The Efficacy of EarthCalm's Quantum Cell to Prevent Damaging Effect of Cell Phone Radiation on Human DNA

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ABSTRACT
Human DNA was used as a target biomolecule because it is known to respond to both classical and non-classical electromagnetic (EM) fields. The electrical properties of human DNA were measured because they are known to correlate with physiological functions of DNA in-vivo and the electrical properties are highly sensitive to the external energetic environment. Previous research at the Quantum Biology Research lab has demonstrated that cell phone radiation inhibits electrical conductivity of human DNA.

The present study investigated the effects of radiation emitted by an iPhone3 in standby mode and when receiving a (prerecorded) message. Glass vials containing human DNA were placed on top of a iPhone3 to expose the DNA to cell phone radiation. Thirty-six excitation conditions were screened to find resonance conditions which allowed transfer of information from Earthcalm's Quantum Cell (QC) to the cell phone. Electrical conductivity of DNA was significantly inhibited in the presence of cell phone radiation, whether the cell phone was in standby mode or receiving mode. The experiment was repeated one day after applying Earthcalm's Quantum Cell (QC) to the back of the iPhone.

In this case, the cell phone radiation no longer inhibited the electrical conductivity of DNA indicating a complete and statistically significant reversal of the harmful effect of the cell phone. This reversal occurred either when the iPhone was in standby mode or in receiving mode. The results of the present study also indicate that placing the Earthcalm patch on the cell phone (in standby mode), not only brings conductivity values back to control values, but further increases them by nearly 40% above normal.

I. INTRODUCTION

Detrimental effects from cell phone radiation, as well as other man-made radiation, is now a world-wide epidemic affecting the health of all humans. The global phenomenon is referred to as electro-pollution.

Numerous recent scientific studies from independent laboratories at various Universities throughout the world have now confirmed that cell phone radiation is harmful to the human body (Krishna, 2009). Cell phone industry studies, which contradict these findings, are typically experimentally designed to fail or are based on SAR measurements. The specific absorption rate, SAR, is considered the official gold standard for measuring the effects of cell phone radiation on the human brain. In fact it

is a model system based on physics and not biology, where the human brain is modeled as a solution of salts. SAR measurements are used by the cell phone industry to monitor human exposure standards to cell phone radiation. The cell phone industry has further defined that any cell phone protection technology must reduce SAR measurements using this arbitrary model system (Garn, 1995).

Biologists agree that SAR measurements do not accurately represent the real-life exposure of the human brain to cell phone radiation (Blank, 2012). As an alternative to SAR, an increasing number of scientists are using biological systems in evaluating harmful effects of cell phone radiation and technology which claims to reduce or neutralize this radiation (Goodman, 2002; Syldona, 2007). Numerous commercial products exist which claim to protect the body by reducing the amount of cell phone radiation or by neutralizing its harmful effects. Most studies, however, lack rigorous scientific testing.

The purpose of this study was to evaluate the ability of Earthcalm's Quantum Cell (QC) to neutralize harmful cell-phone radiation. To test this hypothesis, the present study measured the electrical properties of human DNA. Measurements were taken on DNA exposed to ambient EM fields in the environment, DNA exposed to cell phone radiation emitted from an iPhone and DNA exposed to the same iPhone with a Quantum Cell attached.

DNA was chose as the target biomolecule because previous studies have shown that it resonates with and is altered by a variety of classical EM fields (Blank, 1997;Borhani, 2011) as well as non-classical energy fields (Rein, 1995, Rein, 2003). Electrical conductivity of DNA was chosen as the biological endpoint to measure because the electrical properties of biomolecules are highly sensitive to environmental EM fields.

A. Electrical Conductivity of Human DNA

Electrical conductivity of biomolecules is now being used to determine how their electrical properties relate to their well-established physical-chemical properties and their functional role in the human body. Electrical conductivity of DNA, for example, is well known to occur along its central axis and across individual strands (Bakhshi, 1994; Fink, 1999). In the case of DNA, conductivity measures correlate to the functional activity of DNA repair. Increasing conductivity is associated with increased ability of DNA to repair itself (Retel, 1993) and repaired DNA has 20-fold higher conductivity than the same DNA when damaged (Hartzell, 2003). Increased conductivity of DNA is also associated with enhancing intrinsic self-assembly processes (Lintao, 2000). On the other hand, large decreases in conductivity are associated with mismatched DNA strands (Hihath, 2005). Thus, any treatment which increases electrical conductivity can be considered beneficial to the body.

One method for measuring electrical conductivity of biomolecules like DNA is to apply an excitation current (at different amplitudes and frequencies) and measure the response as induced voltage. Other techniques apply an excitation voltage surge (at different amplitudes and frequencies), thereby inducing an electric field, and measure the induced current response. These current-voltage techniques are used in several types of commercially available spectrophotometers, including dielectric spectroscopy. In fact, there are numerous additional methods also available to measure the electrical conductivity of DNA, in-vitro.

Published studies using these techniques report that individual molecules of DNA can conduct electrons, protons and polarons. These subatomic particles can travel down and through the DNA helix at varying rates, a process known as charge transfer. Depending on the type of DNA, its chemical and physical properties, its external environment (i.e. solvent properties), and the excitation conditions used in the measurements, charge transfer can occur via a slow, multi-step electron hopping mechanism or via a fast semi-conductor type mechanism. Under resonance conditions, intrinsic energy fluctuations within DNA result in electron decoherence and charge transfer processes which occur via a one-step coherent superexchange (Xin-Qi 2001). This superconductive process is believed to occur via a quantum tunneling mechanism (Zikic, 2006). Thus, the electrical conductivity of DNA can either occur as a classical (ohmic) multi-step, incoherent hopping process or via quantum tunneling. Although this is acknowledged by main stream science, the exact experimental conditions which allow quantum tunneling are unknown.

B. The Quantum Biology Research Lab's (QBRL) Methodology

The QBRL has developed a method for measuring the electrical property of biomolecules by applying weak voltage spikes at varying amplitudes (10 to 50mV) and vary frequencies (up to 100 kHz) and then measuring the induced current response in nanoamps. The standard current-voltage measurement technique was modified using proprietary methods to insure measurement on non-ohmic behavior and increase the likelihood of measuring quantum behavior (eg. quantum tunneling of electrons as they propagate on the inside and outside of the DNA molecule). This is achieved in part by taking experimental measurements under resonance conditions. Resonance conditions for the interaction of EM radiation and biological systems is complex and are most accurately measured by 'trial-and-error' experiments. As a result of this complexity and the quantum nature of electron propagation along DNA, a phenomenon called 'frequency jumping' or 'frequency hopping' occurs (Plakhotnik, 1997). Therefore, the induced current response can-not be measured as the strength of the current response, as is typically done, but rather as percent occurrence of the response at a particular frequency (ie. how often the response occurs). This novel technique has previously been used at QBRL to characterize the electrical properties of human DNA in response to a wide variety of classical and non-classical EM fields, including cell phones, computers, power-line and WIFI.

II. EXPERIMENTAL PROTOCOL

Stock solutions (1mg/ml) of human placental DNA (Sigma Chemical Co) were made in distilled water and diluted to various final concentrations using distilled water. The electrical conductivity of DNA was measured using a standard potentiostat (Gamry Instruments, Philadelphia, PA) connected to two electrodes. The output and input leads from the potentiostat were fed into a small measuring chamber which consisted of one gold and one platinum electrode, separated by 2mm. These electrodes were immersed into a diluted DNA solution and conductivity measurements were taken using various excitation conditions. Thus, conductivity was measured by applying an excitation voltage spike through one electrode and measuring the induced current in the second electrode. Each sample was measured 12 times sequentially over the course of 15 minutes.

Controls were measured first, where the diluted DNA was placed on the lab bench and exposed only to ambient EM fields found naturally in the lab. Then electrical conductivity was measured immediately after exposing DNA to cell phone radiation with and without the Quantum Cell (active vs dummy).

The following 'experimental variables' were used to find resonant conditions for this particular system:

a) dilution of stock DNA (1/10 to 1/100)
b) different excitation voltages (from 10-30 mV)
c) different excitation frequencies (1-100 kHz)– a total of 36 frequencies were tested
d) different exposure times (30- 80 minutes)

When resonance conditions occur, the EM field emitted by the cell phone had a strong impact on electrical conductivity of DNA causing a large spike in the current response. Under resonance conditions a large decrease in conductivity was observed relative to the control values.

Once resonance conditions were found, electrical conductivity measures were taken under the following experimental conditions

1. environmental ambient EM fields (controls)

2a. DNA sample (in test tube) on top of an iPhone3 in standby mode (mostly powered down with no image on the screen)
2b. DNA on top of the same standby CP with dummy patch attached to the lower back
2c. DNA on top of the same standby CP with active QC patch attached to the lower back

3a. DNA on top of the same CP in receiving mode (listening to the weather report loop)
3b. DNA on top of the same receiving CP with dummy patch attached to the lower back
3c. DNA on top of the same receiving CP with active QC patch attached to lower back

The two patches provided by Earthcalm were labeled by a third party in a blind fashion. They were attached to the iPhone in the lower part of the back and radiation from each was measured, two days apart to ensure there would be no carry over effects. The code was broken after the data for the series 3a, b and c was analyzed.

III. DATA ANALYSIS

The current response measured varied enormously over the frequency range tested (1-100kHz), varying from 10% to 600% inhibition in the presence of cell phone energy. More consistent data was obtained when, at a given frequency, the total number of current spikes was determined, rather than the magnitude of each spike. Only peaks stronger than 50% (relative to the baseline value for measurements taken using particular set of excitation conditions) were counted as an 'occurrence'. The percent occurrence was then calculated as the number of occurrences divided by the total number of sequential measurements (12). Percent occurrence values can be considered raw data. Percent occurrence values are used in the Figures 1 and 2 presented below. These numbers were then used to calculate the percent inhibition relative to the untreated control. Percent inhibition values are presented in all tables below.

Three control samples of DNA were measured sequentially using separate aliquots from a stock solution of DNA. Such measurements allow the determination of the experimental error, since the standard deviation of the three independent measurements could be determined (ideally all three numbers should be the same no matter what the excitation conditions were). Statistical significance was determined from the standard deviation values using a technique called 'margin of error' analysis. Two sigma – 2σ (twice the standard deviation) – values represent the "margin of error". The experimental error (twice the standard deviation) was calculated at 10-13%. Any experimental values greater than the margin of error can be considered to be statistically significant at the 95% confidence level ($p=0.05$). In Figure 1 and Figure 2, error bars (2σ) which do not overlap indicate two values are statistically different from each other.

IV. RESULTS

Varying the amplitude and frequency of the excitation signal and changing the experimental variables stated above usually resulted in current response values similar to those of the controls (DNA by itself). However, when resonance conditions were met, statistically significant differences were observed where the iPhone produced a large inhibition of conductivity and the Quantum Cell completely reversed this effect.

I) THE BLIND EXPERIMENT

The iPhone containing the dummy quantum cell was blindly labeled 2190 and the same iPhone with the active Quantum Cell was coded 1121 by a third party. Two excitation conditions revealed distinct differences between the iPhone with the two patches. Exciting the DNA with a 12mV and 8.91 kHz voltage spike produced an 83% inhibition with patch 2190, which indicates the patch had no effect on electrical conductivity. However, using the same excitation conditions the iPhone with patch 1121 produced the same 71% inhibition of conductivity as the iPhone with no patch. This clearly indicated that patch 1121 was the active patch. Similar results were obtained with a 10mV, 15.83 kHz excitation pulse, although patch 1121 did produce a small inhibitory effect. When the code was broken patch 1121 was revealed to be the active patch.

II) CELL PHONE IN RECEIVING MODE
A) DNA EXPOSED TO CELL PHONE RADIATION

Radiation from a cell phone in receiving mode (calling a prerecorded message) created resonance with DNA when it was diluted 1/10, when excitation pulses were around 15 mV, the excitation frequency ranged from 1.9kHz to 3.9 kHz and with a 70 minute exposure time. Compared to controls, cell phone radiation caused a 42%-100% inhibition of electrical conductivity of DNA depending on the excitation conditions.

B) DNA EXPOSED TO CP RADIATION WITH AND WITHOUT THE QC

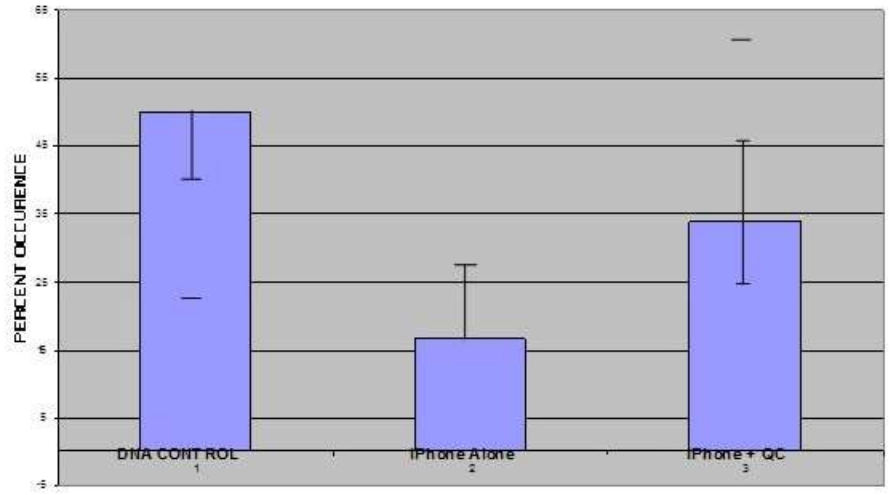

Figure 1: iPhone in receiving mode with and without Quantum Control (QC patch). Excitation conditons: 15mV, 3.16kHz. Exposure time of 70 minutes.

The data in Figure 1 demonstrate that under these excitation conditions, the iPhone radiation caused a 67% inhibition compared to untreated controls. Because there is no overlap between error bars, we can conclude this effect is statistically significant. In the presence of the QC patch only 33% inhibition occurred. Because the error bars do overlap when comparing controls and the iPhone with the QC patch, we can conclude there is no (statistical) difference between these two experimental conditions. Thus the presence of the QC patch on the iPhone completely reversed the inhibitory effect of the CP radiation.

III) STANDBY MODE
A) DNA EXPOSED TO CELL PHONE RADIATION

Resonance occurred when DNA was diluted 1/10, when the strength of the excitation pulse was around 10 mv, when the excitation frequency was from 1-14 kHz and when the DNA was exposed to cell phone radiation for 60 minutes. Compared to controls, cell phone radiation caused a 36%-100% inhibition of electrical conductivity of DNA depending on the excitation conditions.

B) DNA EXPOSED TO CP RADIATION WITH THE QC

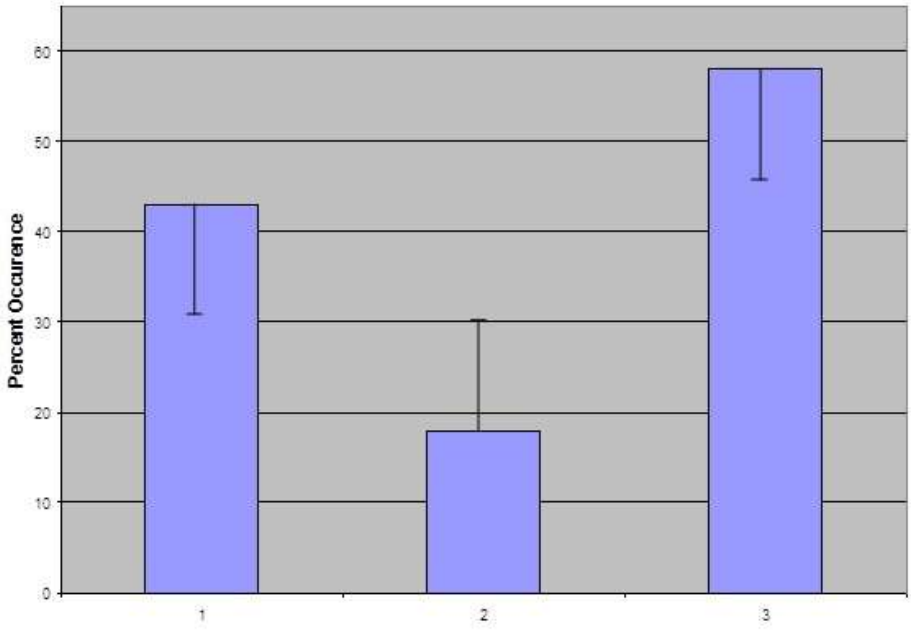

Figure 2: iPhone in standby mode with and without Quantum Control (QC patch). Excitation conditons: 10mV, 3.55 kHz. Exposure time is 60 minutes.

The data in Figure 2 demonstrate that under these excitation conditions, the iPhone radiation caused a 61% inhibition compared to untreated controls. Because there is no overlap between error bars, we can conclude this effect is statistically significant. In the presence of a QC patch, (as clearly seen in Figure 2) the inhibitory effect of cell phone radiation is completely reversed. Above and beyond the 100% return to baseline

(starting) values, this radiation caused an additional 35% stimulation of DNA conductivity.

Because the error bars do overlap, there is no statistical difference between controls and the treated iPhone. Although the extra 35% is not statistically significant, the data indicate a strong trend to increase the electrical conductivity of DNA. This is a good thing. Increasing conductivity is associated with increased ability of DNA to repair itself (Retel, 1993). Furthermore, increased conductivity of DNA is also associated with enhancing intrinsic self-assembly processes (Lintao, 2000).

Nonetheless, the results from this study demonstrate that iPhone radiation with the QC patch no longer inhibited DNA conductivity, but increased it over and above the baseline starting value for the CP itself.

When comparing standby and receiving modes, the iPhone in the standby mode produced more resonances at higher frequencies and required a shorter treatment time. Thus DNA is more sensitive to (at least regarding its electrical properties) radiation emitted from a standby iPhone than an active one.

DISCUSSION

The results of this study demonstrate a statistically significant effect of radiation emitted by an iPhone to inhibit the electrical properties of DNA. Radiation emitted from an active cell phone and the radiation emitted from an iPhone in standby mode both inhibited the DNA to a similar extent, although it appears that standby radiation may be more effective because more resonances are observed.

The results of the present study also demonstrate the efficacy of EarthCalm's QC to normalize the inhibitory effect of cell phone radiation. Under resonance conditions, resonance (and information transfer) occurs between the (subtle) energy from the QC patch and the (electromagnetic) radiation from the cell phone. Thus, in the presence of a protected cell phone (with the QC patch), the radiation from the iPhone no longer inhibited electrical conductivity in human DNA. Whether the phone was in standby mode or receiving mode, the harmful effect of cell phone radiation from an iPhone 3 was completely (100% or more) reversed.

The results of the present study also indicate that placing the EarthCalm patch1 on the cell phone not only brings conductivity values back to control values, but further increases them by nearly 40% above normal. From previous studies at QBRL it was concluded that this effect occurs when there is a strong resonance between two energetic systems. In this case there is the subtle energy from the Quantum Cell patch and the radiation emitted by an iPhone. The results also indicate that the information which is transferred (via coupling) into the cell phone has two main actions. First, it changes the quality (perhaps coherence) of the cell phone radiation, so it is no longer

harmful to DNA. Secondly, it adds beneficial information to the cell phone radiation which then stimulates electrical conductivity. As described in the introduction, it is known that stimulating electrical conductivity in DNA is associated with increased DNA repair (Retel, 1993) and facilitate self-assembly (Lintao, 2000).

It is important to point out that whether the QC patch is modifying the radiation so it is no longer harmful to DNA or having a beneficial effect on DNA, the effects observed in this study are using purified DNA (in the absence of proteins and other biomolecules it is normally associated with in the body) in a non-physiological aqueous environment. Although in-vitro models are often used in biomedical research to predict behavior in the human body (in-vivo), it is not clear to what extent the in-vitro results observed here will extend to the complex environment DNA lives in inside the nucleus of our cells in our body.

Although the mechanism of action of the EarthCalm patch is unknown, it is likely that the subtle energy it generates qualitatively modulates the properties of the cell phone radiation. In this case the radiation no longer damages DNA. One possible mechanism to explain this effect is here proposed. If the subtle energy from the EarthCalm patch is relatively coherent, the addition of extra coherent energy into the incoherent cell phone radiation, could conceivably modulate the cell phone radiation so it is biologically inactive. This hypothesis is based on previous published studies demonstrating that EM field effects are dependent on the ratio of coherent to incoherent energies, and that a biological effect of a particular EM fields could be reversed by certain ratios. (Litovitz, 1994; Farrell, 1998).

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