Article

New Nonlocal Biological Effect
A Preliminary Research

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ABSTRACT

We report here our preliminary experimental findings of new nonlocal biological effect measured objectively and quantitatively under blind conditions. The method used includes the steps of providing two parts of quantum-entangled medium, applying one part to a biological system such as a human, contacting the other part with a desired substance such as a medication, and detecting change of a biological parameter with a detecting device. Using this method, we have found that after consumption by a test subject of one part of the quantum entangled water, the subject's heart rate was non-locally increased under blind conditions by adding to the second part of the quantum-entangled water an over-the-counter medication Primatene which contains the heart stimulant ephedrine. The said increase of heart rate is measurable with a heart rate monitor, statistically significant and consistently reproducible.

Key Words: quantum entanglement, biological non-local effect, heart rate, heart stimulant

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1. Introduction

We previously found nonlocal biological effects of various substances measured by first-person experiences of the voluntary test subjects (Hu and Wu, 2006a; 2006b). We then found nonlocal thermal, chemical and gravitational effects in simple physical systems measured by high-precision instruments (Hu and Wu, 2006c; 2007).

We report here our preliminary findings of new nonlocal biological effect measured objectively and quantitatively under blind conditions. The method we used includes the steps of providing two parts of a quantum-entangled medium, applying one part to a biological system such as a human, contacting the other part with a desired substance such as a medication, and detecting change of a biological parameter with a detecting device.

Between the time of our previous findings and the present, there have been reports of macroscopic quantum entanglements by other groups. For example, entanglement of macroscopic diamonds at room temperature has been reported (Lee *et al.,* 2011); entanglement in photosynthetic light harvesting complexes has been calculated to exist (Sarovar *et al.,* 2012); and evidence of potential macroscopic entanglement between brain activities has also been reported (Persinger *et al.,* 2008). Further, results obtained with DNA and water may be relevant (Gariav *et al.,* 1991; Montagnier *et al.,* 2010). For additional relevant literatures, readers may read (Thaheld 2000; Wackermann *et al.,*

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2002; Hatori *et al.,* 2001; Standish *et al.,* 2003; Pizzi *et al.,* 2004).

We point out here that due to the limitations in the numbers and availabilities of voluntary test subjects and the limitations of the measurement instruments, our data sets (sampling size and methods) are somewhat limited. We encourage institutional researchers who have wider and better accesses to voluntary test subjects and instrumentations independently verify our results.

2. Methods, Materials and Test Subjects

As shown on the left side of Figure 1, the essential steps of producing a nonlocal biological effect in one of our methods include preparing two equal parts *qe1* and *qe2* of a quantum-entangled medium *qe*, applying one part *qe1* to a voluntary test subject *h*, and contacting the other part *qe2* with a desired substance *s* such as a particular medication or substance encoded with a message whereby non-local effect of the substance on the said test subject is produced.

As shown on the right side of Figure 1, the essential steps of objectively and quantitatively detecting and measuring said non-local effect in said test subject includes providing a detecting device such as a heart rate monitor comprising a heart rate probe *p* attached to the chest area of the test subject and a display mechanism *d* connected to said probe *p*, or a wireless probe plus transmitter *p* attached to said the chest area of said test subject and a wireless receiver plus display mechanism *d*, and detecting a change of a physical, chemical or biological parameter such as heart rate of the human produced nonlocally by said substance.

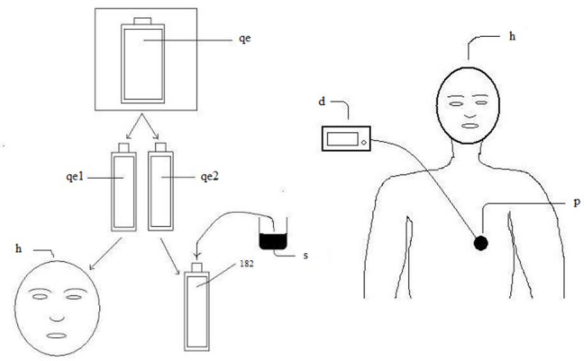


Figure 1. Key Experimental Setup

In particulars, the experiments were conducted under blind conditions in that the voluntary test subject did not know any detail of the experiment and the detecting and measuring person did not know the exact time when a substance was added. The quantum entangled medium used was microwaved water prepared as follows (Hu and Wu, 2006a; 2006b): 400ml Poland Spring water in a plastic ware with a shelf time of at least three months was exposed to the radiation of microwave oven with a 1500 Watt output for 1min as illustrated in Figure 1. The medication used was Primatene prepared as follows: Five (5) tablets of Primatene (containing a total of 60mg ephedrine, a heart stimulant) were crushed into powder and dissolved into 10ml water. Primatene is an over-the-counter medication for asthma.

The test subject then immediately consumed one-half of the water so exposed as described above. After 30min from the time of consumption, the 10ml solution of Primatene was added into the other half of the microwaved water by a person in a different room about 50 feet away from the test subject and at a time not known by the test subject or the person measuring and recording the heart rate. The time series of heart rate were measured as shown in Figure 1 with a Polar FT4 wireless heart rate monitor and recorded by hand at the interval of every 0.1min (6sec) before, during and after Primatene was added into the other half of the microwaved water.

With respect to the test subjects, Subject A and C are respectively the first author and co-author of this paper and Subject B is the father of the first author. All three test subjects voluntarily consented to the proposed experiments. To ensure safety, all initial experiments were conducted on Subject A by himself. Further, over-the-counter medication Primatene used in the study was properly obtained for research purpose.

3. Results

Figure 2 shows 3D Charts of five (5) data sets from experiments conducted on Subject B as described previously with each set comprising a test and baseline (control) time series of heart rate.

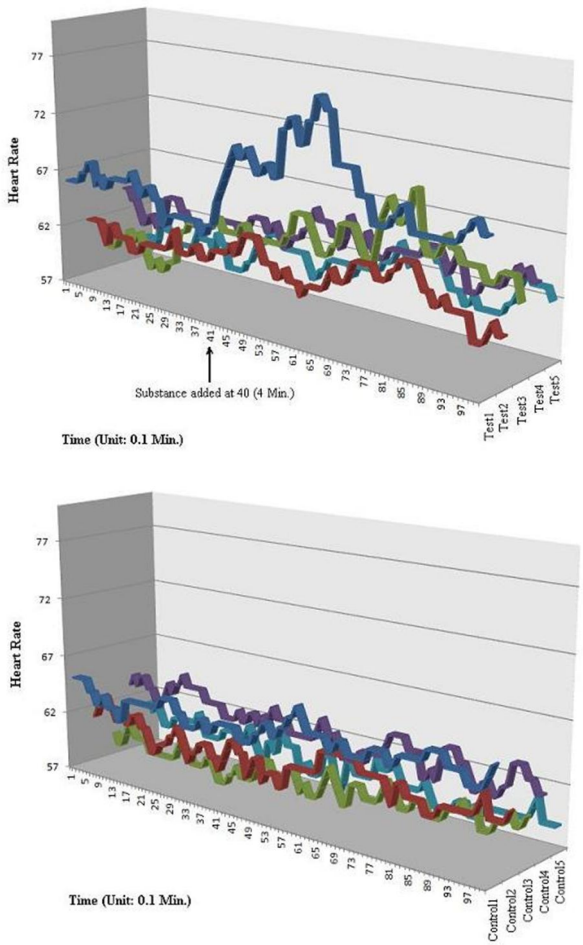
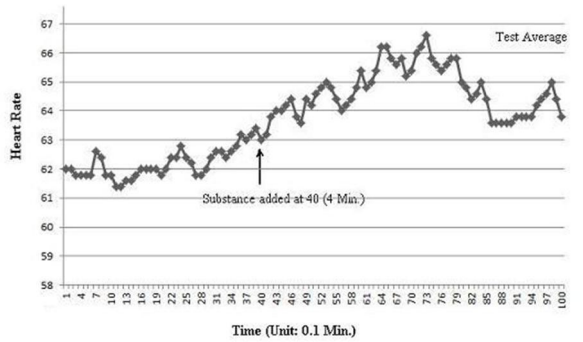


Figure 2. 3D Charts of five (5) data sets from experiments conducted on Subject B

The upper 3D chart displays the time series of heart rate with 10ml solution of five (5) tablets of Primatene (containing 60mg ephedrine) being added at the marked time of four (4) minute. The lower 3D chart displays the control data (baseline) obtained before any Primatene was added to the second half of the microwaved water (starting at 15 minute after Subject B consumed the first half of the microwaved water).

Figure 3 shows the charts of test and control averages on data obtained on Subject B and displayed in Figure 1.



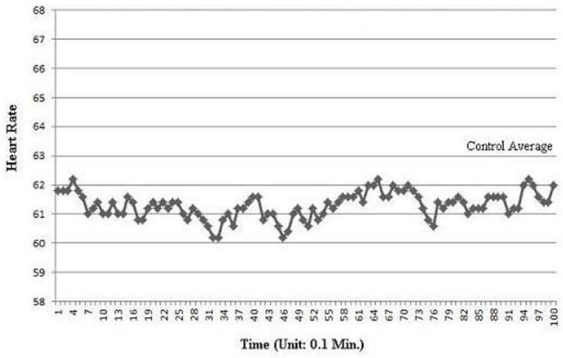


Figure 3. Charts of test and control averages of five data sets obtained on Subject B

For further illustration, Figure 4 shows the time series charts of Test1 and Control1 obtained on Subject B.

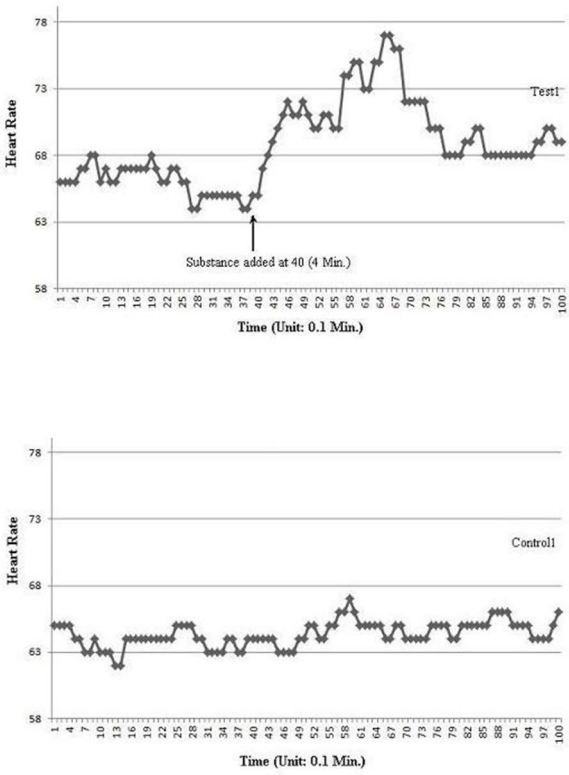


Figure 4. Charts of Test1 and Control1 data set obtained on Subject B

As another example, Figure 5 shows the charts of time series of Test2 and Control2 obtained on Subject B.

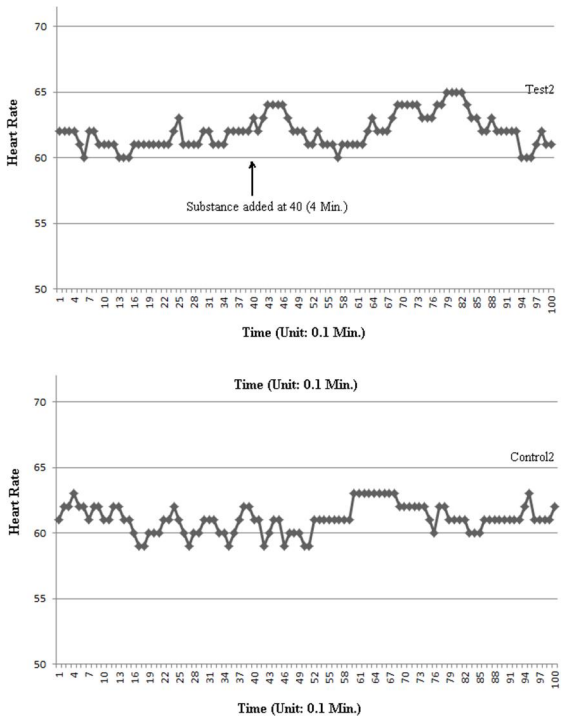


Figure 5. Charts of Test2 and Control2 data set obtained on Subject B

It is clear from the above data shown in Figures 2-5 that while the baselines (controls) of the heart rate of Subject B are stable, and fluctuate and drift within the ranges of five (5) points (beats), Primatene solution containing 60mg ephedrine produced detectable non-local effect in Subject B in the form of rapidly increased heart rate for at least four (4) minutes in the range of 1-6 points (beats) or 1.5%-10% above the fluctuating ranges of the baselines.

The increase of heart rate in Subject B non-locally induced by Primatene is statistically significant because: (1) The timing of the increase in heart rate coincide with the time of adding Primatene; (2) Averaging of the time series does not cancel the signal as random noises would as shown in Figure 3; and (3) Assuming normal (Gaussian) distribution, we did student's t-tests comparing data points within 4 minutes (forty data points) immediately after adding Primatene (Sample1)and the data points within 4 minutes (forty data points) immediately before adding Primatene (Sample2) which all show statistically significant differences as listed in Table 1 below:

Table 1

Test1	Size	Mean	Std. Dev.	SE Mean
Sample1	**40**	**71.65**	**2.6559**	**0.42**
Sample2	**40**	**66**	**1.1323**	**0.179**
Observed difference (Sample 1 - Sample 2):				5.65
Standard Deviation of Difference:				0.4565
Degree of Freedom:				52
95% Confidence Interval for the Difference:				(4.734, 6.566)
T-Value:				12.3768
Population 1 ≠ Population 2:				P-Value = < .00001
Population 1 > Population 2:				P-Value = >.99999
Population 1 < Population 2:				P-Value = < .00001

Test2	Size	Mean	Std. Dev.	SE Mean
Sample 1	**40**	**62.575**	**1.3376**	**0.211**
Sample 2	**40**	**61.35**	**0.7355**	**0.116**
Observed difference (Sample 1 - Sample 2):				1.225
Standard Deviation of Difference:				0.2414
Degree of Freedom:				60
95% Confidence Interval for the Difference:				(0.7421, 1.7079)
T-Value:				5.0746
Population 1 ≠ Population 2:				P-Value = < .00001
Population 1 > Population 2:				P-Value = >.99999
Population 1 < Population 2:				P-Value = < .00001

Test3	Size	Mean	Std. Dev.	SE Mean
Sample 1	**40**	**65.15**	**2.0946**	**0.331**
Sample 2	**40**	**61.175**	**2.0492**	**0.324**
Observed difference (Sample 1 - Sample 2):				3.975
Standard Deviation of Difference:				0.4633
Degree of Freedom:				77
95% Confidence Interval for the Difference				(3.0524, 4.8976)
T-Value:				8.5798
Population 1 ≠ Population 2:				P-Value = < .00001
Population 1 > Population 2:				P-Value = >.99999
Population 1 < Population 2:				P-Value = < .00001

Test4	Size	Mean	Std. Dev.	SE Mean
Sample 1	**40**	**64**	**0.9608**	**0.152**
Sample 2	**40**	**62.75**	**0.9541**	**0.151**
Observed difference (Sample 1 - Sample 2):				1.25
Standard Deviation of Difference:				0.2141
Degree of Freedom:				77
95% Confidence Interval for the Difference:				(0.8237, 1.6763)
T-Value:				5.8384
Population 1 ≠ Population 2:				P-Value = < .00001
Population 1 > Population 2:				P-Value = >.99999
Population 1 < Population 2:				P-Value = < .00001

Test5	Size	Mean	Std. Dev.	SE Mean
Sample 1	**40**	**61.525**	**1.3006**	**0.206**
Sample 2	**40**	**59.775**	**1.2297**	**0.194**
Observed difference (Sample 1 - Sample 2):				1.75
Standard Deviation of Difference:				0.283
Degree of Freedom:				77
95% Confidence Interval for the Difference:				(1.1865, 2.3135)
T-Value:				6.1837
Population 1 ≠ Population 2:				P-Value = < .00001
Population 1 > Population 2:				P-Value = >.99999
Population 1 < Population 2:				P-Value = < .00001

Figures 6 and 7 shows two (2) sets of experimental data obtained on Subject C with the same procedure as that used on Subject B, each set comprising a test and a control (baseline), 10ml solution of five (5) tablets of

Primatene (containing 60mg ephedrine) being added at the marked time of four (4) minute:

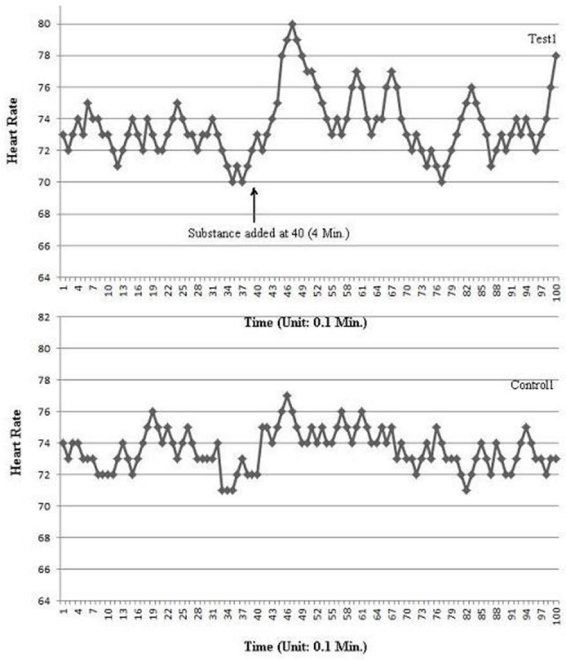


Figure 6. Charts of Test1 and Control1 data set obtained on Subject C

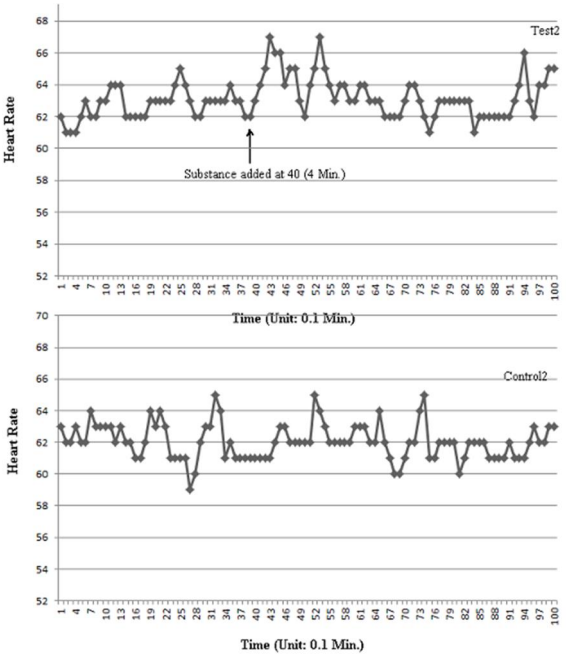


Figure 7. Charts of Test2 and Control2 data set obtained on Subject C

It can be seen from the data shown in Figures 6 and 7, while the baselines (controls) of the heart rate of Subject C are stable and fluctuate within the ranges of five (6) points (beats), Primatene solution containing 60mg ephedrine produced detectable non-local effect in Subject C in the form of rapidly increased heart rate for at least two (2) minutes in the range of 1-4 points (beats) or 1.5%-6% above the fluctuating ranges of the baselines.

Assuming normal (Gaussian) distribution, we again did student's t-test on data sets collected on Subject C comparing data points within 4 minutes (forty data points) immediately after adding Primatene (Sample1) and the data points within 4 minutes (forty data points) immediately before adding Primatene (Smaple2) which show statistically significant differences as shown in Table 2 below:

Table 2

Test4	Size	Mean	Std. Dev.	SE Mean
Sample 1	**40**	**64**	**0.9608**	**0.152**
Sample 2	**40**	**62.75**	**0.9541**	**0.151**
Observed difference (Sample 1 - Sample 2):				1.25
Standard Deviation of Difference:				0.2141
Degree of Freedom:				77
95% Confidence Interval for the Difference:				(0.8237, 1.6763)
T-Value:				5.8384
Population 1 ≠ Population 2:				P-Value = <.00001
Population 1 > Population 2:				P-Value = >.99999
Population 1 < Population 2:				P-Value = <.00001

Test5	Size	Mean	Std. Dev.	SE Mean
Sample 1	**40**	**61.525**	**1.3006**	**0.206**
Sample 2	**40**	**59.775**	**1.2297**	**0.194**
Observed difference (Sample 1 - Sample 2):				1.75
Standard Deviation of Difference:				0.283
Degree of Freedom:				77
95% Confidence Interval for the Difference:				(1.1865, 2.3135)
T-Value:				6.1837
Population 1 ≠ Population 2:				P-Value = <.00001
Population 1 > Population 2:				P-Value = >.99999
Population 1 < Population 2:				P-Value = <.00001

Finally, experiments conducted on Subject A with Primatene while exploring the parameters of experimental setup also showed increased heart rate in Subject A.

4. Conclusions & Discussions

In this new study, we have found that after consumption by a test subject of one part of the quantum entangled water, the subject's heart rate was non-locally increased under blind conditions by adding to the second part of the quantum-entangled water an over-the-counter medication Primatene which contains the heart stimulant ephedrine. The said increase of heart rate is measurable with a heart rate monitor, statistically significant and consistently reproducible. However, we point out here that due to the limitations in the numbers and availabilities of voluntary test subjects and the limitations of the measurement instruments, our data sets

(sampling size and methods) are somewhat limited.

The results obtained herein extend our results obtained in (Hu and Wu, 2006a; 2006b; 2006c; 2007). We encourage institutional researchers who have wider and better accesses to voluntary test subjects and instrumentations independently verify our results. However, please use caution as improper dosage may cause fast heart beat above normal range, panic attack or maybe worse. Anyone who is allergic or otherwise sensitive to Primatene (ephedrine), or has a heart problem and/or high blood pressure should refrain from participating in any testing even in a proper/professional setting. For safety reason, amateurs should not attempt any testing on their own.

This new study reaffirms our earlier conclusions (Hu and Wu, 2006a; 2006b; 2006c; 2007). First, biologically/chemically meaningful information can be transmitted through quantum entanglement mediated processes from one place to another. Second, both classical and quantum information can be transmitted between different locations through quantum entanglement alone. Third, instantaneous signaling is physically real which implies that Einstein's theory of relativity needs new interpretation as we have done in (Hu and Wu, 2010a; 2010b). Further, our new findings provide important insights into the essence and implications of the quantum entanglement. Very importantly, our findings also assist the establishment of a unified scientific framework for explaining many paranormal and/or anomalous effects such as telepathy, telekinesis and homeopathy, if they do indeed exist, thus transforming these paranormal and/or anomalous effects into the domains of conventional sciences.

With respect applications, our findings enable various quantum entanglement technologies be developed. Some of these technologies can be used to deliver the therapeutic effects of many drugs to various biological systems such as human bodies without physically administrating the same to the said systems. Further, many substances of nutritional and recreational values can be repeatedly administrated to desired biological systems such as human bodies through the said technologies either on site or from remote locations. Other such technologies can be used for instantaneous communications between remote locations of arbitrary distances in various ways. Potentially, these technologies can also be used to entangle two or more human minds for legitimate and beneficial purposes.

Acknowledgement

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References

Gariaev PP, *et al.,* Holographic Associative Memory of Biological Systems. Proceedings SPIE - The International Society for Optical Engineering. Optical Memory and Neural Networks, 1991; 1621: 280- 291.

Hatori K, Honda H and Matsuno K. Magnetic dipoles and quantum coherence in muscle contraction. 2001; arXiv: quant-ph/0104042.

Hu H and Wu M. Photon induced non-local effect of general anesthetics on the brain. NeuroQuantology 2006a; 4(1): 17-31.

Hu H and Wu M, Nonlocal effects of chemical substances on the brain produced through quantum entanglement. Progress in Physics 2006b; 3: 20-26.

Hu H and Wu M. Evidence of non-local physical, chemical and biological effects supports quantum brain. NeuroQuantology 2006c; 4(4): 291-306.

Hu H and Wu M. Evidence of nonlocal chemical, thermal and gravitational effects. Progress in Physics 2007; 2: 17-21.

Hu H and Wu M. Prespacetime model of elementary particles, four forces & consciousness. Prespacetime Journal 2010a; 1(1): 77-146.

Hu H and Wu M. Prespacetime model II: genesis of matrix law & the ontology & mathematics of ether. Prespacetime Journal 2010b; 1(10): 1477-1507.

Josephson BD and Pallikari-Viras F. Biological utliization of quantum non-locality. Found Phys 1991; 21: 197.

Lee KC *et. al.*, Entangling macroscopic diamonds at room temperature. Science 2011; 334 (6060): 1253-1256.

Montagnier L et al., DNA waves and water. 2010; arXiv:1012.5166.

Persinger MA, Tsang EW, Booth JN and Koren SA, Enhanced power within a predicted narrow band of theta activity during stimulation of another by circumcerebral weak magnetic fields after weekly spatial proximity: evidence for macroscopic entanglement? NeuroQuantology 2008; 6(1): 7-21.

Pizzi R, Fantasia A, Gelain F and Rosetti D, Vdscovi A. Nonlocal correlations between separated neural networks. Quantum Information and Computation II. Proceedings of SPIE 2004; 5436: 107.

Sarovar M, Ishizaki A, Fleming G R and Whaley KB, Quantum entanglement in photosynthetic light harvesting complexes. Nature Physics 2012; 6: 462–467.

Standish L, Johnson L, Kozak L and Richards T. EEG evidence of correlated event related signals between the brains of spatially and sensorily isolated human subjects. J Alter Compl Med 2004;10:307.

Thaheld FH, Proposed experiment to determine if there are EPR nonlocal correlations between 2 neuron transistors. Apeiron 2000; 7: 202.

Wackermanna J, Seiterb C, Keibel H and Walach H, Correlations between brain electrical activities of two spatially separated human subjects. Neuroscience Letters 2003; 336(1): 60–64.