The result was that the imprinted frequency remained at 1 Hz until 4 × 1ml had been added to the original 10ml representing a dilution ratio of 1.4. When the dilution was increased to 10 ml + 5 × 1 ml (dilution ratio 1.5) the frequency jumped to 1.5 Hz. For dilutions from here to 10 ml + 9 × 1ml (dilution ratio 1.9) the frequency remained at 1.5 Hz. At 10 ml + 10 x 1ml (dilution 2.0) the frequency jumped to 2 Hz.

This was the general pattern at other dilution ratios. There were some exceptions. Although the 4-fold dilution gave 4 Hz so did a 5-fold dilution, the 6-fold dilution gave 6 Hz so did a 7-fold dilution. The 11-fold and 13- to 19-fold dilutions did not imprint any frequency at all. The 20- to 23-fold dilutions all gave 20 Hz; the 24- to 29-fold dilutions all gave 24 Hz, the 30-fold dilution gave 30 Hz. There were similar results for dilution ratios of 10, 100 and 1000 with similar exceptions. This emphasises how accurately homoeopathic dilutions must be carried out for making the X(D), C and M potencies; nothing approximating to an 11-fold, dilution will potentise at all.

10. Conclusions

The Diagnosis and Therapy of EM Hypersensitivity

EM Fields in Health, in Therapies, as Hazards

The challenging of a patient in a controlled environment with frequencies at a strength typical of the electrical environment was discontinued some years ago in favour of the much more patient-friendly method using a measurement of the frequencies imprinted into water held in a glass tube in the hand and succussed on wood by the patient. The imprinted frequencies cover the Ting acupuncture points, meridians and target organs and can show which are under stress and which are in need of stimulation.

The measurements of frequencies at the acupuncture points and chakras given in Tables 5.1-5.4 also gave two branches of frequencies (there is a third band of still higher frequencies). The branch in the ELF is interpreted as corresponding to the velocity of coherence propagation. The measured value for coherence propagation along the human leg was 6 m/s. The other branch, in the RF, is interpreted as corresponding to propagation at the velocity of light *in vacuo* ~3×10^8 m/s. The ratios of the high and low bands of frequencies taken from Tables 5.1, 5.3, 5.4 (mean value = $48.46 \pm 1.77 \times 10^6$) were precise to within a few percent and equal to the ratio of the velocity of light in free space (2.998×10^8 metres/sec) to a velocity of about 6 m/s. This is of the correct order of magnitude for coherence waves first reported and measured in the 1930's by Wüst and more recently measured by the writer. The latter measured 2.6 m/s in 'Volvic' mineral water and 6 m/s in a leg. This is consistent with a living system being a coherent system in which the coherence length is constant and velocity is proportional to frequency.

The electromagnetic individuality of each patient and of homoeopathic remedies are manifest throughout this work.

The important parameters are the frequency and its coherence in space and time which are expressed in the spectral power density (Watts per cycle of bandwidth) and the volume of the living system exposed to the field. In a coherent system, coherence length is the constant parameter, many velocities and frequencies are possible which satisfy this condition. Frequency becomes proportional to the velocity and this gives the low-frequency band with the coherence wave propagating slowly through the medium at velocities of the order of metres per second; this is due to the large mass of each coherence domain.

This work provides evidence of a formal link between acupuncture and homoeopathy through the commonality of frequencies and changes in frequency involved in homoeopathic potencies and on acupuncture meridians.

Any health risks from environmental frequencies are likely to arise through adaptation to chronic exposure to a coherent frequency almost irrespective of its power level, until thermal effects can occur. This is analogous to adaptation through chronic exposure to homoeopathic

provings. The acupuncture point GV14 is particularly sensitive to the electromagnetic environment.

The difficulty in objective instrumentation for measurements of frequencies imprinted into water and the frequencies of homoeopathic potencies lies in the conversion of the information from a quantum wave function to a time-varying classical voltage or current without involving liquid helium temperature (superconducting) apparatus. Its practical realisations must somehow make use of the coherence properties of water.

Professor V. Elia (1999) has carried out an extensive thermodynamic study on aqueous solutions obtained through successive dilutions and succussions. The exothermic heat of mixing with acids or bases differs between the solutions and the untreated solvent water. The successive dilutions and succussions may permanently alter the physical-chemical properties of the solvent water for which an hypothesis of a disorder-order transition could be proposed.

It has been reported that the microwave cooker frequency 2.45 GHz alters constituents in milk from L- to D- isomers [Lancet (1989) **9**:1392-3]. Enzymes are highly stereo-specific for a particular reaction. The active site of an enzyme is a highly organised, stereo-specific, three-dimensional, region of a macromolecule and only one isomeric form may react. The search for a mechanism for hazardous non-thermal effects of frequency should concentrate on the tertiary structure of enzymes and the role of water memory and order-disorder transitions.

General Reading

Smith CW, *Electromagnetic Effects in Humans.* In: Fröhlich H (Ed.). Biological Coherence and Response to External Stimuli. Berlin: Springer-Verlag, 205-232, 1988.

Smith CW, Best S. *Electromagnetic Man: Health and Hazard in the Electrical Environment.* London: Dent, 1989,1990; New York: St. Martin's Press, 1989; Paris: Arys/Encre, 1995 (French edition), Bologna: Andromeda, 1997, 1998 (Italian edition).

Smith CW. *Coherent Electromagnetic Fields and Bio-Communication.* In: Popp F-A, Warnke U, König HL, Peschka W (Eds.). Electromagnetic Bio-Communication. Munich, Baltimore: Urban & Schwarzenberg, 1-17, 1989.

Smith CW. *Bioluminescence, Coherence and Biocommunication.* In: Jezowska-Trzebiatowska B, Kochel B, Slawinski J, Strek W (Eds.). Biological Luminescence. Singapore: World Scientific, 3-18, 1990.

Smith CW. Biological effects of weak electromagnetic fields. In: Ho M-W, Popp F-A, Warnke U (Eds.). Bioelectrodynamics and Biocommunication. Singapore: World Scientific, 81-107, 1994.

Smith CW. *Electromagnetic and Magnetic Vector Potential Bio-Information and Water* (pp. 187-202); Smith CW, Endler PC. *Resonance Phenomena of an UHD* (pp. 203-208); Citro M, Smith CW, Scott-Morely A, Pongratz W, Endler PC. *Transfer of information from molecules by means of electronic amplification - preliminary results* (pp. 209-214). In: Endler PC, Schulte J (Eds.). Ultra High Dilution: Physiology and Physics. Dordrecht: Kluwer Academic, 1994.

Smith CW. *Coherence in biological systems and water* (pp.88-94); *Water and the diagnosis and treatment of electromagnetic hypersensitivity* (pp.184-192); *Water and bio-communication* (pp.295-304). In: Taddei-Ferretti C and Marotta P (Eds.) High Dilution Effects on Cells and Integrated Systems, Series on Biophysics and Biocybernetics Vol 3 - Biophysics. Singapore: World Scientific, 1998,. ISBN 981-02-3216-0.

Endler PC, Heckmann C, Lauppert E, Pongratz W, Alex J, Dieterle D, Lukitsch C, Vinattieri C, Smith CW, Senekowitsch F, Moeller H and Schulte J. *The metamorphosis of amphibians and information of thyroxin storage via the bipolar fluid water and on a technical data carrier; transference via an electronic amplifier.* Schulte J and Endler PC (Eds.) Fundamental Research in Ultra High Dilution and Homoeopathy. Dordrecht: Kluwer Academic, 1998. pp.155-187.

Preparata G. *QED Coherence in Matter.* Singapore: World Scientific, 1995.

Heine H (1991) *Matrix and matrix regulation: Basis for a holistic theory in medicine.* Medicina Biologica. ISBN 2-80434-000-7 (In German, Heidelberg: Haug-Verlag 1998).

Relevant Research Papers

Smith CW, Al-Hashmi SAR, Kushelevsky A, Slifkin MA, Choy RYS, Monro JA, Clulow EE, Hewson MJC.(1987) Preliminary Investigations into Acceptability of Fabrics by Allergy Patients. *Clinical Ecology* **4(1)**: 7-10.

Choy RYS, Monro JA , Smith CW. (1987) Electrical Sensitivities in Allergy Patients. *Clinical Ecology* **4(3)**: 93-102.

Smith CW, Choy RYS, Monro JA. (1990) The Diagnosis and Therapy of Electrical Hypersensitivities. *Clinical Ecology* **6(4)**: 119-128.

Smith C.W. (1994) Coherence in living biological systems. *Neural Network World* **3**: 379-388.

Smith C.W. (1995) Measurements of the electromagnetic fields generated by biological systems. *Neural Network World* **5**: 819-829.

Smith C.W. Nursing the Electrically Sensitive Patient, *Complementary therapies in nursing & midwifery* **3**, 111-116, 1997.

Smith C.W. Is a living system a macroscopic quantum system? *Frontier Perspectives*, 7(1), 9-15 (1998), (Temple University, Philadelphia, audio tape of 1997 lecture from Frontier Sciences Department). ISSN:1062-4767.

Smith CW. *Coherent frequencies in living systems and homoeopathic medicine.* Proc. 53rd. Congress of the Intl. Homoeopathic Medical League. April 25-29, 1998. RAI, Amsterdam. Paper T001.

Smith CW. Physicks and Physics. *The J. of Alternative and Complementary Medicine* **5(2)**: 191-193, April 1999.

Smith CW (Section 10 with Griffiths BB and Rea WJ), *"The Fröhlich Approach to Cellular Communication Systems"*. Proc. First World Congress on "Effects of Electricity and Magnetism in the Natural World", Funchal, Madeira 1-6 October, 1998. Coghill Research Laboratories, Lower Race, Pontypool, Gwent NP4 5UH, Wales (to be published),

Smith CW. (1999) *The Physics of Homoeopathy*. Proc. Intl. Conf. "Improving the Success of Homoeopathy 2: Developing and Demonstrating Effectiveness". London: 15-16 April, 1999. Abstract p. 89.

Smith CW. (1999) *The Physics of Biological and Cognitive Sciences.* Proc. Intl. Multi-Conf. of the Information Society IS'99, Conference on "Biology and Cognitive Sciences" pp.36-39, Ljubljana, Slovenia, 12-14 October, 1999. ISBN 961-6303-18-X

Del Giudice E, Doglia S, Milani M, Smith CW, Vitiello G. (1989) Magnetic flux quantization and Josephson behaviour in living systems. *Physica Scripta* 1989:**40**: 786-791.

Del Giudice E, Preparata G. (1994) "Coherent dynamics in water as a possible explanation of biological membranes formation". *J of Biol Phys* **20**: 105-116.

Elia V, Niccoli M. (1999) "Thermodynamics of Extremely Diluted Aqueous Solutions" *Ann. N.Y. Acad. of Sci.* **879:** 241-248.

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